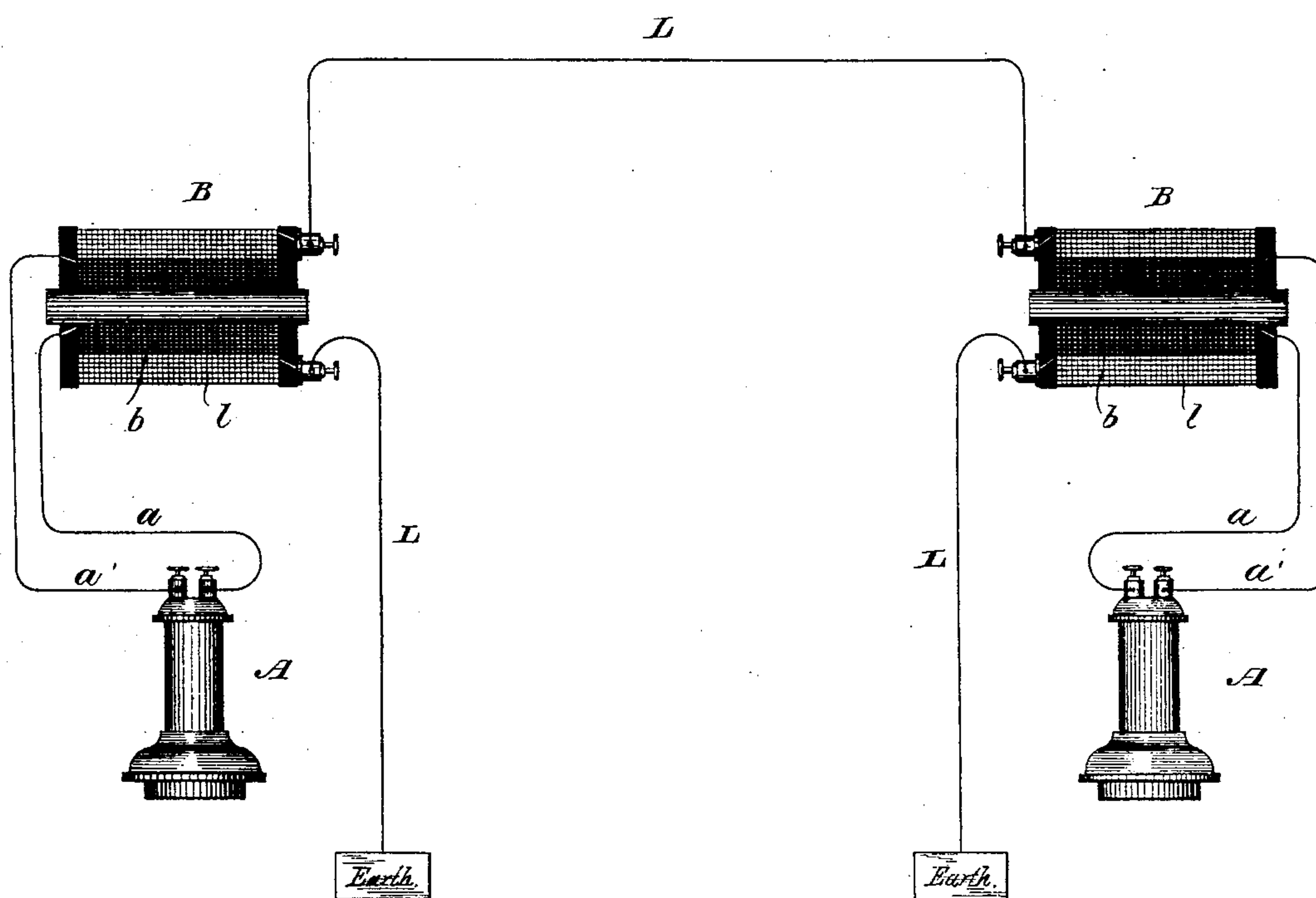


(No Model.)

F. ROSSETTI.
Magneto Electric Speaking Telephony.

No. 235,173.

Patented Dec. 7, 1880.



WITNESSES

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MAGNETO-ELECTRIC SPEAKING TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 235,173, dated December 7, 1880.

Application filed May 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, FRANCESCO ROSSETTI, a citizen of the Kingdom of Italy, and residing at the city of Padua, in said Kingdom, have invented or discovered certain new and useful Improvements in Magneto - Electric Speaking Telephony, of which the following is a specification.

The object of my invention is to transmit rhythmic vibrations, representing articulate speech, through a telegraphic circuit, and reproduce them at a great distance, with clearness and precision, without the use of a battery. These ends I attain by a new organization of old instrumentalities, the essential features of which organization are a magneto-telephone of suitable construction for action both as a transmitter and as a receiver, and a Ruhmkorff or induction coil the primary wire of which is in closed metallic circuit with the helix of the magnet of the magneto-telephone, and the secondary of which is included in an earth-circuit of which the main line forms a part. A duplication of this apparatus at each station adapts it to transmission in either direction.

