

(No Model.)

R. M. HUNTER.
ELECTRICALLY PROPELLED VEHICLE.

No. 432,136.

Patented July 15, 1890.

FIG. 1

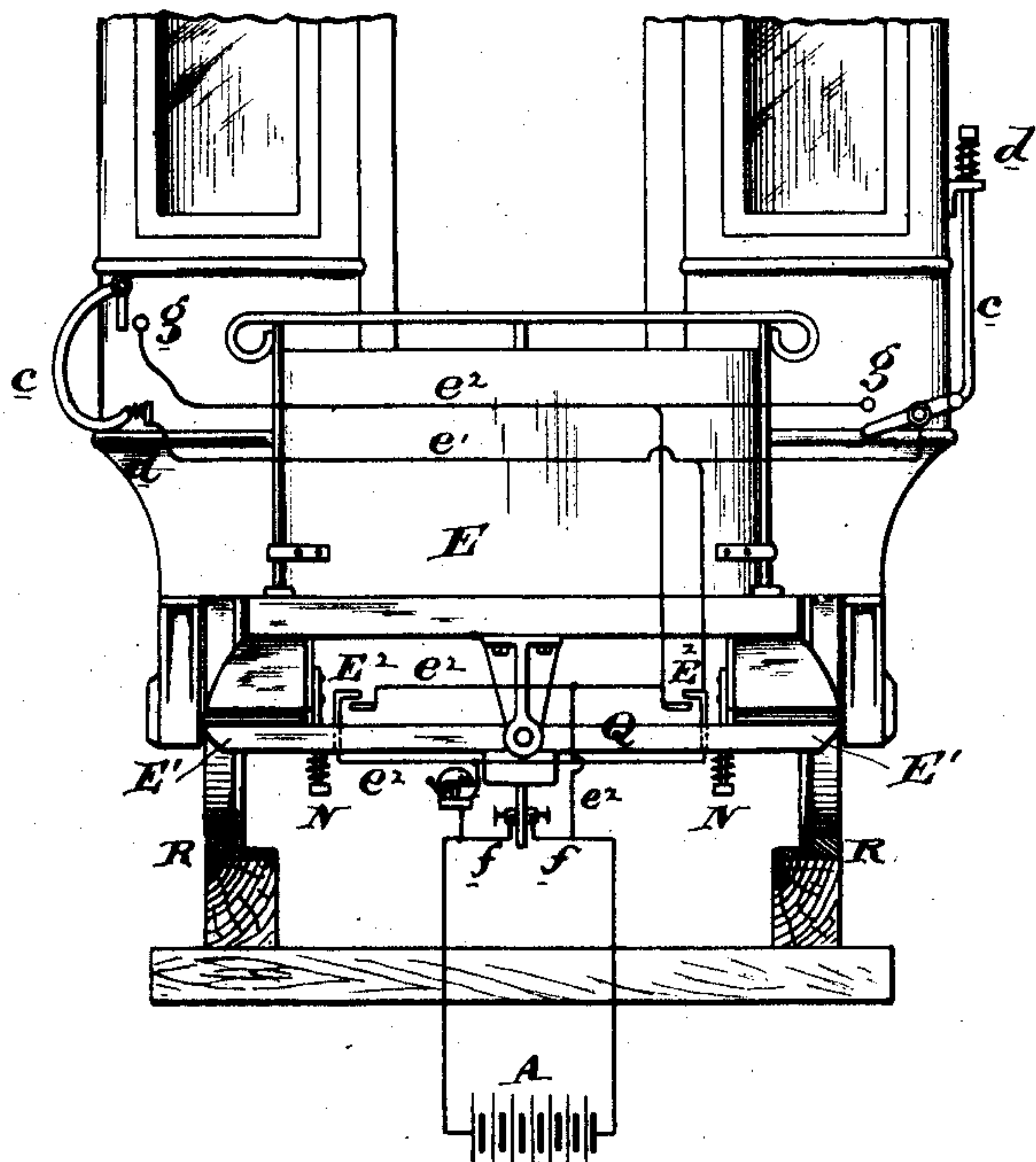


FIG. 2

