

No. 760,801.

PATENTED MAY 24, 1904.

H. W. NICHOLS.
AUTOMATIC TROLLEY CONTROLLING DEVICE.

APPLICATION FILED SEPT. 9, 1903.

NO MODEL.

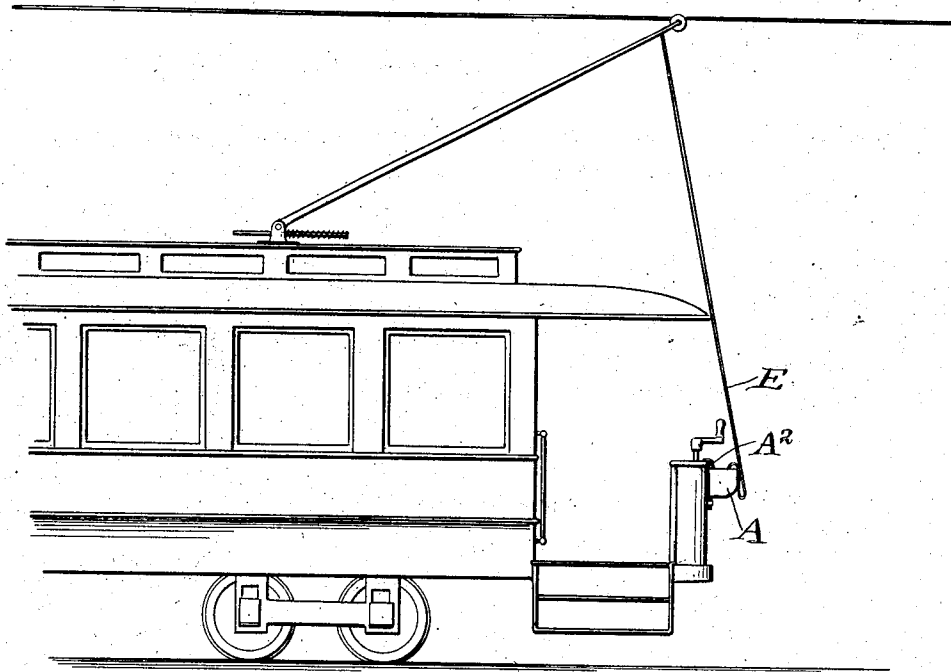


Fig. 1.

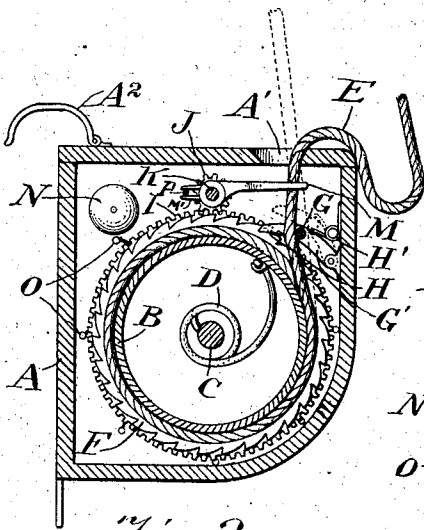


Fig. 2.

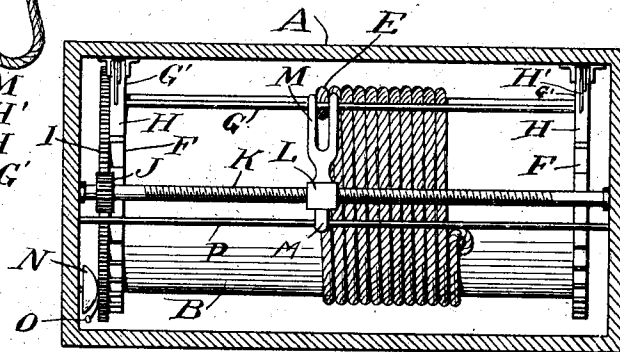


Fig. 3.

Witnesses:
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By *[Signature]*
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UNITED STATES PATENT OFFICE.

HORACE W. NICHOLS, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC TROLLEY-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 760,801, dated May 24, 1904.

Application filed September 9, 1903. Serial No. 172,431. (No model.)

To all whom it may concern:

Be it known that I, HORACE W. NICHOLS, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Automatic Trolley-Controlling Devices, of which the following is a specification.

My invention relates to a new and useful improvement in automatic trolley-controlling devices; and it has for its object to provide a device to be attached to the car which will automatically pull the trolley down below the wire at any time the trolley leaves the wire.

With this end in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a portion of a car, showing my device applied thereto; Fig. 2, a vertical cross-section through my device, showing the parts in their normal position in full lines and the pawls raised in dotted lines; Fig. 3, a longitudinal section through the case, showing the operating parts in elevation.

A represents the casing, which may be of any suitable shape or design to properly contain the operating parts. This casing is provided with a slot A', formed through the upper side, through which the trolley-rope extends to the trolley. This casing may be permanently secured to the dashboard of the car, but would preferably be made removable, so as to be changed from one end of the car to the other when the trolley is reversed.

