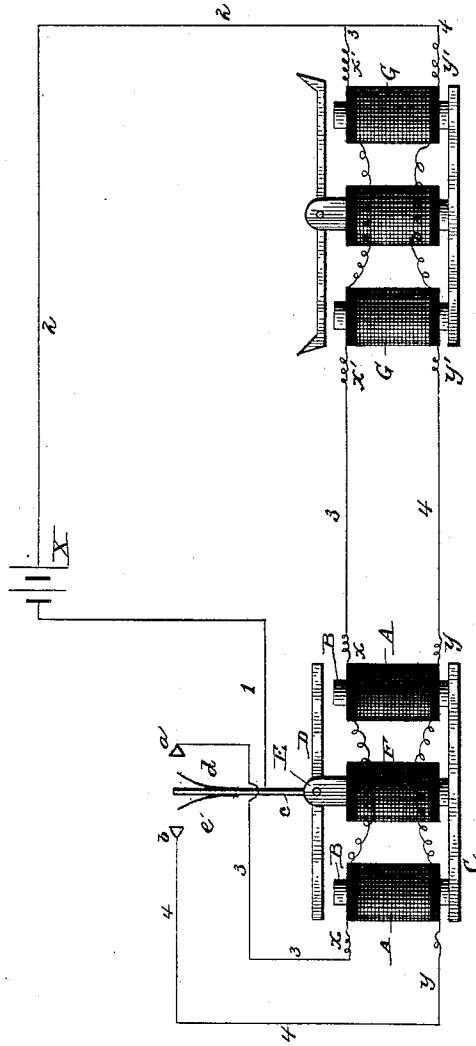


(No Model.)

E. J. MALLETT.
AUTOMATIC POLE CHANGER.

No. 384,326.

Patented June 12, 1888.



WITNESSES,

Edwin I. Yewell,

Ewell A. Dick

INVENTOR,

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UNITED STATES PATENT OFFICE.

EDWARD J. MALLETT, OF NEW YORK, N. Y.

AUTOMATIC POLE-CHANGER.

SPECIFICATION forming part of Letters Patent No. 384,326, dated June 12, 1888.

Application filed April 9, 1888. Serial No. 270,017. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. MALLETT, of the city, county, and State of New York, have invented a certain new and useful Improvement in Automatic Pole-Changers and Circuits Thereof, of which the following is a specification.

The object of my invention is to insure the certain and efficient operation of an automatic pole-changer with a current of one polarity. To effect this result I provide the polarized magnet of the pole-changer with two independent and separate windings of such nature that an electric current, when passed through one winding, will impart to the magnet an opposite polarity from that which will be imparted to the magnet when the current is passed through the other winding, and I include one winding in a circuit completed through one of the two sets of contacts with which the pole-changer is, as usual, furnished, and the other winding in a circuit in derivation to the one first named and completed through the other set of contacts of the pole-changer. The circuit-connections are such that when one circuit is completed through one set of contacts such polarity will be imparted to the magnet as will move its armature in a direction to cause the other circuit to be completed through the other set of contacts. In this way the action of the pole-changer becomes entirely automatic, and it will continue in operation indefinitely.

The accompanying drawing represents a pole-changer and circuit-connections therefor embodying my invention.

A A are the spools of the electro magnet of the pole-changer. B B are their cores, and C is the yoke. These spools are wound with two independent and separate wires or coils, whose terminals are seen at *x* and *y*, respectively. The windings are such that a current, when passed through *x*, will impart one polarity to the magnet, and when passed through *y* will impart an opposite polarity to the magnet. This method of winding or of connecting up two separate coils on the same spool is well known in the art and requires no detailed description.

D is the magnetic armature of the magnet. In this instance it is supposed to be inductively

magnetized, for which purpose it is pivoted to the core E of an electro-magnet which is secured to the yoke C. The spool F of this magnet can be in circuit with any suitable source of electricity.

The contacts of the pole-changer are formed in this instance by the two stationary contact-points *a b* and the tongue *c* of the armature D, which plays between the stationary contact-points *a b*, and makes contact with one and the other of them alternately, being provided for this purpose with the two springs or leaves *d e*. The tongue and the stationary contact *a* form one set of contacts, and the tongue and the stationary contact *b* form the other set of contacts. This is one well-known type of pole-changing contacts.

The circuit-connections are as follows: From one pole of battery X by wire 1 to the tongue; from the opposite pole of the battery by wire 2, which branches, one branch, 3, connecting winding *x* of the magnet A with the stationary contact *a*, and the other branch, 4, connecting winding *y* with contact *b*. The windings and connections, as before stated, are such that when the circuit is completed through one set of contacts such polarity will be imparted to magnet A as will move its armature in a direction to cause circuit to be completed through the opposite set of contacts. Consequently, if we suppose the tongue *c* and contact-point *a* to be in contact, the circuit will be completed through branch 3 and winding *x*, with the effect of imparting such polarity to magnet A as to tilt the armature in a direction to bring the tongue into contact with *b*. This will complete the circuit through the opposite winding *y* of the magnet and through the branch 4, which is in derivation to 3. Opposite polarity will thereby be imparted to magnet and the armature will be moved in a direction to complete the circuit through the tongue *c* and contact *a*, and so on. In this way with a current of one polarity the pole-changer can be continued in action indefinitely.

In order to illustrate one of the uses to which the pole-changer can be put, I have represented a polarized escapement whose magnet G is doubly and oppositely wound in the same way as magnet A, and has its two windings, *x' y'*, respectively, included in a similar man-

ner in the branches 3 4. Under this arrangement the escapement will continue in vibration so long as the pole-changer is in operation.

5 Having described my improvement and the manner in which it is or may be carried into effect, what I claim herein as new and of my own invention is—

10 An automatic pole-changer the magnet of which is doubly and oppositely wound, one winding included in a circuit completed through one of the sets of contacts of the pole-

changer, and the other winding included in a circuit in derivation to the one first named, and completed through the other set of contacts of the pole-changer, substantially as set forth. 15

In testimony whereof I have hereunto set my hand this 6th day of April, A. D. 1888.

EDWARD J. MALLETT.

Witnesses:

EWELL A. DICK,
MARVIN A. CUSTIS.