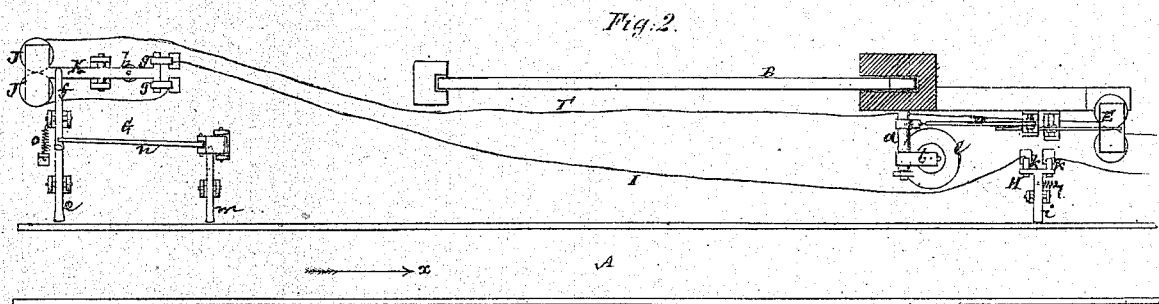
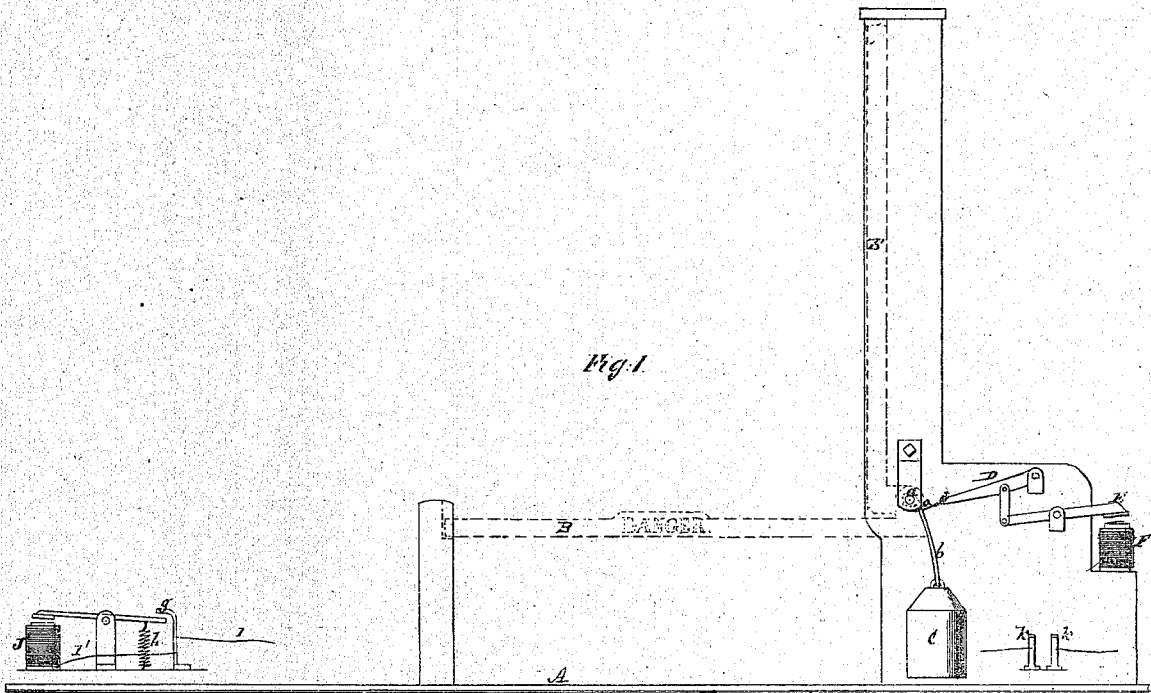


W. ROBINSON.  
 ELECTROMAGNETIC GATE AND SIGNAL APPARATUS FOR RAILROADS.  
 No. 105,493. Patented July 19, 1870.



Witnesses:  
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# United States Patent Office.

WILLIAM ROBINSON, OF BROOKLYN, NEW YORK.

Letters Patent No. 105,493, dated July 19, 1870.

## IMPROVEMENT IN ELECTRO-MAGNETIC GATE AND SIGNAL APPARATUS FOR RAILROADS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, WILLIAM ROBINSON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Electro-Magnetic Gate and Signal Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a view in elevation of an electro-magnetic gate and signal apparatus, constructed in accordance with my improvement as applied to a line of railroad;

Figure 2, a plan of the same; and

Figure 3, a modification of the signal used.

Similar letters of reference indicate corresponding parts.

My invention has for its object the operation automatically, by the passage or approach of a vehicle, of a gate or signal, which may either be visible or audible, and causing the same to cease or readjust themselves out of position after the vehicle has passed by means of circuit breakers and closers connected with a battery or batteries.

