(No Model.) 2 Sheets—Sheet 1.

J. L. POALK.

RAILWAY SIGNAL.

No. 249,669. Patented Nov. 15, 1881.

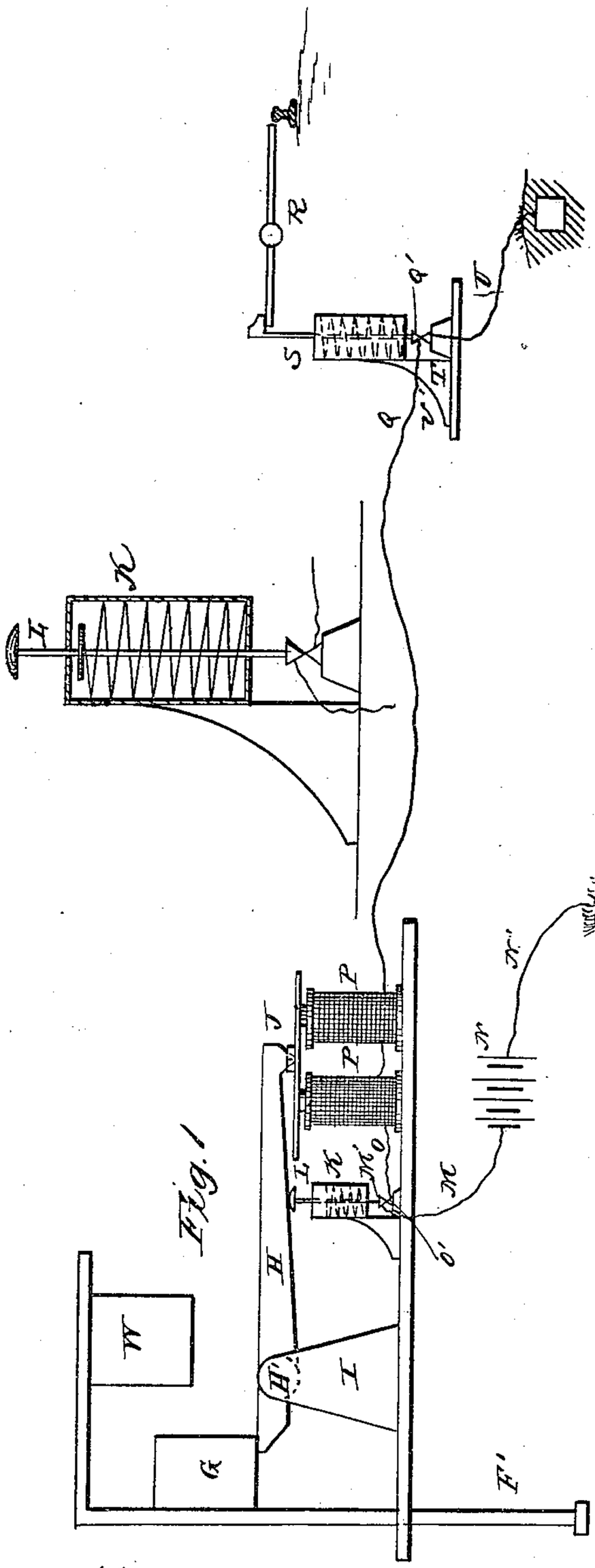

Fig. 1.

