(No Model.)

T. E. ADAMS.

POLE TROLLEY AND STAND FOR ELECTRIC STREET RAILWAYS.

No. 457,334. Patented Aug. 11, 1891.

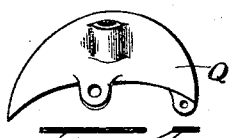


FIG. 4.

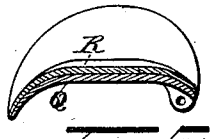


FIG. 5.

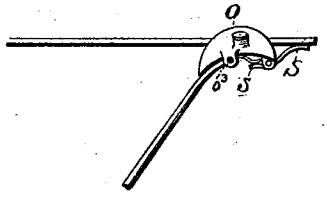
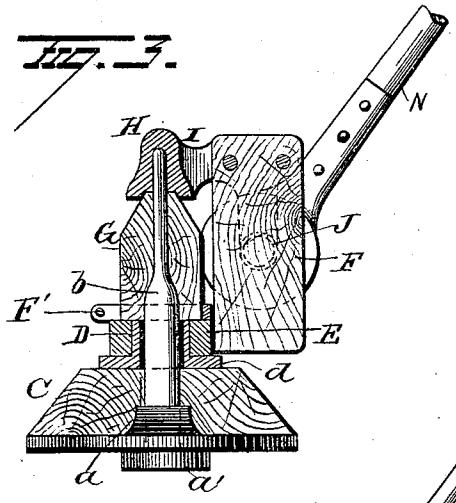


FIG. 3.



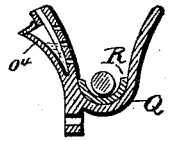
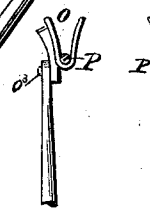


FIG. 6.



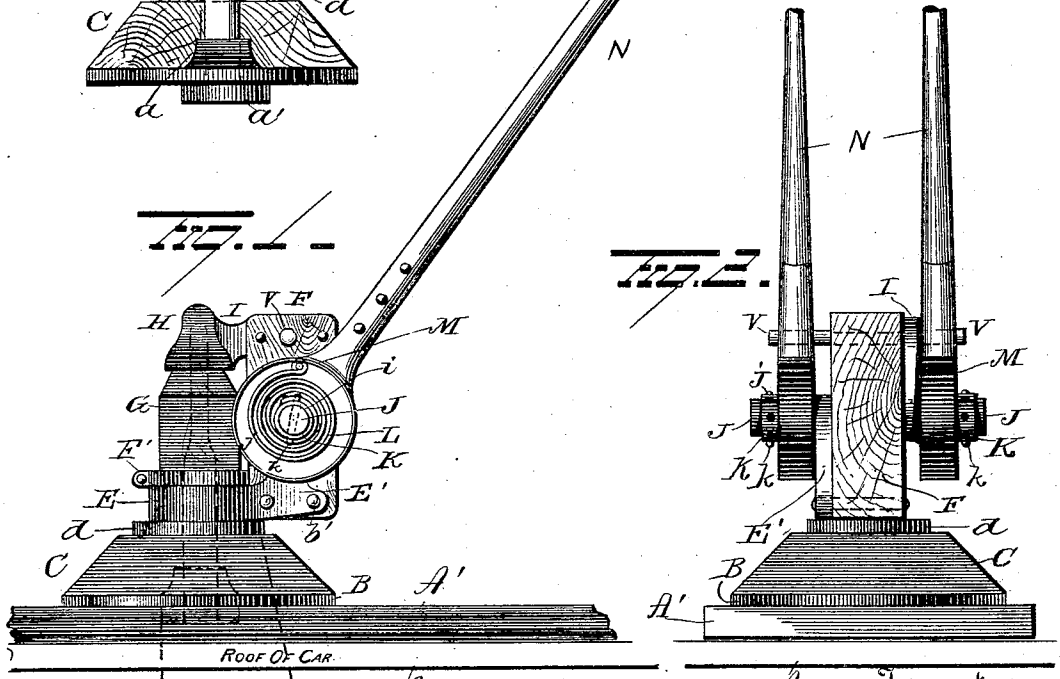


FIG. 1.

