

No. 626,168.

Patented May 30, 1899.

F. N. KELSEY.
TROLLEY CATCHER.
(Application filed Dec. 14, 1898.)

(No Model.)

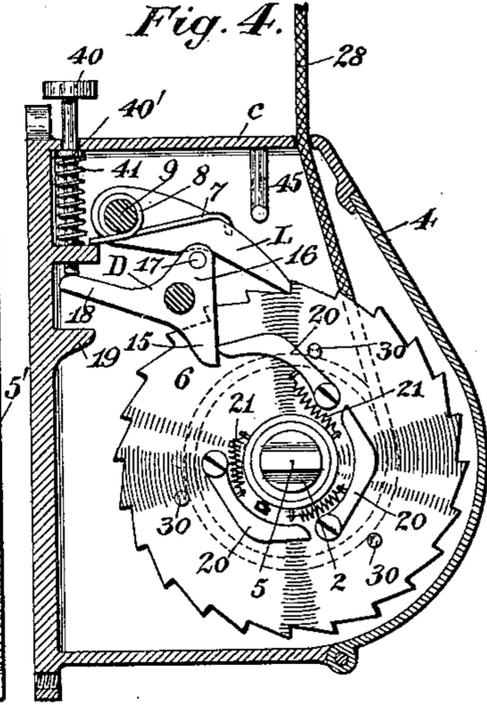
