William Robenson's Impt in Electro Magnetic Signalling Apparatus for Switches &c on Railroads.

108633

PATENTED OCT 25 1870

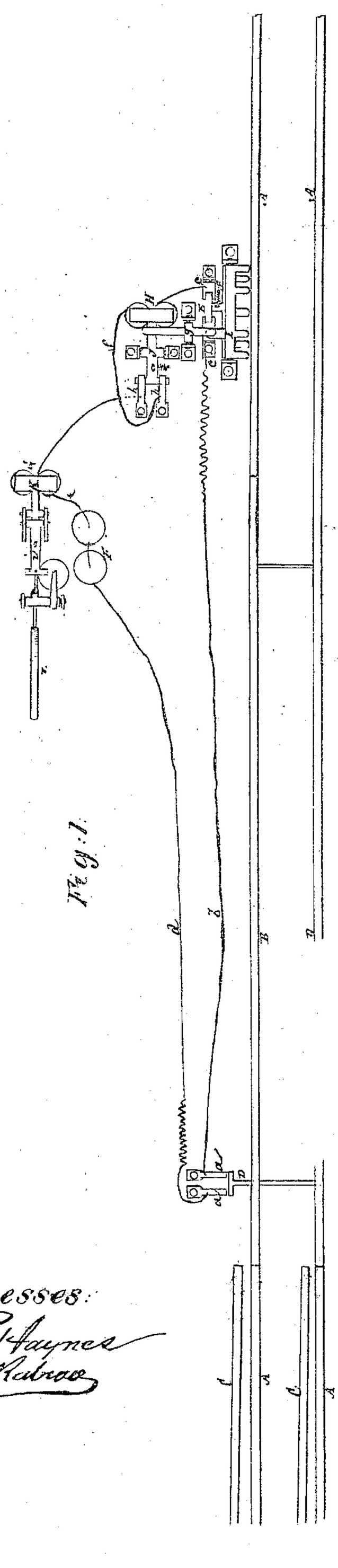

Fig 1st

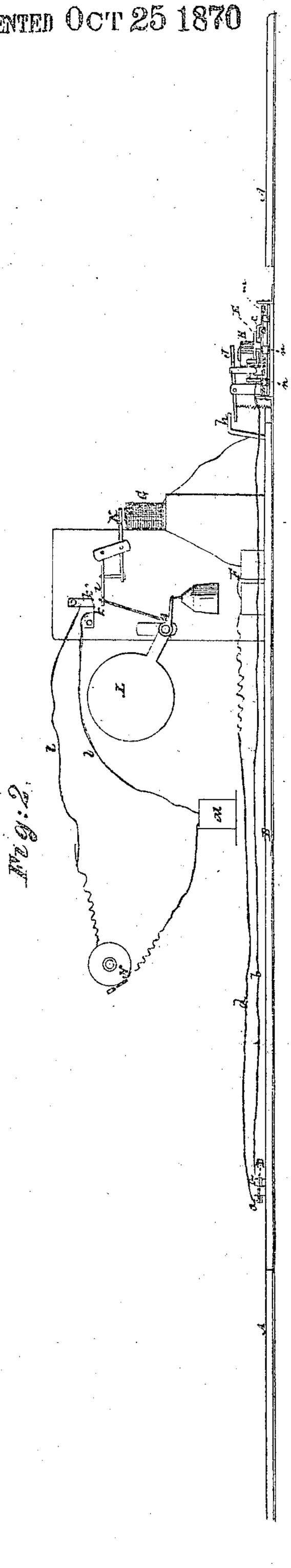

Fig 2nd

Witnesses:
Fred. Haynes
R E Rabroo

Inventor
William Robenson

United States Patent Office.

WILLIAM ROBINSON, OF BROOKLYN, NEW YORK.

Letters Patent No. 108,633, dated October 25, 1870.

IMPROVEMENT IN ELECTRO-MAGNETIC RAILROAD-SIGNALS.

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 the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Electro-magnetic Signaling-Apparatus for Switches or Draw-Bridges on Railroads, 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 plan, in part, of my improved apparatus as applied to a switch of a railroad-track; and

Figure 2 an elevation of the same.

Similar letters of reference indicate corresponding parts.

My invention relates to electro-magnetic apparatus for signaling by the train, while in motion, breaks in the main track on a line of railroad, as by the displacement of a switch or opening of a draw-bridge, or through the operation of adjuncts which are employed in connection with these devices, to effect change in their position. To this end the invention includes an independent circuit-breaker and closer, and additional circuit for sounding a bell or alarm, audible at the station, and displaying a signal visible to the engine-driver in advance, by the displacement of the switch or draw-bridge, whenever the engine or train operates a main or primary circuit-breaker and closer, but which is inoperative when the switch or draw-bridge is displaced except on approach of the train or passage of it over the primary circuit-closer, thus dispensing with waste of the chemicals used in the battery.

The invention also includes an irregular spacing of the circuit-breaker or breakers, for operation in connection either with an irregularly spaced or ordinary circuit-closer, to indicate by the intermissions in the sounding of the alarm the direction in which the train is traveling.

