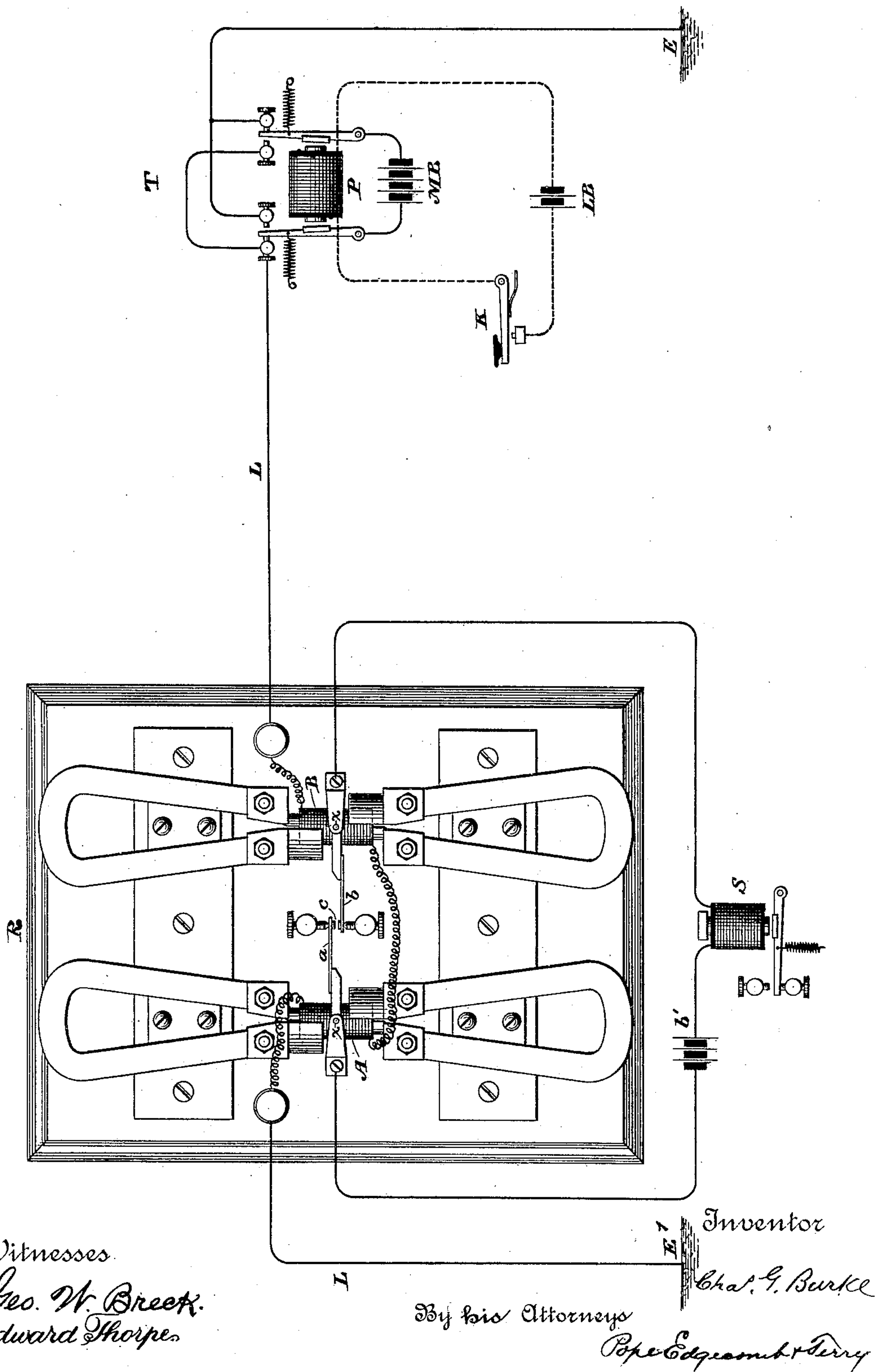


(No Model.)

C. G. BURKE.
TELEGRAPHIC INSTRUMENT.

No. 405,986.

Patented June 25, 1889.



UNITED STATES PATENT OFFICE.

CHARLES G. BURKE, OF RICHMOND HILL, ASSIGNOR TO FREDERICK WOLFFE,
TRUSTEE, OF NEW YORK, N. Y.

TELEGRAPHIC INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 405,986, dated June 25, 1889.