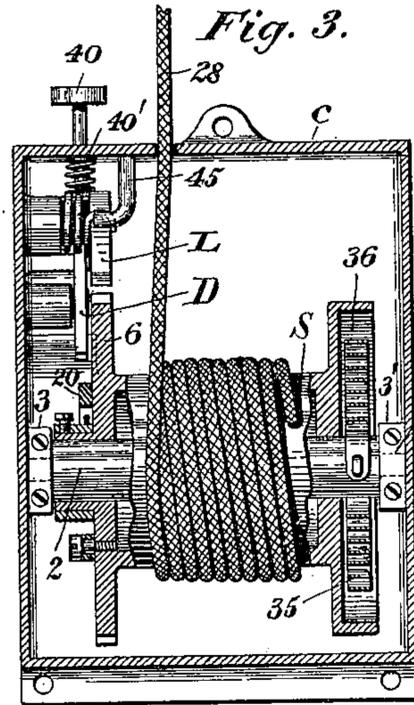
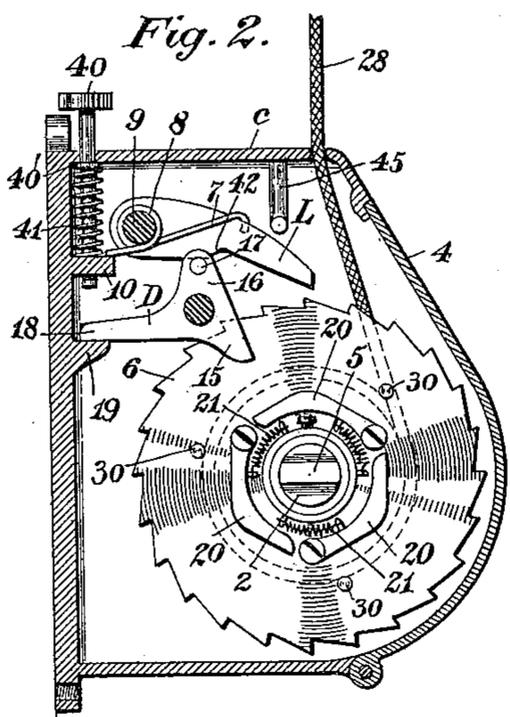
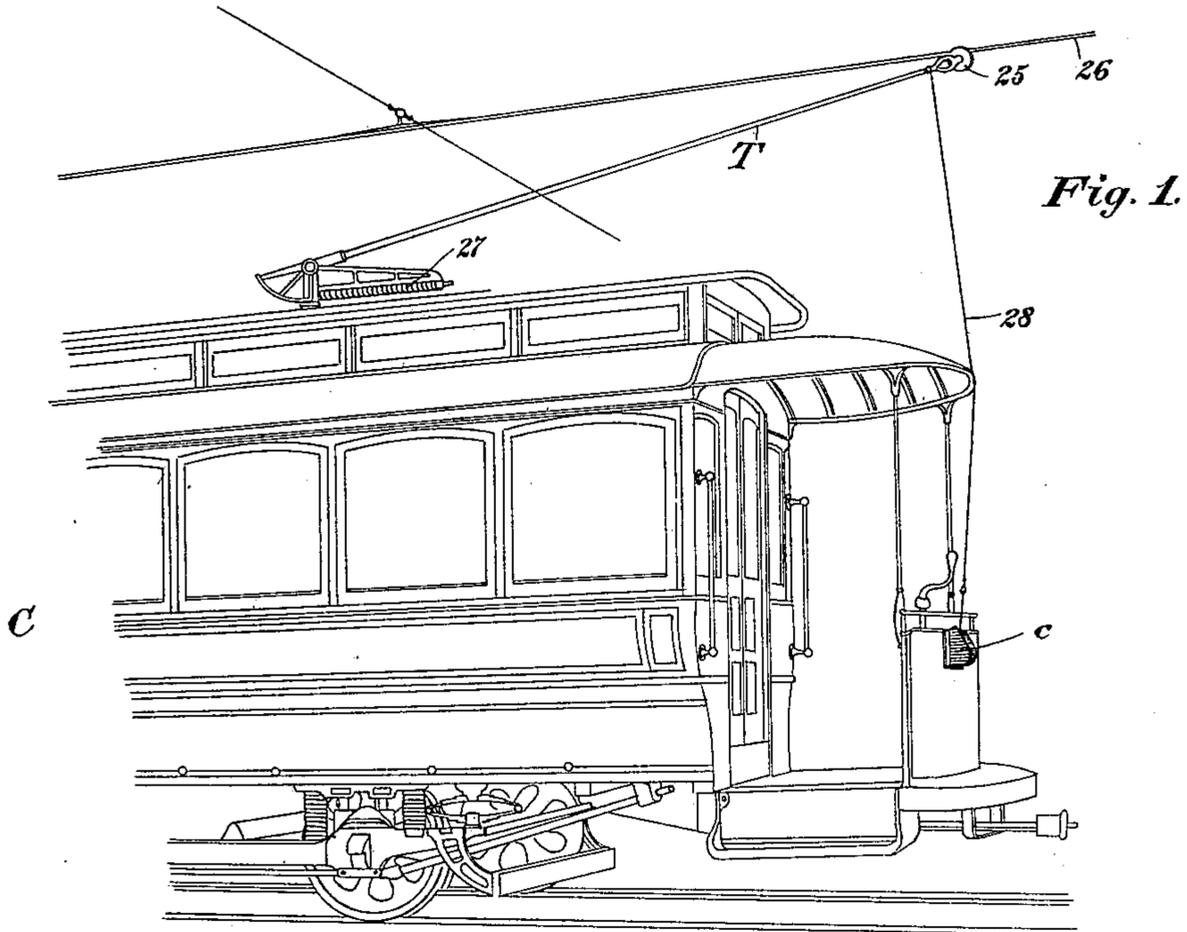
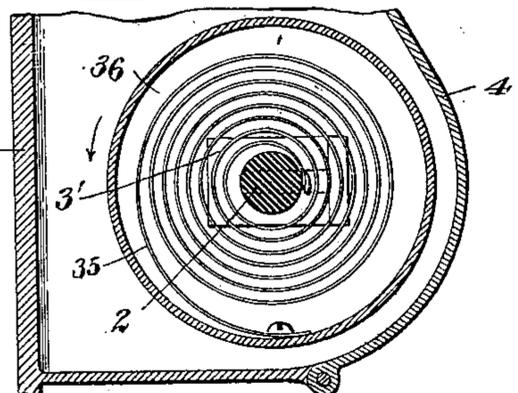


