(No Model.) 2 Sheets—Sheet 1.

G. F. ATWOOD, J. W. AYLSWORTH & W. H. MILLER.

ELECTRICAL ALARM FOR STREET CARS.

No. 534,597. Patented Feb. 19, 1895.

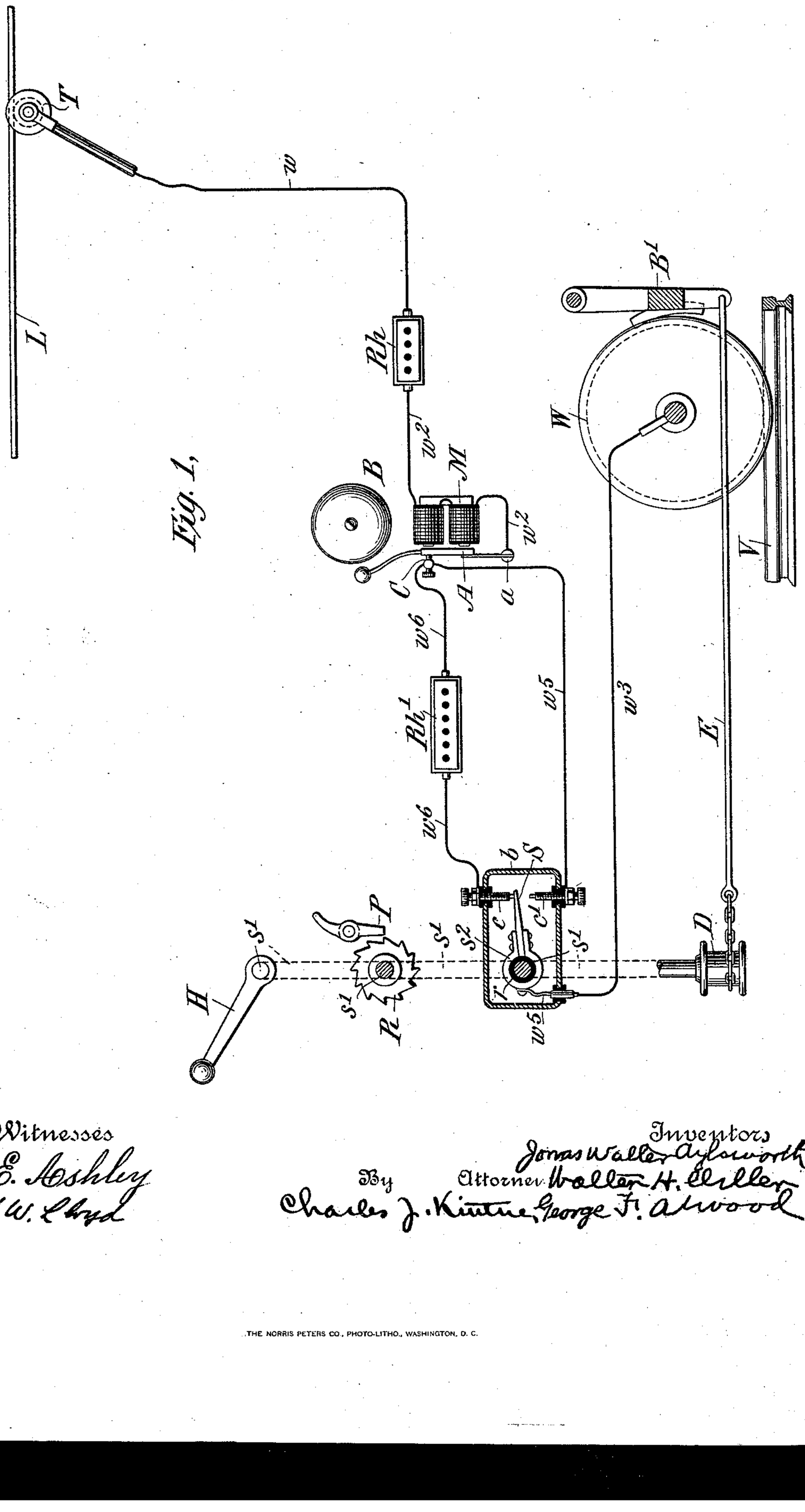

Fig. 1.

