

R. K. BOYLE.
Circuits for Railroad Signals.

No. 134,246.

Patented Dec. 24, 1872.

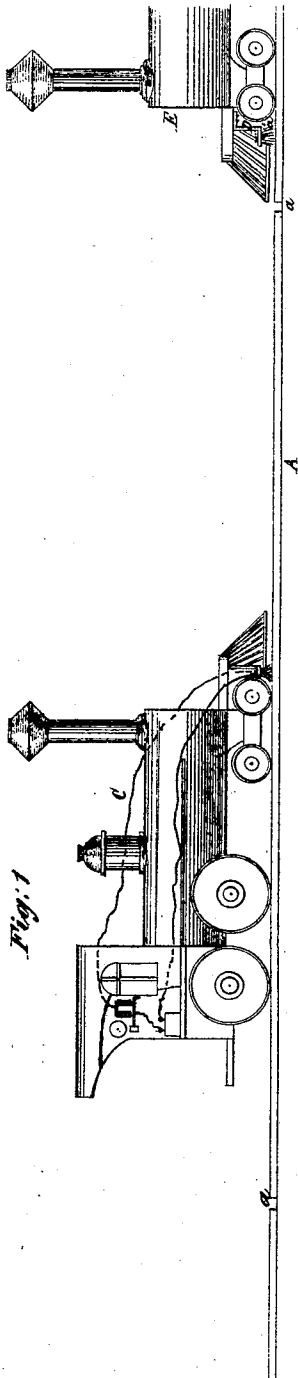


Fig. 1

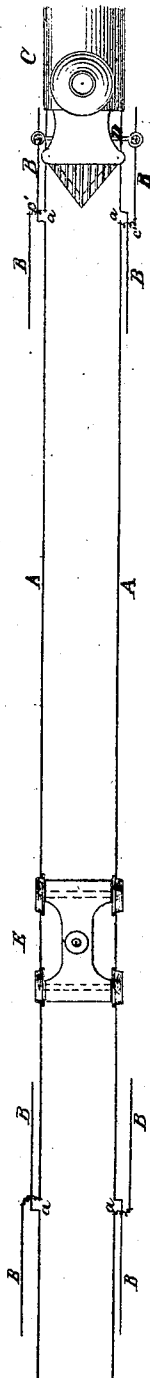


Fig. 2

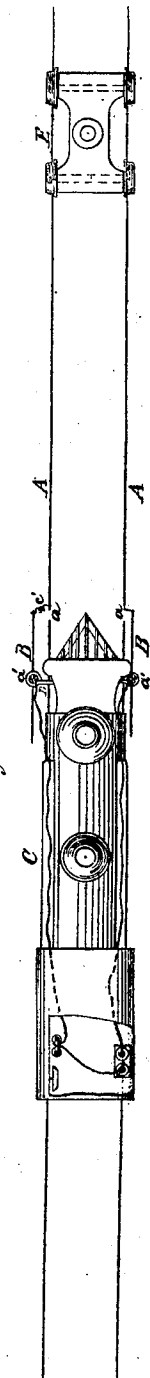


Fig. 3

Witnesses:
Fred Wagner
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UNITED STATES PATENT OFFICE.

ROBERT K. BOYLE, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CIRCUITS FOR RAILROAD-SIGNALS.

Specification forming part of Letters Patent No. 134,246, dated December 24, 1872.

To all whom it may concern:

Be it known that I, ROBERT K. BOYLE, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Means of Signaling between Railway Trains, of which the following is a specification:

The object of this invention is to enable the engineer upon a locomotive railway train to ascertain whether there be in advance upon a given adjacent portion of the same track another locomotive or train, or any portion of the latter. The invention relates to the combination of intermitted rail-sections with batteries, electro-magnets, and circuit-closers arranged upon and in connection with the locomotive, tender, or cars of the train, whereby, when the rails of the section in advance are connected by the wheels and axles of any railway vehicle, the circuit may be completed through such section by the circuit-closer provided as aforesaid, and caused to sound a signal on the train, thereby indicating to the engineer the presence on the section of a train, or some portion of a train. The improvement consists in so combining extra rails or extension devices with the intermitted track sections that the circuit through any of the sections will be sounded by the circuit-closer on the locomotive or train before such locomotive train has left the preceding section, the presence upon or absence from a given section of another train or part of a train being thus shown before the train carrying the circuit-closer has passed upon such section.