Fig. 5.



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UNITED STATES PATENT OFFICE.

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TROLLEY-CATCHER.

SPECIFICATION forming part of Letters Patent No. 626,168, dated May 30, 1899.

Application filed December 14, 1898. Serial No. 699,203. (No model.)

To all whom it may concern:

Be it known that I, FRANK N. KELSEY, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Trolley-Catchers, of which the following is a specification.

This invention relates to a device known as a "trolley-catch" for controlling the trolley-arm of an electric car in such a manner that in case said trolley-arm leaves the wire the movement thereof will be exceedingly limited, as the moment said trolley-arm passes above the wire the working part of the apparatus is instantly thrown into action for the purpose of arresting or blocking the further motion of said arm, the purpose being to prevent the arm from striking and dismounting the stay and other wires; and my improved appliance is simple and compact in construction and is of such a nature that it permits of a perfectly free and gradual movement of the trolley-arm either up or down to compensate for any variations in height of the trolley-wire, and is also intended to take up any slack or looseness in the rope.

My improved trolley-catch includes as one of its features and in combination with a rotative device and with a trolley-arm connected with said rotative device a locker for said rotative device, a detent located normally to hold the locker in its inoperative position, and a tripping device controlled by the rotative device and adapted to be thrown into position to trip the detent when the speed of rotation of said rotative device exceeds a predetermined standard, and the several parts comprising this combination may be of any suitable or preferred construction.

In the drawings accompanying and forming a part of this specification, Figure 1 is a perspective view of a trolley-car equipped with my present improvements. Fig. 2 is a vertical section of the trolley-catch, showing the locker in its inoperative position. Fig. 3 is a transverse section of said trolley-catch. Fig. 4 is a view similar to Fig. 2, showing the locker in its operative position; and Fig. 5 is a vertical sectional detail showing a spring for operating the rotative device or drum. Figs. 2, 3, 4, and 5 are on an enlarged scale.

Similar characters designate like parts in all the figures of the drawings.

In the accompanying drawings I have represented my improvements applied to a trolley-car C of ordinary construction, the trolley-catch being conveniently mounted upon the dashboard of the car.

My improved device includes in its construction a rotative device, which may be of any suitable construction and upon which the trolley cord or rope can be wound, but which is represented consisting of a drum S, which is conveniently mounted for rotation upon the arbor 2, which is preferably carried by brackets or bearings, as 3 and 3', conveniently located upon opposite sides of the casing c, in which the various parts of the apparatus may be housed, said casing having a hinged door, as 4, by which access may be had to the interior thereof.

For the purpose of preventing the arbor 2 from turning in its bearings the opposite ends thereof may be squared, as at 5 and 5', respectively, and these squared portions fit in correspondingly-shaped projections in the two bearings.

In connection with the rotative device S, I provide a locker, which may consist of a pawl, as L, adapted to lock the drum when the trolley-arm leaves the wire, thereby to arrest the rotation of the same, and consequently to block the further upward motion of the trolley-arm. The pawl L is pivotally supported on the stud 9, extending from the casing, and is adapted to cooperate with the ratchet 6 on one end of the winding-drum S. While the pawl L may operate by gravity, I prefer to employ, for the purpose of securing a rapid action, a spring, as 7, which is adapted when the pawl is released to throw the same into the path of the teeth of the ratchet 6 for the purpose of preventing the rotation of said ratchet, and hence of the spool. The spring 7 is coiled, as at 8, and its coils encircle the stud 9, and the free ends of said spring bear, respectively, against the pawl and the ledge 10 in the casing c.

In Fig. 2 the pawl L is shown as being in its inoperative position, with the point thereof above and out of contact with the teeth of the ratchet 6, and held in such position by a

suitable detent controlled by the operation of the winding-drum S. The detent for holding the locker L in its inoperative position (represented in Fig. 2) consists, in the present case, of a three-armed lever, as D, conveniently pivoted in the casing below the pawl L and having its arm 15 disposed in the path of movement of a suitable tripping device governed by the spool or drum S, and the arm 16 being provided with a stud 17, upon which the pawl L normally rests, and the third arm of the detent resting upon the projection 19 in the casing. It will be evident on an inspection of Fig. 2 that when the upper arm 16 of the detent is swung to the right the pawl L will be released and can be thrown into engagement with the teeth of the ratchet 6 by the spring 7. The ratchet 6 carries one or more trip-fingers, each of which is thrown outward by centrifugal force on the rapid rotation of the drum S and one of which will engage the arm 15 of the detent for the purpose of tripping said detent and releasing the pawl L. I have represented three of these trip-fingers, and have designated them by 20, and they are preferably pivoted at the ends thereof to the outer face of the ratchet 6 and are held in their extreme inner positions by a series of light springs, as 21, so that when the spool S rotates during the usual rise and fall of the trolley-arm, due to differences in height of the trolley-wire from the ground, said trip-fingers will not be thrown outward. The trolley-arm is designated by T, and the roller thereon is held against the wire at 26 by the usual strong coiled springs 27, and said trolley-arm is connected with the drum S by the rope or cord 28, the lower end of the cord being wound several times around the body of said drum S. Should the trolley-arm T or roller 25 thereon leave the wire 26, it will be thrown rapidly upward by the powerful coiled springs 27, and the rapid rotation of the drum S will of course follow, so that the several trip-fingers 20 will be thrown outward by centrifugal action until they strike the stops 30 on the side of the ratchet and one of said trip-fingers will strike the arm 15 of the detent, thereby rocking said detent and releasing the pawl, whereby the pawl can be thrown downward by the action of the spring to engage the teeth of the ratchet 6 for stopping the rotation of the spool S, and consequently the further upward movement of the trolley-arm.

