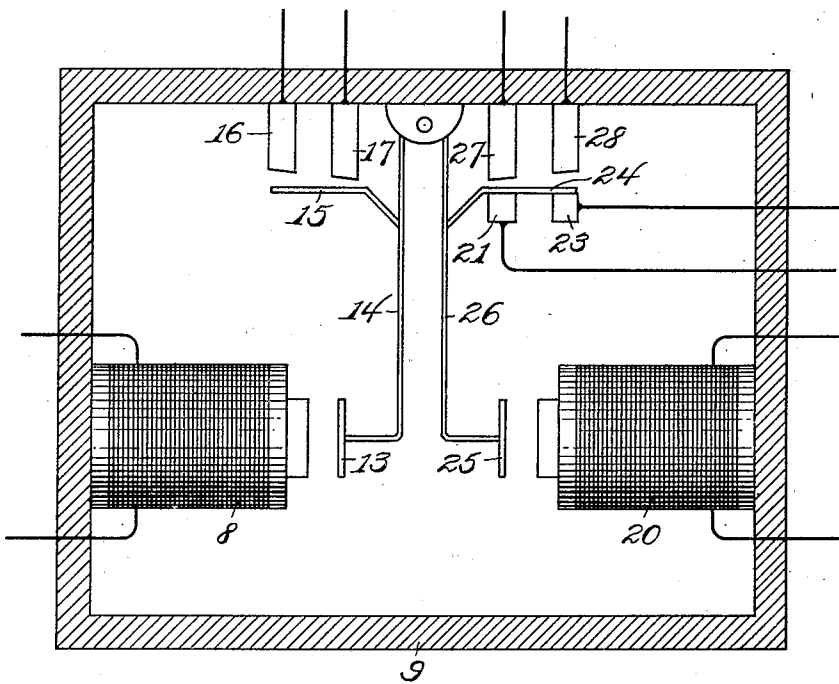


F. A. PIERCE.
CIRCUIT CLOSER.
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1,006,005.

Patented Oct. 17, 1911.



WITNESSES:
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UNITED STATES PATENT OFFICE.

FRANKLIN A. PIERCE, OF WHEELING, WEST VIRGINIA.

CIRCUIT-CLOSER.

1,006,005.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed November 6, 1909. Serial No. 526,651.

To all whom it may concern:

Be it known that I, FRANKLIN A. PIERCE, a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, have invented certain new and useful Improvements in Circuit-Closers, of which the following is a specification.

This invention relates to a circuit closer for open circuit train control and signal systems.

The primary object of the invention is to provide a circuit closing device particularly adapted for use in connection with a protective system for railways of the general character disclosed in a companion application for Letters Patent of the United States, Serial No. 526,653. Said protective system consists, briefly, of normally open electric circuits arranged in blocks in each track of the railway and has associated therewith normally operative mechanisms for automatically effecting the application of the brakes of the air-brake system of a train.

The circuit closing device constituting the invention is adapted to be actuated by an approaching train to operate for closing certain electric circuits whereby the mechanisms of the protective system above referred to are moved, under certain conditions, to inoperative positions.

In describing the invention in detail, reference is herein had to the accompanying drawing, forming a part of this specification, in which the figure is a vertical section of the invention.

In said drawing, 9 indicates a casing within which are horizontally mounted two independent electro-magnets 8 and 20. Pivotally mounted and depending within said casing is a pair of arms 14 and 26, preferably of spring copper, which respectively carry upon their free ends armatures 13 and 25 for engagement with said magnets 8 and 20, respectively. Located within the casing is a pair of contact points 16 and 17 which are adapted to be simultaneously contacted or engaged, when the armature 13 moves into engagement with the magnet 8, by a contact plate 15 carried by the pivoted arm 14 intermediate its ends, for closing an electric circuit in which said contact points are located. In like manner, a pair of contact points 27 and 28 are located within the cas-

ing and are adapted to be simultaneously contacted or engaged, when the armature 25 moves into engagement with magnet 20, by a contact plate 24 carried by pivoted arm 26 intermediate its ends, for closing an electric circuit in which said contact points 27 and 28 are located. Also located within the casing at a point where they will be simultaneously contacted or engaged by the contact plate 24 on arm 26, when the latter depends in its normal position, is a pair of contact points 21 and 23 located in an electric circuit which is normally maintained closed by said contact plate 24. As has just been seen, the circuit through contact points 21 and 23 is normally held closed by the contact plate 24. However, when magnet 20 is energized, the armature 25 is attracted thereby and the pivoted arm 26 is moved laterally, carrying contact plate 24 out of engagement with contact points 21 and 23, thus opening the circuit through the latter, and carrying said contact plate into engagement with contact points 27 and 28, thus closing the circuit through the latter.

The contact plate 15 normally stands out of engagement with contact points 16 and 17, the circuit through said points thus being open, normally; but, when magnet 8 is energized, the armature 13 is attracted thereby, causing arm 14 to swing laterally upon its pivot, thus carrying said contact plate into engagement with said points and closing the normally open circuit therethrough.

What I claim is—

1. A circuit closer including a casing, a pair of magnets arranged in said casing, a pivoted arm for each magnet, an armature at the free end of each arm for engagement with the respective magnets, a contact plate carried by each arm between the ends of the latter, a pair of contact points for engagement with the contact plate of one of said arms, two pairs of contact points for engagement at different periods with the opposite sides of the contact plate of the other arm.

2. A circuit closer including a casing, a pair of magnets in said casing, a pair of pivoted arms having armatures on their free ends, one arm for each magnet, a contact plate carried by each arm, a pair of contact points in the casing for engagement with one of said contact plates, and two pairs of

contact points for engagement with the opposite sides of the contact plate of the other arm.

3. A circuit closer comprising a casing, a
5 pair of magnets arranged in said casing, a pair of movable arms under the control of said magnets, a contact member carried by each arm, a pair of contact points within the casing adjacent to each contact member, each
10 contact member being adapted to engage the adjacent pair of contact points when the arm which carries it is attracted by the adjacent magnet, and a third pair of contact
15 points which is engaged by one of said contact members when the arm which carries it occupies normal position.

4. A circuit closer including a pair of magnets, a pair of movable contact elements, a pair of contact points for each element,
20 means for mounting said elements whereby when said elements are attracted by said magnets they will engage said contact points,

and a third pair of contact points which is engaged by one of said elements when the latter occupies its normal position. 25

5. A circuit closer including a pair of magnets, a pair of contact points for one magnet, means actuated by the energizing of the one magnet whereby connection is established between said points, two pairs 30 of contact points for the other magnet, means normally connecting the points of one of the two last mentioned pairs and adapted to be attracted by said other magnet, when energized, whereby the normal connection 35 is broken and connection is established between the points constituting the remaining pair.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

FRANKLIN A. PIERCE.

Witnesses:

E. A. LENKARD,
H. E. DUNLAP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."