FIG. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS E. ADAMS, OF CLEVELAND, OHIO, ASSIGNOR TO THE BRUSH ELECTRIC COMPANY.

POLE TROLLEY AND STAND FOR ELECTRIC STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 457,334, dated August 11, 1891.

Original application filed June 11, 1889, Serial No. 313,822. Divided and this application filed April 30, 1891. Serial No. 349,994.

(No model.)

To all whom it may concern:

Be it known that I, THOMAS E. ADAMS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pole Trolleys and Stands for Electric Street-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 pole trolleys and stands for electric street-railways, and is a division of application Serial No. 313,822, filed June 11, 1889.

Heretofore it has been customary to establish the electrical connection of vehicles with the overhead conductor or conductors by means of one or more traveling contacts in the form of rollers, which are pressed upwardly against and run along the conductor or conductors.

According to the present invention a sliding grooved shoe is employed, the shoe or shoes being held in contact with the conductor or conductors by elastic or yielding pressure.

My invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of my invention. Fig. 2 is a similar view in rear elevation. Fig. 3 is a vertical section taken through the trolley-stand. Fig. 4 is a detached view in side elevation of the trolley. Fig. 5 is a longitudinal section, and Fig. 6 is a transverse vertical section, of the same.

A represents the roof of a street-car, which latter is provided with any suitable electromotor and apparatus for propelling it by electricity. To the roof is secured a plank or bed-piece A′, which serves as a support for the trolley-stand, which latter is constructed as follows:

B is a cast-iron plate, which may be circular in form, and which is perforated for the insertion of screws or bolts for fastening the plate to the plank A′. Plate B may be provided on its upper and lower sides with the bosses or hubs *a a′* to form an extended bearing, within which is firmly secured the lower end of the pivot *b*, which may have its upper end reduced in size, as shown in the drawings.

On the upper surface of the plate B is placed a block C, of wood or other suitable material, which is provided with a central hole for the reception of the pivot *b*. Upon the wooden block C is supported a contact-sleeve D, of brass or other suitable material, the lower end of which is formed with an outwardly-projecting flange *d*, which serves as an annular seat for the cast-metal sleeve E, the latter having a bracket E′ formed integral therewith. Bracket E′ is suitably perforated for the insertion of screws *b′*, by which it is secured to one side of the wooden block F. The cast-metal sleeve E is held in snug contact with the brass sleeve D by means of a split ring F′, which encircles the wooden block G, which latter is firmly secured on the pivot *b*. Upon the upper and reduced end of the pivot *b* is supported an inverted-cup-shaped casting H, which has an extended bearing on the pivot, and hence has a good electrical contact therewith, and the contact-surfaces are thoroughly protected against the entrance of rain or snow by the closed upper end of the casting H. The casting H is formed integral with the bracket I, which is fastened to the wooden block on the side opposite the bracket E′. Brackets E′ and H are each provided with a trunnion J, upon which is loosely mounted a sleeve K. The outer end of each sleeve is provided with a hole *j*, through which is inserted a pin *k*, which enters one of a series of holes *i*, formed in the outer end of the trunnion. To the periphery of each sleeve is secured the inner end of a spiral spring L, the outer end of which is fastened to the housing M on the lower end of the trolley-pole. The housing serves to receive and protect the spiral spring.

N represents the trolley-poles, to the upper end of which are secured the trolleys O, which latter are held in snug electrical contact with the two line-wires P P′.

Each trolley is constructed as follows: Q is a U-shaped metal plate or casting in the form of a shoe, the sides of which are arc-shaped. Each shoe plate or casting is provided with a renewable contact-plate R, which is riveted or otherwise secured on the wearing or contact face of the trolley.

The sliding contact above described is found to be much better than a wheel, as it does not wear the conductor so much nor is it so apt to leave the same, and the electrical connection is more perfect.

