No. 717,291. Patented Dec. 30, 1902.

J. G. SHARWELL.

TROLLEY CONNECTION AND GUARD FOR ELECTRIC CARS.

(Application filed Apr. 10, 1902.)

(No Model.)

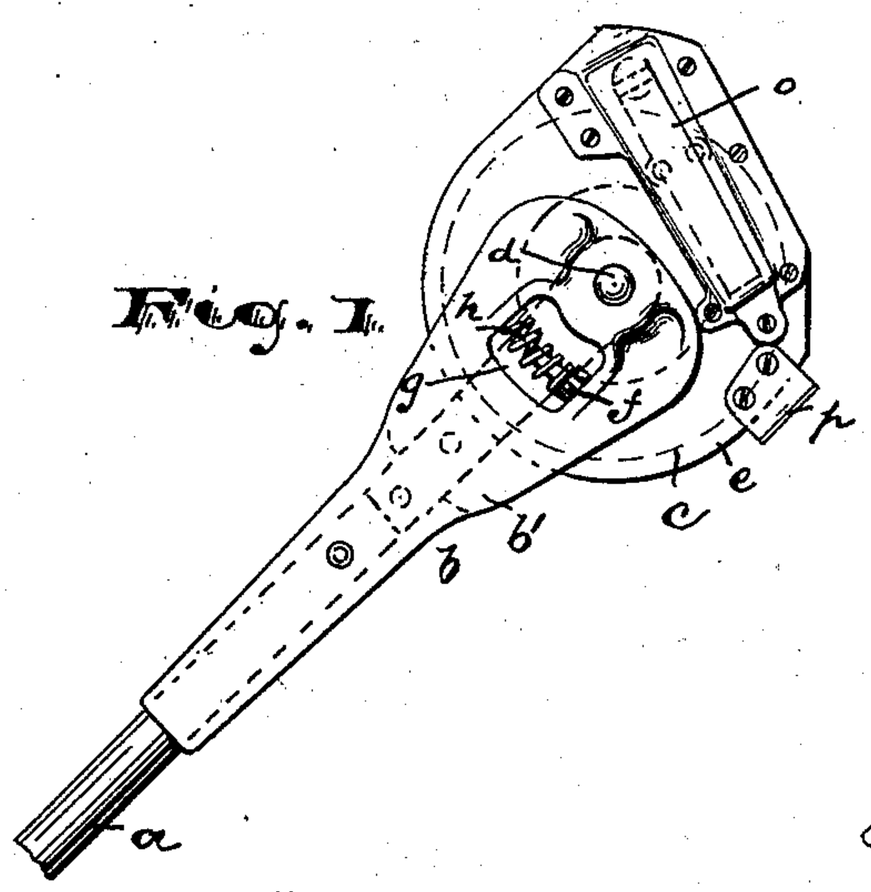

Fig. 1.

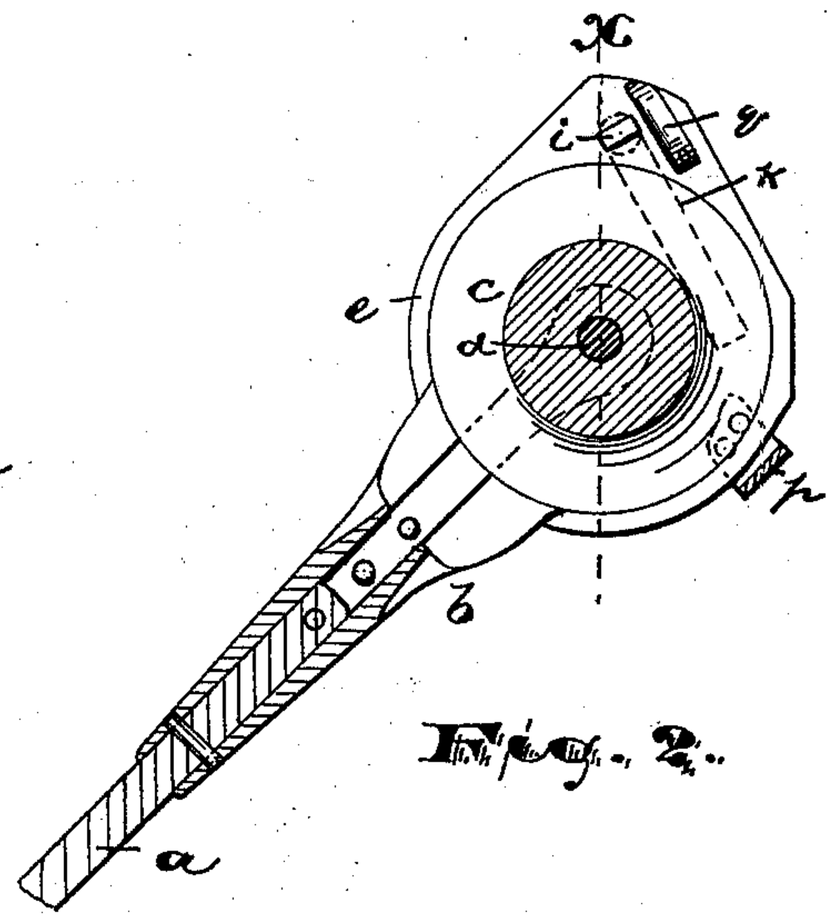

Fig. 2.