Referring to the accompanying drawing, which shows the invention as applied in connection with a switch on a line of railroad—

A A represent the rails of the main track of a line of railroad, or a single line of main rails; and

B B, a switch, connecting, when desired, with rails C C, of a siding.

Attached to the switch B B is an arm or lever, D, so arranged that when the switch is thrown off the main line of rails it closes the connection, as by points or parts *a a*, which connect, the one by a wire, *b*, with one fixed arm or point, *c*, under control of a main circuit-breaker, E, while the other part, *a*, is connected by a wire, *d*, with a battery F, that is connected by wires, *e f*, with magnets, G H, and with the other arm or point *c*, under control of the main circuit-breaker E.

This breaker E is operated by the train in advance of the switch, and is kept closed on the arms or points *c c* by a spring, *f*.

I is a main circuit-closer, also operated by the train when in motion to close the circuit, and serving, through a lever, *g*, to bring down an armature, J, in contact with the magnets H, and with the points *h h*, with which the wires *e f* connect.

K is an armature operated by the magnets G, and serving to operate a lever, *i*, which actuates a signal, L, visible to the engineer of the train as he passes the circuit-breaker and closer E and I; also, which closes on points *k k* of an independent circuit formed in part by wires *l l* and a battery, M, and which has connected with it a gong or bell, N, at the nearest station to the switch.

By this arrangement or combination of devices, although the switch B B, when thrown off the main line, closes the connection at *a a*, the circuit is still open, but ready to be closed by the train, in passing, pressing on the circuit-closer I.

This closing of the circuit gives an alarm by the gong or bell at N at the station, and exposes the signal L ahead of the train, visible to the engineer and warning him of the displacement. Thus the displacement of the switch does not operate the bell or signal excepting when a train is approaching, thereby preventing the waste of chemicals, and affording positive warning only when a train is approaching danger.

While the arm or lever D, in the displacement of the switch, closes the connection at *a a*, it is also, or more properly speaking, a circuit-breaker, inasmuch as although the circuit-closer I is operated to close the circuit by an approaching train, the circuit is broken by the replacement of the switch on to the main line.

The gong or bell N is rung by the alternate breaking and closing of the circuit, or by an attachment from the train passing over keys as projections *m* and *n* on the circuit-breaker and circuit-closer I. Said gong is designed to produce a continuous alarm, and is so constructed that the approach of the hammer to the bell breaks the circuit. This break would also cause a break at the circuit-closer I, if in the same circuit; hence the necessity of a secondary circuit which avoids the breaking of the primary circuit while the bell is kept ringing.

The keys or projections *m* on the circuit-breaker, and also, preferably, the keys or projections *n* on the circuit-closer, are irregularly spaced, whereby the sounding of the alarm may be made by its intermis-

sions, to indicate at the station the direction in which the train is moving, or otherwise convey useful intelligence.

Either one or two bells may be used, the one a gong for giving a general sound, and the other serving to ring telegraphic signals to indicate location and direction of the train; as for instance, to make known on which side of the switch or draw-bridge the train is.

To give location and direction, a simple circuit-closer, irregularly spaced, and without a magnet excepting at the bell, may be used, without a circuit-breaker. Or a circuit-breaker alone, similarly spaced, or several circuit-breakers placed at irregular intervals, may be used in place of the combination of circuit-closing and breaking levers with irregularly spaced teats or keys, *m n*, as in the drawing.

Furthermore, the visible and audible signals may both be operated by one circuit, or an additional signal by an additional circuit. The additional circuit may be closed either by a magnet arranged for the special purpose, or by the magnet operating the primary signal, or by the magnet of the primary circuit-closer.

When a break occurs in the main line, after the train has passed and before it has reached the circuit-closer I, its operation on the circuit-closer and signals might give unnecessary alarm. This is obviated by placing the circuit-breaker E in combination with, or proximity to, the circuit-closer, and on the side away from the break in the main line, by which means the train passes from the break in the main line over the circuit-closer and breaker, leaving the circuit broken.

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

1. A circuit-closer arranged for operation by a moving train, in combination with a switch, draw-bridge, or device operating to break connection with the main track, and a signal or signals, substantially as and for the purpose or purposes herein described.

2. The circuit-breaker E, so arranged with reference to the circuit-closer I that a vehicle or train moving in one direction will leave the circuit closed, but moving in the other direction will leave the circuit broken, substantially as herein specified.

3. The combination with a switch or device operating to break connection with the main line of an independent circuit-closer and breaker, D, the points *a a* in the circuit, a circuit-closer and breaker, E and I, operated by the train when in motion, and arranged in advance of the switch, and visible and audible signals, or either, substantially as specified.

4. The combination of an additional circuit for operating the bell or alarm, or additional signal, with the primary circuit under control of the train, essentially as herein set forth.

5. The circuit-breaker and closer E and I, or either, provided with irregularly-spaced keys or projections, *m* and *n*, and arranged for operation substantially as and for the purposes herein described.

WM. ROBINSON.

Witnesses:
JOS. ROBINSON,
JAMES C. SCOTT.