(No Model.)

J. H. BEAZAN.

TROLLEY GUARD.

No. 554,571. Patented Feb. 11, 1896.

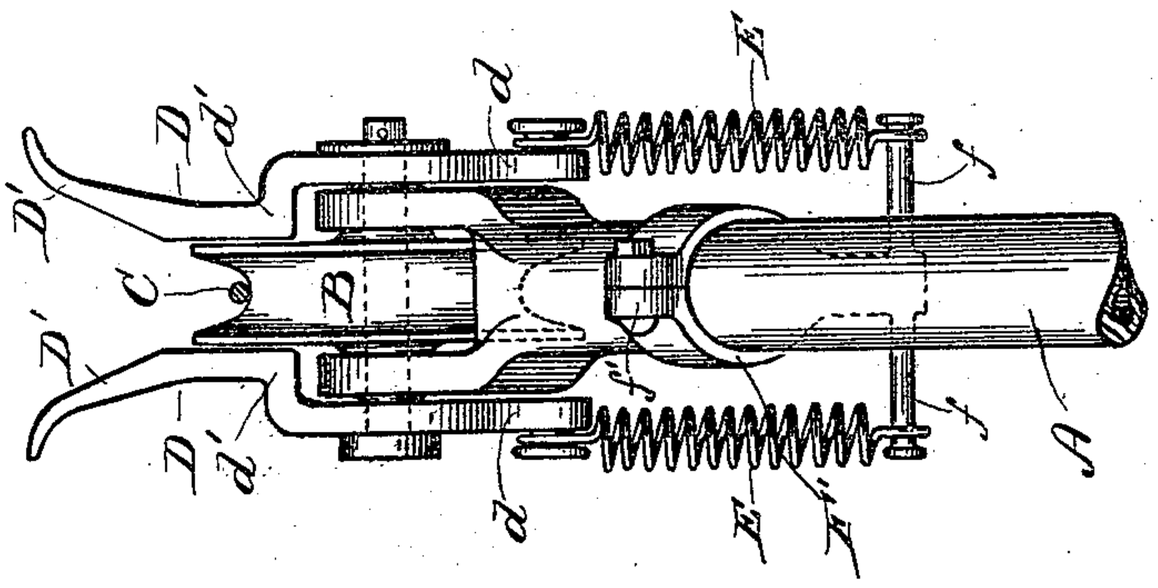

Fig. 2.

