

No. 753,542.

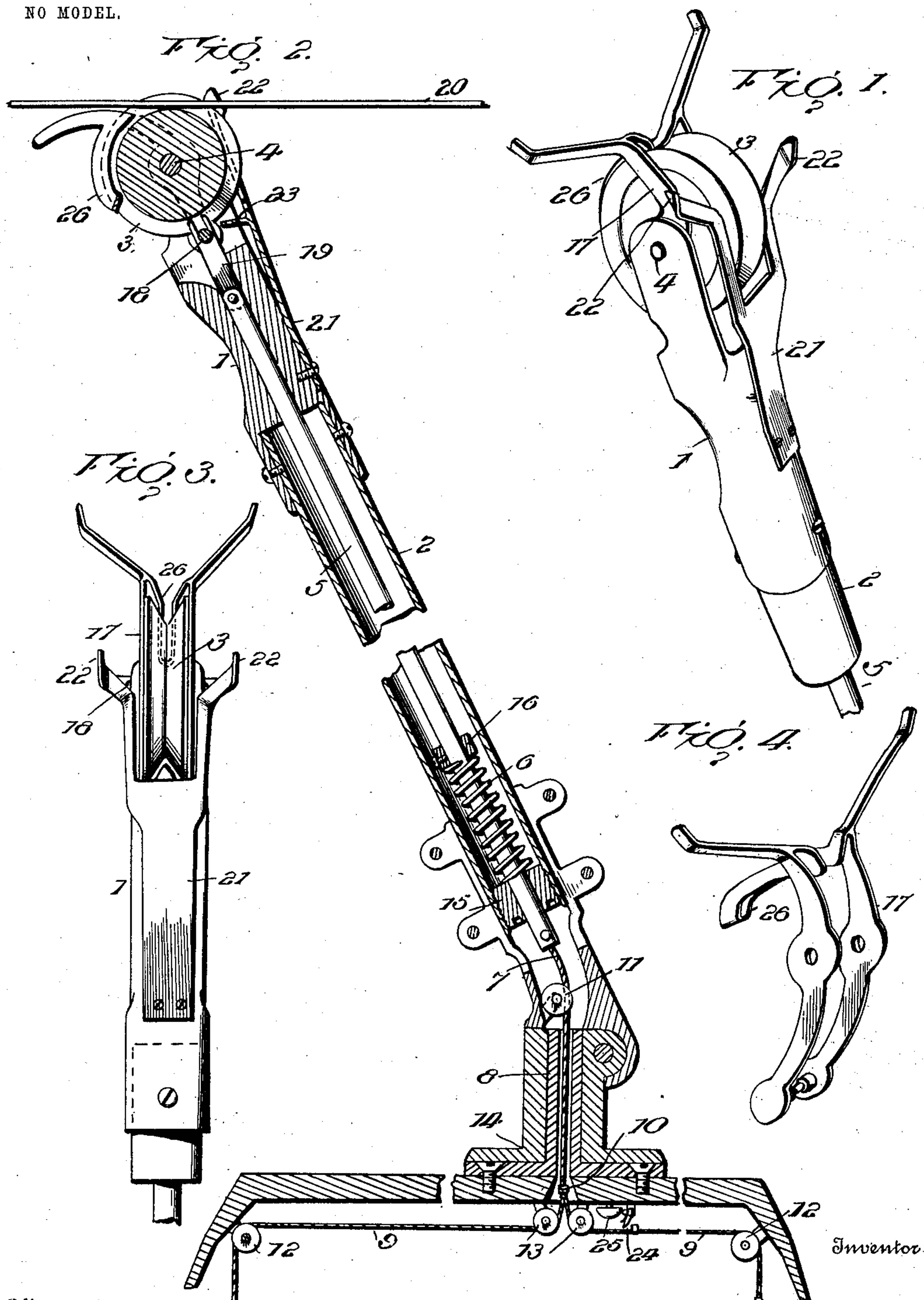
PATENTED MAR. 1, 1904.

A. C. CALDERWOOD.

TROLLEY.

APPLICATION FILED AUG. 6, 1903.

NO MODEL.



