

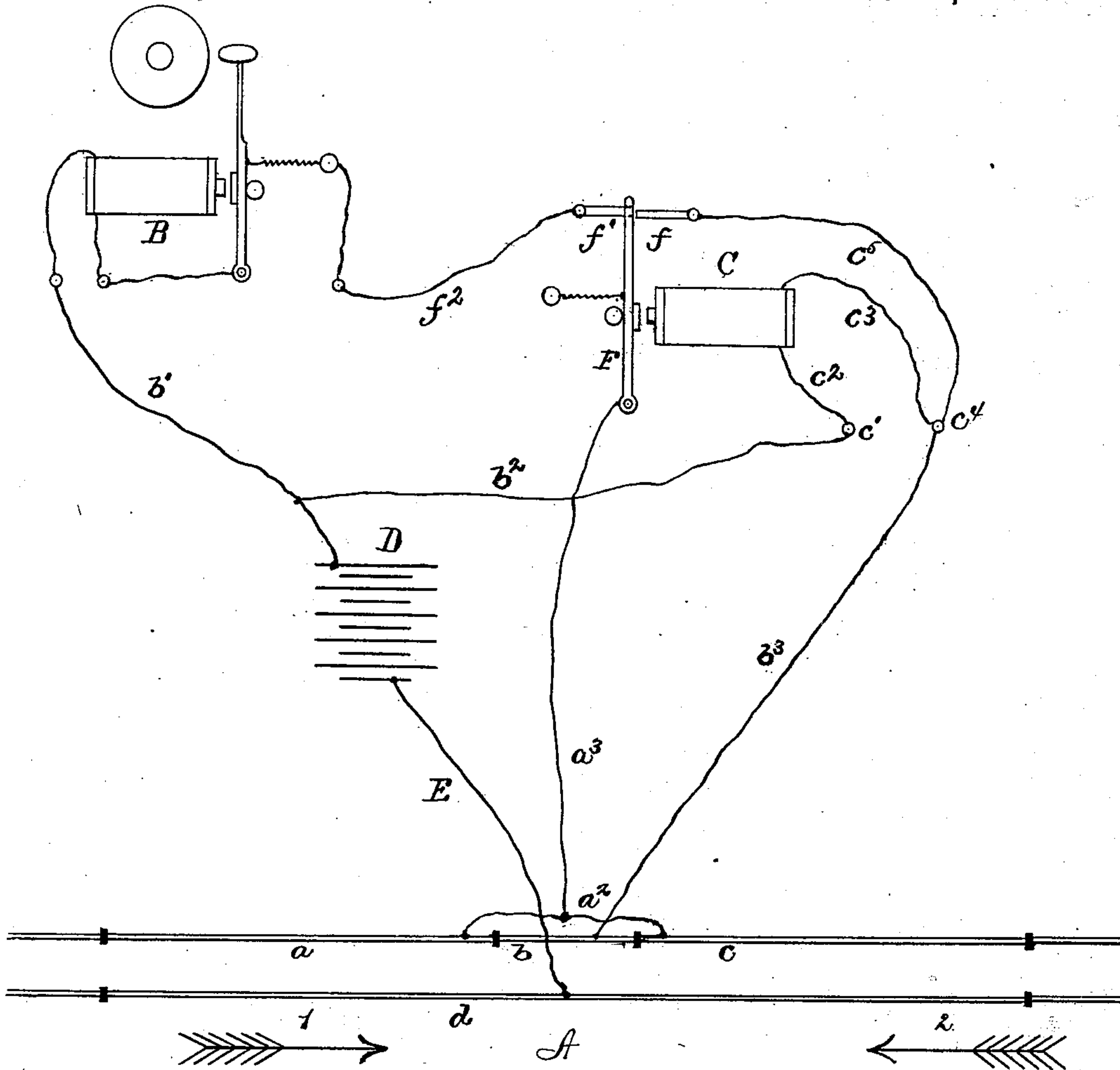
(No Model.)

S. C. MAHANAY & B. L. CAMPBELL.

ELECTRIC RAILWAY SIGNAL.

No. 352,700.

Patented Nov. 16, 1886.



Witnesses:
Thos. Houghton.
J. S. Jordan

Inventor:
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UNITED STATES PATENT OFFICE.

SIDNEY C. MAHANAY AND BEN. L. CAMPBELL, OF NEAR MANCHESTER, MO.

ELECTRIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 352,700, dated November 16, 1886.

Application filed April 14, 1886. Serial No. 198,825. (No model.)

To all whom it may concern:

Be it known that we, SIDNEY C. MAHANAY and BEN. L. CAMPBELL, citizens of the United States of America, residing near Manchester, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in an Electric Railway-Crossing Alarm; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which form a part of this specification.

The figure of the drawing represents a plan view of the invention.

This invention relates to an improved electric alarm to be placed at a railroad-crossing; and it consists in the device hereinafter set forth.

