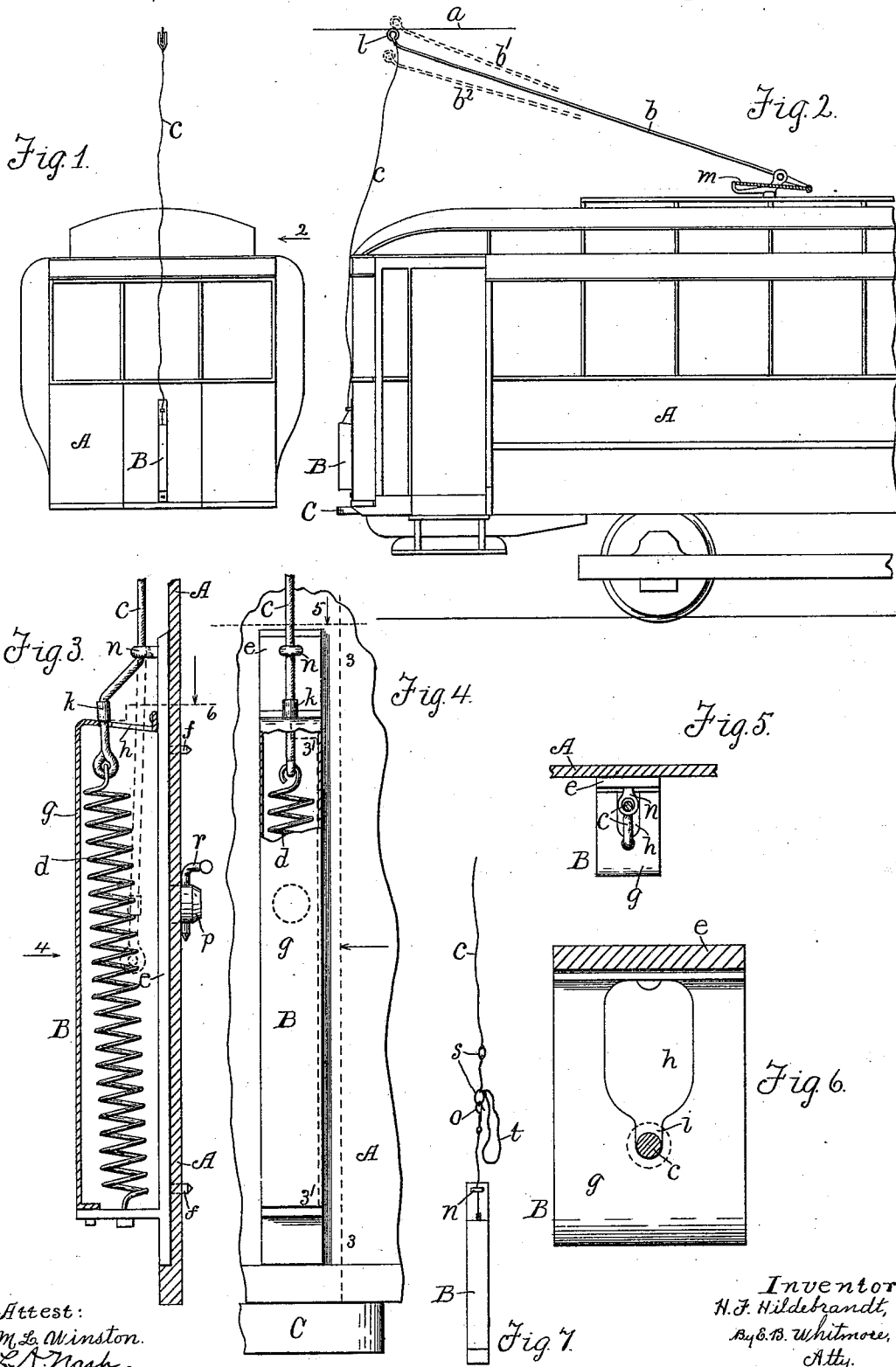


(No Model.)

H. F. HILDEBRANDT.
TROLLEY ARRESTER.

No. 545,649.

Patented Sept. 3, 1895.



Attest:
M. L. Winston.
L. A. Nash.

Inventor:
H. F. Hildebrandt,
By E. B. Whitmore,
Att'y.