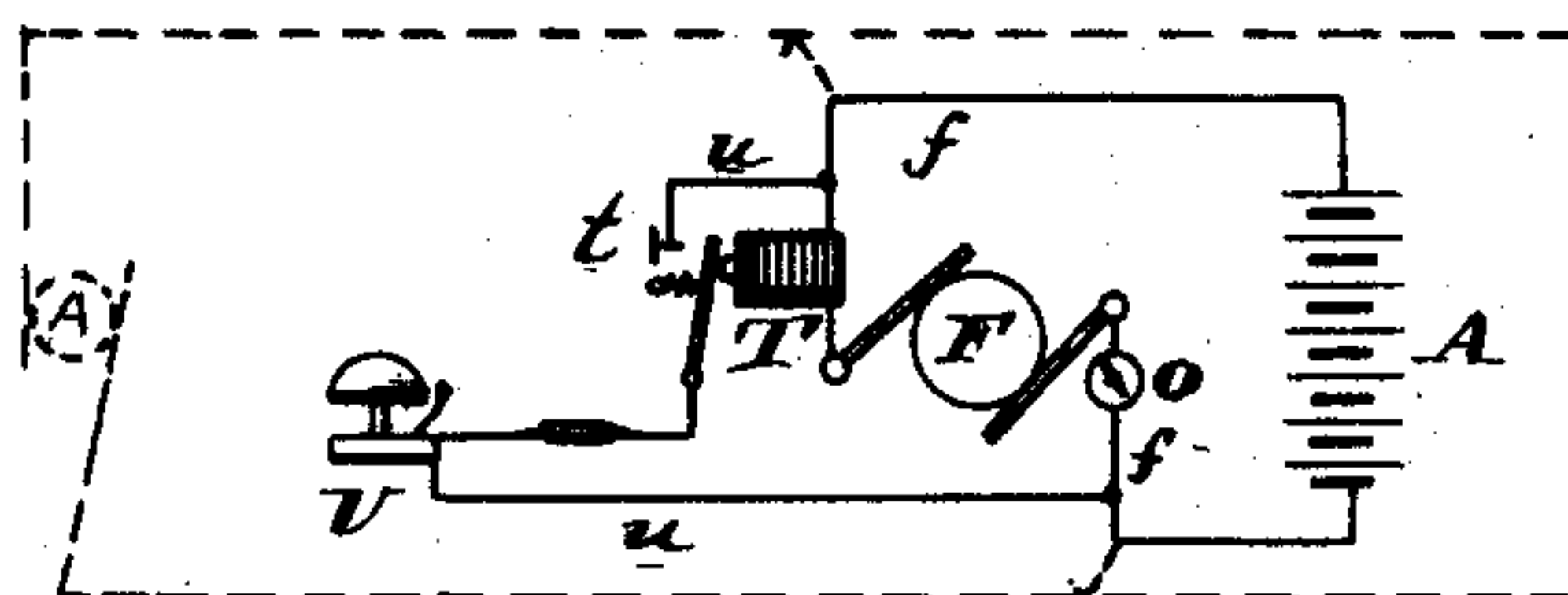


FIG. 3

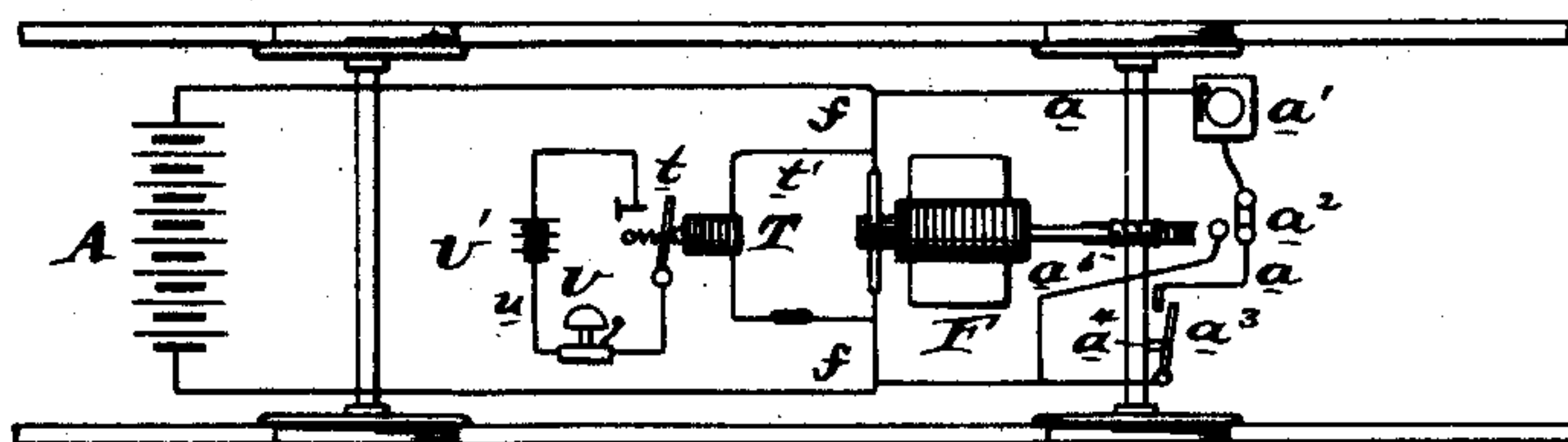
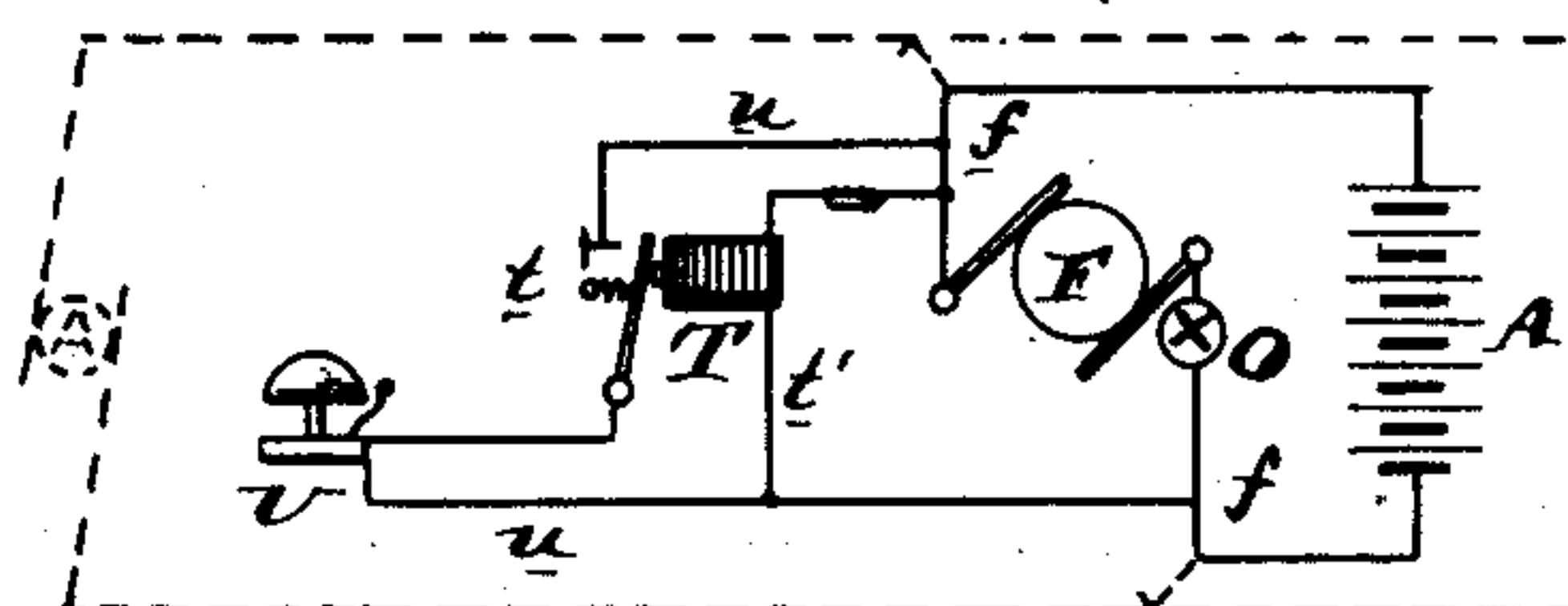


FIG. 4

Witnesses:

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RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICALLY-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 432,136, dated July 15, 1890.