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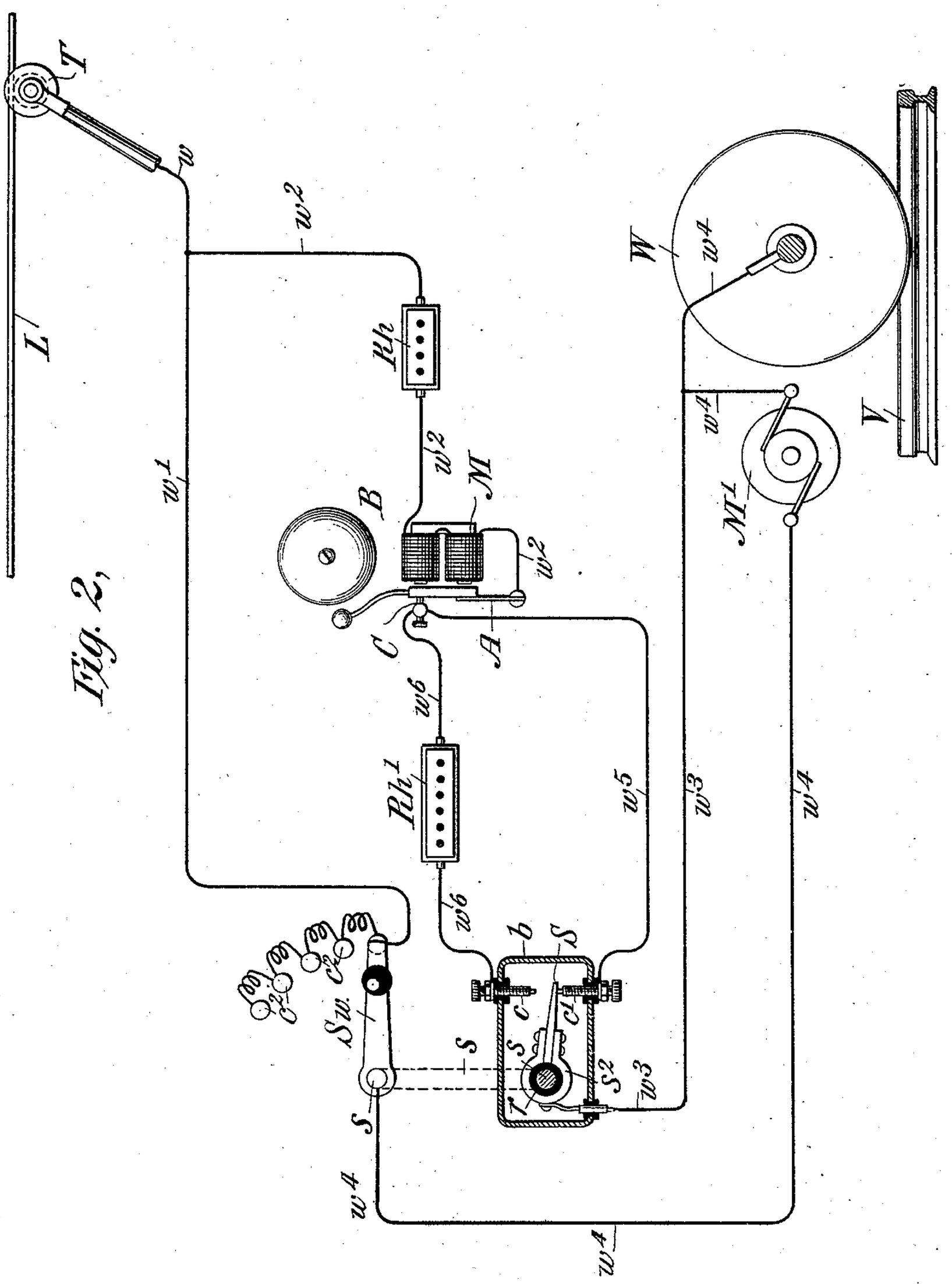

Fig. 2,

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UNITED STATES PATENT OFFICE.

GEORGE F. ATWOOD, OF ORANGE, JONAS WALTER AYLSWORTH, OF NEWARK, AND WALTER H. MILLER, OF ORANGE, NEW JERSEY.