Witnesses

James L. Thompson
Gladys L. Thompson

By

A. C. Calderwood

R. A. Lacy Attorney.

UNITED STATES PATENT OFFICE.

ALEXANDER C. CALDERWOOD, OF GLOVERSVILLE, NEW YORK.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 753,542, dated March 1, 1904.

Application filed August 6, 1903. Serial No. 168,509. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER C. CALDERWOOD, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented certain new and useful Improvements in Trolleys, of which the following is a specification.

This invention is designed to maintain proper relation of a trolley upon the line-wire and to automatically replace the same when from any cause it leaves the line, thereby obviating the annoyance, loss of time, and hazardness usually attendant upon the replacement of the trolley when it becomes necessary while the car is in motion.

This invention combines with the trolley a replacer normally held out of the way, means coöperating with the replacer to throw it into position for returning the trolley to the line should it become displaced, and a trip mechanism so related as to be engaged by the line-wire upon displacement of the trolley to liberate the replacer, whereby the trolley is again returned to the line. Inasmuch as the replacer has to be reset by hand, an alarm, signal, or like contrivance is actuated when the replacer is operated to give warning that the automatic trolley-actuating means have been actuated, thereby enabling the parts to be returned to a normal position, so as to avoid ill results.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a trolley-harp equipped with a trolley-replacer embodying the invention. Fig. 2 is a vertical longitudinal section of the harp, pole, and the upper portion of the car, illustrating the invention in operative position, a portion of the trolley-pole being broken away. Fig. 3 is a

front view of the harp. Fig. 4 is a perspective view of the replacer detached from the harp.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The trolley-harp 1 is secured to the upper end of the trolley-pole 2 in any approved way and may be of any structural type. The trolley-wheel 3 is journaled upon the axle or spindle 4, secured at its ends to the side members of the harp 1. A rod or bar 5 passes through the pole and harp and is acted upon by a spring 6, which normally tends to move the rod upward or toward the trolley-wheel. A cable or other flexible connection 7 is secured to the lower end of the rod or bar 5 and passes through the spindle 8, about which the trolley-pole turns when swung from one position to another. Operating-cords or like connections 9 are united to the lower end of the flexible connection 7 and extend within convenient reach, so as to be drawn upon to reset the replacer after being actuated. The operating connections 9 are secured by a swivel connection 10 to the flexible connections 7, so as to admit of the turning of said connection with the trolley-pole without producing torsional strain thereon. A guide-pulley 11 is located at the upper end of the spindle 8, and other guide-pulleys 12 and 13 are provided for the operating connections 9. The turn-table 14 is mounted upon the spindle 8 and base thereof, and the lower end of the trolley-pole is pivoted thereto in the usual manner. The mountings for the trolley-pole may be of any structural type so long as provision is had for passage of the connection 7 through the vertical axis to admit of resetting the replacer. A nut 15 is threaded in the lower end of the pole 2 and forms a guide for the rod 5, and the spiral spring 6, mounted upon the rod 5, is confined between the nut 15 and the collar 16, secured to the rod 5 a short distance from the nut 15. The spring 6 is of the expansible type.

The replacer comprises side members 17, which are pivotally mounted upon the axle 4 intermediate of their ends. A yoke 18 con-

nects the lower ends of the side members 17 to cause them to move as one part, and this yoke may form a part of or be independent of the members 17, as found most advantageous in the construction of the device. A link 19 pivotally connects the yoke 18 with the rod or bar 5. The upper ends of the side members 17 curve longitudinally and flare outwardly, the latter feature presenting a wide range for gathering or guiding the trolley when it becomes necessary to replace the same. The longitudinal curvature of the upper ends of the members 17 is such as to throw them below the line-wire 20, so as not to come in contact with a cross-line, support, or other part approaching the line 20 from above. In the normal position of the replacer, as shown in Fig. 2, the link 19 is in line with the rod or bar 5, and the lower straight portions of the members 17 and the pivotal connection of said link with the replacer is in line with or slightly above a straight line passed through the centers of the axle 4 and pivotal connection of the link 19 with the rod 5, thereby forming, in effect, a lock-joint.

