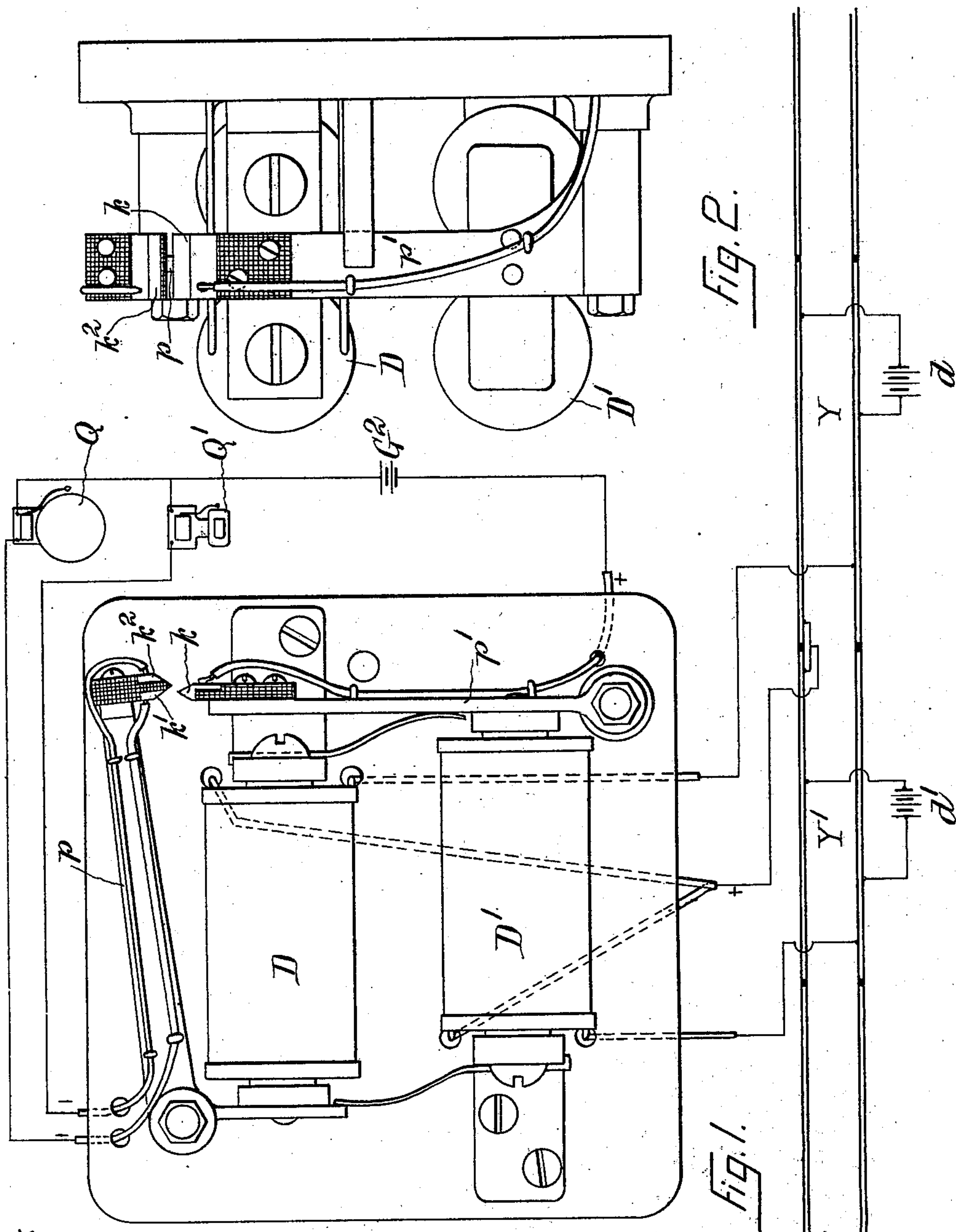


B. C. ROWELL.
TRAIN INDICATING APPARATUS.

(Application filed Feb. 13, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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Inventor:

