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E. W. LEE,
ELECTRIC SIGNALING FOR TROLLEY RAILROADS.
APPLICATION FILED JAN. 31, 1905.

Fig. 1.

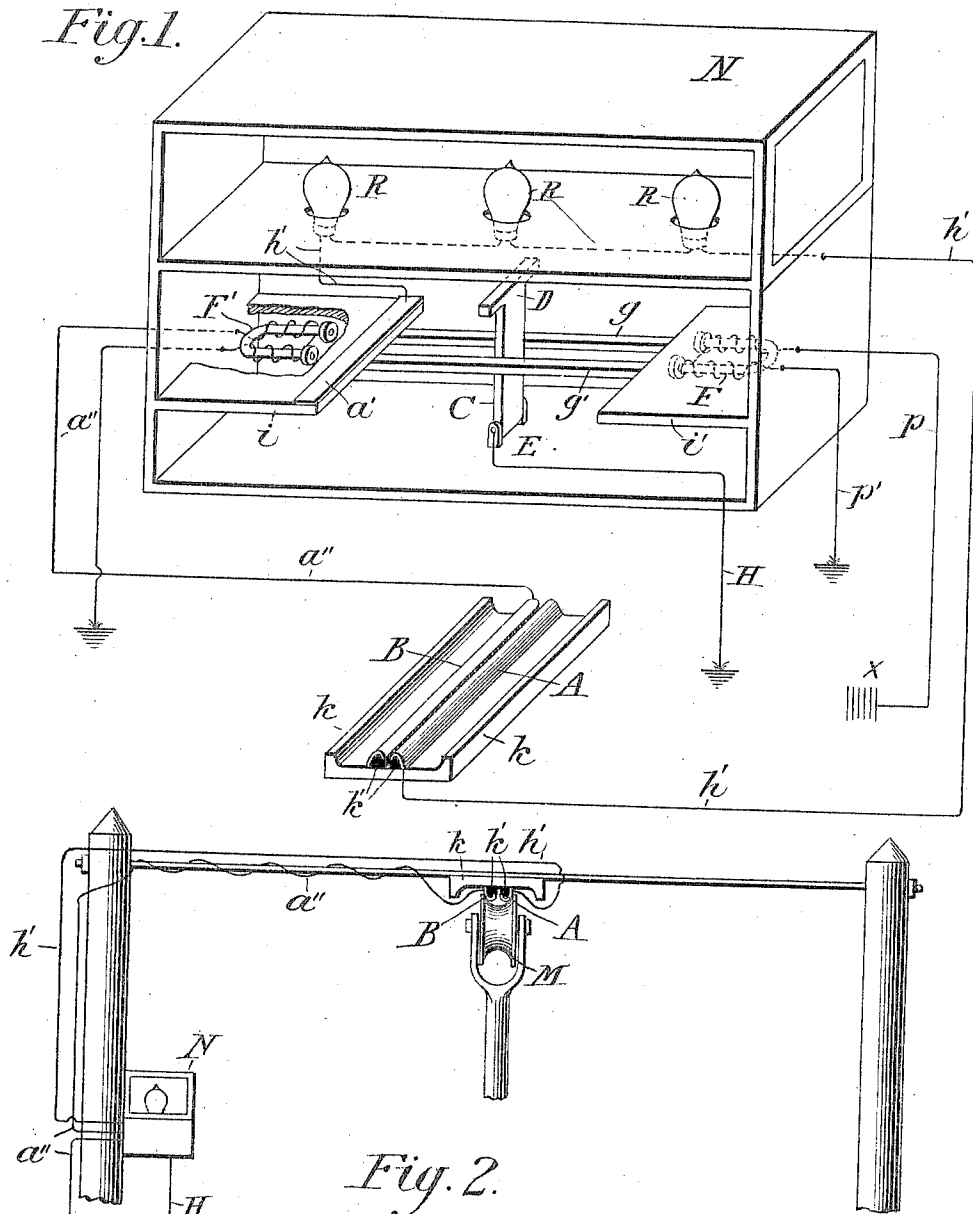


Fig. 2.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD WASHINGTON LEE, of South Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Improvement in Electric Signaling for Trolley-Railroads, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple and effective danger-signal for trolley-railroads.

My invention consists in the combination of two copper strips, respectively, with the oval-shaped sides of a stick of wood-fiber insulation, said combination to be known hereinafter as the "circuit maker and breaker," the combination of said insulated strips or circuit maker and breaker mechanically with the under side of a wide piece of plank or block, the combination of the two ends of one of the insulated copper strips forming one side of the circuit maker and breaker with the regular trolley-wire, and the combination of the two respective sides of the circuit maker and breaker electrically with the electromagnets, armature, and incandescent lamps adjusted in a signal-box to be hereinafter more fully described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the views.

Figure 1 is a side view of my signal-box, showing a view of the construction and operation of the same. Fig. 2 is a view of the contact device in position and the adjustment of the same to the trolley-railroad.

