H. G. SEDGWICK.

MAGNETIC CIRCUIT CLOSER FOR TRAIN STOPS AND SIGNALS.

APPLICATION FILED NOV. 22, 1912. RENEWED OCT. 9, 1916.

1,225,507. Patented May 8, 1917.

Fig. 1.

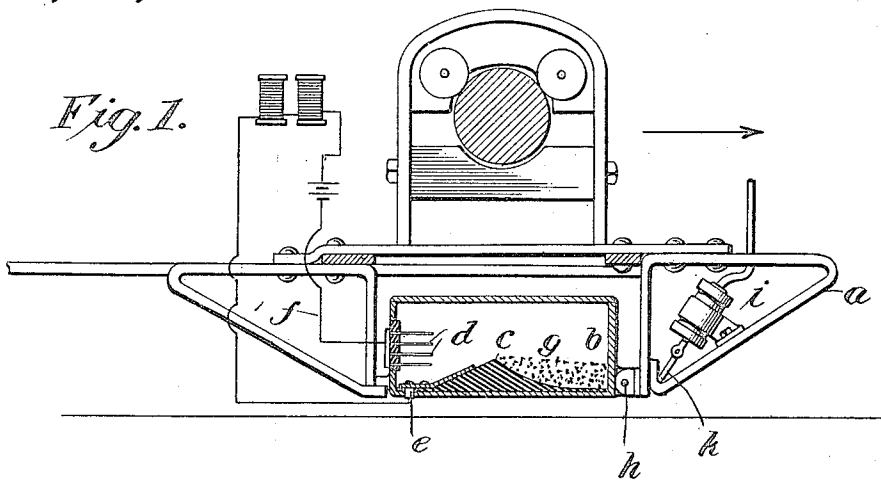


Fig. 2.

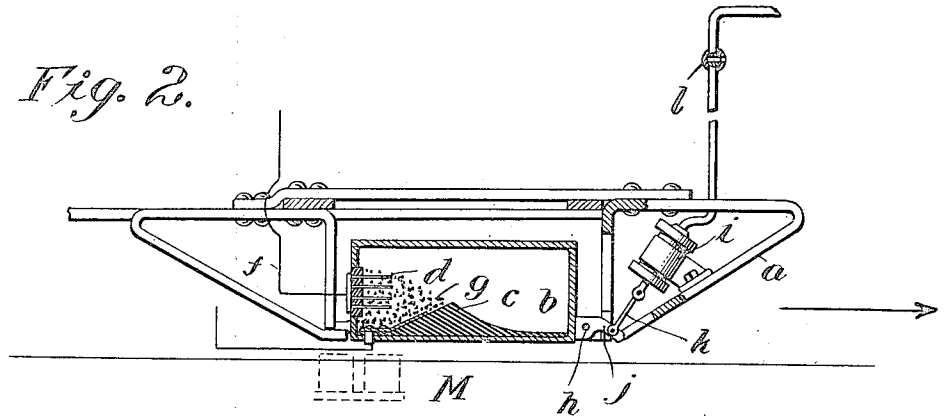
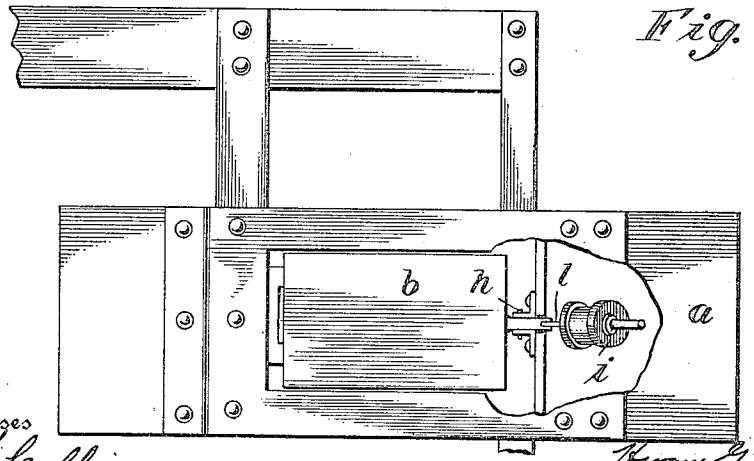


Fig. 3.



