D. ROUSSEAU & W. C. SMITH.

CIRCUIT-CLOSER FOR ELECTRIC RAILWAY SIGNALS.

No. 187,318. Patented Feb. 13, 1877.

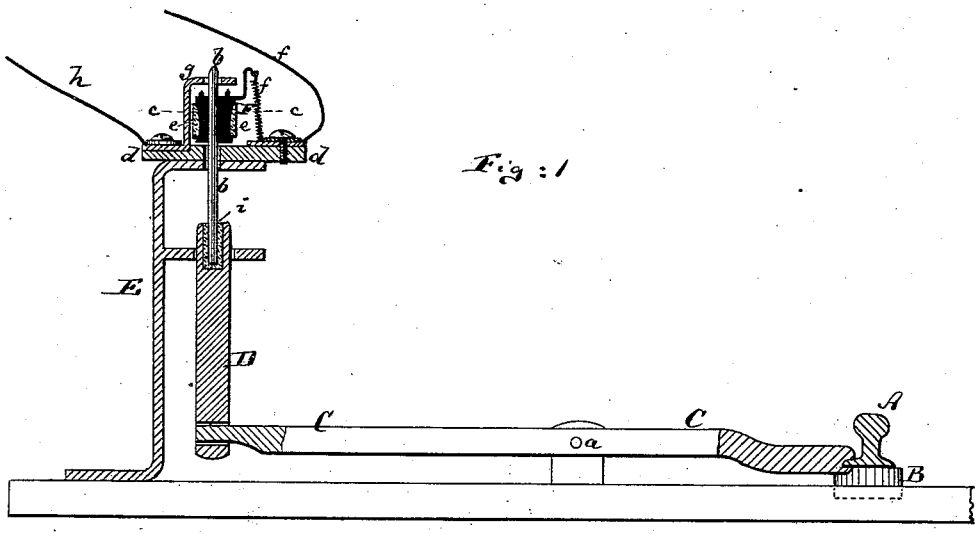
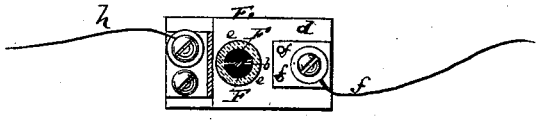


Fig: 1

Fig: 2



Witnesses:

D. Briesen

Ernest Wiss

Inventors:

David Rousseau

Wm. C. Smith

by their attorney

Alex. Briesen

UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU AND WILLIAM C. SMITH, OF NEW YORK, N. Y., ASSIGNORS TO WILLIAM F. SMITH AND SAMUEL SAMUELS, OF NEW YORK CITY.

IMPROVEMENT IN CIRCUIT-CLOSERS FOR ELECTRIC RAILWAY-SIGNALS.

Specification forming part of Letters Patent No. **187,318**, dated February 13, 1877; application filed December 13, 1876.

To all whom it may concern:

Be it known that we, DAVID ROUSSEAU and WILLIAM C. SMITH, both of New York city, in the county and State of New York, have invented a new and Improved Circuit-Closer for Electric Railway-Signals, of which the following is a specification:

Figure 1 is a sectional side elevation of our improved circuit-closer. Fig. 2 is a horizontal section thereof, on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new device for closing an electric circuit by the deflection of a rail. It consists in joining the rail by a lever to a sliding pin, which carries a friction-block for alternately closing and breaking the circuit, all as hereinafter more fully described.

The invention also consists in the new disposition and construction of the said friction-block.

In the drawing, the letter A represents a railroad-rail, placed upon a yielding cushion, B, or otherwise so disposed that it will be deflected by the weight of a locomotive or train passing over it, and caused to resume its normal position after the locomotive or train has left it. C is a lever, pivoted at *a* to a suitable support, and extending with one end into close proximity with the rail.

The end of the lever next to the rail is, by preference, forked, as shown, and caused to straddle the base or flange of the rail, so that the vertical vibration of the rail will be transmitted to the lever C. The other end of the lever C connects with a vertical slide, D, that is guided in a stationary frame, E. The upper part of the slide D terminates in a pin, *b*, which carries above a platform, *d*, of the frame E the circuit-closing block F. This block is, by preference, split or made in two parts, as indicated in Fig. 2, which parts are crowded against the pin *b* by a rubber or other elastic ring, *e*. The block F is thus held with sufficient friction on the pin *b* as will cause it to join in the up-and-down movements of said pin, and yet the block is capable of independent motion on said pin.

The block F is in connection with one or more suitable conductors, *f f*, that lead to a suitable signal or signals. A metallic plate, *g*, affixed to the frame E above the block F, is in connection with another conductor or conductors, *h*, leading to the same signal or signals, or to the ground.

When the block F is raised into metallic connection with the plate *g* the circuits are closed; when drawn away therefrom the circuits are broken. Now, whenever the rail A is depressed, the pin *b* is elevated, and raises the block F against the plate *g*, closing the circuit; but this is performed by a very slight degree of motion of rail, lever, and slide. Should such motion be continued it would cause the pin *b* to pass upward through the block F without disturbing the position of the latter. Yet, as soon as the rail commences to elevate itself into its normal position, the consequent downward movement of the pin *b* will at once draw the block F away from the plate *g* and against the platform *d*, whereupon the downward movement of the pin *b* may be continued *ad libitum* without further disturbing the block F. In fact, between the platform *d* and plate *g*, the block can move but a very short distance up or down, and thereby the circuit is closed and broken as soon as the lever C receives a very slight motion. By the foregoing construction the apparatus is preserved against injury, even if the rail is subjected to violent motion.

Between the pin *b* and the slide D a non-conducting lining, *i*, should be placed, in order to prevent the formation of an electric current through the lever C and rail A. In place of the plate *g* the plate *d* may be the circuit-closing plate, and the conductor *h* may be partly formed by the frame E.

We claim as our invention—

1. The combination of the rail A with the lever C, which is connected with the rail to be vibrated by the deflection and elevation of the same, substantially as herein shown and described.

2. The combination of the deflecting rail A, and of the lever C joined thereto, with the circuit-closing slide D, substantially as herein shown and described.

3. The sliding pin *b*, combined with the fric-

tion-block F and circuit-closing plate *g*, substantially as herein shown and described.

4. The split friction-block F, held to the rod *b* by the elastic ring *e*, substantially as herein shown and described.

5. The combination of the slide *b* and fixed plates *d* and *g* with the circuit-closing block F, which is moved by said slide, substantially as herein shown and described.

6. The combination of the pin *b* with the non-conducting lining *i* and supporting slide D, substantially as herein shown and described.

DAVID ROUSSEAU.
WILLIAM C. SMITH.

Witnesses:
ERNEST C. WEBB,
JAMES TURK.