

No. 825,847.

PATENTED JULY 10, 1906.

W. LINTERN.
ELECTRIC CAR SIGNAL CIRCUIT.
APPLICATION FILED AUG. 22, 1905.

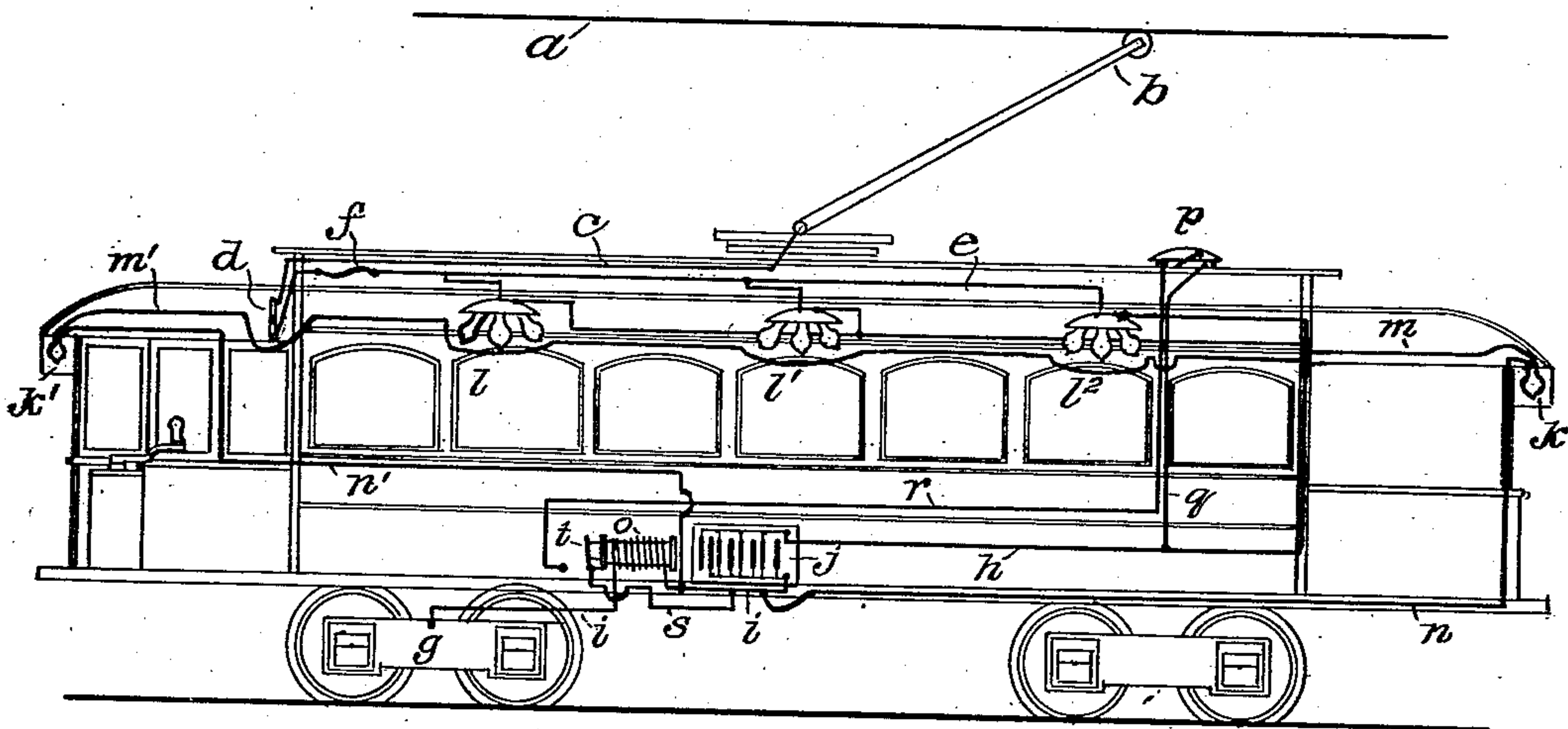


FIG. I.

