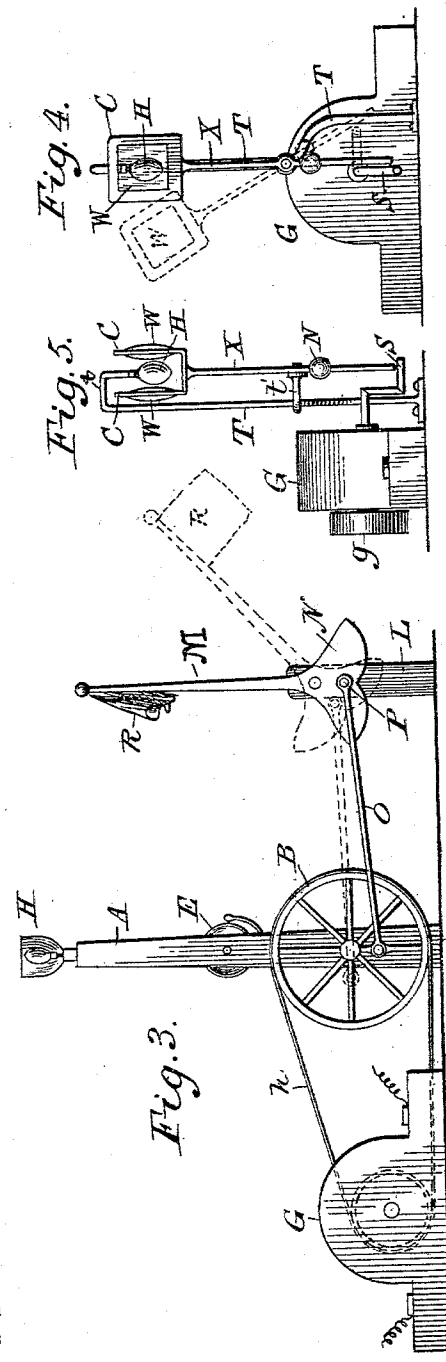
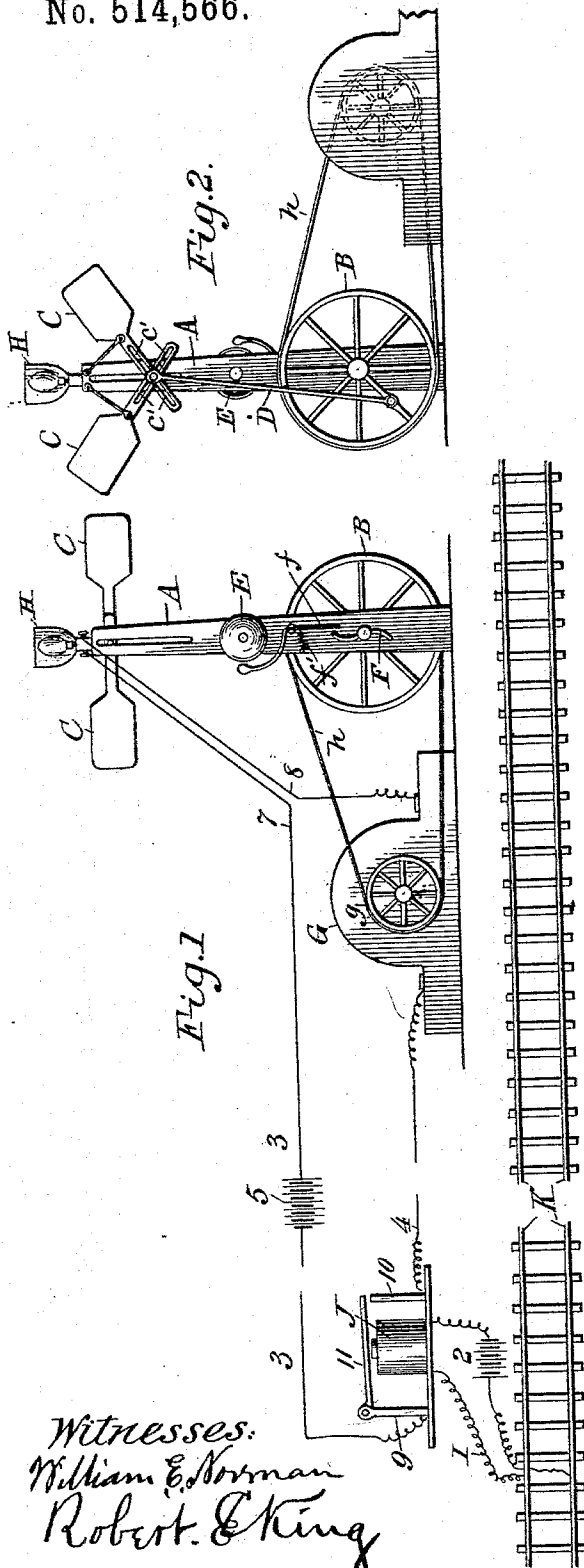


(No Model.)

M. J. O'SULLIVAN.
ELECTRIC RAILWAY CROSSING SIGNAL.

No. 514,566.

Patented Feb. 13, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

MICHAEL J. O'SULLIVAN, OF BALTIMORE, MARYLAND.

ELECTRIC-RAILWAY-CROSSING SIGNAL.

SPECIFICATION forming part of Letters Patent No. 514,566, dated February 13, 1894.

