

(No Model.)

S. H. SHORT.
TROLLEY POLE FOR ELECTRIC CARS.

No. 566,237.

Patented Aug. 18, 1896.

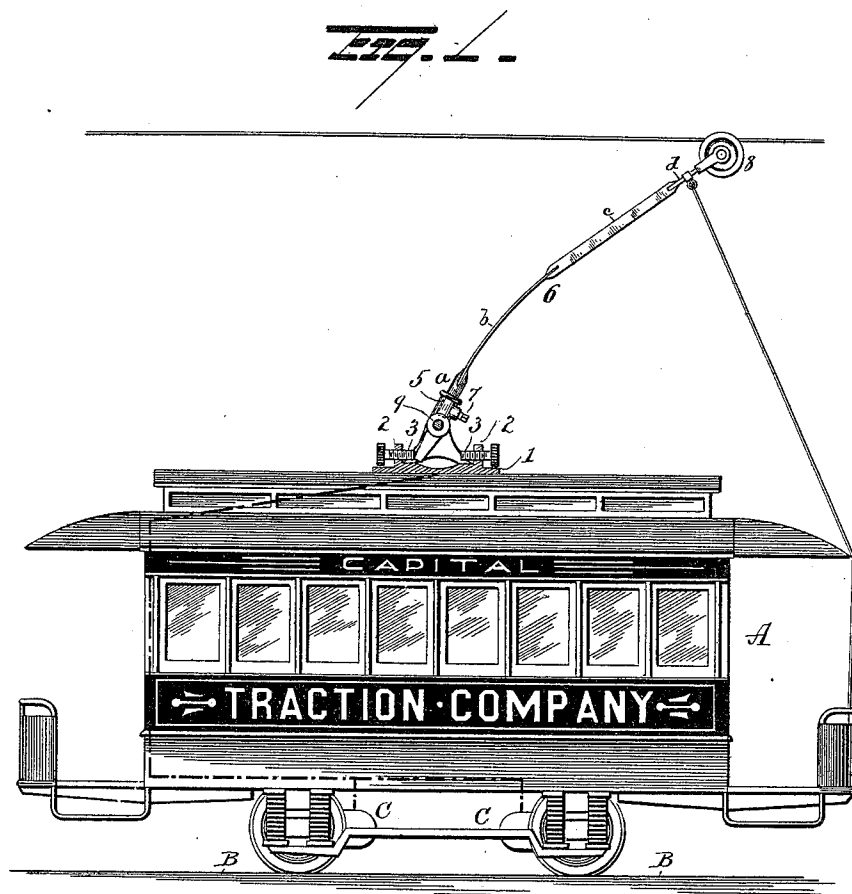


Fig. 2.



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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

TROLLEY-POLE FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 566,237, dated August 18, 1896.

Application filed February 17, 1896. Serial No. 579,572. (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 Electric Railroads; 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 electric railways, and more particularly to trolley devices, the object of the invention being to produce a simple and efficient trolley device by means of which the trolley shoe or wheel will be maintained in contact with the under face of the trolley-wire with the proper degree of pressure and be permitted to accurately follow the trolley-wire without the use of springs or weights.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a car having my improvements applied thereto. Fig. 2 shows sections at different points on trolley-pole.

A represents a car, B the track, and C the electric motors for propelling the car. A plate or base 1 is secured to the roof of the car and provided at its ends with upwardly-projecting lugs 2 2, having screw-threaded perforations for the reception of screw-stops 3 3. The plate or base 1 is provided between its ends with arms 4, between which a socket-piece 5 is pivotally supported between its ends by means of a pin 9. Said socket-piece 5 is for the reception of the lower end of the trolley-pole 6, which is secured therein by means of a screw 7 or in any other suitable manner, and at its free end is provided with a trolley-wheel or contact device 8. The trolley-pole 6 is made of spring or elastic material, so that the trolley-wheel at the free end thereof will be maintained in contact with the under face of the trolley-wire with the necessary de-

gree of pressure wholly independent of any auxiliary springs (or weights) such as have heretofore been employed for this purpose.

The spring trolley-pole should be so constructed as to be capable of sufficient lateral motion to permit the trolley-wheel to maintain its contact with the wire on curves and under all circumstances when a lateral movement of the pole is necessary or desirable, and it is also a matter of some importance that the pole be constructed in such manner that there will be no liability of that portion of the pole a short distance below the trolley-wheel making contact with the trolley-wire. For these purposes a trolley-pole made in the manner which will now be described will be found efficacious. The trolley-pole 6 will preferably be made of spring-steel, (or it may be made of any suitable spring material,) and its lower end *a* is made cylindrical (preferably tubular) in form and is inserted into the socket-piece 5, in which it is held by means of the set-screw 7, as above explained. Immediately above the lower round or tubular portion *a* the pole is made with a flat elongated or ribbon-like section *b*, the longest diameter of which is parallel with the pin 9. In other words, the section *b* of the pole is so formed as to permit the pole to bend toward or away from the car and so that the resilience of the said portion *b* will act to press the trolley-wheel against the wire. The section *c* of the pole (in immediate advance of the section *b*) is also made flat, but its longest diameter is disposed at right angles to the longest diameter of the section *b*, and the free end or section *d* of the pole, to which the trolley-wheel is attached, is preferably made round in cross-section (preferably tubular) and quite small as compared with the lower end or section *a* of the pole.