Original application filed March 18, 1886, Serial No. 195,742. Divided and application filed February 8, 1889, Serial No. 299,169. Again divided and this application filed March 27, 1890. Serial No. 345,502. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Electrically-Propelled Vehicles, of which the following is a specification.

My invention has reference to electrically-propelled vehicles; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

This application, Case No. 134, is a division of my application, Case No. 82, Serial No. 299,169, filed February 8, 1889, which in turn was a division of my application, Serial No. 195,742, filed March 18, 1886.

The object of my invention is to provide suitable signal or alarm devices upon an electrically-propelled vehicle. In carrying out my invention I provide the car with a movable part on or adjacent to the platform, which may be used by the passenger in getting off or on the car—such, for instance, as a movable step or hand-rail—and which movable part shall operate to close an alarm-circuit on the car, causing a danger or alarm signal bell to ring, or cause such movement of a danger-indicator of any suitable construction as will show the man in charge of the motor that it would be dangerous to start the car.

I do not limit myself to any particular details of construction, as these particulars may be varied in many ways.

The motor may be energized from any suitable source, whether by line-conductors extending along the railway or by battery carried on or moving with the car.

In addition to the indicator or alarm being operated by the movable part actuated by the passenger, I may provide an automatic switch, which upon the falling of the current in the motor-circuit beyond a certain point may cause the danger or indicator signal to be sounded automatically.

In carrying out this part of the invention I provide the car with a circuit including an electric bell or signal, and control said circuit by means of an electro-magnet having such circuit-connection with the motor that the increase or decrease in the current passing

through the motor will correspondingly energize the magnet, and when such change in the circuit is a decrease below a given quantity the magnet releases its armature and closes the alarm-circuit. The details of these circuits can be considerably varied without in the least departing from the spirit of the invention. In the case of the use of an intermittent danger signal or gong I provide a circuit on the car in which the signal is located, and which circuit is derived from or in shunt relation to the motor, and this circuit is intermittently broken and closed by any suitable device, such as a projection on the axle or any moving part acting on a switch. In practice the circuit would be provided with a switch, which would only be closed when the alarm was to be sounded, and the source of electric power may be such as desired, and in the case of the hand-operated signals may be carried by the car. The interrupter might be dispensed with, if desired.

In the drawings, Figure 1 is an end view of a car and cross-section of a railway embodying my invention. Figs. 2 and 3 are diagrams showing arrangements of circuits on the car, and Fig. 4 is a plan view of car-wheels and some of the electrical connections of the car which embody part of my improvements.

A is any source of electric power, and may be supplied to the motor F on the car.

E is the car or vehicle, and may be made in any suitable manner.

f is the motor-circuit for connecting the motor F with the source of electrical energy A, and has a regulator O therein for controlling the motor. In shunt relation with the motor is a circuit $e'e^2$, normally open, but having circuit-closers g in or operated by the hand-rails c against the action of springs d , and circuit-closers E^2 operated by the pivoted or hinged steps E' against the action of springs N. It will be seen by this construction that stepping on the steps or pulling the hand-rail will close the circuit $e'e^2$ and sound the danger-signal b . While the circuit containing the signal is in shunt relation with the motor-circuit it is evident that any source of electric power may be used, and the same source of power may be used for both.

In the construction shown in Fig. 3 the mag-

net T is in shunt-circuit t' around the motor F and operates the circuit-breaking armature t in signal-circuit u . The gong or alarm U may be rung by the current in the shunt-circuit u or by a separate battery U', if desired, as shown in Fig. 4.

In Fig. 2 I have the magnet T in the motor-circuit, and it operates a circuit-breaker t in the alarm-circuit u , the device operating in such a manner that when the current in the motor-circuit F falls below a given quantity the circuit-breaker closes and sounds the alarm U. The current in the motor-circuit may be regulated or controlled by the regulator O, of any suitable construction.

In the construction shown in Fig. 3 the magnet T is in a shunt-circuit t around the motor; but otherwise the construction is the same as in Fig. 2.