Application filed October 13, 1888. Serial No. 288,012. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. BURKE, a citizen of the United States, residing in Richmond Hill, in the county of Queens, in the State of New York, have invented certain new and useful Improvements in Telegraphic Instruments, of which the following is a specification.

The object of the invention is to provide a sensitive receiving telegraphic instrument suitable for cables or other lines where feeble electric currents are used.

The invention consists, in general terms, in placing two coils or solenoids of insulated wire in the circuit of the line and providing for them magnetic fields of high intensity. Each coil or solenoid is independent of the other, although connected in the same circuit. Each is capable of movement, being pivoted or suspended at its center, and when the wire of which it is composed is traversed by a current it will move one way or the other, according to the direction of the current with reference to the magnetic field. The magnetic field is preferably produced by two or more magnets with their poles so arranged as to act upon the coils or solenoids when traversed by a current in the same manner—that is, under the influence of the same current the two solenoids will move in the same direction. Each solenoid carries a small arm, which is preferably united to the pivot of the solenoid by friction. Contact-points are placed upon the ends of the arms, and the arms project toward each other, and are so arranged as to bring the contact-points together by the movements of the solenoids, each arm being carried by its solenoid one-half the distance which separates the contact-points. It will be seen that by this arrangement each solenoid has to move but one-half the distance that would be required of one in order to close the contact-points which they carry. The arms form a part of a local circuit which is common to both, and therefore the closing of the contact-points closes the local circuit and reproduces in the ordinary manner the signals which traverse the main circuit. The line is supplied with the usual pole-changing device at the transmitting-station, and the move-

ments of the coils herein mentioned are produced in the usual way by the successive impulses of opposite polarity.

The invention is illustrated in the accompanying drawing, in which a telegraphic circuit is shown from the earth at the transmitting-station at E, through the transmitting apparatus T, the main line L, the receiving apparatus R, to the earth at E'.

The transmitting apparatus may be of the usual construction, as illustrated, the main battery being sent to line by its opposite poles alternately through the operation of the key K and the electro-magnet P, operated by the local battery L B.

The receiving-instrument consists of two pairs of permanent magnets, each pair having situated within its field of force a solenoid. (Shown at A and B.) The solenoids are each pivoted at *xx*, as shown, and each is free to move a short distance to and fro under the influence of impulses transmitted over the main line, the two solenoids being arranged in series.

The arms *a* and *b* are frictionally attached to the pivots *xx*, and it is apparent that the movements of the solenoids will thereby bring the circuit-closing points at *c* together and separate them as the two solenoids are moved in one direction or the other.

The local circuit, including the battery *b'* and the sounder S, is connected through the two arms *a* and *b*, and the movements of the latter therefore open and close the local circuit, so as to repeat the signals coming over the main line.

The pole-pieces of the permanent magnet are arranged to extend partly over the outside and partly within the solenoids; but as this construction is already described and claimed in an application filed by me on the 8th day of September, 1888, Serial No. 284,891, it is not herein claimed.

It will be seen that by this construction each solenoid is required to move but one-half the distance in order to close the contact-points at *c*, that would be necessary if but one solenoid should be used.

I claim as my invention—

1. A compound telegraphic receiving-in-

strument having two coils upon independent centers, movable simultaneously in fields of force, each coil carrying an arm, said arms being attached to the axes upon which the
5 coils turn, and which are caused to simultaneously approach or separate from each other by the motion of said coils.

2. In a telegraphic instrument, the combination of a field of force, two coils having
10 simultaneous motion upon independent centers, an arm attached to the axis of each coil and carrying contact-points, and a local circuit of which both said arms are a part.

3. In a telegraphic instrument, the combination of two coils, each moving independently upon its center and forming part of the main-line circuit, magnets supplying a field of force to each coil, an arm carrying a contact-point attached frictionally to each
20 solenoid, and a local battery having its circuit common to both of said arms, the said parts

being so adjusted that the movements of the coils under the influence of a current passing through them shall cause the said arms to approach each other.

4. The combination of a main line, a battery therefor, a device for transmitting impulses thereon, two coils independently and simultaneously movable and forming part of said main line, fields of force for said coils, 30 and independent contact-arms attached to the axes of said coils, substantially as described, for opening and closing a local circuit of which both said contact-arms are a part.

In testimony whereof I have hereunto subscribed my name this 21st day of September, 35
A. D. 1888.

CHARLES G. BURKE.

Witnesses:

DANL. W. EDGECOMB,
CAROLINE E. DAVIDSON.