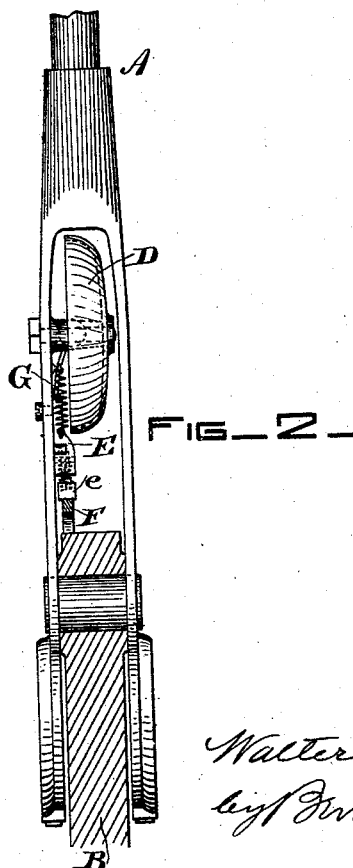
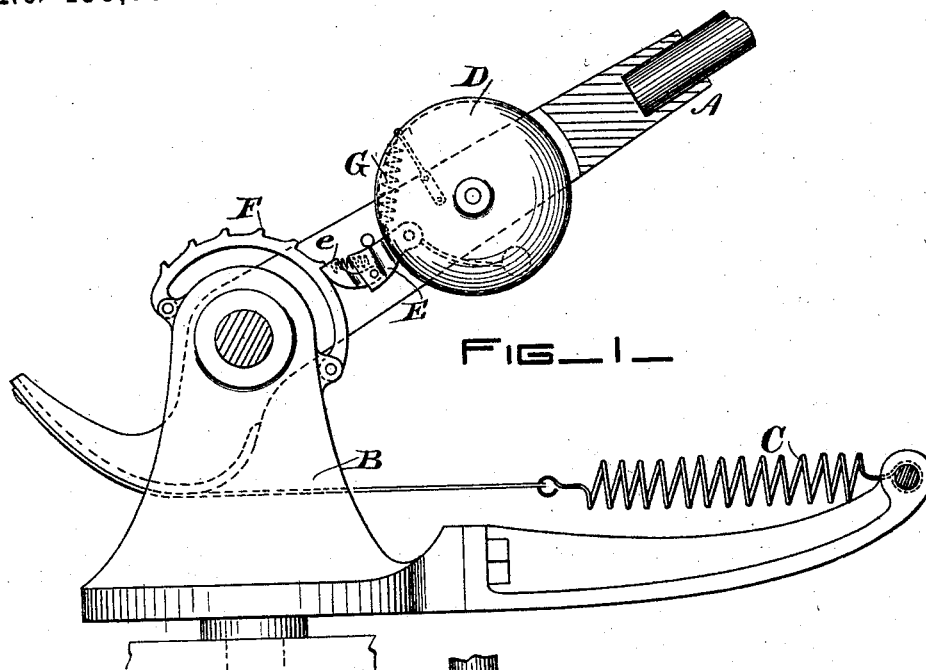


(No Model.)

W. H. KNIGHT.  
TROLLEY FOR ELECTRIC CARS.

No. 455,798.

Patented July 14, 1891.



WITNESSES:

*A. L. Love*  
*H. L. Hayes*

INVENTOR:

*Walter H. Knight*  
*by J. H. Knight*  
ATTYS.

# UNITED STATES PATENT OFFICE.

WALTER H. KNIGHT, OF NEWTON, MASSACHUSETTS.

## TROLLEY FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 455,798, dated July 14, 1891.

Application filed April 8, 1891. Serial No 388,166. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. KNIGHT, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Trolleys for Electric-Railway Cars, of which the following is a specification.

My invention relates to improvements in trolleys for electric-railway cars; and its object is to sound an alarm when the trolley-wheel has run off the trolley-wire. For this purpose I provide a bell whose hammer is actuated mechanically by the movement of the trolley-arm when it is thrown up by the spring on leaving the wire.

The form in which I prefer to embody my invention is represented in the accompanying drawings, Figure 1 being a side view, and Fig. 2 a front view, of a trolley-base and lower end of the trolley-arm with the mechanical alarm applied thereto.

The trolley-arm A, base or support B therefor, and trolley-raising spring C may be of any usual or desired construction.

As is well known, this upwardly-running trolley is sometimes thrown off the wire and is then thrown up by its spring, and unless the driver or brakeman is at once notified of the fact the car may run a considerable distance and cause serious damage by stripping of insulators and breaking of cross-wire before the car is arrested. For other reasons, also, it is desirable that the displacement of the trolley should be instantly signaled to the car-operators.

In order to give the signal, I provide a bell, gong, or alarm device D with a hammer or

actuator E, operated by the upward movement of the trolley-arm. To this end the bell may be attached to the trolley-arm, as shown, and the hammer of the bell may engage by a spring-toe *e* with a fixed ratchet or actuating device F. When the arm flies up, the toe is dragged over the fixed ratchet and is caused to tap the bell, being withdrawn therefrom by the ratchet and driven against the same by the spring G. It is obvious, however, that the alarm may be operated in numerous other ways without departing from my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the upwardly-pressing trolley-arm, of the mechanical alarm device connected thereto and operated by the movement thereof.

2. An alarm for electric-railway trolley-arms having an actuating device connected to and operated by the movement of the trolley-arm.

3. The combination, with the upwardly-pressing trolley-arm, of the alarm having a movable actuating device carried by the trolley-arm and a fixed actuating device engaging with said movable actuating device.

4. The combination of the upwardly-pressing trolley-arm, the bell and hammer carried thereby, and a fixed rack engaging with and operating said hammer.

In witness whereof I have hereto set my hand this 4th day of April, 1891.

WALTER H. KNIGHT.

Witnesses:

JOHN W. GIBBONEY,  
BENJAMIN B. HULL.