Referring to Fig. 4, the cars are shown as provided with an alarm-gong a to notify vehicles and persons on the track, and this gong or signal may be of the kind known as the "striking-gong" or a "vibrator." It is placed in a shunt-circuit a with reference to the motor, and the shunt may be opened and closed by the driver or operator by the switch a^2 and a circuit a^5 . This gong or signal a' may be operated intermittently by the revolution of the axle of the car or other moving part, having a bend or projection a^4 , actuating a circuit-breaking spring or arm a^3 in the shunt-circuit a . This intermittent circuit-breaker would have no effect so long as the switch a^2 was open; but when closed the alarm would be automatically sounded. The source of electric power for this alarm is immaterial, and, if desired, may be carried on or with the car, as indicated. Broadly considered, it is immaterial what the source of electric power may be, as it may be supplied by line-conductors extending along the railway or from a source of power, such as a battery carried upon or moving with the car. When the constructions employing the magnet T are used, the circuit-breaker t remains open, except when the electric energy is reduced sufficiently to enable the circuit-breaker to overcome the attraction of the magnet, in which case the alarm is sounded. This will perform the function of indicating when the power of the battery or electro-motive force of the source of power decreases below a certain amount during the normal operation of the car, and will also throw in the danger-signal when the motor shown in Fig. 2 is shut off. The signal might be cut off when the car is stopped, if desired.

Where line-conductors are employed, as indicated in dotted lines in Figs. 2 and 3, the operation of the magnet and its connecting parts are used for the purpose set out in my application of which this is a division.

Any matters herein set out but not claimed form subject-matter of my applications before referred to.

Having now described my invention, what

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

1. The combination of an electrically-propelled vehicle, a source of electric power, an electric motor to propel the vehicle, an alarm or signal carried by the vehicle, a shunt-circuit around the motor, including the alarm or signal and receiving current from the same source as the motor, and a switch to control the action of the alarm or signal independently of the motor.

2. The combination of an electrically-propelled vehicle, a source of electric power, an electric motor to propel the vehicle, an alarm or signal carried by the vehicle, a shunt-circuit around the motor, including the alarm or signal and receiving current from the same source as the motor, an interrupter independent of the bell to interrupt the shunt or signal circuit, and a switch to control the action of the alarm or signal independently of the motor.

3. In an electrically-propelled vehicle, the combination of an electric motor to propel the same, a motor-circuit, an electric-signal circuit in parallel with the motor-circuit, an electric signal or alarm in said signal-circuit, a circuit-closer for said signal-circuit, and a movable support over which the passenger walks to operate said circuit-closer.

4. In an electrically-propelled vehicle, the combination of an electric circuit, including an electric signal or alarm, with a circuit-closer for said circuit and a movable hand-rail to operate said circuit-closer.

5. In an electrically-propelled vehicle, the combination of an electric circuit, including an electric signal or alarm in shunt relation with the motor, with a circuit-closer for said circuit and a movable hand-rail to operate said circuit-closer.

6. In an electrically-propelled vehicle, an electric motor and motor-circuit, in combination with an alarm or signal circuit on the vehicle, an alarm or signal in said circuit, and an electro-magnetic device controlled by the current flowing through the motor-circuit to sound an alarm when the current falls below a given strength.

7. In an electrically-propelled vehicle, an electric motor and motor-circuit, in combination with an alarm or signal circuit on the vehicle, an alarm or signal in said circuit, and an electro-magnetic device in a shunt-circuit around the motor and controlled by the current flowing through the motor-circuit to sound an alarm when the current falls below a given strength.

8. The combination of a vehicle, an electric motor to propel the vehicle, a motor-circuit carried by the vehicle and including the motor, a signal-circuit parallel with said motor-circuit, and an electric signal in said signal-circuit.

9. The combination of a vehicle, an electric motor to propel the vehicle, a motor-circuit carried by the vehicle and including the mo-

tor, a signal-circuit parallel with said motor-circuit, an electric signal in said signal-circuit, and a switch to control the current in the signal-circuit independently of the motor.

5 10. The combination of a vehicle, an electric motor to propel the vehicle, a motor-circuit carried by the vehicle and including the motor, a signal-circuit in parallel with said motor, an electric signal in said signal-circuit, and independent controlling devices
10 for the current in the motor-circuit and signal-circuit.

11. The combination of a vehicle, an elec-

tric motor to propel said vehicle, an electric bell or signal, a source of electric supply, circuits for supplying electricity to the motor and signal from the source of supply, and independent means to control the current flowing, respectively, to the motors and signal.

In testimony of which invention I have here-
20 unto set my hand.

R. M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,
MAURICE H. HOLMES.