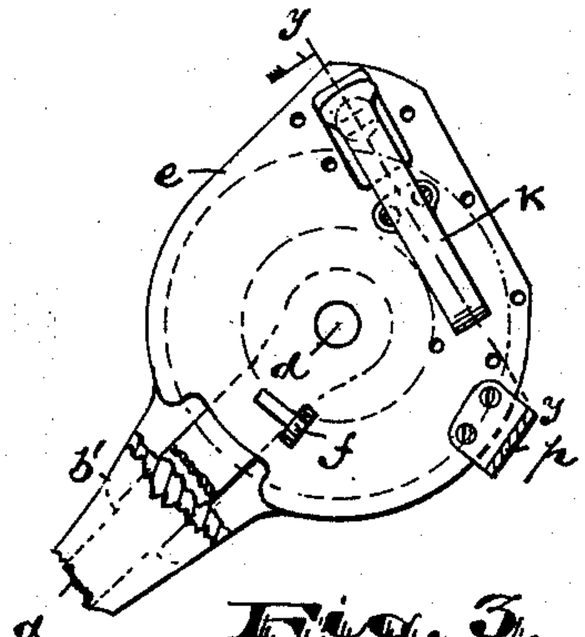

Fig. 3.

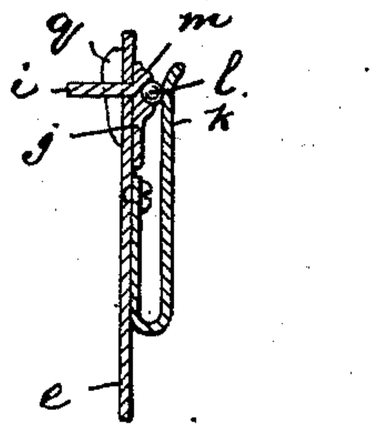

Fig. 4.

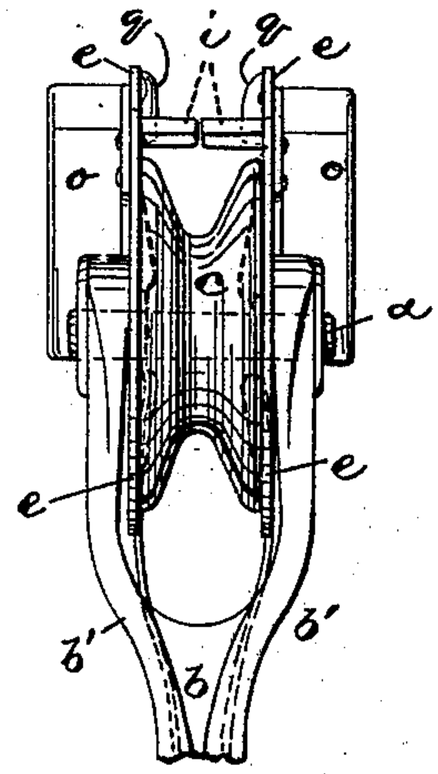

Fig. 5.

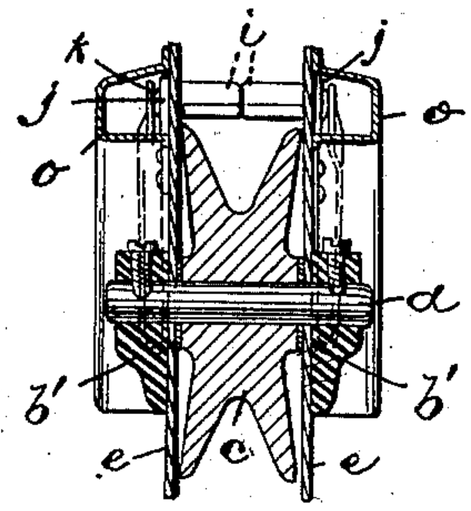

Fig. 6.

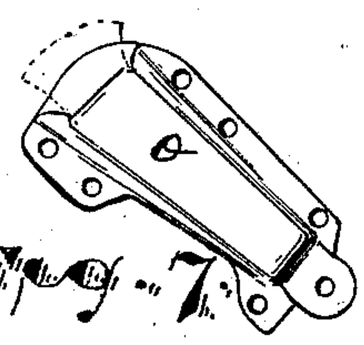

Fig. 7.

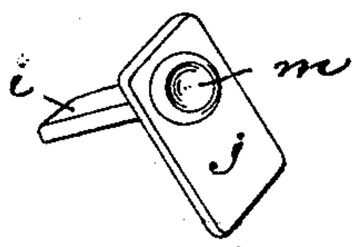

Fig. 8.

WITNESSES:

Henry King

Russell M. Everett.

INVENTOR:

Joseph G. Sharwell,

BY

Drake & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPH G. SHARWELL, OF NEWARK, NEW JERSEY.