From this construction of the trolley-pole it will be observed that its most elastic portion with respect to the trolley-wire and the roof of the car is in the section *b*, which is nearer the roof of the car than the trolley-wire, and as the section *c* of the pole cannot bend in the same direction as section *b* there will be no liability of the upper portion of

the pole striking the trolley-wire. By making the section *c* of the pole flat in a direction at right angles to the section *b* the necessary lateral movements of the trolley-wheel will be readily permitted.

It will be observed that when the pole is in operation the lower end of the socket-piece 5 will be in engagement with one of the stops 7 and that it will have no movement whatever on the pin 9, all movement of the trolley-wheel as it runs against the wire being permitted by the spring or elastic nature of the trolley-pole itself. When the direction of the car is to be changed, the pole will be then turned on the pin 9, so that the lower end of the socket-piece will bear against the opposite stop 7. For thus shifting the pole the cord 10 will be employed, the upper end of which is attached to a ring 11, encircling the pole just below the trolley-wheel, and the other end terminating at the platform of the car or in the vicinity thereof.

By means of the adjustable stops 3 the tension of the spring-pole can be regulated and the pressure of the trolley-wheel against the wire adjusted.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. In an electric railway, the combination with a track, a supply-conductor suspended above the track and an electric car, of a flexible or elastic trolley-pole attached to the roof of the car, devices for regulating the tension of said pole and a contact device carried by said pole, substantially as set forth.

2. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a spring trolley-pole made in a single piece and attached to the car, and a contact device carried by said pole, the most yielding portion of said pole toward and away from the car-roof being nearer the car-roof than to the contact device, substantially as set forth.

3. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a flexible trolley-pole and a contact device carried by said pole, said pole being made with a flattened portion at a point near but above its attachment to the car-roof, substantially as set forth.

4. In an electric railway, the combination with a track, a conductor suspended above the track, and an electric car, of a flexible trolley-pole attached to the car-roof, a portion of said trolley-pole between its ends being made flat or elongated in cross-section where-

by to permit the upper end of the pole to have a lateral movement, and a contact device carried by the upper end of the pole, substantially as set forth.

5. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a flexible trolley-pole attached to the car-roof, said pole having two portions made flat and the longest diameter of one portion disposed at right angles to the longest diameter of the other portion, and a contact device carried by said pole, substantially as set forth.

6. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a flexible trolley-pole attached to the car-roof, a portion of said pole near its lower end being made flat whereby to permit the pole to bend toward and away from the car, and a portion of said pole in advance of the above-mentioned flat portion, being made flat at right angles to the first-mentioned flat portion whereby to permit the upper portion of the pole to have a lateral movement, and a contact device at the upper end of said pole, substantially as set forth.

7. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a pivoted spring trolley-pole attached to the car-roof, stops in front and in rear of the pole to limit its movements and prevent it from turning on its pivot when in use, and a contact device at the upper end of said pole, substantially as set forth.

8. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a flexible pole pivotally supported on top of the car, adjustable stops for limiting the movements of said pole and preventing it from turning on its pivot when in use and a contact device at the upper end of said pole, substantially as set forth.

9. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a base-plate secured to the car and having perforated lugs at its ends, arms projecting upwardly from said base-plate, a socket-piece pivoted between its ends to said arms, screws passing through said perforated lugs and adapted to be engaged by said socket-piece, a flexible trolley-pole inserted in said socket-piece and a contact device carried by said flexible trolley-pole, substantially as set forth.

10. In an electric railway, the combination with a track, a conductor suspended above the track and an electric car, of a flexible trolley-pole attached to the car, a contact device carried by the trolley-pole and adapted to engage the trolley-wire and means for adjusting the tension of said flexible trolley-pole, substantially as set forth.

11. In an electric railway, the combination
with a track, a conductor suspended above
the track, of a flexible trolley-pole attached
to the car, said trolley-pole being constructed
5 and adapted to yield in two directions at
right angles to each other and means for ad-
justing the tension of said flexible pole, sub-
stantially as set forth.

In testimony whereof I have signed this
specification in the presence of two subscrib- 10
ing witnesses.

SIDNEY H. SHORT.

Witnesses:

GEO. H. KNIGHT,
J. C. LOUGHRY.