(No Model.)

P. SEILER.

ELECTRIC RAILROAD DANGER SIGNAL AND BELL.

No. 493,125. Patented Mar. 7, 1893.

Fig. 1.

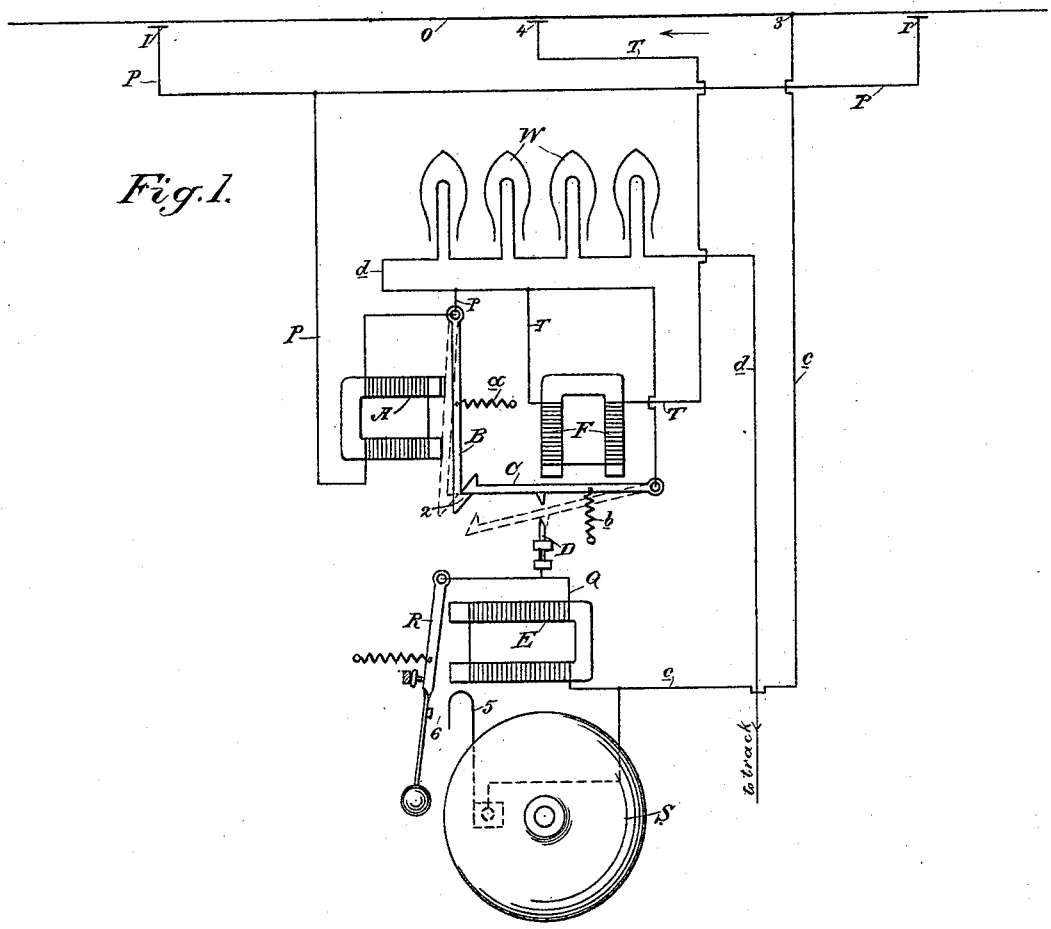


Fig. 2.

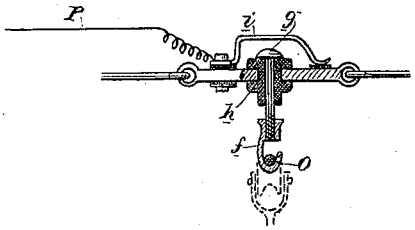
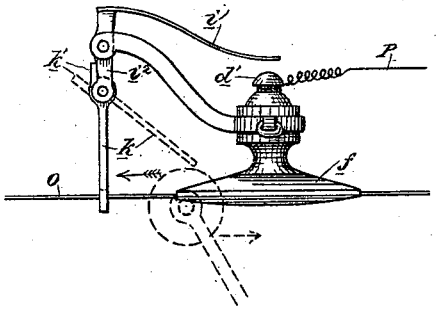


Fig. 3.



