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T. A. EDISON.  
Carbon Telephone.

No. 222,390.

Patented Dec. 9, 1879.

Fig. 1

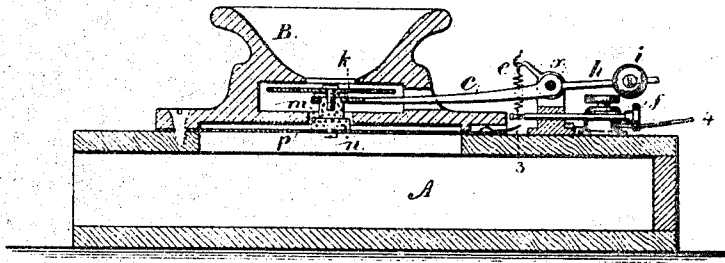
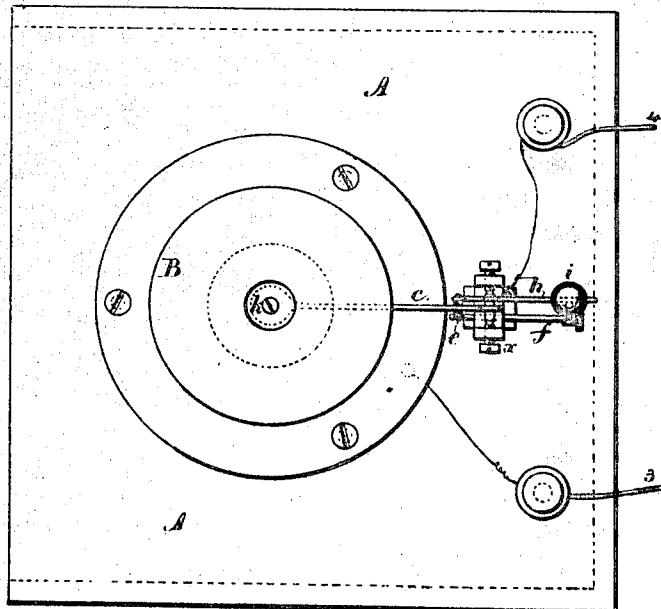


Fig. 2



Witnesses

Chas. H. Smith  
Geo. D. Pinckney

Inventor

Thomas Alva Edison  
per Lemuel W. Searell

# 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 CARBON-TELEPHONES.

Specification forming part of Letters Patent No. 222,390, dated December 9, 1879; application filed November 11, 1878.

*To all whom it may concern:*

Be it known that I, THOMAS ALVA EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented an Improvement in Telephones, of which the following is a specification.

This invention I term the "micro-telephone," in consequence of the same responding to minute vibrations of the instrument itself, transmitted to it by any solid body or of the atmosphere, and in so doing transmitting electric pulsations to a distance, where they can be received by an ordinary telephone.

In the drawings, Figure 1 is a section of the instrument, and Fig. 2 is a plan of the same.

The box A is of a suitable size and shape for holding the apparatus, and for acting as a resonant case, one side thereof being open. This case conveys to the apparatus any vibrations or disturbance resulting from the sound-vibrations of the atmosphere or from the vibration of the solid material upon which the box rests.

In the box A is an opening, preferably round, in which is the diaphragm *p*, and upon this diaphragm is a piece of compressed finely-divided conducting material, such as carbon, *n*. A second piece of carbon or similar material, *m*, is secured to a lever, *e*, the fulcrum or pivot of which is at *x*.

A lever-arm, *h*, and movable weight *i* may be employed to balance the lever *e* and parts connected therewith, and the delicate spring *e* and adjusting-spindle *f* serve to increase or decrease the pressure of the buttons *m n* upon each other.

The plate *k*, of light material, such as mica, is connected with the lever *e*, and this is within and protected by a funnel or mouth-piece, B, upon the box A.

It is now to be understood that the slightest vibration or jar given to the apparatus, such as that resulting from walking about a room, or from the articulate speech or sound-vibrations, vary the pressure of *m n* upon each other,

and in so doing the electric condition of a circuit passing through *p n m e* and wires 3 4 is varied, and a corresponding response occurs in a distant receiving-telephone. The finely-divided carbon or other material between *k* and *p* thus becomes a circuit-regulator, that acts to vary the resistance in proportion to the vibration of the parts.

This transmitter is either included in a short circuit containing a receiving-telephone and battery, or in the primary circuit of an induction-coil containing a battery, and whose secondary coil is in the line-wire containing the receiving-telephone.

In my application No. 141, filed July 20, 1877, I have shown a diaphragm and a spring carrying one electrode, and also a second electrode; and in my application No. 178, filed June 2, 1879, I have shown a diaphragm and two springs, with carbon between them. I do not herein lay claim to any of the devices shown in either of the said applications.

I claim as my invention—

1. The combination, with a resonant case or support, of the carbon or similar material, the lever *e*, disk *k*, and circuit-connections, substantially as set forth.

2. The combination of two moving plates or diaphragms, *p* and *k*, with finely-divided carbon or similar material intervening, and the circuit-connections passing through the same, substantially as set forth.

3. The combination, with a resonant case, of two diaphragms or plates, *p* and *k*, upon which sound or other vibrations operate, and a circuit-regulator of finely-divided carbon or other material placed between such plates *k* and *p* and the circuit-connections, substantially as set forth.

Signed by me this 8th day of November, A. D. 1878.

THOMAS A. EDISON.

Witnesses:

S. L. GRIFFIN,  
CHAS. BATCHELOR.