W. C. McREA

Railroad Drawbridge and Switch Safety Telegraph.

No. 11,763. Patented Oct. 3, 1854.

Fig. 1.

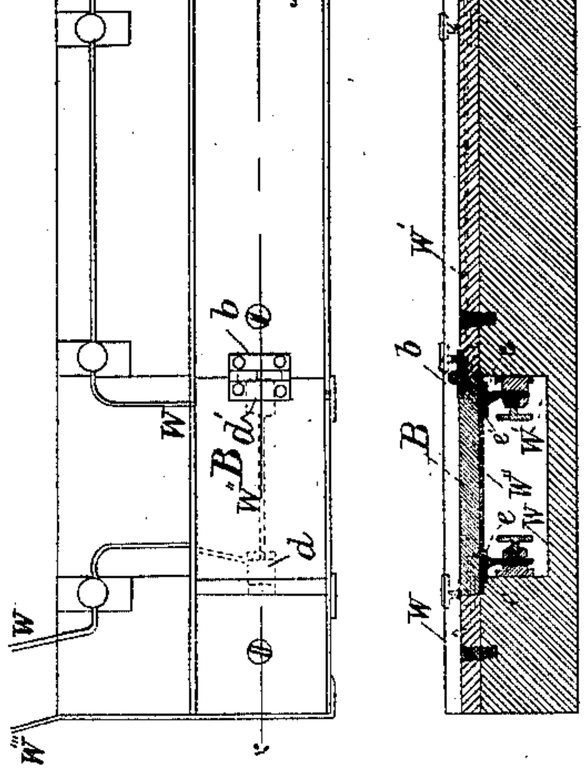

Fig. 2.

Fig. 3.

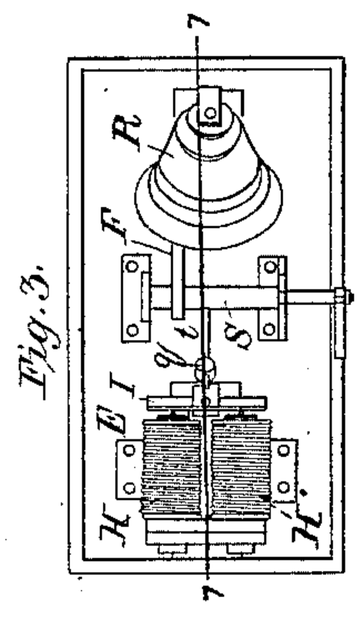

Fig. 4.

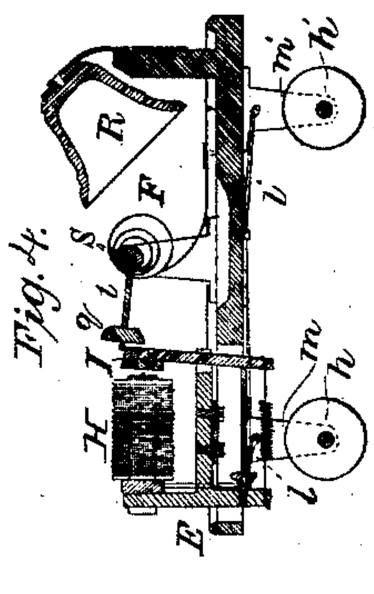

Fig. 5.

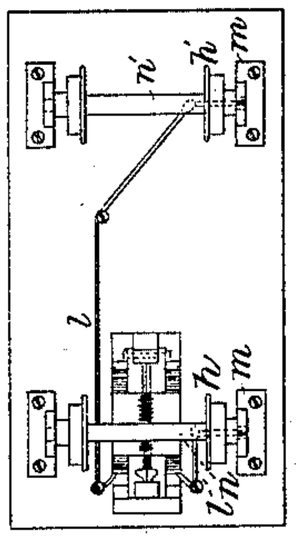

Fig. 6.

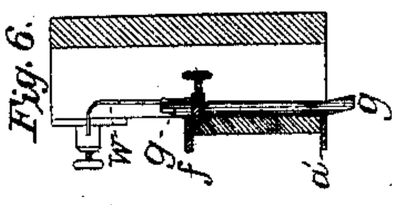

Fig. 7.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM C. McREA, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RAILROAD DRAW-BRIDGE AND SWITCH TELEGRAPHS.

Specification forming part of Letters Patent No. **11,763,** dated October 3, 1854.

To all whom it may concern:

Be it known that I, WILLIAM C. McREA, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Railroad Draw-Bridge and Switch Safety-Telegraph; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming part of this specication, in which—

Figure 1 is a plan of the draw, insulated rail, and main-wire connection. Fig. 2 is a vertical section on line *x x* of Fig. 1. Fig. 3 is a plan of car carrying electro-magnet and alarm apparatus. Fig. 4 is a vertical section of same on line *y y*, Fig. 3. Fig. 5 is a view of car inverted, showing connection of helices with the wheels. Fig. 6 is a vertical section on line *z z* of Fig. 1. Fig. 7 is a plan of car, road, and draw, and connection of same with the battery.