ELECTRICAL ALARM FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 534,597, dated February 19, 1895.

Application filed May 28, 1894. Serial No. 512,653. (No model.)

To all whom it may concern:

Be it known that we, GEORGE F. ATWOOD, of Orange, JONAS WALTER AYLSWORTH, of Newark, and WALTER H. MILLER, of Orange, county of Essex, and State of New Jersey, citizens of the United States, have made a new and useful Invention in Electrical Alarms for Street-Cars, of which the following is a specification.

Our invention has for its object, the placing of an alarm bell under the direct control of a motor-man so that it may be manipulated directly by the operation of the hand controlled brake or in the case of an electrically propelled vehicle by the hand operated switch through which he controls the motor current.

Railway or tram cars as now devised are usually provided with a hand actuated apparatus for controlling the brakes, and a second hand actuated apparatus for controlling the current supply to the propelling motor, and a third apparatus in the nature of a mechanically or electrically actuated bell, usually manipulated by the foot of the motor-man for warning persons of the movement of the car, thus placing at the disposition of such motor-man three independent sets of mechanism thereby necessarily leading to much confusion in the event of a possible accident to foot passengers, vehicles, &c.

It is the especial object of our invention to place the alarm mechanism, of vehicles of this character, immediately under the control of the motor-man through the agency of either the brake mechanism or the switch controlling mechanism for the motor, and the invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 illustrates diagrammatically the circuits and circuit connections, together with the mechanical connections of our improved alarm mechanism connected to a tram car and controlled by a hand actuated brake lever. Fig. 2 is a similar diagrammatic view illustrating our invention as applied to an electrically propelled car and operatively connected to the switch which controls the propelling motor.

Referring to the drawings in detail and first to Fig. 1, V represents one of the tram rails of an ordinary tramway and W one of the wheels of a tram-car; L, an overhead trolley wire and T a trolley having a conductor w connected through a rheostat Rh, conductor w^2, electro-magnets M, and vibratory armature A adapted to ring the alarm bell B; C being the back contact for such armature and w^5 w^6 independent branch circuits running to a water tight switch box b carried by the dash-board, not shown, Rh' being a rheostat included in the branch circuit w^6; c c' being conducting contacts secured to the conductors w^5 w^6 and insulated from the box b; w^3 being a return conductor running to the axle of the car and wheel W.

B′ represents the brake, and E a brake rod secured in the usual manner by a chain to the brake pulley D on the lower end of the usual form of brake rod s', to the upper end of which is attached the usual brake crank H.

s^2 represents an adjustable collar or yoke which surrounds the brake rod s' and is secured thereto inside of the water tight switch box b frictionally by any well known means, r being preferably a band of rubber which insulates this collar from the brake rod and at the same time allows the collar s^2 to rotate under frictional stress when the conducting arm S is brought into contact with either one of the conducting contact points c or c'.

R represents the usual ratchet wheel secured to the brake rod near the platform floor, and P the usual pawl for locking said ratchet and brake in any preferred position.

The operation of this form of the apparatus is as follows: The current supply passes down from the trolley wire L through the trolley T, conductor w, thence through the rheostat Rh, conductor w^2, electro-magnets M, armature lever A, back contact C, conductor w^6, rheostat Rh', conductor w^6, contact c in the box b, conducting arm S, collar s^2, conductor w^3, wheel W and rail V to the power house, a branch of the current passing in derived circuit to the propelling motor, not shown, but in a manner which will be at once understood by those skilled in the art and particularly on inspection of Fig. 2 of the drawings. Under this condition of affairs, upon the supposition that the motor-man is holding the brake lever in the position shown with his toe against the outer end of the pawl