For the purpose of taking up any slack in the rope 28, due to differences in the height of the wire 26 from the ground, I employ in connection therewith a coiled winding-spring 35, the opposite ends of which are secured, respectively, to the arbor 2 and to the wall of the aperture 36 in one end of the drum S, the spring being sufficiently strong to take up any slack that may exist in the rope 28, and it will be evident that this construction also permits the free paying out of said rope when higher trolley-wires are met with.

For the purpose of effecting the release of

the ratchet 6, and consequently of the spool S carrying the same, I provide normally-controlled means for resetting the detent D and the locker L, which means includes in its construction a presser-bar 40, passing through openings in the casing c and the projection or ledge therein, the lower end of the presser-bar 40 being adapted to engage the arm 18 of the detent when the latter is in its shifted position, whereby to return the same to its working position to uphold the pawl L. The presser-bar 40 is preferably held in its inoperative position by a spring, as 41, which is coiled and which surrounds the presser-bar. The opposite ends of the spring bear against the collar 40' on the presser-bar and the projection 10 in the casing. The under side of the locker L is provided with a cam-face 42, along which the stud or pin 17 rides when the detent is tripped until it reaches the position shown in Fig. 4, at which time it will be observed that the free end of the arm 18 abuts against the lower end of the presser-bar 40.

When it is desired to release the parts from the positions represented in Fig. 4, the presser-bar is forced downward to force the arm into engagement with the projection 19, which action causes the pin 17 to ride along the cam-face 42 and return the pawl to its primary position, (shown in Fig. 2,) and when the bar is released the relaxing spring 41 will elevate the same until the stop-shoulder 40' strikes the casing.

The upward motion of the pawl L is preferably limited by a stop 45, shown as an L-shaped piece depending from the top of the casing.

It will be evident from the preceding description that all danger of breaking the span or guard wires by reason of the slipping of the trolley from the conductor-wire is absolutely prevented, while at the same time the normal motion of the trolley-arm, due to differences in the height of the conductor-wire, is freely permitted without affecting the operation of the device.

It is obvious that instead of mounting the device upon the dashboard it can be secured to any other convenient part of the trolley.

Having described my invention, I claim—

1. In a trolley-catch, the combination, with a rotative device and with a trolley-arm connected therewith, of a locker for said rotative device; a detent located normally to hold the locker in its inoperative position; and a tripping device controlled by the rotative device and adapted to be thrown into working position to trip said detent when the rate of rotation of said device exceeds a predetermined standard.

2. In a trolley-catch, the combination, with a spring-operated rotative device and with a trolley-arm connected therewith, of a locker for said rotative device; a detent located normally to hold the locker in its inoperative position; and a tripping device controlled by the rotative device and adapted to be thrown

into working position to trip said detent when the rate of rotation of said device exceeds a predetermined standard.

3. In a trolley-catch, the combination, with
5 a rotative device and with a trolley-arm connected therewith, of a locker for said rotative device; a detent located normally to hold the locker in its inoperative position; a tripping device controlled by the rotative device
10 and adapted to be thrown into working position to trip said detent when the rate of rotation of said device exceeds a predetermined standard; and means for resetting said locker.

4. In a trolley-catch, the combination, with
15 a rotative device and with a trolley-arm connected therewith, said rotative device having a ratchet, of a pawl adapted to engage said ratchet; a detent located normally to hold the pawl in its inoperative position; and
20 a tripping device controlled by the rotative device and adapted to be thrown into working position when the velocity of the same exceeds a certain standard.

5. In a trolley-catch, the combination, with
25 a rotative device and with a trolley-arm connected therewith, of a locker for said rotative device; a detent located normally to hold the locker in its inoperative position; and a

tripping device carried by said rotative device and adapted to be thrown into working
30 position by centrifugal force on the rapid movement of said rotative device.

6. In a trolley-catch, the combination, with a rotative device and with a trolley-arm connected therewith, said rotative device hav-
35 ing a ratchet at one end; a cord wound upon said rotative device; a spring acting against said rotative device; a pawl adapted to engage said ratchet; a dog normally retaining
40 said pawl out of engagement with said ratchet; a centrifugally-acting finger carried by the rotative device and adapted to engage said detent; and a device adapted to engage the dog, thereby to reset said pawl.

7. In a trolley-catch, the combination of a
45 casing having a stationary arbor; a rotative device on said arbor; a trolley-arm connected with said rotative device; a locker for the latter; a detent for holding the locker in its
50 inoperative position; and a centrifugally-operated trip device for the detent carried by said rotative device.

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