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PAUL SEILER, OF SAN FRANCISCO, CALIFORNIA.

ELECTRIC-RAILROAD DANGER SIGNAL AND BELL.

SPECIFICATION forming part of Letters Patent No. 493,125, dated March 7, 1893.

Application filed July 13, 1892. Serial No. 439,892. (No model.)

To all whom it may concern:

Be it known that I, PAUL SEILER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Electric-Railroad Danger Signals and Bells; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a danger signal which is especially applicable to electric railways.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a general view of my apparatus. Fig. 2 is a detail showing the application to a double track railway. Fig. 3 is a detail showing the mechanism as applied to a single track railway.

The object of my invention is to provide a proper danger signal, and utilize the present construction of trolley wires and electric power current to operate danger signals in the shape of lights, bells, semaphores or other devices, at street crossings or other places to announce the approach of trains or cars. In this device it is not necessary to maintain batteries to operate the lights or bells, but the current which operates the cars is utilized by means of an attachment on the trolley wire insulator, and a support which carries the mechanism to be operated by the trolley of the passing electric car. This attachment can be placed at a suitable distance away from the crossing to announce the approach of a car, and another attachment placed at the crossing to stop the bell, or operate the signal at clear.

A is a magnet and B is an armature fulcrumed or pivoted so as to be attracted by the magnet when contact is made by reason of the trolley striking the contact lever I which is fixed with proper relation to the trolley wire O, and has leading from it a wire or connection P through which the current passes to the magnet A at the instant of contact. This causes the magnet to be energized and attract the armature B. Suitably arranged with relation to the magnet A and its armature is the bell magnet E. In the present case I have shown it fixed below the magnet A, and above it is a stud D with which the wire Q of the bell magnet is connected.

R is the hammer lever of the bell S.

At one side, and a short distance from the magnet A, is situated another magnet F having the armature C pivoted as shown.

In the present illustration, the magnet A stands in such position that its armature B is in an approximately vertical position, and the magnet F is so arranged that its armature is in an approximately horizontal position. The lower end of the magnet A has a latch, as shown at 2, and this engages the corresponding end of the armature C when the magnet A is not energized, the armature B being drawn away from the magnet A by a spring *a*. The magnet F is connected by a wire T with a contact maker 4 which operates to stop the bell whenever the car has reached or passed the danger point, as will be hereinafter described.

The operation will then be as follows:—When the magnet A attracts the armature B the latch 2 releases the movable end of the armature C, and thus being drawn downward by gravitation and by a spring *b* strikes the top of the stud D. The current from the trolley wire passes from the point 3 through a wire *c* to the bell magnet E connecting with the coil thereof. The armature C is connected through a proper resistance mechanism, to be hereinafter described, by means of the wire *d* and thence to connect with the track as shown. When, therefore, the armature C has fallen into contact with the stud D, this connection is made and the bell will be operated as long as may be desired.

In case of a crossing, which I will use for present illustration, the bell may be stopped when the car has passed the crossing, and it is done by the action of the magnet F which takes place as follows:—When the trolley passes the contact maker 4, the latter is forced into contact with the trolley wire for an instant, and the current passes through the wire T and energizes the magnet F. The latter then attracts the armature C, thus breaking contact with the stud D and de-energizing the bell magnet E which thereupon ceases to act. As the armature C is drawn into contact with the magnet F it engages the latch 2 of the armature B, and is thus retained in place after the current is cut off from the magnet F which occurs the instant the trolley passes the contact maker 4 and releases it from contact with the trolley wire. The parts are

then in position to be again actuated by the following car, the operation being the same as before.