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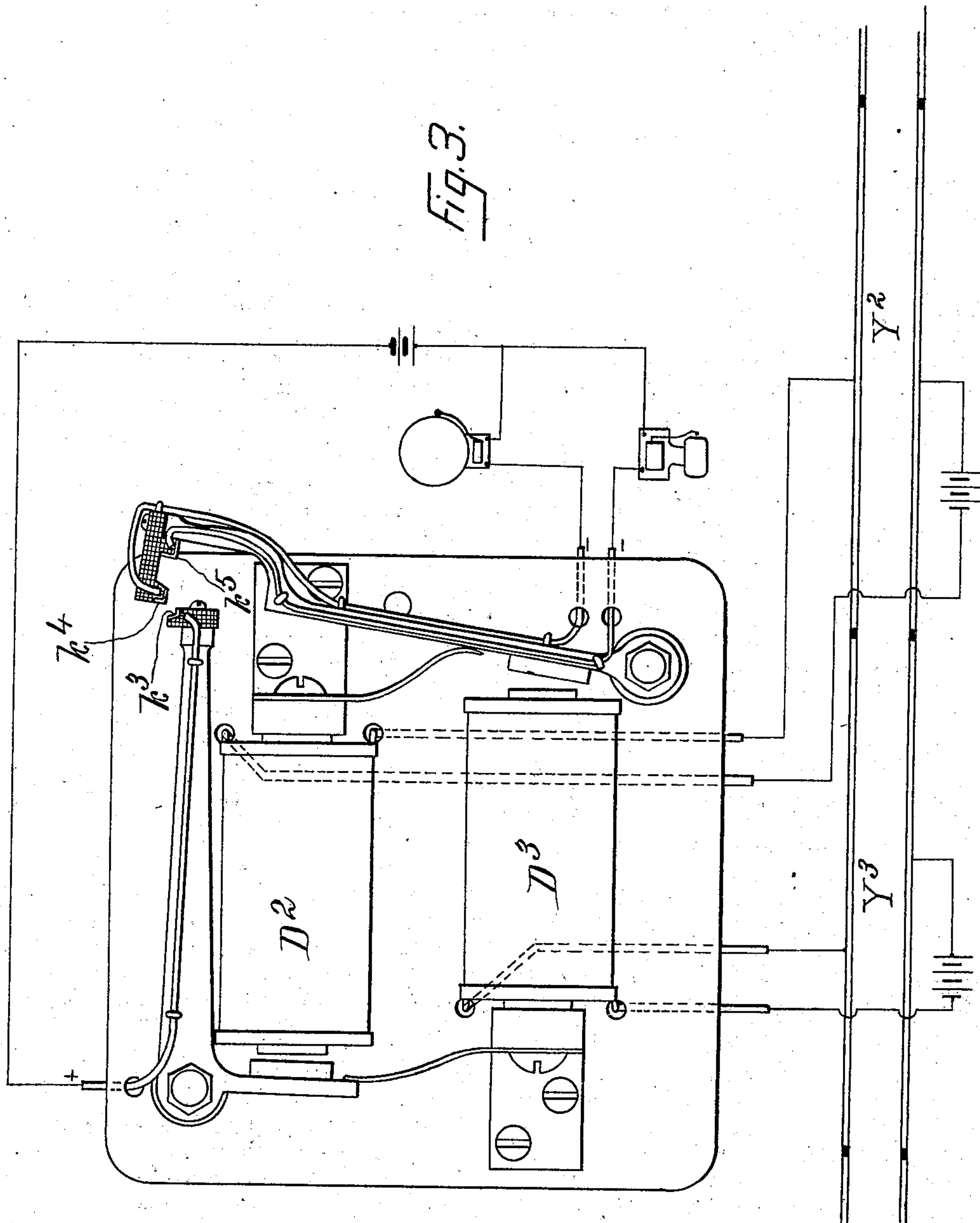
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B. C. ROWELL.
TRAIN INDICATING APPARATUS.

(Application filed Feb. 13, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

BENTON C. ROWELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ROWELL POTTER SAFETY STOP COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

TRAIN-INDICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 695,649, dated March 18, 1902.

Application filed February 13, 1899. Serial No. 705,434. (No model.)

To all whom it may concern:

Be it known that I, BENTON C. ROWELL, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Train-
5 Indicating Apparatus, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of my apparatus shown diagrammatically as connected to a railroad-
10 track. Fig. 2 is an end elevation. Fig. 3 is a plan showing my apparatus as used in connection with open circuits.

The main purpose of my invention is to cause a train to sound a bell or otherwise in-
15 dicate its presence and also its direction; and my invention is controlling two magnets each energized by its own circuit, both circuits being interrupted by a train running over the track, but the order of interruption being de-
20 termined by the direction in which the train is running.

The best embodiment of my invention which I have contemplated is that shown in the drawings, in which—