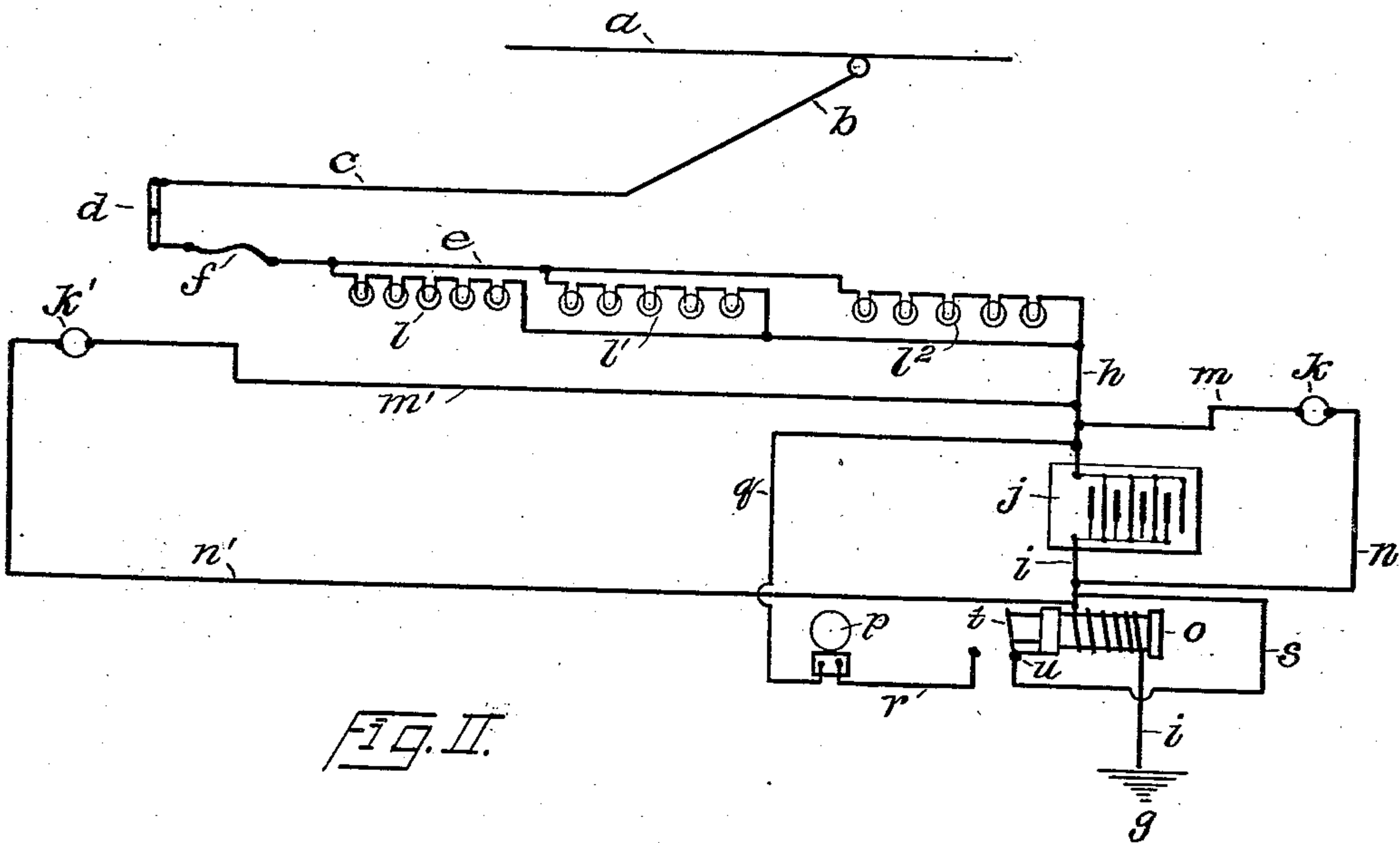


FIG. II.

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ELECTRIC-CAR SIGNAL-CIRCUIT.

No. 825,847.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed August 22, 1905. Serial No. 275,246.

To all whom it may concern:

Be it known that I, WILLIAM LINTERN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric-Car Signal-Circuits, of which the following is a specification.

This invention relates to signal-circuits for cars, trains, and other vehicles for which it is adapted.

The more commonly arranged electric signal-lamps as employed heretofore upon cars and trains have been adapted to be supplied from the line or motor circuits, with the consequent disadvantage that whenever through accident or design the electric current ceases to flow from the line conductor to the car the signal-lamps upon the car cease to glow. Since, in order to avoid accidents, it is important that signal-lights be kept burning continuously, the prime object of the invention herein described is to provide an electric circuit which will not be interrupted upon the failure of the usual source of supply and to adapt said circuit to operate signals upon electric-railway cars.

A further object of the invention is to provide a signal-circuit for electric cars arranged to be supplied under normal conditions by the line or trolley current, but adapted to be supplied automatically by means carried upon the car when said normal circuit is interrupted; also, to provide means for operating signals upon the failure of the line-current of a car.

