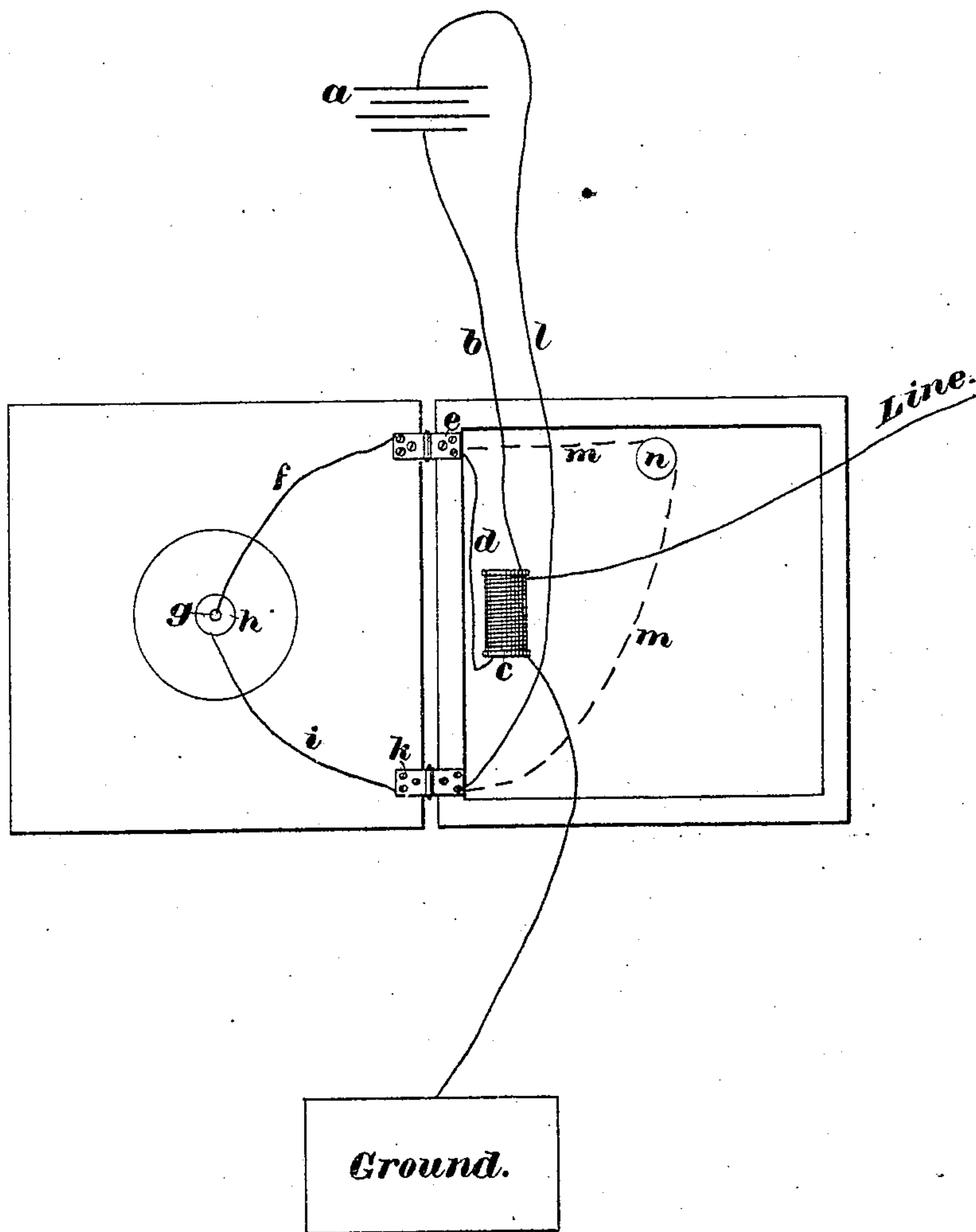


(No Model.)

F. BLAKE.
Speaking Telephone.

No. 238,557.

Patented March 8, 1881.



Witnesses:

Samuel B. Bates
H. L. Obmsted

Inventor:

Francis Blake
by W. W. Swan
his atty.

UNITED STATES PATENT OFFICE.

FRANCIS BLAKE, OF WESTON, MASSACHUSETTS.

SPEAKING-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 238,557, dated March 8, 1881.

Application filed January 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS BLAKE, of Weston, State of Massachusetts, have invented a new and useful Improvement in Speaking-Telephones, of which the following is a specification.

In battery-telephones as heretofore constructed the voltaic circuit is liable, under certain conditions, to be broken. It is well known to electricians that at the instant of breaking a voltaic current an extra current of greater intensity is induced, causing the passage of a spark between the electrodes not in contact. The passage of this spark produces oxidation of the surfaces of the electrodes, as well as the transference of particles of the matter of which each is composed from one to the other. Both these results tend to diminish the subsequent power of the instrument as a transmitter of sounds, while the breakings cause it at the time to transmit harsh and inarticulate noises.

It is also well known to electricians that a voltaic current passing between electrodes tends to force them apart, and if they be but lightly in contact, as in the case in well-adjusted battery-transmitters, a current of more than a certain strength will set them into a rapid vibration in opposite directions, thus producing very quickly the ill effects above described.

The object of my improvement is to free the instrument of these disturbing causes, and the following is a specification of my invention.

The invention consists in the insertion of a branch circuit of proper resistance between two points in the circuit, on opposite sides of the electrodes, by which the strength of the current is varied.

The annexed drawing shows the manner in which I have applied my invention to the instrument commonly known as the "Blake transmitter."

The drawing will be sufficiently explained by a description of the electrical connections, which are as follows:

Starting at the positive pole of the battery *a*, the current flows through the wire *b*, the

primary of the induction-coil *c*, and the wire *d* to the hinge *e*, thence through the wire *f*, platinum-electrode *g*, carbon-electrode *h*, and wire *i* to the hinge *k*, and thence by wire *l* to the negative pole of the battery. The branch circuit *m*, including a resistance-coil, *n*, connects the hinges *e* and *k*, thus bridging any break which may occur between the electrodes *g* and *h*, and permitting the ready passage of the induced extra current, while the resistance of the coil *n* is too great to sensibly affect the working of the main circuit, above described. The main telephone-line is from ground through the secondary of the induction-coil *c* to line.

The proper resistance of the coil *n* may be practically determined in the following manner: The instrument, being in a dark room, is placed upon a good working adjustment with a battery of two Leclanché cells included in the circuit through the electrodes. The electrodes *g* and *h* are then pulled apart, and a brilliant spark will be observed to pass between them at the instant of separation. The branch circuit, including a low-resistance coil, is then introduced between the hinges *e* and *k*, and on again separating the electrodes no spark will be observed. Coils of gradually-increasing resistance should then successively be introduced into the branch circuit until the separation of the electrodes is again accompanied by the passage of a spark between them, thus showing the resistance last tried to be too great. A coil of somewhat lower resistance than this last one is finally inserted for permanent use, when the instrument will give exceedingly satisfactory results both as to the volume and distinctness of its transmitted sounds and the permanency of its adjustments.

I claim—

In a battery-telephone, a branch circuit of proper resistance forming a bridge for the two electrodes, substantially as described.

FRANCIS BLAKE.

Witnesses:

SAM. W. BATES,
W. W. SWAN.