It is preferred to have the wings or sides of the shoe flaring upward and of considerably greater depth than the diameter of the wire on which it travels, so that said shoe is readily applied to the wire and is not liable to escape therefrom under sudden lateral stress or by jumping in passing hangers or frogs and the like or by turning in passing curves. It is further preferred to have the shoe flexibly connected with the pole, so that it may rock longitudinally of the wire, a horizontal pivot o^3 being shown as provided for that purpose; but the invention includes the new or improved pole-trolley irrespective of the flexibility or precise character of the means for securing the contact in place. It is further preferred to have the wings project beyond the removable wear-plate R, which is placed at the bottom of the groove, as shown.

S is a spark-catcher consisting of a metal plate pivoted to the trolley and forced upwardly against the under side of the line-wire by means of a spring *s*. Should the trolley jump out of contact with the line-wire the circuit will still be completed through the spark-catcher and the formation of an arc be prevented thereby.

S′ is a pin removably secured to the trolley and adapted to actuate the line-switches.

Conductors T and U are connected with the car-motor. Conductor T is electrically connected with the brass sleeve D, which is electrically connected with the cast-metal sleeve E, with which the trolley is electrically connected by means of a suitable conductor. The conductor U is electrically connected with the other trolley through the pivot *b*, casting H, and suitable conductor connecting the casting and trolley. Both poles and trolleys may be swung around in unison and their positions reversed, and their forward movement is limited by steel stop-pins V, secured to the wooden block.

I make no claim in this application to a plurality of suspended supply-conductors combined with an upward-pressure contact device comprising a plurality of independent insulated contacts adapted to engage the said supply-conductors, nor to a double suspended system of electric conductors combined with a duplex contact device comprising separate upwardly spring-pressed contact-carrying arms movable on both a vertical and transverse axis and separate insulated circuit connections between said arms and their stationary support, nor to a double suspended system of electric conductors combined with a duplex contact device comprising separate upwardly spring-pressed arms, each provided with a current-collecting device at its free end and movable on both a vertical and transverse axis and separate insulated circuit connections between said arms and their stationary support, said connections being also free to move upon a vertical axis, as said parts are shown, described, and claimed in pending application, No. 313,822, filed by me June 11, 1889; nor do I claim in this application the means for tightening the springs which yieldingly hold the trolley-poles elevated, nor the means shown, consisting of a lubricant-chamber o^4, communicating by perforations with the groove of the trolley, for lubricating the overhead conductor, as said parts are claimed in my application above referred to.

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

1. The combination, with a trolley, of a spark-catcher arranged to press against the under side of the line conductor at one end of the trolley, substantially as set forth.

2. The combination, with a trolley-shoe, of a spark-catcher plate arranged to press against the under side of the line conductor at one end of the trolley-shoe, substantially as set forth.

3. The combination, with the pivot and the trolley-stand and a conductor connected with the car-motor electrically connected with said pivot, of a trolley-bracket provided with a bearing that is supported on said pivot, substantially as set forth.

4. The combination, with a trolley-pole and trolley, of a pin for actuating the line-switches, substantially as set forth.

5. The combination, with a trolley-pole and trolley, of a removable pin for actuating the line-switches, substantially as set forth.

6. The combination, with a trolley and shoe, of a pin for actuating the line-switches, substantially as set forth.

7. The combination, with a trolley pole and shoe, of a removable pin for actuating the line-switches, substantially as set forth.

8. A trolley or traveler having a grooved shoe, the latter having a removable wearing-surface at the bottom of the groove, substantially as set forth.

9. A trolley or traveler having a grooved shoe provided with a removable wearing-surface at the bottom of the groove and wings projecting beyond said removable surface, substantially as described.

10. A trolley or traveler comprising a spring-pressed pole and a grooved shoe flexibly connected with said pole by means of a pivot transverse to the length of the shoe, substantially as described.

11. A trolley or traveler comprising a spring-

pressed pole swiveled to the car and a contact in the form of a grooved shoe flexibly connected with the outer end of said pole so as to be capable of rocking longitudinally of the conductor or supply wire, substantially as described.

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

THOS. E. ADAMS.

Witnesses:
A. B. CALHOUN,
JOHN G. DOLPH.