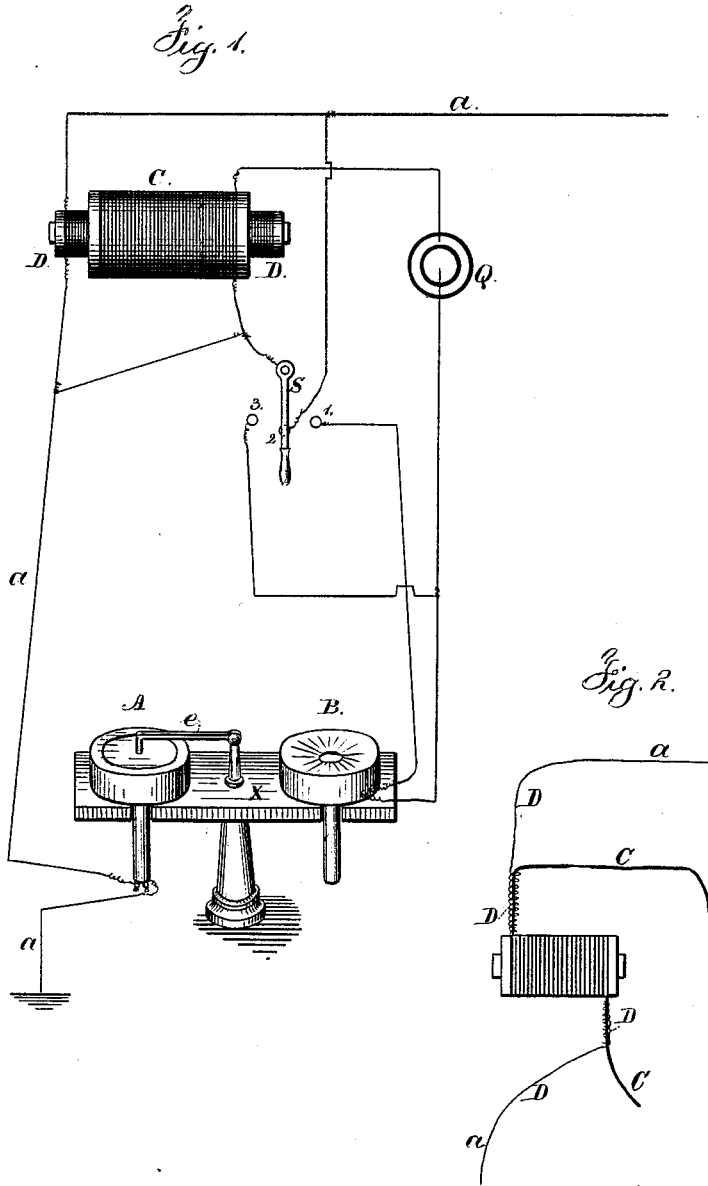


T. A. EDISON.  
Telephone Call-Signal.

No. 203,017.

Patented April 30, 1878.



Witnesses

Chas H Smith  
Geo. D. Pinckney

Inventor

Thomas A. Edison.  
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1107

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y.

## IMPROVEMENT IN TELEPHONE CALL-SIGNALS.

Specification forming part of Letters Patent No. 203,017, dated April 30, 1878; application filed March 4, 1878.

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented an Improvement in Telephone-Calls, (Case No. 152,) of which the following is a specification:

The object of this invention is to provide a simple apparatus for a signal-call on a telephonic circuit.

The invention consists in a stand for the receiving-instrument and a swinging metal lever, the end of which comes into contact with the diaphragm, so that it is thrown from it violently when a strong wave or current passes over the line or through the magnet of the receiving-instrument. This lever, in returning, strikes the diaphragm a blow, and produces a sharp penetrating sound like that of a Morse sounder, and this may be heard in all parts of a large room.

I have heretofore shown, as in Case No. 146, an induction-coil in connection with a telephone. I arrange a switch between the local and main-line circuits, in such a manner as to vary the electric tension on the line by moving such switch, and thereby operating the call at the distant station; and I prefer to employ a peculiarly-constructed induction apparatus, in which there is a fine wire wound helically around a larger wire, and then the two are wound to form a helix. The larger wire is in the local circuit, and forms the primary induction-coil, and the induced current is set up in the finer helix.

If a soft-iron bar passes through the coil, its inductive force is increased; but the clearness of the sound received upon the telephone is lessened thereby.

In the drawing, Figure 1 is a diaphragm of the circuit-connections, and Fig. 2 shows the induction-coil separately.

A is the receiving-instrument, provided with a diaphragm and a magnet for giving motion to it. This is included in the main line *a a a a*.

C is the primary coil; D, the secondary coil, which latter is included in the main-line circuit. *e* is the sounder-lever, resting upon the

diaphragm of A. X is a rack or stand for holding both the receiving and transmitting instruments when not in use. S is a switch. When it is turned to the point 1, the transmitter B is included in the primary circuit with coil C and battery Q, and the transmitter serves to increase and decrease its resistance when the diaphragm is vibrated by sound.

There is a carbon disk, through which the current passes, and it produces more or less resistance, according to the amplitude of vibration of the diaphragm, causing greater or less pressure on the carbon.

When the switch-lever S is moved to the point 2, the secondary wire of the coil is short-circuited. It remains in this position for the reception of a call-signal from the distant station. Were the coil D left in circuit it would tend to weaken the signal-call by its resistance to the passage of the current from the distant station.

When the switch-lever is at the point 3, the current from the battery Q passes only through the primary wire. By connecting and disconnecting the switch S from this button 3, powerful induction-waves are thrown into the line, and act upon the distant receiver to attract and repel the lever *e* and give the signal-call.

Fig. 2 illustrates the construction of my improved induction-coil. In this the large wire C forms the primary coil, and the fine wire D, wound around the same, forms the secondary coil, the latter being placed in the main circuit and the former in the local circuit, as heretofore explained.

I claim as my invention—

1. In combination with a receiving telephone-instrument having a diaphragm and electromagnet, a swinging lever placed with its moving end in contact with the receiving-diaphragm, and a switch or key for increasing the electric current and operating the lever as a sounder or call upon the diaphragm, substantially as set forth.

2. In combination with the telephone-transmitter B and receiver A, the induction-coil C D, battery Q, local circuit, switch S, and

circuit-connections, substantially as and for the purposes set forth.

3. In combination with the main-line circuit and local circuit, and the telephonic instrument, the induction-coil composed of two wires, the largest of which is surrounded by a finer insulated wire wound helically, the two being then wound into a helix to form the induction-coil, substantially as set forth.

Signed by me this 28th day of February,  
A. D. 1878.

THOS. A. EDISON.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.