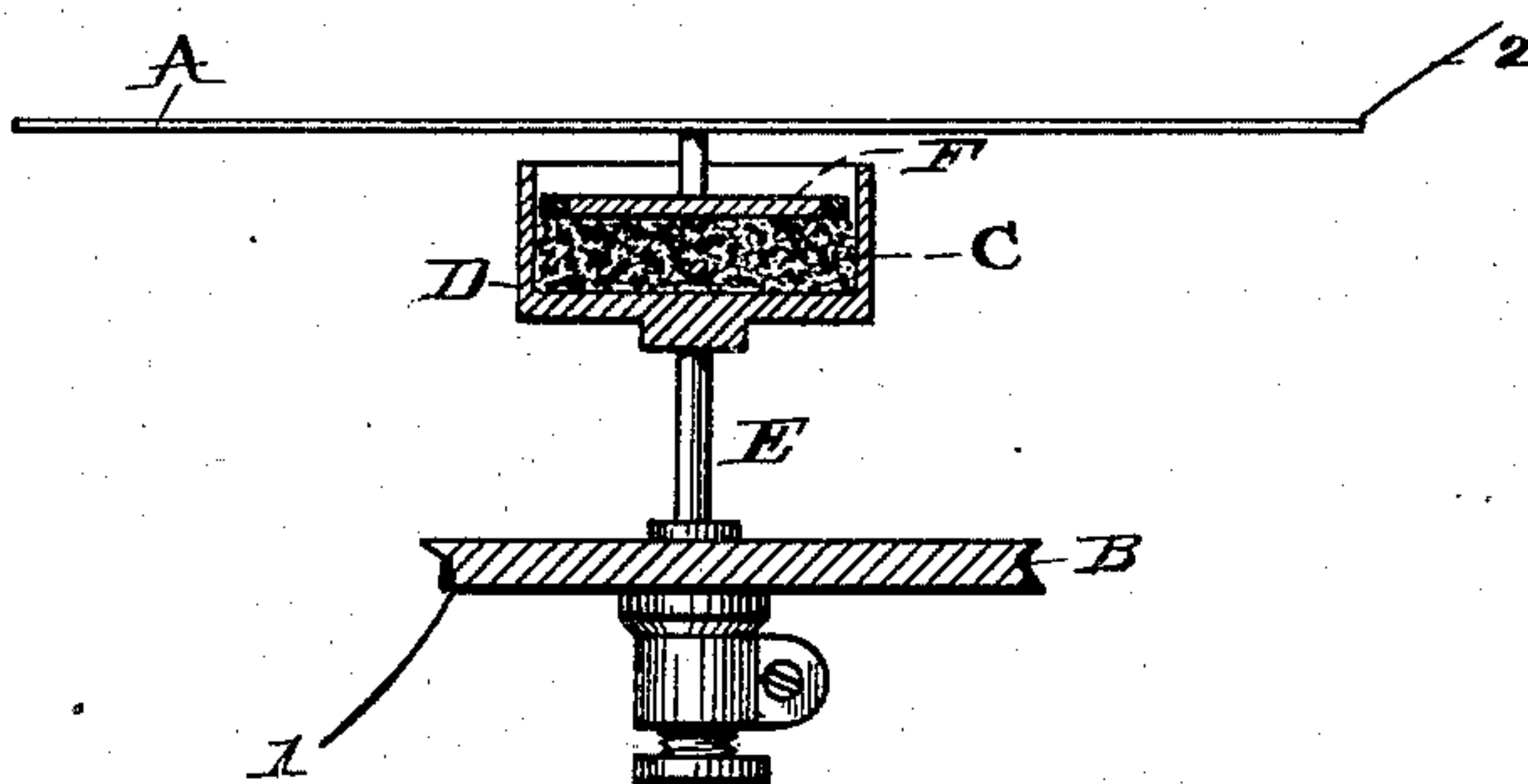


(No Model.)

T. A. EDISON.  
TELEPHONE.

No. 406,567.

Patented July 9, 1889.



ATTEST:

*E. Bowland*  
*Att. Fiddle*

INVENTOR:

*Thomas A. Edison*  
*By Dyer Sherry*  
*att.*

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 406,567, dated July 9, 1889.

Application filed February 19, 1886. Serial No. 192,485. (No model.)

*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 a new and  
5 useful Improvement in Telephones, (Case No. 661,) of which the following is a specification.

My invention relates to that class of telephones wherein a body of carbon-granules is  
10 held between metal surfaces, one of which is connected with the diaphragm of the instrument and acts upon the carbon to vary the resistance of the circuit in unison with the sound-waves. The object I have in view is  
15 to produce for this purpose a form of carbon which will be free from the objections incident to the use of the carbon heretofore employed, in that it will not blacken the metal surfaces in contact with it, and will not by use become  
20 finely powdered and liable to pack. The result is a more durable instrument and one which maintains its adjustment better and is capable of being used in any position.

My improved carbon is made by the carbonization of anthracite or hard cannel coal  
25 by subjecting it to a high heat in a manner similar to the carbonization of materials for the conductors of incandescent electric lights. It is then powdered into granules which will  
30 pass through a twenty or thirty mesh screen, and is ready for use as the electrode of a telephone.

In the accompanying drawings the figure represents parts of a well-known form of tele-

phone with an electrode of my peculiar carbon.

A is the diaphragm, and B a part of the case. C is the electrode of carbon-granules, produced, as before explained, from hard coal, and held in a metal cup D, carried by an adjusting-screw E. A metal plate F, carried by  
40 the diaphragm, presses on the carbon in the cup. The circuit-connections 1 2 are such that the current passes through the carbon electrode.

What I claim is—

1. An electrode for telephones composed of a body of granules of carbonized hard coal, substantially as set forth.

2. In a telephone, the combination, with a  
50 diaphragm, of an electrode composed of a body of granules of carbonized hard coal included in the circuit and acted upon by the diaphragm to vary the resistance of the circuit, substantially as set forth.

3. In a telephone, the combination, with a  
55 diaphragm, of an electrode composed of a body of granules of carbonized hard coal, and metal surfaces between which such body of carbon-granules is held, one of such metal  
60 surfaces being controlled by the diaphragm, substantially as set forth.

This specification signed and witnessed this 28th day of January, 1886.

THOS. A. EDISON.

Witnesses:

A. W. KIDDLE,  
E. C. ROWLAND;