25 D and D' are the two magnets, magnet D controlling lever *p* and the magnet D' controlling lever *p'*, so that when both magnets are energized both levers are in the normal position, as shown in the drawings. When
30 a train running from right to left occupies the section Y of track whose rails are electrically connected with the positive and negative poles of battery *d*, the current from battery *d* will no longer flow through the coils of mag-
35 net D, but will be short-circuited or shunted through the wheels and axles of the train on section Y, as will be well understood without further description, and when the current through the coils of magnet D is interrupted
40 its armature-lever *p* will be released, and as the armature end of lever *p* moves away from magnet D the other end of lever *p* will move toward the corresponding end of lever *p'*; but as soon as the current through the coils
45 of magnet D' is interrupted by the train entering on section Y' armature-lever *p'* will be released, and as the armature end of lever *p'* moves away from magnet D' the other end of lever *p'* will make contact with the corre-

sponding end of lever *p*. Thus if armature-
50 lever *p'* carry electrode *k* and armature-lever *p* carry electrode *k'* these two electrodes will be brought into contact by interrupting first the circuit of magnet D and next the circuit of
55 magnet D', and the signal-circuit from battery G² will be completed through the bell Q or any other desired instrument; but when the current is reestablished through magnet D, which will be as soon as the train leaves section Y
60 in that form of apparatus shown in the drawings, armature end of lever *p* will be attracted and armature-lever *p* will resume its normal position, (shown in the drawings,) thus breaking the circuit through instrument Q,
65 and so of armature-lever *p'*, for that lever will resume its normal position as soon as the current is reestablished from battery *d'* through magnet D' or as soon as the train running
70 from right to left leaves section Y'; but a train running from left to right will first interrupt the current of magnet D' and release
75 lever *p'* first, and next interrupt the current of magnet D and release lever *p* last, with the result that electrodes *k*² and *k* will be brought into contact and a circuit will be established
80 through instrument Q'. Thus each train passing over track-section Y and Y' automatically indicates not only its presence on those sections, which is old, but in addition indicates the direction in which it is running, which is
85 wholly new with me and which is a wholly new result.

One use of my new apparatus is to give warn-
ing that an approaching train has reached a
85 certain place, and another use of my new apparatus is to give warning that a receding train has reached that place; but of course if one of the instruments Q or Q' be not de-
90 sired the corresponding electrode *k'* or *k*² may be dispensed with. In practice when my apparatus is used to automatically sound a gong
95 at a crossing a train running over section Y and Y' on its approach to the crossing will ring the gong; but a train running on those sections after it has passed the crossing will not ring the gong, for lever *p* will carry only one electrode—that is, the apparatus will go through its motions idly for receding trains

and will not sound the gong except for approaching trains.

Other uses of my invention will be well understood by all skilled in the art without detailed description; but especially important uses are fully described in my pending applications, Serial No. 705,432, filed February 13, 1899, and Serial No. 705,435, filed February 13, 1899.

It will now be clear that my invention is, practically speaking, an apparatus by which a train not only indicates its presence on a certain part of the track, but also indicates in which direction it is running, and the essential parts are two magnets, two energizing circuits, one for each magnet, and means by which trains interrupt those circuits in an order corresponding to the direction in which the train is moving—that is, a train in one direction interrupts first the circuit of D and last the circuit of D', while a train in the opposite direction interrupts first the circuit of D' and last the circuit of D. While in most cases magnet D must control two electrodes k' and k^2 , it will be clear from what has been said that one of these two electrodes may be omitted and other means for interrupting the circuits of magnets D and D' and other means for causing the interruption of the circuits through magnets D and D' in a given order to operate suitable instruments Q and Q' will suggest themselves to the constructor as circumstances vary. The means shown are the best of all those that I have contemplated, except that some persons prefer an open circuit, as shown in Fig. 3, in which the wheels and axles of a train on section Y² complete a circuit through magnet D², which actuates its armature; but as soon as that train has reached section Y³ its wheels and axles complete circuit through magnet D³, which actuates its armature, thereby making contact through electrodes $k^3 k^4$; but if the train runs

in the opposite direction a contact will be made through electrodes k^3 and k^5 , as will be clear without further description, for in this form of apparatus the train interrupts current through the coils by first causing it to flow and next to stop its flow, instead of first stopping its flow and next causing it to flow.

I am aware of Patents No. 266,904, dated October 30, 1882, to Scott; No. 349,927, dated September 28, 1886, to Daves; No. 524,038, dated August 7, 1894, to Daves, and No. 542,699, dated July 16, 1895, to Wetherbee, and disclaim all that is shown in them, for they show nothing more than the usual crossing-signal operated automatically by any train approaching the crossing regardless of the direction in which the train is moving, with inhibiting means to prevent the operation of the crossing-signal by trains receding from the crossing.

What I claim as my invention is—

1. An automatic signaling apparatus comprising two circuits; means by which a passing train controls both those circuits; and an indicator-circuit made operative by the action of the train-circuits in one order but remaining inoperative under the action of the train-circuits in the other order.

2. An apparatus for indicating both the presence of a train and the direction in which it is running comprising two circuits; means by which a train controls those circuits in one order when running in one direction, and in another order when running in an opposed direction; and two indicator-circuits one made operative by the action of the train-circuits in one order, the other made operative by the action of the train-circuits in the other order.

BENTON C. ROWELL.

Witnesses:

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LOUIS A. DE BERARD.