In order to prevent an overcharge passing from the powerful current of the trolley wire to the bell magnet, and to avoid the use of resistance coils for this purpose, I have found it advisable to employ one or more incandescent lamps W, depending upon the voltage of the current, these lamps acting in the place of resistance coil and regulating the amprage as well. These lamps may be inclosed in red or other colored globes to show a visible danger signal, in addition to the bell or other audible signal.

The bell magnet E is short-circuited at every stroke of the armature by means of the spring 5 and the armature is made to vibrate backward and forward by the shunting of the coils of the magnets between the spring and hammer lever, as shown at 6, thereby avoiding the forming of an arc between contact points at 5, as would occur if the contacts were made and broken as in the ordinary vibrating bell.

The construction here described is adapted for a line of track where the cars pass in one direction, and the device for making the contact is shown enlarged at Fig. 2. Various devices may be employed for this purpose. In the present case I have shown the trolley wire O with the usual suspension piece *f* connected with a stud *g* which moves loosely and vertically through the insulator *h*.

i is a spring secured in line above the movable stud *g* and having connected with it the wire P which leads to the magnet A through which the bell signal is put into operation. As soon as the trolley reaches this point, it presses the suspension piece, the wire, and the stud upward, makes the contact with the spring *i*, and the operation of the apparatus is as previously described. As soon as the trolley passes this point, the trolley wire drops of its own weight and breaks the contact of the stud *g* with the spring *i*. The same form of contact may be used for stopping the bell signal and re-arranging the parts for a new signal.

In case of a single track, where the cars pass in both directions, I have shown the contact maker, as illustrated in Fig. 3. In this case, the spring *i'* is adapted to make concact with the cap *d'*. The spring *i'* is connected with a swinging arm i^2 fulcrumed to a suitable support. At the lower end of this is fulcrumed a swinging arm *k* having a point projecting upward, as shown at *k'* so that it will engage with the swinging arm i^2 when the trolley strikes it, moving in the direction shown by the arrow. This forces the spring arm *i'* into contact with the cap *d'* and thus makes connection through the wire P or T as before described. It will be manifest that the signal will thus be set in operation the same as before described, and may also be stopped at the proper point as previously described. When, however, the trolley reaches the similar device for making contact upon the other side of the crossing or point of danger, it will be necessary that no contact should be made, therefore, when it strikes the arm *k*, the latter will swing into position shown in the dotted lines, and will not act upon the spring *i'* or make any contact, but a car arriving from the opposite direction will make this contact from this side and will in the same manner fail to make a contact upon the opposite side.

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

1. The combination with an electric railway and the conducting trolley wire thereof, of a danger signal and a mechanism by which said signal is electrically actuated comprising magnets A, F and E with their armatures and connecting wires, and contact making devices by which the current is diverted from the main conducting wire to actuate the magnets, whereby the signal mechanism is first set into operation and afterward caused to cease by the passage of the trolley of a passing car over the contact making devices, substantially as herein described.

2. An electric danger signal consisting of lights and audible signal, the magnets A and F with armatures B and C arranged with relation to the magnets and each other as shown, a magnet E and bell sounding mechanism actuated thereby, wires connected with said magnets and with the conducting trolley wire of an electric railway, and contact making devices whereby the signal mechanism is first set into operation and afterward caused to cease by the passage of the trolley of a passing car over the contact making devices, substantially as herein described.

3. A trolley wire, the suspension piece to which the trolley wire is fixed, a stud extending vertically upward from said suspension piece, an insulated guide within which the stud is movable, and an elastic arm with which the stud is brought into contact by the passage of the trolley beneath the suspension piece, and wires leading from said arm to the signal mechanism which is actuated thereby, substantially as herein described.

4. An electric signal apparatus consisting of the magnets A, F and E with their armatures and connecting wires, the lamps W situated in the circuit between the magnets and the conducting trolley wire of an electric railway, contact making devices by which the current is diverted from the main conducting wire to actuate the magnets, connected mechanism and signal devices when the arm passes a certain point, and again actuated when the arm passes another point to cut off the signal, substantially as herein described.

In witness whereof I have hereunto set my hand.

PAUL SEILER.

Witnesses:
L. E. LEE,
GEORGE NICALAI.