

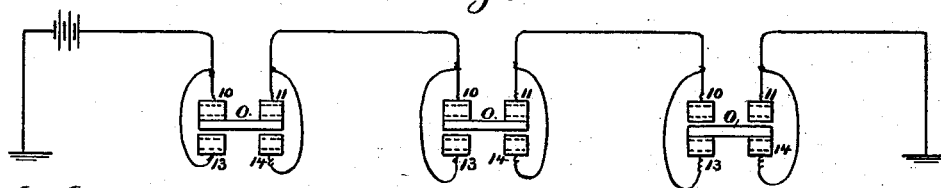
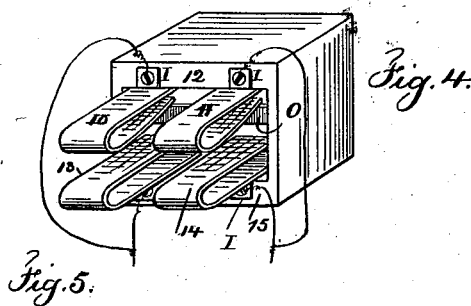
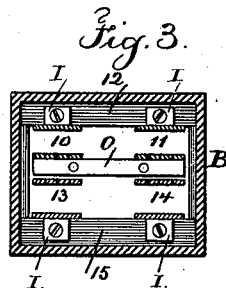
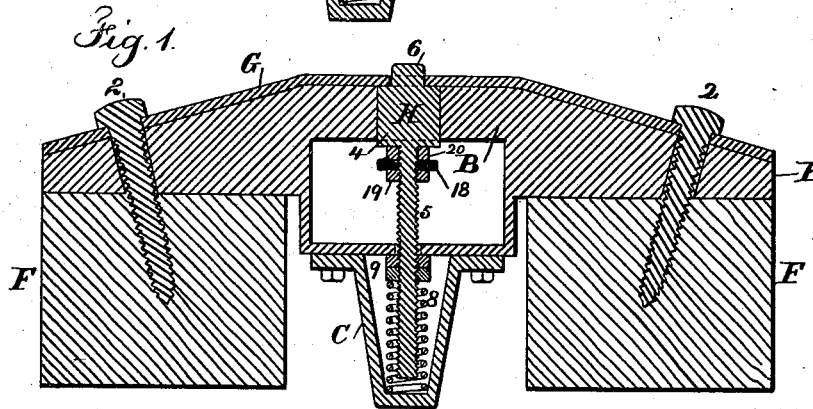
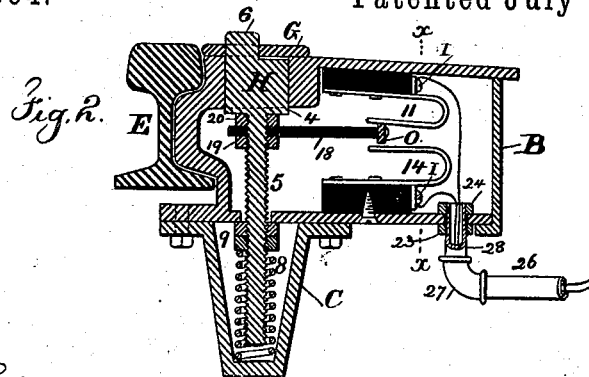
(No Model.)

E. A. SHARP.

# ELECTRIC SIGNAL FOR RAILWAYS.

No. 385,964.

Patented July 10, 1888.



Witnesses

Chas H. Smith.  
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# UNITED STATES PATENT OFFICE.

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## ELECTRIC SIGNAL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 385,964, dated July 10, 1888.

Application filed March 30, 1888. Serial No. 268,968. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD A. SHARP, of Rogers Park, in the county of Cook and State of Illinois, have invented an Improvement in  
5 Electric Signals for Railways, of which the following is a specification.

This electric signal is made for the purpose of changing the circuit-connection by the action of the locomotive-wheels or car-wheels  
10 upon a train, so that a bell may be rung at a crossing or annunciator operated at a signal-house to indicate the location or direction of movement of an approaching train, or a visual or other signal may be operated so as to bring  
15 into action successively a series of block-signals to the front or rear of the moving train.

In the drawings, Figure 1 is a longitudinal section of my improved signal apparatus. Fig. 2 is a transverse section of the same. Fig. 3  
20 is a detached section at the line *xx* of Fig. 2. Fig. 4 is a perspective view representing the springs and the box for holding the same, and Fig. 5 is a diagram illustrating the manner in which this signal apparatus may be made use  
25 of with a system of signals.

I make use of circuit-closing springs in pairs, and between the same is an insulated conducting-bar, and said bar is moved by the action of the passing train so as to break the contact  
30 with one pair of springs and close the circuit through the other pair of springs, and then to break the circuit between the first pair of springs. Thereby the electric current is not interrupted, but the current is diverted from one  
35 circuit into another by the passing train. One rail of the track is represented at E, and the cross-ties are shown at F, and I make use of a box, B, extending from one tie to the other and secured in place by the screws or spikes  
40 2. This box is preferably of cast-iron, and the upper surface is protected by a plate or shoe, G, of steel, and this plate and the upper surface of the box B are inclined in both directions, so that a passing wheel may run up  
45 the incline, should such wheel be worn so that the outer rim thereof is larger than the tread or portion of the wheel resting upon the rail E.