Figure 1 is a side view, representing a means of signaling between railway trains constructed and operating according to my invention. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the same, showing its application to one of the tracks of a double-track railway.

A A are the rails of an ordinary single-track railway, the track thus constituted being divided into sections of, say, one mile in length. Each section is separated from those immediately adjacent by a short space at *a*, or in any manner or by any means whereby, practically, the insulation of the different sections will be secured. The ends of the rails of each section are furnished with extra rails or extension devices B, which are simply short pieces of rails lapping past the intermittent space *a*, sepa-

rating the sections and parallel with the rails constituting the track. In order to enable the circuit-closer to operate, whether the train be going in one direction or the other, upon the extra rails of the section in advance, without interference with or from those of the section upon which the train carrying such circuit-closer is situated, the extra rails B are arranged as shown in Figs. 2 and 3—that is to say, of the two extra rails at each end of such section one is placed nearer the rail of the next section than is the other provided at the opposite side of the track. Those extra rails placed nearest the track may be formed in one with the rails of the section from which they project, but the others are connected with their rails by wires or connections *c'*. The locomotive C, or, when desired, the tender or any other portion of the train, carries an insulated cross-bar, D, which has at its ends downwardly-extending wire brushes *a'*, calculated, in the advance of the locomotive, to come upon or in contact with the extra rails B of the next section ahead of the track.

This device constitutes the circuit-closer, and is connected with an insulated battery or batteries and electro-magnets, provided upon the train in substantially the same manner as set forth in my application for patent on means of signaling railway trains, filed February 5, 1872, the apparatus thus provided being so arranged as to sound a bell or equivalent signaling device when the circuit is closed or completed, as follows: Assuming the locomotive or train provided with the circuit-closer and its adjuncts, as described, to be upon one track-section, and a car or locomotive, E, or a train or locomotive upon the section immediately in advance, as shown in the several figures, the rails of the advance section will be connected by the wheels and axles of the cars, tender, or locomotive, as the case may be, in such wise that capacity for electric communication is established between them. The advance of the locomotive carrying the circuit-closer brings the metallic brushes of the latter upon or in contact with the extra rails of the section ahead, and thereby completes the circuit and insures the sounding of the signal, thus indicating to the engineer or other person in charge the presence of a train, or portion of a train, upon the aforesaid section in advance.

It is, of course, obvious that if the said section were clear the circuit would fail to be completed by the contact of the circuit-closer with the extra.

The arrangement of the two extra rails at the end of each section at different distances from the adjacent rails of the section which they overlap provides for the passage of the circuit-closer past the extra rails of the section on which the train provided therewith may be, without contact with such extra rails of such section, (which would, of course, nullify the operation of the apparatus,) at the same time that due provision is made for their effectual contact with the extra rails of the next section, as previously explained. Of course, the circuit-closer is projected further at one side than at the other, to insure its requisite operation in connection with the extra rails. It is obvious that in running in a reverse direction the position of the circuit-closer will still correspond with that of the extra rails of the sections in advance, that one of the extra rails of the adjacent ends of adjoining sections

furthest from its parallel rail of the section being placed on the opposite side of the track from the corresponding one of the section adjoining, as will be more readily understood by reference to Figs. 2 and 3. Where a double track is used, and, presumably, trains run in one direction only upon each, only one end of each section need be furnished with the extra rails, as shown in Fig. 3, the advance section being, in such case, always in the same direction as concerns the movement of the train to be signaled.

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

In combination with the intermitted rail sections the extra rails or extension devices *d d*, extended from one intermitted section beyond the intermission between it and the next section, substantially as and for the purpose herein described.

R. K. BOYLE.

Witnesses:

HENRY T. BROWN,
FRED HAYNES.