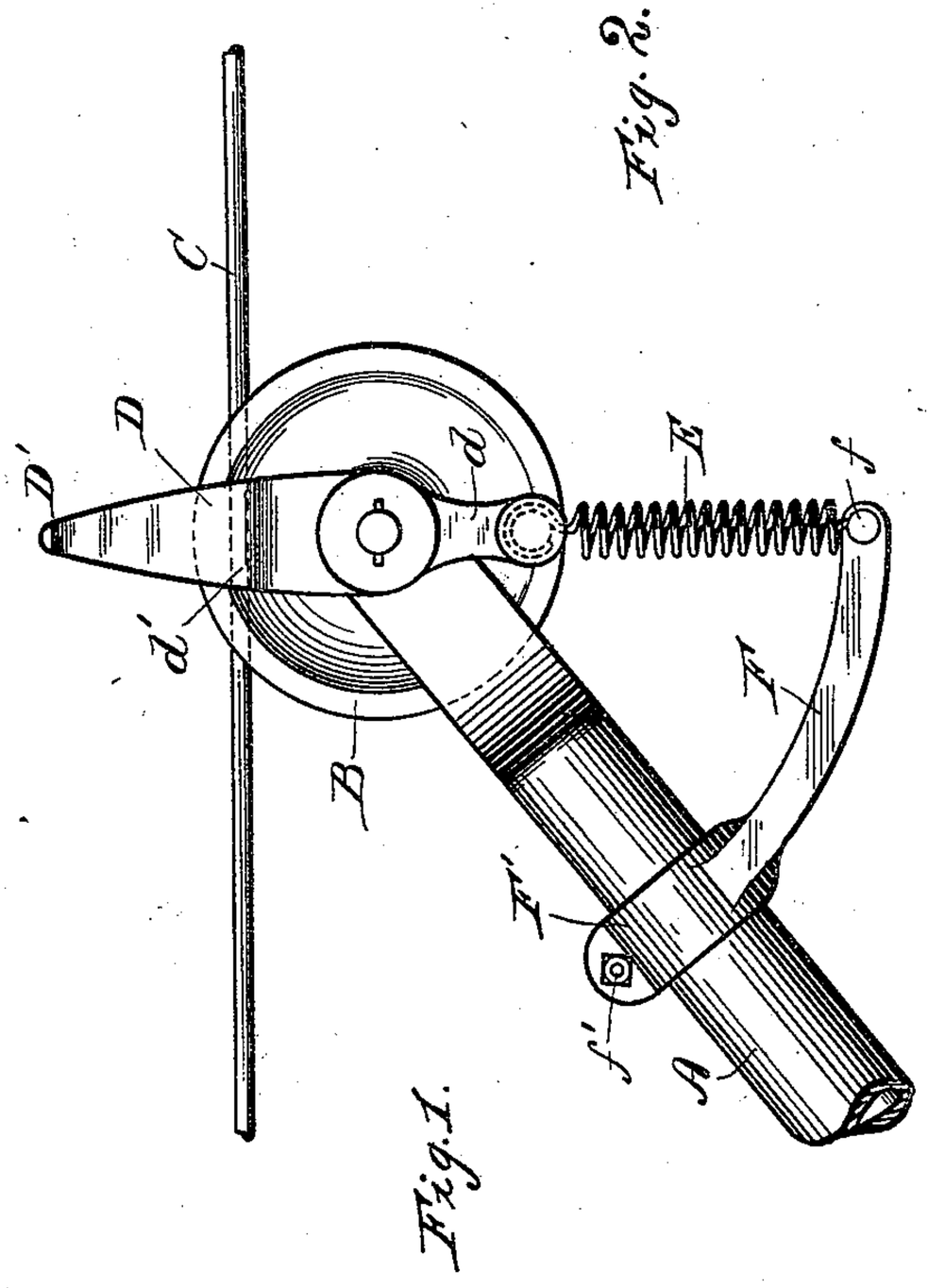

Fig. 1.

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UNITED STATES PATENT OFFICE.

JOHN H. BEAZAN, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF THREE-FIFTHS TO MORITZ M. MEISSNER AND SAMUEL S. WEIL, OF SAME PLACE.

TROLLEY-GUARD.

SPECIFICATION forming part of Letters Patent No. 554,571, dated February 11, 1896.

Application filed March 19, 1894. Serial No. 504,206. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BEAZAN, a citizen of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented a certain new and useful Improvement in Trolley-Guards; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to new and useful improvements in the construction of devices for maintaining contact between overhead electric wires and the trolley-wheels attached to the ends of the movable arms upon electric cars; and said invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of the upper end of a trolley-arm, together with its trolley-wheel, and provided with my improved device. Fig. 2 is a front elevation of the same.

Referring by letter to said drawings, A designates the trolley-arm, and B the trolley-wheel, which may both be of any desired or familiar construction.

C designates the overhead electric wire, with which the wheel B makes contact.

Much trouble and annoyance are occasioned in the use of devices for making contact with overhead wires, which are of any of the various well-known forms, from the fact that, owing to vibration of the overhead wires or of the car itself, the contact between the wire and the trolley-wheel is frequently broken, the trolley-wheel dropping below the level of the wire and the upward movement of the arm causing the trolley-wheel to rise past the wire at one side or the other, when it becomes necessary to replace the wheel upon the wire.

It is often quite difficult to replace the trolley-wheel in contact with the wire, and especially so at night.

It is to provide means for guarding against accidental displacement of the trolley-wheel and also to facilitate replacing the trolley in contact with the wire that my present invention is designed.

In carrying my invention into effect I provide suitable arms D D, which are pivotally secured to the trolley-arm at opposite sides of the wheel B and are arranged to normally extend upward beyond the periphery of said wheel to a considerable distance above the level of the wire, in the manner shown in the drawings. Upon the lower ends of the pivoted arms D D are provided extensions *d d*, which are arranged to project considerably below the pivotal connections of said arms, and to the extremities of these extensions are secured suitable springs E E, which are connected at their other ends with any suitable or desired form of rigid support attached to the trolley-arm. It follows from this construction that upon encountering any obstruction either one or both of the arms D D are free to swing upon their pivotal supports in order to pass such obstruction, when the springs will tend to automatically return the arms to their normal position.

It is desirable that the arms D D be maintained in a position substantially at right angles to the wire C, and inasmuch as the trolley-arm when in use rests in a position oblique to the wire it becomes necessary to arrange the rigid support for the lower ends of the springs E E at a point somewhat distant from the trolley-arm, and for this purpose I find it convenient to provide a laterally-extending arm F, which is secured in any desired or convenient manner to the trolley-arm A and provided at its outer end with projecting pins *f f*, to which the springs are secured. As a matter of convenience, I prefer to form this arm F in the manner shown in the drawings with a suitable clamp F′ at its end for engagement with the outside of the trolley-arm, which may be secured in place by means of a suitable bolt *f′*, as shown. The arm F is arranged to extend considerably to the rear of its point of support upon the trolley-arm so as to bring its rear end into a position substantially in a vertical line with the center of the wheel when the arm is in the position shown in Fig. 1. By this arrangement the tension of the springs will serve to normally hold the

pivoted arms in a vertical position with respect to the wire, while at the same time permitting a free movement of said arms in either direction.