The box portion containing the circuit-connections comes between one tie and the next, as

indicated in Fig. 1, and this is of a sufficient size for receiving the parts hereinafter described.

There is a vertical hole passing through the box B, and into this is received the plunger H, the head 4 of which is larger than the shank  
55 5, and there is a projecting pin or stud, 6, at the upper end passing through a hole in the shoe or plate G and projecting above the same a proper distance, so that when the wheel  
60 passes over the apparatus such plunger H will be depressed until the top surface of the stud 6 is level with the top of the shoe G.

The shank 5 of the plunger H is preferably screw-threaded, and it passes down through the bottom of the box B into the conical socket C,  
65 that is bolted upon the under side of the box B, and these bolts may be provided with holes threaded through the heads for the reception of a wire turning or working loose by the jar to which  
70 they are exposed. Within this conical socket C is a spring, 8, around the shank 5, and there are jam-nuts 9, against which the upper end of the spring 8 acts to raise the plunger H after it has been depressed, so as to constantly  
75 force the stud 6 above the surface of the shoe G. The circuit-closing springs are in pairs, the springs 10 and 11 being upon an insulating support, 12, and the springs 13 and 14 being on an insulating support, 15, and the circuit-wires are connected to the respective  
80 springs by the screw-clamps at I, as represented in Figs. 2 and 4, and these pairs of springs are one over the other, and between them is a metallic bar, O, upon an arm, 18,  
85 of insulating material, which arm is connected to the stem 5, and held by clamping-nuts 19 and 20, so as to be rigidly affixed to the plunger H and moved with it.

In its normal position the bar O maintains a  
90 closed circuit through the springs 10 and 11; but when the plunger H is depressed such bar O first comes into contact with the springs 13 and 14, closing the branch or looped circuit through said springs 13 and 14 before break-  
95 ing the circuit between the springs 10 and 11.

It is now to be understood that the electric circuit upon the line will not be interrupted by the passage of a train and the depression of the plunger H; hence one train does not in-  
100

terfere with the signaling by another train, and I am enabled to make use of several circuit-closing devices in one electric circuit, and thereby I can place the battery in a convenient position for working the signals upon a line of several miles in length. When the plunger H is elevated and the current passes through the springs 10 and 11 and the wires connected with the same, the electric current is in such a condition that any other signal-box may be brought into action by the wheels, and when the plunger H is depressed and the bar O brought into contact with the springs 13 and 14 the current through the line remains unbroken, but the current is divided through the loop or branch to give a signal—such as the ringing of a bell—at a crossing or the display of lights or other signals, or the registering of the passage of the train or the movement of an annunciator in a switch-house.

The wires are preferably laid in iron pipes, and they are coated with insulating material. I have shown a portion of one pipe at 26 connected with an elbow, 27, and thimble 28, and the latter passes through the bottom of the box B, and it is held in place by jam-nuts 23 and 24, so as to make a water-tight joint with the box B. In Fig. 5 I have illustrated the electric circuit connections which may be made use of in a system of signals. In this the passage of the train sets a visual signal in the rear, and this may remain in position until the advancing train has reached a safe distance and passed over a second circuit-closing box, so as to remove the danger-signal and indicate "safety." These electric signals may be of any desired character—such, for instance, as that represented in my application, Serial No. 266,942, filed March 12, 1888.

I claim as my invention—

1. The combination, with the box B, fastened to the railway-ties of the plunger H, passing vertically through the box, and having a projecting stud, 6, at the upper end and a shank, 5, at the lower end, of the spring 8, for raising the plunger, the pairs of circuit-closing springs 10 11 and 13 14, the conducting-bar O between the ends of the said springs, and an insulating arm connecting the bar O with the plunger, substantially as set forth.

2. The box B, with bevel ends resting upon the cross-ties and the sheet-steel shoe, G upon the surface of the same, in combination with the plunger H, passing vertically through the box and the shoe, and the conical socket C, attached below the box B, the nuts 9 and spring 8, for raising the plunger, the circuit-closing springs 10 11 and 13 14 in pairs, and the conducting-bar O between the ends of such springs, and the arm connecting the same with the plunger, substantially as set forth.

3. The combination, with the box B, plunger H, arm 18, and bar O, of the circuit-closing springs, in pairs and insulated, the bar O being between the moving ends of such springs, and the pipe 26 and thimble 28 passing through the bottom of the box B, and the jam-nuts for holding the thimble firmly to the box, and the conductors passing through such thimble and pipe, substantially as set forth.

Signed by me this 16th day of March, 1888.

EDWARD A. SHARP.

Witnesses:

ARTHUR X. HALLSTROM,  
JAS. C. SHARP.