Witnesses

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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MAGNETIC CIRCUIT-CLOSER FOR TRAIN-STOPS AND SIGNALS.

1,225,507. Specification of Letters Patent. Patented May 8, 1917.

Application filed November 22, 1912, Serial No. 732,984. Renewed October 9, 1916. Serial No. 124,682.

To all whom it may concern:

Be it known that I, HIRAM G. SEDGWICK, a citizen of the United States, and a resident of Mill Valley, county of Marin, State of California, have invented certain new and useful Improvements in Magnetic Circuit-Closers for Train-Stops and Signals, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view showing the armature in position for actuation; Fig. 2 a similar view showing the armature shifted into active position; and Fig. 3 a plan view of the device.

This invention has relation to that class of train stopping and signaling apparatus in which an electromagnetic device or devices are arranged upon the road bed in such manner as to actuate an armature on a passing train, the armature being so positioned on the train that it passes through magnetic fields of the magnets and suitable means being arranged on the vehicle whereby the movement of the armature is caused to bring about actuation of suitable train stopping and signaling devices on the train, as more fully hereinafter set forth.

The object of the present invention is to render more certain and to greatly simplify the armature device on the vehicle, the essential feature of the invention consisting in so arranging and confining a freely movable armature, preferably consisting of a mass of comminuted magnetic material, such as iron filings, that when the cell or box containing the same is passed through the field of the road bed magnet, the armature will be so disturbed or shifted bodily as to close an electric circuit, this circuit being connected to any suitable mechanism on the train for actuating signaling or train stopping mechanism.

Within a suitable shoe *a*, suitably mounted on one of the vehicles of the train, I mount a box *b*, this box being preferably set up in a recess or pocket in the under face of the shoe so as to be protected by the body of the shoe from injury by obstacles on the road bed. The bottom of this box is made of suitable insulating material and is provided with an upstanding ridge *c* whose opposite sides are inclined, this ridge extending transversely of the box to form two pockets or depressions, one at each end of the box. Into the pocket at the rear end of the box extend the two terminals *d* and *e* of the train stopping or signaling circuit *f*.

One of the terminals, *e* is arranged at the forward side of the rear pocket and the other terminal is arranged at the rear end of this pocket, this latter terminal preferably consisting of a series of fingers. In the box is placed a mass *g* of iron filings or other small pieces of magnetic material, which mass is loose within the box. In its inoperative position, the mass of loose material is arranged in the forward pocket, and when the box is moved in a horizontal position through the field of the road magnet M the effect of the magnetic flux will be to cause practically the entire mass of magnetic material to move up over the ridge *c* and collect in the rear pocket. When thus collected in the rear pocket the loose magnetic material rests upon the contact *e* and surrounds the pins of the contact *d* and thus forms an electrical connection between these contacts, thereby closing the circuit *f* and causing an actuation of the signal or train stopping device connected to said circuit. Any suitable means may be provided for returning the loose material to the forward pocket; I preferably mount the box on a pivot *h* located at its lower forward corner so that the box may be swung upwardly far enough to cause the magnetic material to run back by gravity into the forward pocket. I preferably cause this tilting action by means of a suitable pneumatic cylinder *i* which may be connected to the main air brake reservoir on the locomotive and be under control of the engineer, the piston working in this cylinder being connected to an arm *j* on the pivot *h* by means of a suitable link *k*, so that by opening a suitable valve *l* in the pipe connecting the reservoir to the cylinder *i* the engineer may let a small quantity of air down into the cylinder *i* and thus cause the box to be tilted upwardly. When valve *l* is closed it will put cylinder *i* in communication with the atmosphere and then allow the box to gravitate to its normal position.