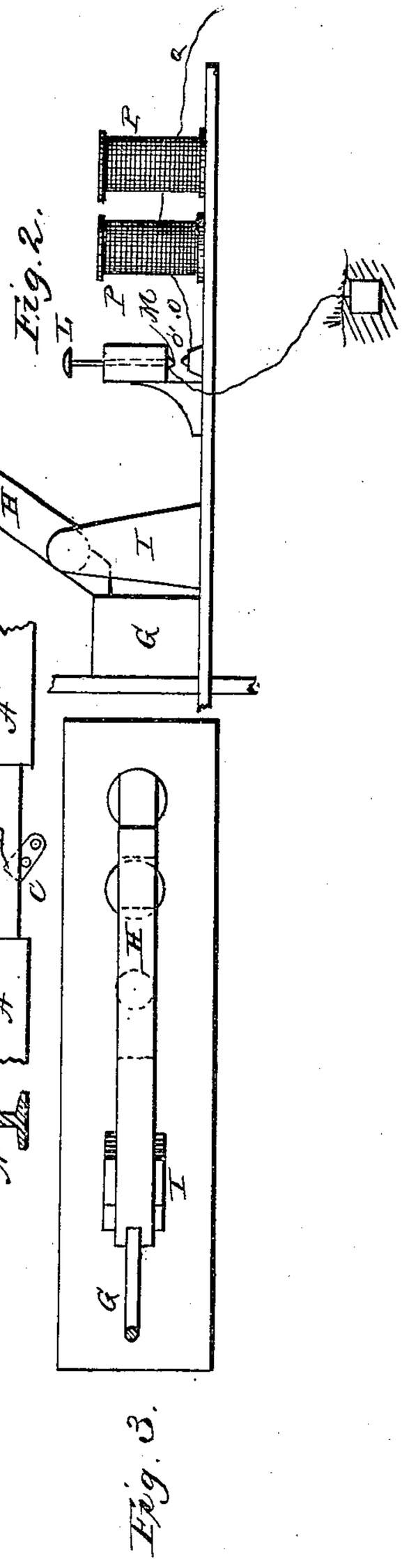

Fig. 2.

Fig. 4.

Fig. 3.

Fig. 5.

Witnesses.
F. L. Durand
J. J. McCarthy

Inventor.
J. Lane Poalk
By George E. Buckley
Attorney

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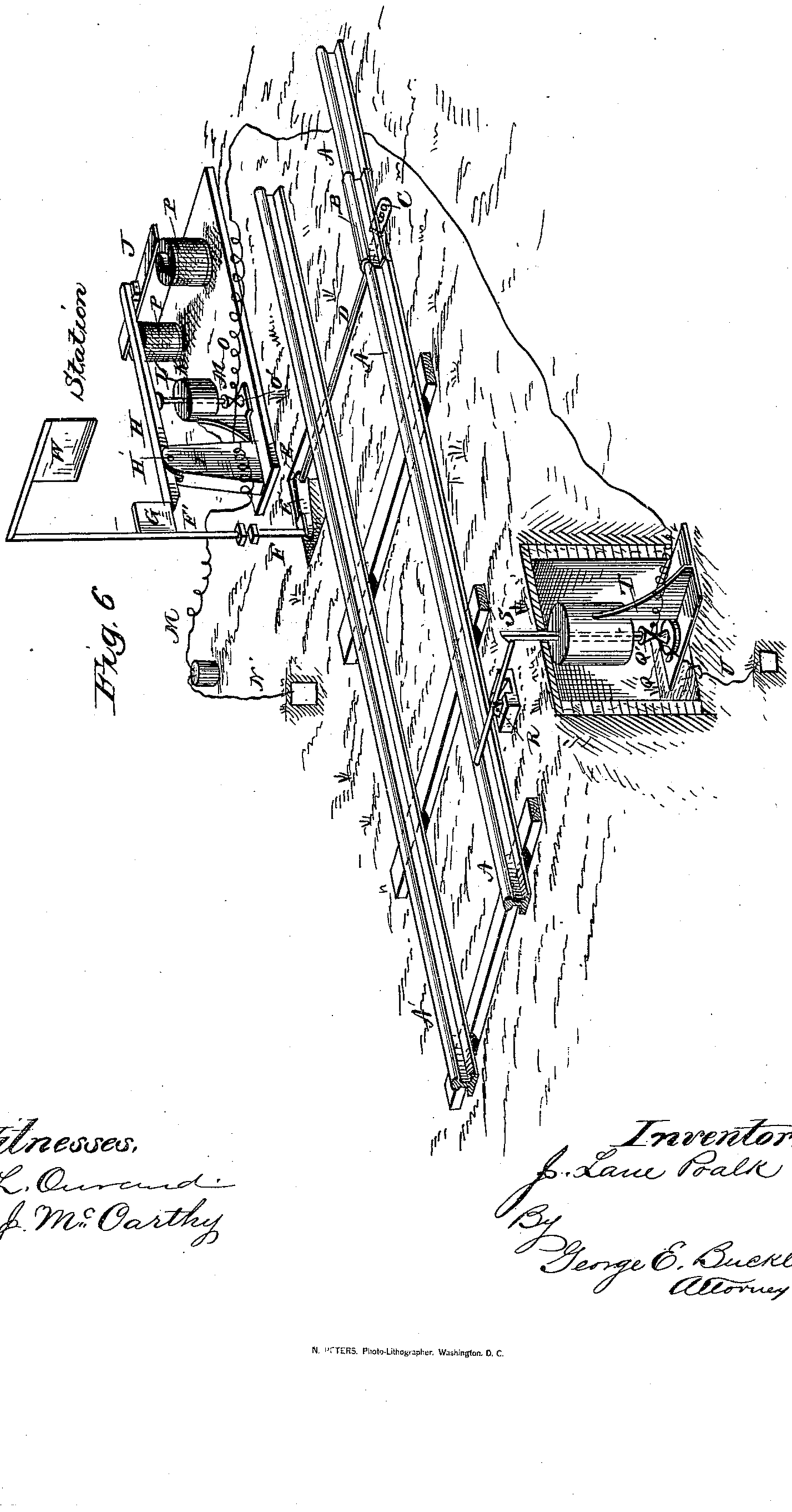