The subject-matter of my invention is set forth in the claims at the end of this specification.

The accompanying diagram represents the organization of the apparatus and its arrangement upon circuit, the details of construction of which apparatus, being well known, need no description here. The apparatus at each station being alike, a description of that of one station will be sufficient.

A magneto-telephone, A, adapted both for the reception and transmission of rhythmic vibrations, representing articulate speech, is shown with its helix connected by suitable wires, $a a'$, with the primary circuit b of an induction-coil, B, constituting a closed metallic local circuit, the primary circuit being of exceedingly low resistance. This magneto-telephone should differ from those in ordinary use in the latter-named particular.

An ordinary magneto-telephone having a helix with a resistance between thirty and eighty ohms would be inefficient in the apparatus shown by me, and the magneto-telephone used by me should have a helix having a resistance of only a fraction of one ohm, and

the resistance of the helix of the telephone, together with that of the said closed primary circuit b , should not exceed, to transmit to a distance of five hundred miles, one and two-tenths ohm, and should not exceed eight ohms for a distance of three thousand miles. Hence it will be seen that the magneto-telephone employed by me is one which could not practically be used on lines as they have been heretofore arranged and operated. The secondary coil l is of comparatively large resistance in order to intensify the action of the current. As an example, it may be stated that the resistance of the secondary coil when the line is five hundred miles long should be about two thousand ohms, and when the line is three thousand miles long should be about seven thousand ohms. This secondary coil forms a part of the earth-circuit, in which the line-wire L is included, as clearly shown in the diagram.

The operation of the apparatus—under the organization shown—is as follows: The diaphragm of the magneto-transmitter is vibrated in the magnetic field of the transmitting-telephone in the usual way, thereby inducing rhythmic vibrations in the closed metallic primary circuit of the induction-coil, which operation induces corresponding dynamo-electric effects of high intensity in the line-wire through the action of the secondary coil, which effects are more capable of overcoming the resistance of the line than currents of low intensity, which dynamics are reproduced at the receiving end of the line in inverse order in the primary wire—that is, as quantity currents of low intensity—that is, the secondary of the receiving induction-coil acts upon its primary, and reproduces the transmitted vibrations upon the diaphragm of the receiving-telephone through its closed metallic primary circuit.

I have demonstrated practically that a magneto-apparatus organized in the manner and with the relative resistances herein set forth is preferable both as to simplicity and efficiency to a battery or resistance telephone, as the varying strength of the battery imparts corresponding irregularities to the cores of the electro-magnets, which variations correspondingly affect the proper action of the receiver, besides producing some at least of the unpleasant

noises accompanying such instruments. This irregular action of the battery is to some extent compensated in contact or variable resistance telephones by the action of the contact-surfaces or electrodes; but such telephones are more complicated, costly, and liable to derangement than those of the magneto class. I do not, of course, broadly claim this latter class of apparatus, but limit my claims to substantially the organization herein set forth.

I claim as of my invention—

1. The hereinbefore-described improvement in the art of magneto-electric speaking telephony, which improvement consists in producing (without a battery) in the closed or uninterrupted primary circuit of an induction-coil of low resistance (through the intervention of a helix, also of very low resistance) magneto currents or rhythmical vibrations representing articulate speech, and reproducing them in an earth-circuit, including the secondary wire of said induction-coil of very high resistance.

2. The hereinbefore-described improvement in the art of magneto-electric speaking telephony, which improvement consists in producing (without a battery) in the closed or uninterrupted primary circuit of an induction-coil—of very low resistance—through the intervention of a helix, also of very low resistance, magneto currents or rhythmical vibrations representing articulate speech, transmitting them through an earth-circuit, including the

secondary wire of such induction-coil of very high resistance, and reproducing them by the action of a similar secondary coil acting inductively and inversely on the helix of a magneto-receiver in a closed primary circuit, both of a resistance corresponding with that of the transmitting primary circuit.

3. The combination, substantially as hereinbefore set forth, of a magneto-telephone having a very low resistance helix, the primary wire of an induction-coil, (also of correspondingly low resistance,) wires connecting the helix of the magneto-telephone, and of the primary coil, (constituting with them a short or local closed or uninterrupted circuit,) and the secondary wire of the induction-coil—of very high resistance—one terminal of which is connected to earth and the other with the line-wire.

4. The combination, substantially as set forth, of an earth-circuit, and at each station the secondary wire of an induction-coil of high resistance included therein, and a magneto-telephone with a helix of very low resistance in a closed or uninterrupted circuit, including the primary wire of its respective induction-coil of correspondingly low resistance.

In testimony whereof I have hereunto set my hand this 28th day of April, A. D. 1880.

FRANCESCO ROSSETTI.

Witnesses:

LUCIANO FOSCOLO,
MARTELLI MARCO.