As shown more particularly in Fig. 2, the upper ends D′ D′ of the arms D D are beveled upon their inner faces and are also conveniently curved outward at their upper extremities so as to afford a guide to readily direct the wire into the grooved wheel. I also prefer to form the pivoted arms D D in the manner shown more particularly in Fig. 2 of the drawings, said arms being bent or curved inwardly, as at *d′ d′*, so as to cause the inner faces of said arms to lie close to the outer faces of the upper periphery of the wheel B. By this arrangement very little space is left between the faces of the wheel and the arms D D, and all liability of the wire getting between the wheel and one of said arms is avoided.

It follows from the described construction that by reason of the outwardly-flaring guard-arms upon opposite sides of the trolley-wheel, in case of an accidental displacement of the trolley by reason of the vibration of the overhead wire or of the car itself, the arms D D, extending upwardly for a considerable distance above the wire, will prevent a lateral displacement of the wheel, and as the arm is pressed upward again by its spring-support upon the car said arms will serve to guide the wheel into position beneath the wire in an obvious manner. Furthermore by the pivotal engagement of the arms D D with the upper end of the trolley-arm and the arrangement of the springs E E, connected with the lower ends of said arms, these arms are permitted to yield in either direction upon encountering an obstruction along the wire, so as to readily pass beneath such obstruction without in any way affecting the contact of the wheel with the wire and without bringing any undue strain upon the wire or its supports.

It will also be understood that by the arrangement of the flaring guard-arms D D to project above the upper periphery of the trolley-wheel in the manner described the operation of replacing the trolley in contact with the wire is rendered much easier than would be the case if said arms were not employed, inasmuch as it is only necessary to direct the trolley-arm with sufficient accuracy to cause the wire to enter between the outer extremities of the guard-arms, when said arms will automatically direct the wire into the groove of the trolley-wheel, whereas, if the guard-arms were not employed, it would be necessary to exercise greater care and to direct the trolley-arm with sufficient accuracy to cause the overhead wire to enter the groove in the wheel itself.

By my improvement, therefore, a great saving of time is effected from the fact that accidental displacement of the trolley-wheel is avoided, and the operation of placing the trolley in contact with the wire when this becomes necessary, as at the end of a route, is greatly facilitated. Furthermore, accidents to the trolley mechanism and also to the overhead wires and their supports, due to accidental displacement of the trolley-wheel, are also avoided by the employment of my improved device.

I would have it understood that I do not desire to limit myself to the exact form of construction illustrated in the drawings and herein described, as various modifications in the details of construction might be made without departure from my original invention, and any form of device of this nature in which is employed a pair of pivoted guard-arms arranged to normally extend upward upon opposite sides of the overhead wire I would regard as coming within the scope of my said original invention.

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

1. The combination with a trolley-arm and its wheel, of a pair of upwardly-divergent guard-arms pivotally supported upon the upper end of the trolley-arm and arranged to extend at their upper ends considerably above the periphery of the wheel, downwardly-extending projections upon said arms below their pivotal supports, an arm upon the rear side of the trolley-arm terminating at a point substantially beneath the center of the trolley-wheel when the latter is engaged with the wire, and suitable connections between said extension and the extensions upon said guard-arms for normally sustaining the latter at substantially right angles to the wire, substantially as described.

2. The combination with a trolley-arm and its wheel of a pair of upwardly-divergent guard-arms pivotally supported upon the upper end of the trolley-arm, and arranged to extend at their upper ends considerably above the upper periphery of the wheel, downwardly-extending projections upon said arms below their pivotal supports, a suitable arm secured to the trolley-arm and arranged to extend rearwardly therefrom to a point substantially beneath the center of the trolley-wheel, when in engagement with the wire, and suitable springs connecting the outer end of said rearwardly-extending arm and the lower ends of the extensions upon said guard-arms substantially as described.

3. The combination with a trolley-arm and its wheel, of a rearwardly-projecting arm detachably clamped to the upper end of said trolley-arm and arranged to terminate at a point substantially beneath the center of the wheel when the latter is in engagement with the wire, a pair of upwardly-divergent guard-arms pivotally secured to the axis of the wheel, and arranged to extend at their upper ends somewhat above the upper periphery of

the wheel, and provided below their pivotal supports with downwardly-extending projections, and independent spring connections between the rear end of said first-mentioned arm and the lower ends of said extensions upon the guard-arms, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN H. BEAZAN.

Witnesses:
JOHN E. WILES,
M. M. WILES.