P, the alarm bell B is ringing moderately owing to the small current supply passing through both rheostats Rh and Rh' and the bell actuating magnets M, thereby indicating that the car is running with the brake off, or at all events, indicating that the brake has been partially released. Should he wish to release the brake farther, he would of course turn the operating handle H to the left, thus causing the collar s^2 to slide frictionally around the brake rod s' while the bell continues to ring as before. Should he wish to discontinue the ringing of the bell, he simply reverses the operation of the brake handle H until the circuit is interrupted between the arm S and contact points c c' allowing said arm to remain in a central position between said contact points c and c', there being sufficient space between the contact points c and c' to allow the arm S, when in its central position, to be out of contact with either of said points. Should it become necessary to suddenly apply the brake, he turns the operating handle rapidly to the right thereby causing the arm S to be carried with it until its free end comes into contact with the other contact point c'. The current now flows through the rheostat Rh, bell magnets M and the conductor w^5, contact c', arm S, collar s^2, conductor w^3, wheel W, rail V, to earth to the power house as before. The increased flow of current which results from the substitution of the low resistance conductor w^5 for the conductor w^6 and high resistance rheostat Rh' now causes the bell B to be rung very vigorously, thus indicating danger and warning every one that the brake has been applied. As long as the brake handle H is continuously moved to the right, the bell will ring loudly and the collar s^2 will move frictionally around the brake rod s' remaining of course wherever it is left by action of the motor-man. Immediately on reversing the movement of the operating handle the bell discontinues to ring and if said handle be rotated still farther in reverse direction, the circuit will be again closed through the rheostat Rh' and contact point c, thus indicating as in the first instance that the brake has been released by a continuous mild ringing of the bell.

It will be appreciated therefore that with such an apparatus we are enabled to not only minimize the number of functions which a motor-man is called upon to perform, but at the same time place in his hands a means which enables him to indicate the condition of the brakes and whether or not the car is proceeding under full speed or in dangerous proximity to a person or vehicle.

In the modified form shown in Fig. 2, the brake rod s', Fig. 1, is replaced by a vertically disposed rod s journaled to the dash-board and extending upward as before through the water tight switch box b and frictionally supported conducting yoke or collar s^2 contained therein, the upper end of said rod s being provided with a motor controlling switch Sw having circuit connection through a conductor w^4 running to the propelling motor M' which in turn is connected directly through the wheel of the car to the tram rail V, the free end of the switch Sw being adapted to make circuit connection with any preferred form of circuit controlling device, that herein shown being a well known form of sectional rheostat having conducting contact points c^2 c^2, said rheostat being connected directly to the current supply conductor w'.

The operation of this form of the apparatus will be clearly understood on inspection of the drawings, it being appreciable that when the controlling rheostat is cut out of circuit the motor M' will be running at full speed and the bell or gong B operating with its maximum controlling current.

Although we have shown our invention as applicable to electrically propelled vehicles, it obviously might be applied on cable railways and with other sources of power, it being only necessary in such events to supply a portable source of electrical energy as a primary or storage battery, and to connect the poles thereof directly to the conductors w^2 and w^3.

We do not limit ourselves to the particular forms of devices herein shown and described for placing the alarm bell of a moving vehicle directly under the control of an attendant through the agency of the brake mechanism or switch controlling mechanism as we believe we are the first to combine these elements in such way as to enable the attendant to utilize the combined results with the advantages above enumerated, and our claims are directed broadly to such a combination of elements. Nor do we limit ourselves to the use of an electrically controlled bell or gong as the same might be replaced by an electric lamp or any visual signal which would serve the same function.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. A vehicle provided with a propelling electric motor, in combination with hand operated mechanism for regulating the speed of the vehicle and an electrical alarm having two sets of circuit connections with the speed regulating mechanism, the circuit connections being such that when the speed regulating mechanism is turned in one direction a moderate alarm is sounded and when turned in the other direction a loud alarm is sounded and when left in a central position no alarm is sounded.

2. A vehicle provided with an electrical alarm bell having two sets of circuit connections to and through circuit controlling devices controlled by the brake mechanism, and means for varying the current supply to the magnets of the alarm bell whereby the bell

may be rung moderately or violently at will, substantially as described.

3. A vehicle provided with mechanism for braking its speed, in combination with an electrical alarm mechanism having two sets of circuit connections with the brake controlling mechanism, one set of circuit connections including means for varying the current supply to the electrical alarm mechanism.

In testimony whereof we have hereunto subscribed our names this 24th day of May, 1894.

GEORGE F. ATWOOD.
J. WALTER AYLSWORTH.
WALTER H. MILLER.

Witnesses:
WILLARD E. SARGENT,
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