

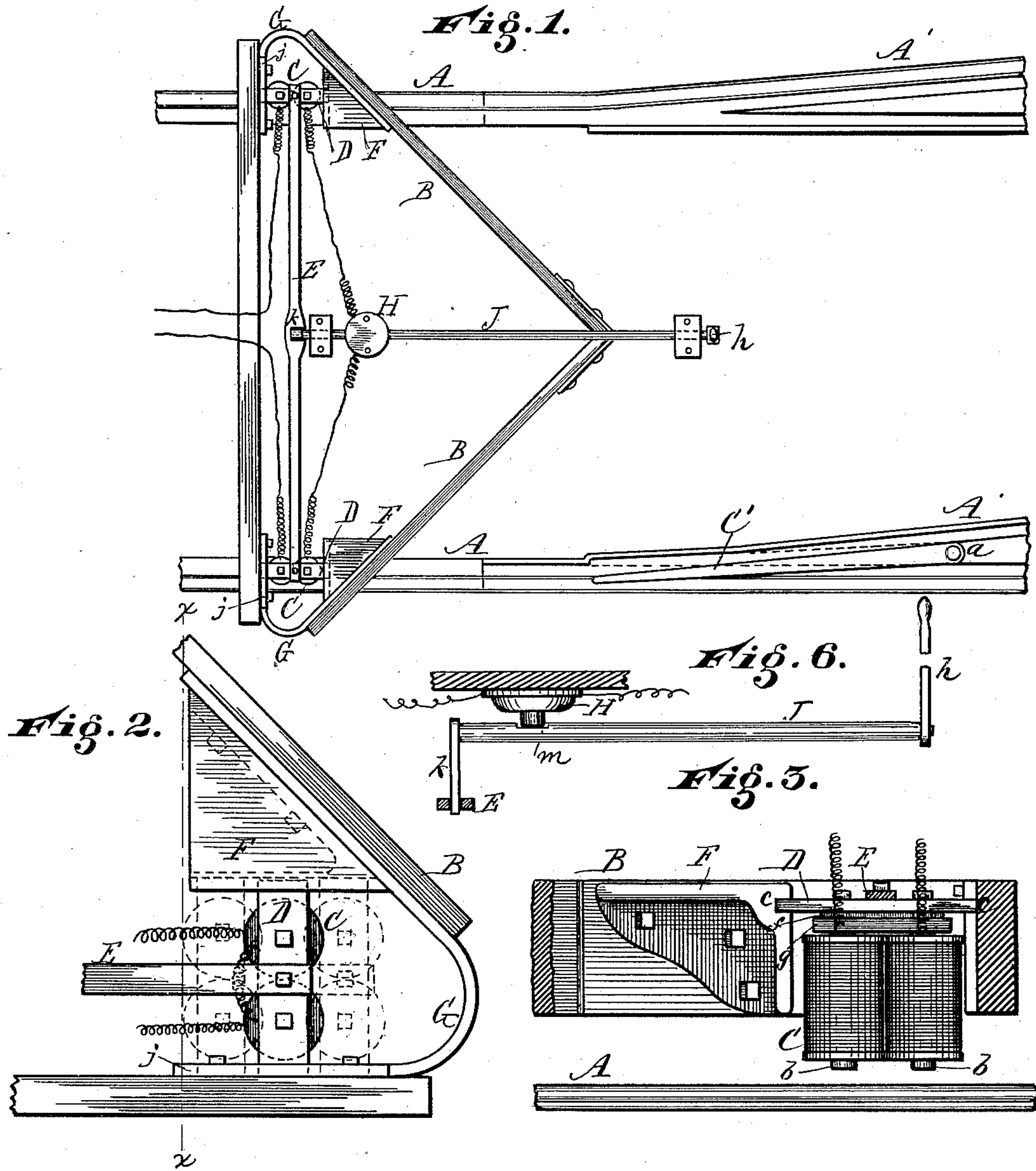
(No Model.)

W. A. BROWN.

DEVICE FOR OPERATING RAILWAY SWITCHES.

No. 463,136.

Patented Nov. 17, 1891.



Witnesses.  
R. L. Osgood  
P. A. Cothran

Inventor.  
Watson A. Brown



# UNITED STATES PATENT OFFICE.

WATSON A. BROWN, OF ROCHESTER, NEW YORK.

## DEVICE FOR OPERATING RAILWAY-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 463,136, dated November 17, 1891.

Application filed November 12, 1890. Serial No. 371,188. (No model.)

*To all whom it may concern:*

Be it known that I, WATSON A. BROWN, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Devices for Operating Switches on Railways; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this specification.

The object of my improvement is to provide means for operating a switch on a railroad by means of a magnet on the car. It is especially adapted to operating the pivoted switches on street-railways, but can also be applied on other railroads.