In the annexed drawing, the letter A indicates a portion of a railroad-track at an ordinary crossing. On one side or line of rails are three sections, *a b c*, insulated from one another and the rest of the rails. On the opposite section, parallel with these three sections, is another section, *d*, coextensive with the three sections *a b c*, and in like manner insulated from the rest of the track. At a convenient distance from the track are placed an alarm, B, and relay C, and battery D. A wire, E, connects the battery with the track-section *d*. Running from the battery D to the alarm B is a wire, *b'*. This wire *b'* is connected also by another, *b²*, with the binding-post *c'* of the relay, from which post the wire *c²* connects with relay-coils, and another wire, *c³*, passes thence to the other binding-post, *c⁴*. A wire, *b³*, connects this post *c⁴* with the middle track-section, *b*, and another wire, *c⁵*, connects said post *c⁴* with the armature front stop, *f*. The back stop, *f'*, is connected with the alarm by a wire, *f²*. The two sections *a* and *c* are connected by a bridge-wire, *a²*, around the section *b*, and from this bridge-wire runs another wire, *a³*, connecting with the wheel of the armature F, the latter normally resting against the back stop, *f'*, and therefore normally open. This produces five metallic circuits. One includes the middle section, *b*, and section *d*, passing through the

relay-coils, and open at the track only. The other four consist of two sets of two circuits each, one set including sections *a* and *d*, the other set sections *c* and *d'*, each set including an alarm-circuit which has the relay-armature as part thereof, and another circuit which includes the relay-coils and the relay-armature. The alarm-circuit is open at the track only, and the other at the track and the armature.

As a train approaches in the direction of the arrow 1, as soon as the front wheels touch the sections *d* and *a* the alarm-circuit is closed through the engine, section *d*, wire E, battery D, wire *b'*, alarm B, wire *f²*, back-stop *f'*, armature F, wire *a³*, bridge-wire *a²*, and section *a*, and the alarm is sounded. This circuit continues closed until the front wheels reach the section *b*, when the shorter circuit through section *d*, wire E, battery D, wires *b² c²*, relay-coils, wires *c³ b³*, and section *b* is closed. This draws the armature down, breaking the alarm-circuit, and the alarm ceases. As the train passes onto section *c*, the circuit from section *b* continues closed until the whole train leaves such section *b*. At the very instant this takes place, the armature F being closed, a circuit is formed through the train, section *d*, wire E, battery D, wires *b² c²*, relay-coils, wires *c³ c⁵*, front stop, *f*, armature F, wires *a³ a²*, and section *c*. This still holds the armature closed, and prevents the alarm-circuit being closed through the track-section *c*, which would happen were the armature allowed to fall open. As soon as the train leaves the section *c*, the armature falls open, and, resting against the back stop, the alarm-circuit is ready for another train. Should a train approach in the direction of arrow 2, the same action would ensue. The alarm-circuit would be closed through sections *d* and *c*, wires *a², a³*, and E, and the other parts, as already described, then the relay-circuit from section *b*, and then the relay and its armature-circuit, through wires E *b² a² a³*, &c., as before described. Thus the alarm sounds when a train is approaching a crossing only, and ceases as the train leaves the crossing. The armature F is a circuit-changer, by the movements of which the circuits are made or broken.

By this device, while each outside section has two circuits, the alarm-circuit is only closed

when the train approaches the crossing, the other circuit being to keep the alarm-circuit broken as the train passes the section in leaving the crossing.

5 Having described our invention, what we claim is—

1. The combination of the sections $a\ b\ c$ of one line of track-rails and the section d of the other line of track-rails, sections b and d being
10 parts of a relay-circuit, which circuit is normally open, the armature resting on the back stop, and sections a and d and c and d being, each set, parts of an alarm-circuit which includes the relay-armature, and each set also
15 parts of another circuit which includes the relay-coils and relay-armature, as set forth.

2. The combination of the sections $a, b, c,$

and d , arranged as set forth, the battery, alarm, and relay, wires $E\ U' f^2$, the last connected to the relay-armature back stop, wires $2c\ b^2\ c^2\ c^3\ b^3\ c^5$, the last connected to the relay-armature front stop, bridge-wire a^2 , and wire a^1 , connected to the heel of the relay-armature, as set forth.

In testimony whereof we affix our signatures 25 in presence of two witnesses.

SIDNEY C. MAHANAY.
BEN. L. CAMPBELL.

Witnesses:

W. J. HOLLOCHER,
FRANK J. HOFSTETTER.

It is hereby certified that in Letters Patent No. 352,700, granted November 16, 1886, upon the application of Sidney C. Mahanay and Ben. L. Campbell, of near Manchester, Missouri, for an improvement in "Electric Railway-Signals," an error appears in the printed specification requiring the following correction: In line 48, page 1, the word "wheel" should read *heel*; and that said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 23d day of November, A. D. 1886.

[SEAL.]

D. L. HAWKINS,
Acting Secretary of the Interior.

Countersigned:

R. B. VANCE,
Acting Commissioner of Patents.