Such electro-magnetic gate or signal apparatus it is mainly designed to use at railroad crossings, or elsewhere, on a line of railroad, but it may be used wherever the same is found suitable.

The improvement embraces novel means or combinations and arrangement of devices for accomplishing the results specified, including peculiarities of construction in certain of the devices, whereby a uniform and easy action is obtained, and the necessary power of the magnets and batteries reduced.

Referring to the accompanying drawing—

A represents the track of a line of railroad, and B, a gate or signal, which may be placed at a crossing thereon, or elsewhere.

In further description, it will suffice to refer to B as a gate.

This gate is fastened to a pivot-pin, *a*, to which is secured a projection or lever, *b*, that serves to carry a partially balancing weight, *C*.

The lever *b* is so slaped or arranged, relatively to the gate, that, as the latter descends and its outer end is carried away from the center of gravity, the weight is thrown away from the center of the pivot in the opposite direction, and the counterbalancing action of its weight thus made uniform, or nearly so, throughout the throw of the gate, so that the gate descends with a steady and uniform motion.

The lever *D*, which actuates the gate by the approach of the armature *E* to the magnets *F*, is equivalently connected by lever *e* and cord or chain *d* with the pivot *a*, so that the leverage lift by the armature diminishes as the gate completes its descent, the chain

then working closer to the pivot as the armature approaches the magnets, thereby contributing to uniformity in the action, and whereby less powerful magnets and batteries suffice.

*G* is a circuit-closer, and

*H*, a circuit-breaker, arranged at a suitable distance apart, in contiguity to the rails, for the approaching or passing train to operate the signal or gate.

*I* and *I'* are the wires from the battery, and which connect with the magnets *F* and *J*.

Supposing the train to be traveling in direction of the arrow *x*, it is caused to strike a lever, *e*, which, operating on a secondary lever, *f*, operates the lever armature *K*, to bring it in contact with the magnets *J*, and by contact at its opposite end with points *g*, closing the circuit.

In thus closing the circuit, the gate *B* is shut down by the action of the magnets *F*, on the armature *E*, and the gate remains shut till the circuit is broken by the passing train, by the armature *K* remaining in contact with the magnets *J*.

When the circuit is broken, a spring, *h*, draws the armature *K* away from the magnets *J*, and the circuit is left or kept open.

The lever *i* of the circuit-breaker is kept in contact with points *k*, to insure the circuit being closed whenever the armature *K* is in contact with the magnets *J*.

This may be effected by a spring, *l*, applied to said lever.

To break the circuit and raise the gate or remove or change the signal, the train having passed the gate or signal, presses on the lever *i*, and relieves it from contact with the points *k*.

This breaking of the circuit by the action of the lever *i* is only momentary, but the instant it occurs the spring *h* draws the armature *K* from the magnets *J*, thereby leaving the circuit open for the next train, and giving time for the automatic raising of the gate by the action of its weight, the circuit remaining broken only at the points *g*.

When the train is moving in an opposite direction to the arrow *x*, it is made to first act upon a lever, *m*, connected with the circuit-closer *G*, which lever operates upon a rod, *n*, to throw the lever *f* out of gear with the lever *e*, so that the train in passing the lever *e*, will fail, when depressing it, to close the circuit by the absence of action on the armature *K*. This is necessary when the train has passed the gate and come to the circuit-closer beyond.

The lever *f* is returned to its normal position or connection with the lever *e* by a spring, *o*.

Instead of the gate or signal *B*, a colored, disk or signal, *B'*, capable of illumination, if desired, may be used, and the same be similarly hung and operated as the gate *B*.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The magnet *J*, forming a part of the circuit, so arranged, with reference to an armature and circuit-closer, as to continue the action of said circuit-closer, substantially as herein described.

2. The combination of the circuit-closer *G* with the circuit-breaker *H* and gate or signal, substantially as described, and whereby, on the opening of the circuit by the circuit-breaker, the circuit-closer is released and made to keep open the circuit till it is again closed automatically by the circuit-closer, essentially as herein set forth.

3. The lever *f* of the circuit-closer, so hung or arranged as to be thrown out of working position by a vehicle or train passing in the one direction and afterward returning to its normal position for control of the armature and circuit-closer by a vehicle or train

moving in the opposite direction, substantially as herein set forth.

4. The combination of the levers *e*, *f*, the spring *o*, the rod *n*, and the lever *m*, with the armature *K* of the circuit-closer.

5. The arrangement, relatively to the gate or signal *B* and its pivot *a*, of the weight *C* and projection or lever *b*, substantially as and for the purpose herein set forth.

6. The arrangement, relatively to the gate or signal *B* and its axis *a*, of the projection or lever *c*, with its link, chain, or cord *d*, and lever *D*, in connection with the armature *E*, substantially as and for the purpose or purposes herein described.

WM. ROBINSON.

Witnesses:

JAS. ROBINSON,

WM. J. INNIS.