In the lower section of the signal-box N an armature of soft iron C D is so adjusted that it will swing backward and forward on the pivot E and between two wooden strips *g g'*, which form the path of the movable armature C D by being fastened to two shelves *i i'*, said shelves *i* and *i'* being fastened to the ends of the signal-box. To the outer edge of the shelf *i* is fastened a metallic strip *a'*, which strip *a'* acts as a stop for the movable armature C D when it is drawn in that direction. Attached to the metallic strips *a'* is a wire *h'*, which leads to and is electrically connected with the electric lamps R R R, stationed in the upper section of the signal-box N. From these lamps R R R the wire conductor *h'* leads to and is connected with the copper strip A, which forms the live side of the circuit maker and breaker A B. To the base of the movable armature C D is fastened

a wire H, which leads to the ground or return wire.

Underneath the shelves *i* and *i'* are fastened electromagnets F' and F. These magnets are so adjusted that when the electric current is sent around them each will draw the armature C D toward it. From the insulated side of the circuit maker and breaker B a wire *a''* leads to, around the magnet F', and thence to the ground or return wire.

Two copper strips A and B are fastened to the oval-shaped sides of a strip of wood-fiber insulation *k'*. Said combination A *k'* B forms a track so constructed that the trolley-wheel M will roll on the same and impinge the two sides A and B. This combination A *k'* B or circuit maker and breaker is fastened to the under side of a short plank *k k'* or block of insulation, which acts as a watershed to shield the strips A B from the short-circuiting caused by water and ice.

The copper strip A is so adjusted to the regular trolley-wire that the electric current from the trolley-wire will pass constantly through the said copper strip A. The copper strip B being insulated from the copper strip A will contain no current unless an electrical connection is made between the strips A and B by the trolley-wheel M passing over the same. The circuit maker and breaker A B is so adjusted above the trolley-railroad that the trolley-wheel will pass easily from the regular trolley-wire onto the said circuit maker and breaker and thence off onto the regular trolley-wire again.

A wire *a''* leads from the insulated side of the circuit maker and breaker B around the magnet F' and to the ground or return wire. A wire *h'* leads from the electrically-charged side of the circuit maker and breaker A to the electric lamps R R R, and thence the said wire *h'* is connected with the metallic armature-rest *a'*. The movable armature C D is connected by wire H with the ground or return wire.

The circuit maker and breaker A B may be adjusted to the regular trolley-wire at desired points on a double-tracked trolley-railroad or on a double-trolley track or wire, or it may be adjusted to the regular trolley-wire over the switch-track. The signal-box N may be used singly with the circuit maker and breaker, or several of the same signal-boxes N may be connected in series in order that the lights in each signal-box may be made or extinguished at the same time. The

signals may be placed at any point along the track to be protected.

Just before the car carrying the trolley-wheel M passes out of the switch or onto the track to be protected by the danger-signals 5 the trolley-wheel M rolls on the circuit maker and breaker, and thereby impinges its two insulated sides A and B. The electric current from the copper strip A passes through 10 the trolley-wheel M into the opposite copper strip B, and then the current passes from the copper strip B, through the wire a'' , around the electromagnet F' and thence to the ground or return wire. The current passing around 15 the magnet F' causes said magnet F' to draw the movable soft-iron armature C D until it rests on the metallic base a' . When the armature C D touches the metallic base a' , a current will pass from the electrically- 20 charged side of the circuit maker and breaker A or from the regular trolley-wire through the wire h' , thereby lighting the lamps R R R into the metallic base a' through the armature C D into the ground or return wire H. 25 The armature C D being inclined to an angle of about forty-five degrees will remain in said position until the trolley-car passes over the track to be protected by the signals. Then the trolley-wheel M will roll on and im- 30 pinge the sides of a second circuit maker and breaker X, being similar to the circuit maker and breaker A B, which is adjusted to the regular trolley-wire at the end of the track to be protected, either over the continuous 35 double track or over the switch-track, onto which the same car passes. From the insulated section B of the second circuit maker and breaker A B a wire P leads to and around the magnet stationed in the opposite end 40 of the signal-box N. From this magnet F a wire P' leads to the ground.

When the trolley-wheel M passes on the

circuit maker and breaker X at the end of the track to be protected, the circuit between 45 the two copper strips X is completed. Hence the current passes from the copper strip X, through the wire P, around the magnet F and thence to the ground-wire P. The current passing around the magnet F will cause the 50 said magnet to draw the armature C D from its resting-place on the metal basis a' to the opposite shelf i' , thereby breaking the circuit which produces the signal-lights.

Having thus described my invention, I claim as new and desire to secure by Letters 55 Patent—

1. The combination of two short copper strips, mechanically, with the two oval-shaped sides of a strip of wood fiber or other good insulation, to form a circuit maker and 60 breaker, with the under side of a short plank or block of insulation which will act as a water-shed.

2. In a railway signal-box, the combination of a comparatively long armature, T- 65 shaped; with the foot of said armature pivoted to the base of the signal-box, thus allowing said armature to assume a forward and backward motion when acted upon by 70 certain energized magnets; which acts as a ground-conductor, with the outer edge of a shelf i , thereby completing a circuit which will light the signal-lamps, substantially as described.

3. In a railway signal-box, the combination 75 of the pivoted armature C D, with a shelf, i' , located in one end of a signal-box, operated by means of the energized magnet, F, thereby breaking the circuit which lights the signal-lamps, substantially as described.

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Witnesses:

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