Application filed May 22, 1893. Serial No. 475,185. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. O'SULLIVAN, of Baltimore, Maryland, have invented a new and useful Improvement in Railway-Signals; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a device whereby when a train is approaching a railway or wagon road crossing a signal such as a waving flag or arms and an electric light is displayed and an alarm sounded at said crossing and the signal continues so long as an electric circuit remains closed. I accomplish this object by mechanism illustrated in accompanying drawings—in which—

Figure 1 represents a perspective view of my invention complete; Fig. 2 an opposite side of post and arms; Fig. 3 a view of a different form of waving signal. Figs. 4 and 5 are still another modification.

The signal system consists of mainly a post A. upon which is pivoted a wheel B at its lower end. At its upper end is pivoted paddles C C as shown in Figs. 1 and 2.

D is a rod pivotally attached at its upper end to the arms of the paddles C C and allowed to play in slots *c' c'*. On this post opposite from the side upon which the wheel is secured, is a bell E.

F is a pawl secured to the axis of the wheel B.

f is the shank of the bell clapper acted upon by the pawl F and spring *f'* in usual manner. G is an electric motor and H is an electric lamp.

J, is an electro magnet. Passing from magnet J to the rails K of a railroad track which are properly insulated is an electric circuit 1 and local battery 2 and from the post 9 of magnet J runs a wire 3 to a storage battery 5, thence to the motor G. A branch 7—8 runs from circuit 3 to the light H and a circuit 4 runs from said motor back to magnet J and secured thereto by post 10.

The operation is as follows: When a train is approaching a crossing and about two thousand feet therefrom it passes upon a section of track of which the rails thereof are electrically

insulated and connected from this point to said crossing. In passing magnet J at this point the electric circuit 1 the terminals of which are in electrical contact with the opposite track rails is closed through the wheels and axles of the train. This energizes magnet J which attracts armature 11 which in turn contacts with post 10. This closes circuit 3 and 4 and the battery 5 (preferably a storage battery) being of sufficient power causes the light H to become incandescent and motor G to operate. A pulley *g* is secured to the armature of said motor, which upon being revolved causes wheel B to revolve through belt *h*. Upon the revolution of wheel B pawl F revolves which action rings the bell E by striking the clapper extension *f*. At the same time the rod D is caused to reciprocate vertically and this in turn causes the paddles C to swing vertically thus giving prolonged warning of the approach of a train. It is understood of course that after the train shall have passed off of the rails of the track that are insulated and electrically connected the local circuit is broken which de-energizes magnet J. The armature H therefore rises breaking the circuit 3—4 which causes the light to become extinguished, the motor to stop and the signal to become at rest.

In Fig. 3 I have shown a modification of the waving mechanism. Instead of the paddles C I provide an additional post L. Pivoted to the upper end of this post is a flag pole M, weighted at N, pivoted at P on weight N is a rod O which at its other end is secured to one of the spokes of wheel B. When said wheel B revolves by action of motor G it causes rod O to reciprocate horizontally thereby causing arm M and weight N to swing to and fro and wave the flag R.

In Figs. 4 and 5 I show a further modification which is used principally for night service. It consists of a post T with horizontal arms *t t'* extending from the upper and lower ends respectively. From the remote end of arm *t* the electric lamp H is suspended. Pivoted to the end of the arm *t'* is a rod X. At the upper end of this rod are secured rigidly two vertical paddles C, spaced sufficiently to allow lamp H to rest normally therebetween. In each paddle is placed a colored glass W near the lower end a weight N. The manner

of producing an oscillating motion given the paddles differs somewhat from that shown in Fig. 2 in that a crank S is secured to the armature of the motor G in lieu of a pulley wheel, as the motor is operated the crank turns, the end of rod X beneath weight N is struck thereby, thus causing the paddles C to swing to and fro and thereby displaying alternately a red and white light. The whole mechanism above described is housed in a suitable box at the crossing but to enable a clear understanding it is here shown in separate parts. The only parts being exposed outside the box being the paddles or flag, the lamp and the bell.

The motor may be wound for slow speed. I do not wish to limit myself to any particular local circuit closing mechanism nor to battery lamp or motor; the form here shown being preferred.

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

1. A railway crossing signal comprising suitable track connections and a circuit containing a motor, a post or upright to which is connected a lamp, a gong and a vibratory arm or arms, mechanical connections between the motor and the arm and bell whereby the arm and bell are operated to give the danger signal both by sight and sound and the circuit connections with track being such that the

signals will be operated continuously while the train is on the section.

2. In a railway crossing signal a supporting post having a lamp at the upper end thereof, arms or paddles connected thereto a gong secured to such support, two circuits, one containing therein a relay battery and track connections and the other a suitable motor for operating such arms or paddles and bell and suitable connections whereby when the train is in the section where the crossing signal is located the arms will be vibrated and the gong sounded continuously substantially as described.

3. A railway crossing signal consisting of a local circuit adapted to be closed by the passage of a train, a second circuit controlled by the first circuit and containing a suitable motor mechanism, a vibrating signal arm operated by such motor mechanism, a bell or alarm mounted on the support to which the signal arm is attached, a lamp mounted on such support and suitable connections whereby the signal arm is kept continuously vibrating and the bell kept ringing so long as the train is on the protected section of the track, substantially as described.

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