To these ends my invention consists, in general terms, in so connecting a storage battery or accumulator that it will be charged from the line conductor through one of the usual circuits of an electric car or train and placing one or more signal-lights or other signal devices in a shunt circuit or circuits leading around said battery, making the proportions and connections such that the signals are operated by the line-current while it flows; but immediately upon the cessation of the line-current flowing through the car the charged battery begins to supply said signals and continues to operate them until the line-circuit is restored or until the battery is exhausted.

It also consists in the features and combinations hereinafter more fully described, and defined in the appended claim, an embodiment thereof as applied to the usual type of

electric car being illustrated in the accompanying drawings, in which—

Figure I is a longitudinal sectional elevation of a car equipped with my signal-circuits. Fig. II is a diagram showing the preferred arrangement of the circuits.

The reference-letter *a* indicates the line conductor of an electric railway, and *b* is a trolley or other style of connection between said line conductor and a car.

c is the conducting-wire leading from the trolley *b* to the usual lighting-switch *d*.

The lamps for lighting the car are usually arranged in groups, (represented at *l*, *l'*, and *l''*), which are fed by a wire *e*, leading from the switch *d* and provided with a fuse *f*. The negative wire *h* of the lamps usually leads directly to the ground *g*, being electrically connected to the truck-wheels of the car; but for the purposes of this invention I connect the wire *h* to one of the poles of a storage battery or other suitable electrical accumulator *j*, the other pole of said battery having a ground connection through the wire *i*.

A signal device *k*, which is preferably an incandescent electric lamp inclosed in a suitable casing, is secured to the rear end of the car or train, so that it can be seen by the operator of a following car, and is in a circuit formed by the wire *m*, connecting it to the wire *h*, and the wire *n*, connecting it to the wire *i*. One or more additional or alternative signal-lamps may be employed by connecting them in a similar manner, as shown at *k'*, representing a signal-lamp upon the forward end of the car connected in a shunt-circuit around the battery *j* by the wires *m'* and *n'*. Thus it will readily be understood that the car-circuit through *h* and *i* will operate low-voltage signal-lamps *k* and *k'* and charge the storage battery *j* under normal conditions without affecting to any appreciable extent the lighting of the car; but when the trolley *b* leaves the line-wire *a* or when the car-circuit is otherwise interrupted a local circuit is immediately produced by the discharge of the storage battery through *m*, *n*, and *k* and likewise through *m'*, *n'*, and *k'*, whereby the signal-lamps continue to glow without interruption. In practical applications of the circuit it is important that a proper balance be attained between the storage battery and the signal-lamps. Under normal conditions the battery maintains an approximately constant potential between its terminals; but the line-potential is

apt to be variable, and so by employing signal-lamps of higher voltage than the difference of potential between the poles of the battery sufficient light for signals may still
5 be secured and the battery will work below its normal capacity.

In addition to the continuously-operated signal-lights k and k' another signal device—
10 such as a bell or gong, as shown at p , or a whistle—can be operated by a circuit from the storage battery j , represented by the wires q , r , and s , through the introduction of a suitable magneto drop device to close the
15 said circuit when the car-circuit is interrupted. Any suitable form of magneto drop device may be used, and such devices are known which are adapted also to open the circuit of the bell p upon the restoration of
20 the car-circuit. The coil of an electromagnet o is connected in the car-circuit—for example, in the wire i , as shown. A drop t , hinged at u to the structure of the magnet and electrically connected with the conductor s , is adapted to be attracted by the mag-
25 net and held out of contact with the conductor r while the current is passing normally through the car-circuit; but upon the interruption of the car-circuit through the trolley b leaving the line-wire a or other interrup-
30 tion the drop t ceases to be attracted by the magnet o and falls into contact with the conductor r , thus closing the local circuit of the

battery j , whereby the signal-gong, whistle, or other device p is operated. When the car-circuit is restored, the drop t is lifted out
35 of contact with r either automatically or by hand, as in the well-known electric annunciators.

Having described my invention so fully that those skilled in the art to which it apper-
40 tains can make and use it, either in the form shown herein or under some modification thereof, what I claim as new, and desire to secure by Letters Patent, is—

In a system of maintaining display-signals
45 for electric railways, the combination with the line conductor, of lamps in series arranged in parallel in circuit with said line conductor, a storage battery, the wire from said lamps being connected to one pole of said battery,
50 the opposite pole of said battery leading to ground, a signal device exteriorly displayed at each end of the car, and connections for each of said signal devices to said wire of the lamps leading to said battery and said ground
55 connection of said battery.

In testimony whereof I affix my signature, in the presence of two subscribing witnesses, at Cleveland, Ohio, this 9th day of August, 1905.

WILLIAM LINTERN.

Witnesses:

F. W. RANGIN,
F. G. RANDALL.