Fig. 6

Witnesses,
F. L. Ourand
J. J. McCarthy

Inventor.
J. Lane Poalk
By George E. Buckley
Attorney

UNITED STATES PATENT OFFICE.

J. LANE POALK, OF PHILADELPHIA, PENNSYLVANIA.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 249,669, dated November 15, 1881.

Application filed May 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, J. LANE POALK, of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Railroad-Signals; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part hereof.

The nature of my invention will be fully understood from the following specification and claim.

In the drawings, Figure 1 is an elevation of my device, showing the lever for completing the circuit thrown down; Fig. 2, a similar detached view, showing the lever thrown up; Fig. 3, a top view of the signal device; Fig. 4, a view of the track, showing the mechanism for operating the devices for elevating the signal; Fig. 5, a detached view of the rock-shaft, through the medium of which the signal mechanism is operated to elevate the signal. Fig. 6 is a perspective view, showing all the parts composing my signal arranged in relation to a section of railway.

A is the rail; B, a short movable section of the rail adapted to be depressed against the bed of the road beneath by the weight of the train passing over it and to spring up into its original position after the train has passed; C, a short friction-lever under the flange of section B, the upper end of which is depressed by the downward motion of section B; D, a rod set rigidly in the lower end of lever C at one end, the other end being set rigidly in the hub or inner end of lever E′, as shown at E, Fig. 1.

E′ is a lever, one end of which rests under the foot of the bar or standard F.

F F′ are disconnected sections of one standard, which co-operate to operate the electrical part of my device.

G is a lug on standard F′ to depress the heel of lever H.

H is a lever hinged at the point H′ to a support, I. The other end, J, is provided with an armature which operates in connection with the electro-magnet P P.

K is a cylindrical box, through which passes the pin L. This box contains a spiral spring to throw the pin up into position after it has been relieved by the elevation of lever H.

M is the wire passing from the point M′ to the battery N; O, a wire passing from the point O′ to the magnet P P; Q, a wire leading from coils of the magnet P to the circuit-breaker Q′ U′ at another station.

R is a lever to be depressed by the weight of a train operating upon it.

S is a pin or rod passing down through a cylindrical box like that shown in Fig. 1, the spiral spring in which box, however, operates to depress the pin S instead of to raise it. This pin S has a lug upon its upper extremity which engages upon the heel of pivoted lever R, whereby, when the outer end of lever R is depressed, (its inner end being thereby raised,) the lug is raised and the pin S is thus elevated.