TROLLEY CONNECTION AND GUARD FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 717,291, dated December 30, 1902.

Application filed April 10, 1902. Serial No. 102,152. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH G. SHARWELL, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Trolley Connections and Guards for Electric Cars; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to prevent a trolley-wheel in connection with an electric car from jumping from proper conductive relation to the wire, to reduce the cost of construction, to provide a device which will not be complicated or cumbersome and will permit an easy and quick connection to or removal from the wire, and to obtain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved trolley connection and guard for electric cars and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of my improved device. Fig. 2 is a central, vertical, and longitudinal section of the same. Fig. 3 is a side view with a certain protecting-box or inclosure removed. Fig. 4 is a section taken at line *y* of Fig. 3. Fig. 5 is a front elevation, and Fig. 6 is a section taken at line *x* of Fig. 2. Fig. 7 is a perspective view of the box or inclosure above referred to in detail, and Fig. 8 is a perspective view of a certain guarding-piece in detail.

In said drawings, *a* indicates the trolley-pole, adapted to be hinged or otherwise connected with the car, preferably at the top thereof, and having at the upper end a fork *b*, between the prongs *b'* of which the trolley-wheel *c* is arranged on the pivotal pin or shaft *d* in any ordinary and suitable manner. Upon opposite sides of said wheel *c*, between said wheel and the inner sides of the broad prongs *b'*, are arranged plates *e e*, which have a limited pivotal movement on the pin or shaft *d*. Said plates on their outer sides are provided with lugs *f*, which enter recesses or openings *g*, Fig. 1, in the prongs *b'* and are engaged by springs *h*, which permit of the limited movement, but hold said plates *e* in normal operative position. Said plates *e e* extend upward above the periphery of the wheel *c*, where said plates are perforated to receive certain guarding-fingers *i*. Said guarding-fingers are mounted upon or are formed integral with small plates *j*, as shown in detail in Fig. 8, the said plates *j* lying at the outer sides of the plates *e*, while the finger portions *i* project through the perforations to a point about midway of the space between the two plates *e*, where the two fingers meet or lie closely near to one another. Said fingers are slightly rounded at their meeting or adjacent ends, so that the wire may enter between more easily. The fingers *i* are somewhat smaller in cross-section than the diameter of the holes through which they pass, and are thus permitted a limited freedom of movement from and toward the periphery of the wheel.

To hold the plates *j* of the guarding-pieces against the outside of the plates *e*, and thus to hold the guarding-fingers *i* in normal relation, the said plates *j* are backed by springs *k*, which are preferably leaf-springs, fastened to the outsides of the plates *e* and extending to and lying on the faces of the plates *j* or upon balls *l*, interposed between, as shown in Fig. 4. The plates *j* may be provided with sockets *m* to receive said balls. When the pole and trolley-wheel are manipulated to effect a contact with the wire, the said wire passes between the abutting fingers *i*, the latter moving laterally, so as to permit such passage, and the plates *j* are given a rocking movement, which is permitted by the springs *k*; but while permitting of a passage to and from the wheel *c* by the wire said fingers *i* present considerable resistance to the wire, especially on its out-passage from the wheel, because of the length of the plate in one direction from the socket *m*, as shown in Fig. 8, whereby said wheel is retained in proper conductive relation to the wire while travel-

ing rapidly along said wire. The springs *k* are inclosed within boxes or covers *o*, and are thus prevented from injury and from interfering with crossing wires or other extraneous appliances. A bracing-bridge *p* serves to hold the plates *e* at their outer parts rigidly in proper relative position.

In operation should the plates *e* strike a crossing wire the said plates will turn against the spring *h* on the pivot *d*, and thus prevent any damage to said crossing wires because of sudden or sharp impact. On the inner sides of the plates *e* are inward-extending guide projections *q*, adapted to lead the trolley-wire in its inward passage toward the fingers *i* to a point away from the inner sides of the plates *e*, and thus the said wire will be more effective in turning and opening or parting the fingers, as will be evident.

Having thus described the invention, what I claim as new is—

1. The improved trolley appliance comprising the forked pole and wheel, plates disposed beside the wheel and at a point out from the periphery of the wheel having perforations, guarding-pieces consisting of fingers and plates, the plates being loosely arranged on the outside of said plates and the fingers extending inward through said perforations, and springs secured to the outsides of the plates first referred to and adapted to press against the base of the fingers.

2. The combination with the pole and wheel, of the pivoted plates and the loose, rocking guarding-fingers, springs providing seats for said guarding-fingers and boxes inclosing the springs and seated ends of said guarding-fingers, substantially as set forth.

3. The combination with the pole and trolley-wheel, of plates perforated near their tops, small plates arranged at the outsides of said perforated plates and having guarding-fingers extending through the perforations of said perforated plates, said fingers being movable in said perforations, and springs holding said small plates and their fingers in normal relation, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of March, 1902.

JOSEPH G. SHARWELL.

Witnesses:

CHARLES H. PELL,

ROBERT MENZEL.