The trolley-finder or trip device consists of a flat spring 21, secured at its lower end to the harp 1 and having its upper portion forked, so as to embrace opposite sides of the trolley-wheel, the terminal portions of the fork members being upturned, as shown at 22, to prevent lateral slipping of the finder from the line-wire when coming in contact therewith, as when the trolley becomes displaced. A projection 23 extends from the side of the spring 21 adjacent to the harp and comes opposite the pivot-joint between the link 19 and the replacer. The upper or outer portion of the finder or spring 21 normally stands away from the harp, and a pressure thereon from above brings the projection 23 in contact with the joint formed between the parts 19 and 17, whereby the same is caused to break downward and the replacer moved to a position to throw the curved extensions into an approximately vertical position, so as to catch the line-wire and guide the trolley-wheel upon the same. A pull upon either one of the operating connections 9 serves to reset the replacer, whereby the end portions projected vertically are turned down out of the way and the device returned to a normal position for automatic operation in replacing the trolley the next time the same leaves the line-wire. When the free end of the finder or trip is depressed by coming in contact with the line-wire and the joint between the parts 17 and 19 is broken downward, the spring 6 throws the rod 5 upward, thereby drawing upon the parts 7 and 9. In order that either the conductor or motor-man, or both, may be apprised of the operation of the resetting mechanism, a signal, alarm, or like contrivance is provided and arranged so as to be actuated by one of the connections

9. As shown, a gong 24 is applied to the car or other supporting structure, and a trip 25, secured to the part 9, is adapted in the operation thereof to effect a sounding of the alarm by striking the hammer or other part thereof. The curved portions of the side members 17 are connected by a tie 26, so as to strengthen and brace the same. This tie is in the form of a loop and is longitudinally curved to conform to the peripheral grooved portion of the trolley-wheel. This performs another important office—namely, to direct the line-wire into the grooved edge of the trolley-wheel and to prevent catching of the same upon the flanges or rim portions at the side of the groove. The tie or loop is of such relative length as to prevent the closed end coming in contact with the line-wire at any position of the replacer. It is to be understood that the replacer has a limited movement in each direction, the same being determined upon in the construction of the device.

Having thus described the invention, what is claimed as new is—

1. In a trolley, a pivotally-mounted replacer normally held out of action against a force tending to throw the same into a working position, and a trip device actuated by contact with the line-wire to effect a release of the replacer whereby it assumes an operative position and effects automatic return of the trolley to the line-wire, substantially as set forth.

2. In a trolley, the combination of a pivotally-mounted replacer, a longitudinally-movable rod or bar, a link connection between said rod and the replacer adapted in one position to hold the replacer out of operative position, a spring normally exerting a pressure upon the said rod to move it longitudinally to throw the replacer into working position, and a trip device for breaking the joint between the replacer and link connection, substantially as set forth.

3. In a trolley, the combination of a replacer mounted for pivotal movement, a longitudinally-movable spring-actuated rod or bar, a link connection between said rod or bar and the replacer and adapted to aline with said spring-actuated rod and replacer, and a spring-actuated trip device adapted to be operated by contact with the line-wire to break joint between the replacer and link cooperating therewith to permit automatic operation in returning the trolley to the line-wire, substantially as set forth.

4. In a trolley, a pivoted replacer comprising side members having their upper end portions longitudinally curved and outwardly flared, and a tie connecting the curved end portions of said members, said tie being of loop form and longitudinally curved, substantially as set forth.

5. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar having

link connection therewith, a trip device adapted to be actuated by contact with the line-wire to effect release of the replacer to permit movement of the same into operative position, and a connection extended within convenient reach and passed through the pivotal mounting of the trolley-pole to admit of resetting or returning the replacer to a normal position after being actuated, substantially as described.

6. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar having link connection therewith, a trip device, a flexible connection passed through the pivotal mounting of the trolley-pole and secured to the said spring-actuated rod or bar, and an operating connection extended within convenient

reach and secured to said flexible connection by means of a swivel-joint, substantially as and for the purpose set forth.

7. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar linked thereto, a trip device, an operating connection extended within convenient reach for resetting the replacer after being actuated, and a signal device for indicating the operation of the replacer, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER C. CALDERWOOD. [L. s.]

Witnesses:

F. E. MOYER,

WM. B. VAN VLIET.