T is a support for the cylinder containing the pin. This pin terminates below in a point, Q′, which is directly above a corresponding point, U′.

Q is the line-wire connecting the device at the two stations.

U is a ground-wire. The battery N has also a ground-wire, N′.

W is the signal, which is raised and lowered by the upward or downward movement of the standard F′.

When the points Q′ U′ are separated the circuit is broken between wires U and Q, and when the points M′ and O′ are brought into contact a circuit is made from the battery N through the wires M O through the magnets P P to the wire Q.

The operation is as follows: The signal apparatus is set at any given point of the railroad-track beyond which it is desired to know when a train passes. The circuit-breaker Q′ U′ is set at a station beyond which, when the train has passed, it is desired to reverse the action of the signal apparatus. The apparatus is intended to apprise the engineer of one train which is following another when the first train has passed beyond a certain point some distance in advance. Suppose that the signal W is lowered by means of the section of standard F′ being down—that is, its bottom resting on the top of the section F—the lever H will then be in the position shown in Fig. 2. When a train comes by this signal-station it will, by depressing the short section of track B, turn lever C and throw up the lever E′, thus forcing up the section F of the signal-standard

against the lower end of section F′. Section F′ is thus thrown up, raising the lug G high enough to relieve the heel of lever H, and allow this lever to fall down into the position shown in Fig. 1, so that its armature J strikes the post of the magnet P P. The fall of lever H at the same time forces down the pin L until the points M′ O′ meet. This completes the electrical circuit from the battery N to the magnet, and magnetic attraction holds the armature J down against the post of the magnet. The heel of the lever H is thus held up, and, consequently, the signal W is held up also by the pressure of said heel against lug G. The train then passes by, and the signal is still held up. Finally, the train, when it reaches the point in the road where the circuit-breaker is located, strikes a movable section of track similar to B, Fig. 4, and depresses the end of lever R. All the points, M′, O′, Q′, and U′, are insulated, and the points Q′ U′ are always held in contact, so as to keep up a ground-connection through the wire U, excepting when they are thrown apart by the raising of pin S. When, as mentioned above, the passing train lowers the long end of lever R, the pin S is raised, the circuit between points Q′ U′ is broken. This short break destroys the current passing through the magnet, and the armature of lever H being suddenly released, the lever H rises and drops its heel under the weight of lug G and the signal and standard F′, and the section of standard F′ sinks down to its original position, (see Fig. 2,) and thus lowers the signal. The engineer of the next train which comes along is thus apprised of the fact that the train next preceding his has passed the point of road where the circuit-breaker Q′ U′ is located.

The operation is repeated at the passage of every train.

The combined weights of the standard F′, lug G, signal W, and of the heel of lever H exerted on one side of the pivotal point of lever H is but a trifle greater than the weight of lever H upon the other side of said point, whereby when the armature J is touching the magnetized post of P P the attraction is sufficient to hold it there so long as the electrical current continues to overcome the slight difference in weight.

The apparatus shown in Fig. 6, instead of being automatic, may be operated by a station-master to break the circuit at the passage of a train.

Devices other than that shown for operating the lever E′ from the rail will suggest themselves to the mind of any skilled mechanic, and I do not limit myself to that shown. I shall call the pin L and the points M′ O′ and the pin S and its points Q′ U′ "brakes" in my claim.

What I claim as new is—

In a railway-signal, the vertically-movable standard, the lug, and the signal thereon, the vertically-movable section F, its lifting-levers and rock-shaft, and the actuating mechanism B, in combination with the lever H, its armature, the electro-magnet, the circuit-breaker arranged beneath the long arm of lever H, and a circuit-breaker located at a distant point of the road and operated to release lever H and allow the signal to drop, substantially as described.

J. LANE POALK.

Witnesses:

GEORGE E. BUCKLEY,

WM. H. CARSON.