In the drawings I have shown the casing provided with lugs which fit in the clips formed upon the dashboard, the upper portion of the casing fitting underneath the top rail of the dashboard and hooks A² hooking over the top of the rail.

B is a drum journaled upon an axle C, which axle is secured in each end of the casing.

D is a coil-spring surrounding the axle, one

end of the spring being secured to said axle and the other end to the drum.

E is a trolley-rope, the lower end of which is secured to the drum and adapted to be wound thereon, this rope passing upward through the slot in the casing and being secured at its upper end to the trolley-pole. Upon each end of the drum are secured the ratchet-wheels F.

G is a longitudinal rod extending lengthwise of the casing and having secured upon each end the crank-arms G', which are pivoted to the casing, and secured to this rod are the pawls H, adapted to engage the ratchet-wheels. H' represents springs adapted to throw the pawls into engagement with the ratchet-wheels. The rod G is so located that when the pawls are in engagement with the ratchet-wheels said rod will lie above the drum, so that when the trolley-rope is drawn taut it will rock the rod upward and remove the pawls from engagement with the ratchet-wheels; but as soon as the rope is slackened the springs H' will act to throw the pawls into engagement with the ratchet-wheels again. Of course two ratchet-wheels need not be used, as it would probably be only necessary to have one ratchet-wheel upon one side and one pawl.

In operation the device is as follows: When the trolley-wheel is upon the wire and everything is in its normal position, the spring within the drum is wound so as to be under tension, and the pawls H will hold the drum from revolving against the action of the spring, and there is a certain amount of slack in the rope, as shown in Fig. 1. When the trolley-wheel leaves the wire, the spring upon the trolley-pole will force the trolley-pole upward, and thereby draw the trolley-rope taut, which will raise the pawls from out of engagement with the ratchet-wheels, and thus release the spring upon the interior of the drum, and as this spring is much stronger than the spring upon the trolley-pole this spring will revolve the drum, and therefore wind the trolley-rope upon the same and draw the trolley downward below the wire. Then it is only necessary for the conductor to pull sufficient rope from the casing, thereby winding up the spring within the drum, and then by allowing the rope to

slacken the pawls will engage the ratchet-wheels again, and he can place the trolley upon the wire in the usual manner.

In order to insure the rope winding upon the drum so that the coils will lie side by side and not overlap one another, I provide a gear-wheel I, secured to the drum and meshing with the gear-wheel J, journaled in the casing, said gear-wheel being secured upon a screw-threaded rod K.

L is a nut threaded upon the rod, and M is a fork carried by the nut, which fork lies above the drum and straddles the trolley-rope. The pitch of the thread upon the screw-threaded rod is such that it will cause the nut to travel along the rod with the proper speed to guide the trolley-rope so that the coils of the rope will lie closely side by side upon the drum.

P is a guide-rod, and the nut is provided with a fork M' upon the opposite end from the fork M, which straddles the guide-rod, and thereby prevents the nut from revolving with the rod K.

Secured in one end of the casing is the bell N, and secured at intervals upon the end of the drum are the clappers or strikers O, which when the drum revolves will strike the bell, and therefore notify the conductor that the trolley has left the wire.

The advantage of this device will be apparent to anybody skilled in the art or familiar with overhead electric-car systems. The great disadvantage of the system as it now exists is that when the trolley leaves the wire and the conductor is upon the interior of a crowded car the trolley-pole is liable to strike the cross-wires and break such wires before the conductor can reach the rear platform to pull the pole downward.

With my automatic device the trolley-pole will be pulled downward automatically within three or four feet from the point where it has left the wire.

Of course I do not wish to be limited to the exact construction here shown, as slight modi-

fications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In combination with a trolley-car, a spring-controlled drum journaled upon the car, the lower end of the trolley-rope being coiled upon said drum, means for normally holding the drum against rotation, means for releasing the drum when the trolley-rope is pulled taut so as to wind the trolley-rope upon the drum to pull the pole downward, means for automatically guiding the trolley-rope so that it will wind and unwind evenly from the drum, an alarm device actuated by the rotation of the drum to notify the conductor when the trolley has left the wire, as and for the purpose specified.

2. In a device of the character described, a casing removably secured to the car, the casing being provided with a slot in its upper side through which the trolley-rope extends, a drum arranged upon the interior of the casing, a stationary axle upon which the drum is journaled, a spring arranged upon the interior of the drum and coiled around the axle, one end of said spring being secured to the drum and the other end to the axle, the lower end of the trolley-rope being coiled upon the drum, means for normally holding the drum against rotation, means adapted to be actuated by the trolley-rope when it is drawn taut for releasing the drum and allowing the trolley-rope to be wound thereon by the action of the spring, automatic means for guiding the trolley-rope so as to cause it to be wound evenly upon the drum, an alarm device adapted to be sounded when the drum revolves, as and for the purpose specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

HORACE W. NICHOLS.

Witnesses:

MARY E. HAMER,
L. W. MORRISON.