It will be understood that it is within the spirit of this invention in its broadest aspect to employ any other form of armature which is confined loosely within the box or cell in such manner as to be bodily thrown backward against the terminals by the ac-

tion of the flux of the magnet as the box or cell rushes through it.

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

1. In combination with a road bed magnet, and a railway vehicle, of a receptacle mounted on the vehicle and having a space at its front end, an armature in said space consisting of a mass of loose magnetic material, said receptacle having at its rear a pair of separated contacts which are adapted to be connected by said mass when the same is moved rearwardly by passage over the magnet on the road bed.

2. In a circuit closer of the class set forth, the combination of a magnet on the roadbed, a railway vehicle, a support adapted to be attached thereto, a receptacle attached to the support in such position as to pass through the magnetic field of the magnet, electrical contacts within the receptacle, and a mass of loose comminuted magnetic material confined in said receptacle and adapted to be moved in a direction opposite to the direction of movement of the vehicle to close the circuit between said contacts.

3. In a circuit closer for the purpose set forth, a railway vehicle carrying a receptacle, electrical contacts extending thereinto, and a mass of loose magnetic material adapted to close the circuit between said contacts, and a magnet on the road bed for shifting said magnetic material in a direction opposite to the direction of movement of the vehicle into contact with said contacts, said receptacle being so located on the vehicle as to pass through the magnetic field of the magnet.

4. A circuit closer consisting of a receptacle and means supporting it on a railway vehicle, electrical contacts at the rear end of the receptacle, and a circuit-closing armature consisting of electrical-conductive magnetic material confined loosely within the receptacle.

5. In combination with a road bed magnet and a railway vehicle, of a receptacle mounted on the vehicle in such position as to pass through the field of the magnet, electrical contacts at the rear end of the receptacle and a train-control circuit connected thereto, and an electrically-conductive armature freely movable in said receptacle, the bottom of the receptacle being shaped so as to hold the armature normally at the forward end of the receptacle, whereby upon passage of the receptacle through the field of the magnet the armature will be thrown backwardly against the contacts.

6. In combination with a road bed magnet and a railway vehicle, of a receptacle mounted on the vehicle in such position as to pass through the field of the magnet, electrical contacts at the rear end of the receptacle and a train-control circuit connected thereto, an electrically-conductive armature freely movable in said receptacle, the bottom of the receptacle being inclined so as to hold the armature normally at the forward end of the receptacle, whereby upon passage of the receptacle through the field of the magnet the armature will be thrown backwardly against the contacts, and means for returning the armature to its normal or inoperative position at the forward end of the receptacle.

7. In combination with a road bed magnet and a railway vehicle, of a receptacle mounted on the vehicle in such position as to pass through the field of the magnet, electrical contacts at the rear end of the receptacle and a train-control circuit connected thereto, an electrically-conductive armature freely movable in said receptacle, the bottom of the receptacle being inclined so as to hold the armature normally at the forward end of the receptacle, whereby upon passage of the receptacle through the field of the magnet the armature will be thrown backwardly against the contacts, and means for tilting the receptacle for returning the armature to its normal or inoperative position at the forward end of the receptacle.

8. In a circuit closer of the class set forth, the combination of a magnet on the road bed, a railway vehicle, a support adapted to be attached thereto, a receptacle movably attached to said support in position to pass through the magnetic field of the aforesaid magnet, electrical contacts within the receptacle, train-controlled means connected to said contacts, a mass of loose comminuted magnetic material confined in said receptacle and adapted to be moved to close the circuit between said contacts, and means for moving the receptacle independently of its support for moving the magnetic material away from said contacts.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

HIRAM G. SEDGWICK.

Witnesses:
C. D. DAVIS,
CHARLES LOWELL HOWARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."