UNITED STATES PATENT OFFICE.

HENRY F. HILDEBRANDT, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO MARTIN C. RUTHERFORD, OF SAME PLACE.

TROLLEY-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 545,649, dated September 3, 1895.

Application filed May 6, 1895. Serial No. 548,333. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. HILDEBRANDT, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Trolley - Arresters, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

Electric-railway cars in common use, with which are employed a trolley line-wire and trolley-arms, usually have springs on their decks to keep the outer ends of the arms up against the wire. The trolley-arm is provided with a roller, and it sometimes occurs that the roller jumps the line-wire and allows the deck-springs to throw the outer end of the arm high upward, causing it to encounter the cross stay-wires, feeders, and other parts connected with the line-wire, and thus do great damage.

To provide a simple and inexpensive device to automatically arrest and control the trolley-arm when it becomes thus disengaged from the line-wire and bring it into a position where it can do no harm is the object of my invention.

The invention consists in a catch-spring held under tension low down at the end of the car and connected with the outer end of the trolley-arm by a flexible connector, as a cord, and a detent or holder for the spring to hold it normally in inaction. The construction is such that when the trolley-arm leaves the line-wire by accident and swings upward it instantly releases the detent and brings the catch-spring into action, which draws the arm downward out of the way of the parts above it.

The invention is hereinafter more fully described, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is an end view of the body of an ordinary electric-railway car, showing my invention attached thereto. Fig. 2 is a side elevation at one end of the car seen as indicated by arrow 2 in Fig. 1. Fig. 3 is a vertical longitudinal section of a part of the car and the arm-controlling device sectioned on the dotted lines 3 3 and 3' 3', respectively, in Fig. 4. Fig. 4 is a front view

of the arm-controlling device partly broken away and a portion of the car seen as indicated by arrow 4 in Fig. 3. Fig. 5 is an upper end view of the device seen as indicated by arrow 5 in Fig. 4, a part of the car-body being horizontally sectioned on the dotted line at the point of said arrow. Fig. 6 is a similar view of the spring-holder, to better show the opening therein, parts being transversely sectioned on the broken dotted line 6 in Fig. 3. Fig. 7 shows a method of varying the length of the cord for controlling the trolley-arm. Figs. 3 to 6, inclusive, are for the purpose of clearness drawn to scales larger than those to which Figs. 1, 2, and 7 are drawn.

Referring to the parts shown, A is the body of an ordinary electric-railway car operated by means of an electric line-wire *a* and trolley-arm *b*.

c is the cord ordinarily employed, connected with the outer end of the trolley-arm, by means of which the car-conductor operates said arm.

The device B for controlling the trolley-arm, which constitutes my invention, is secured in a vertical position to the end or "dashboard" of the car above the draw iron or head C, as shown in Figs. 1 and 2. This device comprises a coiled spring *d*, supported in a holder *e*, secured either rigidly or removably to the car by simple means. The holder *e*, which is preferably of iron, may comprise a sheet-metal housing or covering *g* for the spring, to protect the latter from accident and from becoming clogged by extraneous matter—as, for instance, sleet or snow.

The cord *c*, which hangs loosely from the trolley-arm above the deck of the car, has its lower end joined to the upper end of the catch-spring *d*, which is below the deck of the car, as shown in Figs. 3 and 4, thus constituting a direct connector for the trolley-arm and the catch-spring. The upper end of the holder *e* for the catch-spring is perforated or formed with an opening *h* above the spring (fully shown in Fig. 6) having a short reduced or narrow part *i*. The part of the cord near the spring passes through this opening, and it is provided with an enlarged part or button *k*, secured thereto. This button is of such size,

relatively, that, while it may pass freely through the larger part of the opening *h*, it cannot pass through the reduced part *i* of the opening, the metal around said part *i* constituting a seat or rest for the button. Now, in practice the cord next the spring is drawn upward through the opening *h* and passed into the opening *i*, with the button resting upon its seat on the outside of the holder *e*, as shown in Figs. 3 and 6, the spring being thereby extended and at a considerable tension. The holder *e* thus, in addition to being a carrier or supporter for the spring, also serves as a detent or holder for controlling the elastic action of the spring. When the parts are thus arranged, the cord above the button hangs loosely from the trolley-arm and in position to be managed by the conductor of the car, the traverse roller *l* of the upwardly-tending trolley-arm being in contact with the under surface of the line-wire *a*, Fig. 2. Now, in case the roller leaves the wire by accident and the arm is thrown upward by the deck-springs *m* on the car to the position shown by dotted lines at *b'* the arm will, from its inertia, jerk the button *k* off of its seat on the holder and release the catch-spring. This spring, thus released, will instantly contract to its normal length and draw the trolley-arm down to the position shown by dotted lines at *b''*, below the line-wire and out of the way of the parts connected therewith, thus avoiding the liability of breaking or injuring any of such parts.