The invention consists in the construction and arrangement of parts, hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of a portion of street-railway, showing also the pilot or plow of the street-car and the electric connections attached thereto. Fig. 2 is an enlarged plan view of one corner of the frame and its connections. Fig. 3 is a vertical section in line *xx* of Fig. 2. Figs. 4 and 5 are diagrams showing the devices for operating and closing the electric circuit. Fig. 6 is a side elevation of the shaft and its attachments for operating the magnet.

*A A* indicate the main tracks, and *A' A'* the branch tracks in a street-railway.

*C'* is the swinging tongue-piece or switch pivoted at *a*, and adapted to be swung from one side to the other in its seat in the usual way.

My improvement is as follows: *B* is the pilot or plow attached to the front of the car and located beneath the cab.

*C C* are the electro-magnets, one on each side. These magnets are of usual construction, and the wires are connected in the ordinary way. The poles *bb* of the magnets stand in line with and ride above the rails, but as closely thereto as is consistent with safety, and are designed to draw the switch from one side to the other of its seat in the track as the car passes. Each of the magnets is attached to a slide *D*, which slides laterally out and in in ways *cc* of the frame. The slides *D D* in turn are connected with a cross-bar *E*, capable of end movement. It is designed that the

throw of the magnets shall be slight, as it is only necessary to shift each of them from one side to the other of its track in order to attract the switch-bar to one side or the other of the seat in which it rests. For instance, in order to draw the switch from the position in full lines to that in dotted lines, Fig. 1, the magnet on that side is slid into the inside of the rail, and in order to draw it out again the magnet is shifted to the outside of the rail. It will be seen that but slight shifting motion of the magnet is required to produce this result. As shown in the drawings, each of the slides *D* rests at one end in the groove of a bracket *F*, attached to the frame, and at the other between the bent iron *G* and a cap *j*, placed over it; but any other arrangement that will guide the slide and allow it free movement may be employed. A hard-rubber or other plate *f* is placed between the slide *D* and the bar *g* that connects the two spools of the magnet, by which means the current is prevented from running off.

*J* indicates a rod or shaft extending horizontally under the cab of the car and connected therewith by suitable attachments in which it can turn axially. It extends forward beyond the pilot, so that its outer end comes directly under the cab. At one end it has a handle *h*, which extends up through the bottom of the cab within convenient reach of the operator, and at the other a stiff crank-arm *k*, that passes down loosely through a hole in the cross-bar *E*. By turning the handle in one direction or the other it will be seen that the cross-bar will be correspondingly thrown in one direction or the other to shift the magnets, as before described.

*H* is a device forming a circuit-breaker, being of the same construction as the push-button in common use on doors and other places to sound an alarm or give a call. It is located over the shaft *J*, and its lower projecting end rests directly over a squared part *m* of the shaft. This square stands at right angles to the crank *k* that passes through the cross-bar *E*. When said crank stands vertically, the magnet stands centrally with the rail and the square *m* then stands horizontally under the push-button, as shown in Fig. 4, and the stem of the button is then depressed or thrown out and the circuit is broken. Consequently the



magnet is not charged; but when the shaft J is turned to shift the magnet out or in, then the sharp eccentric edge of the square *m* strikes under the stem of the push-button, raising the same, as shown in Fig. 5, closes the circuit and charges the magnet, the charging of the magnet being thus simultaneous with the shifting of the same in position to attract the switch-bar from one side to the other of its seat.

This invention is applicable not only to street-railways, but to others where switches of a similar character are to be shifted. On electric roads the current is taken from the main line; but on other roads a battery would have to be carried on the car.

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

1. The combination, with a railway-car, of an electro-magnet attached to the car and capable of being shifted from one side of the rail to the other, electric connections attached to the magnet, and means for opening and closing the circuit, as specified.

2. The combination, with a railway-car, of an electro-magnet, a slide to which the magnet is attached capable of being moved laterally from one side to the other over the rail, electric connections attached to the magnet, and

means for opening and closing the circuit, as and for the purpose specified.

3. The combination, with a railway-car, of two electro-magnets on opposite sides resting over the rails, two slides to which said magnets are attached, a cross-bar connecting the two slides, and a shaft provided with a handle at one end and a crank at the other, said crank connecting with the cross-bar and serving to operate it, as herein shown and described.

4. The combination, with a railway-car, of two electro-magnets on opposite sides, slides to which the magnets are attached, a cross-bar connecting the slides, a shaft provided with a handle at one end and a crank at the other connecting with the cross-bar, and a push-button resting over a squared surface of the shaft, the whole so arranged, as herein described, that the push-button is operated to close the circuit on the turning of the shaft to shift the magnets, as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WATSON A. BROWN.

Witnesses:

R. F. OSGOOD,

CHAS. A. WIDENER.