Similar letters of reference denote the same parts.

The nature of my invention consists in the arrangement of a galvanic circuit in such a manner that the engineer, conductor, or passengers of a train of railroad-cars may, upon the approach of the train to a draw-bridge or switch, be advised with certainty of the position of the draw-bridge or switch in time to prevent all danger in case of said draw or switch being so placed that the train cannot with safety pass, the method employed being to connect one pole of a galvanic battery by a wire with a portion of the railroad-track, which is insulated by breaking the continuity of the rails, and supporting the same between the break on some non-conducting substance, as will be hereinafter set forth, while the wire from the other pole connects with the ground, the connection of the main wire being kept up and broken by the closing and opening of the bridge, as will hereinafter be described. The signal is given by the completion of the circuit by the passing of wheels connected with an electro-magnet on the car over the insulated portion of the track.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the drawings, A represents a portion of a railroad-track, *a* and *a'* being the rails of the same.

B represents a draw movable about the hinge *b*.

C represents a galvanic battery situated at any suitable position in the vicinity of the road. From the pole P runs a wire, represented by W. At the abutment nearest the battery this wire W is connected with the metallic plate *c*, by being secured in contact with the metallic support *e* of said plate. The same connection is maintained at the opposite abutment, between the wire W′ and the support *e′* of the plate *c′*.

On the under side of the draw is fastened the wire W″, its extremities being held by the metallic plates *d* and *d′*, Fig. 1, which, when the draw is closed, rest upon the plates *c c′*, held by the supports *e e′*, thus causing a continued metallic connection between the pole P of the battery and wire W′.

At a suitable distance from the draw is the insulated rail *f*, with which the W′ is connected. This section of rail *f* is insulated by breaking the continuity of the rail *a*, of which it forms a part, and by supporting the said section *f* on some non-conducting substance, represented by *g*.

There are various methods of insulation which may be rendered available in practice, but which it will be unnecessary to describe here.

When the draw is closed a metallic connection is formed between the battery and the insulated section of rail *f* through the wires W W′ W″, these connections forming what is termed the "main" wire.

The wire W‴ from the pole P′ of the battery will in practice run to the ground, while wires run into the ground from the rail *a*, a short distance from the breaks *h h′*, thus using the earth as one of the conductors. In the drawings the wire W‴ is connected with the rail *a′*, so that the galvanic current flowing from one pole of the battery will only require a conductor between the insulated rail *f* and the other portion of the track to render the circuit complete and permit the flow of the current to the opposite pole. This is accomplished as follows: Upon the locomotive or other car I place an electro-magnet, E, the helices H H′ being connected by wires *l l′*, Figs. 4 and 5, with the metallic cheeks *m m′*, which contain the axles *n n′* of the wheels *p p′*. Near the electro-magnet is a bell, R, in front

of which is one shaft *s*, its arm *t* carrying the hammer *q*, which, when held as shown in the drawings and suddenly released, will, by the action of the spring F, strike the bell and give a signal. This arrangement may be varied in its details in many respects, but its main features will always remain the same.

The operation of the safety-telegraph is as follows: During the running of the train the arm *t* of the shaft *s* rests on the armature I of the electro-magnet, and, supposing the train to be moving toward the bridge, as soon as the wheel *p* rests on the insulated section of rail *f* the circuit will be completed, because of the connection between the insulated rail and the other portion of the track through the wheels *p p'* and the electro-magnet E, and the armature I will be drawn to the magnet. This moving of the armature I to the magnet releases the hammer *q*, which, by the action of the spring F, violently strikes the bell R and gives the signal that the draw is closed and the passage therefore safe.

Should the draw be open when the train approaches the connection of the main wire will be broken, as the plates *c d* and *c' d'* will not be in contact. The wheels *p p'* passing over the rail *f* cannot, therefore, complete a circuit, consequently no movement of the armature I can take place and the bell will remain mute, by which all on the train may know with certainty that the draw is open, and that, too, in time to prevent all danger.

By suitable modifications this telegraph can be made to signalize the condition of switches, and also to indicate the presence of trains at certain positions of the road, for the purpose of preventing collisions. The details of these modifications I will not describe here, as they must be varied to suit locality, when put into practical operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The giving of a signal on a car or locomotive by the arrangement of an electro-magnet upon said car or locomotive in such a manner as to constitute part of a galvanic circuit when the wheels of the car or locomotive touch an insulated portion of the track while the train is in motion, thereby causing the electro-magnet to be acted upon by a distant battery for giving said signal, substantially as and for the purposes set forth.

2. Attaching the wires of a galvanic circuit at railroad draw-bridges or switches in such a manner that the opening of the draw or changing of the switch may separate a part of the wire of said circuit, and closing the draw or replacing the switch shall again complete the connection of that part of the wire which was so separated, when used in connection with the before-specified arrangement for signalizing on the car or locomotive when in motion the completion of the circuit, substantially as and for the purposes specified.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

WM. C. McREA.

Witnesses:
WARNER C. JONES,
EDW. MASON.