The power of the catch-spring is sufficient to enable it to control the trolley-arm, even against the action of the deck-springs, the catch-spring having the advantage over the deck-springs on account of the manner in which the parts are connected. Commonly a simple guide-loop *n*, Figs. 3, 4, and 5, secured to the holder *e* or to the car above the holder, is employed, the cord passing through said guide, as shown. The use of this guide is to give to the upward pull upon the cord by the trolley-arm a proper direction, so the button will be of a certainty drawn off of its seat and into the opening *h* to permit the catch-spring to contract, as above described.

In any given case, after the trolley-arm has been drawn below the line-wire by the catch-spring, as described, to put the parts again in order the car-conductor has but to pull the lower part of the cord and the button upward and place the latter upon its seat on the holder and again place the traverse-roller in contact with the line-wire.

The device B is placed upon the car in such manner that the axis of the spring and the trolley-arm are substantially in a plane, and it is detachably connected with the car, so as to be readily shifted from one end of the latter to the other as the direction of the motion of the car is reversed at the ends of a run in

any given case. To provide for thus readily shifting this device the holder *e* is provided with rigid pins *f f*, Fig. 3, and a lug *p*, all adapted to project into or through the wall of the car. A holding-pin *r*, passed through the lug on the inside of the car, serves to hold the parts in place.

It sometimes occurs that the line-wire *a* is higher over certain sections of the track than over other sections, this being frequently a matter of necessity in putting up the wires. To provide for this difference in the height of the wire I employ means for varying the length of the connecting-cord between the catch-spring and the trolley-arm—that is to say, *o*, Fig. 7, is a simple snap-hook of common kind secured to the cord above the guide *n*, and *s s* are rings, also secured to the cord at various points above the hook. Now by means of this hook and the rings (which are in convenient reach of the conductor) the cord may be taken up or let out as the line-wire varies in height over various sections of the track. When the hook is caught into a ring, as shown, a loop *t* of idle-cord is formed, the effective length of the cord between the spring and the trolley-arm being reduced to the amount of the length of the cord in the loop. In case the line-wire runs high, then by letting out this loop the effective length of the cord will be increased accordingly, allowing the trolley-arm to swing upward to meet the wire. These variations in the length of the active part of the cord, it will be seen, do not interfere with the action of the catch-spring in controlling the trolley-arm.

What I claim as my invention is—

1. The combination, with a trolley arrester, of a case, the top of which is provided with a rigid catch, a spring within the case, a cord connected with the spring at one end and adapted to be secured to the trolley arm at the other, and means upon the cord to engage with the catch of the case, substantially as set forth.

2. The combination, with a trolley arrester, of a case, the top of which is provided with an opening, a portion of the said opening being contracted, a spring within the case, a cord secured to the upper end of the spring, the upper end of which is adapted to be secured to the trolley arm, and a button upon the cord adapted to rest upon the top of the case above the contracted portion of the opening, substantially as set forth.

3. The combination, in a trolley arrester, of a perforated dash board, a case provided with projections for entering said perforations, a fastener for one of the projections, a spring within the case, a cord secured to the spring at one end and adapted to be secured to the trolley arm at the other end, and means for holding the spring in an expanded condition, substantially as set forth.

4. The combination, in a trolley arrester,
of a cord adapted to be connected with the
trolley arm at one end and with means for
retracting it at the other end, rings and a
5 snap hook intermediate the ends of the cord
for varying the length of the cord, relatively
to its end, substantially as set forth.

In witness whereof I have hereunto set
my hand, this 27th day of April, 1895, in the
presence of two subscribing witnesses.

HENRY F. HILDEBRANDT.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.