(No Model.)

W. L. VOELKER.

TELEPHONE TRANSMITTER.

No. 354,818. Patented Dec. 21, 1886.

Fig. 1.

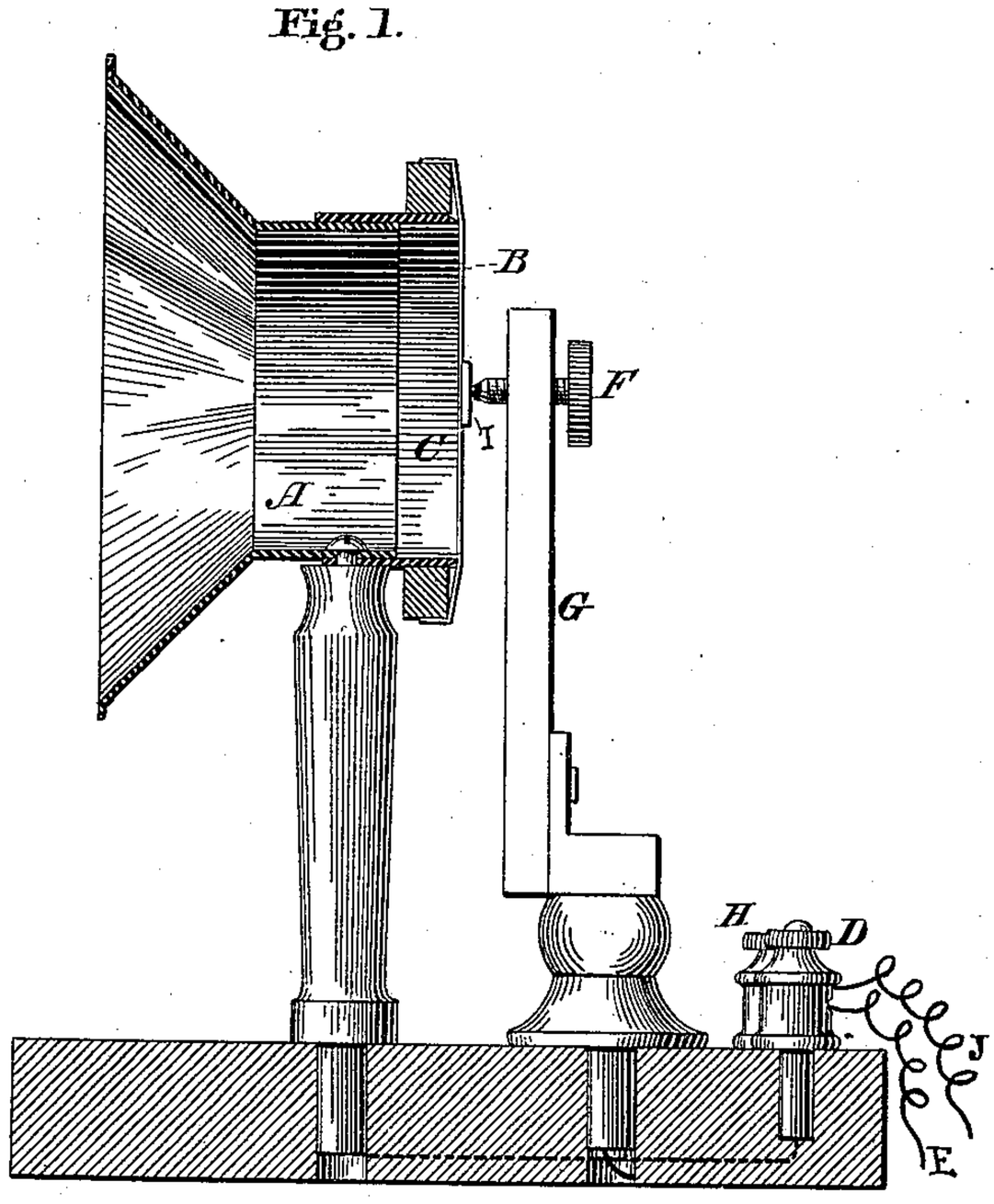
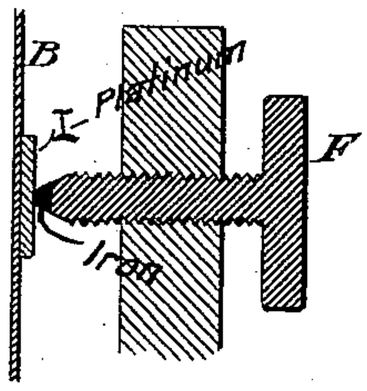


Fig. 2.



Attest:
L. H. Marshall
A. B. Smith

Inventor:
William L. Voelker
By his atty R. D. O. Smith

UNITED STATES PATENT OFFICE.

WILLIAM L. VOELKER, OF MORTON, PENNSYLVANIA.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 354,818, dated December 21, 1886.

Original application filed March 16, 1880, Serial No. 5,190. Divided and this application filed December 27, 1880. Serial No. 22,919.

(No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. VOELKER, of Morton, in the county of Delaware, State of Pennsylvania, have invented a new and useful Improvement in Telephones, of which the following is a full and complete description.

My invention relates to a transmitting-instrument consisting of a diaphragm forming or bearing one of the electrodes, the other electrode being an instrument maintained in close juxtaposition or contact with the electrode forming or borne by the diaphragm.

The transmitting-instrument to which my present invention relates is shown and described in an application filed by me on the 16th of March, 1880, and in said application there is shown a combination of said instrument with a receiving-instrument of special construction, and various details of construction of the transmitting-instrument are described and claimed.

The present specification is a division of said application and relates to one of the details of construction therein shown.

That others may fully understand my invention, I will particularly describe the same in a typical form, without intending to confine myself to the exact details shown and described, as it is evident the same may be varied without departing from the substance of the invention.

The electrical transmission of sounds is accomplished by transmitting the sound-waves into a series of electrical pulsations or waves corresponding in amplitude and intervals of succession to the sound-waves to be transmitted. This transmutation is effected at a point in the electrical circuit in the transmitting-instrument where the electrical current encounters a resistance made variable by the vibrating effect of the impact of sound-waves upon the diaphragm of such receiving-instrument. Such variable resistance is best produced by means of two electrodes of such form as to present a very small or attenuated point of contact with each other, one of said electrodes being carried by or being the diaphragm which is sensitive to or capable of being set in vibration by the impact of sound-waves, the other electrode being in contact with the first-mentioned electrode when the same is in a state of rest. The pressure of contact will vary with each vibrating movement of the diaphragm, or the electrical resistance at the point of contact will vary with each increase or diminution of pressure there. If the vibrations of the diaphragm are considerable, the contact between the electrodes may be interrupted or broken. Musical tones may be transmitted without being impaired when the vibrations of the diaphragm break the electrical contact between it, or the electrode borne by or in contact with it, and the other electrode. In transmitting articulate speech it is required that the electric waves should be practically continuous, although slight separations of the electrodes at times will not impair the practical result of the instrument.

In the instrument shown in the drawings, A is the mouth-piece in which the sound-waves are gathered and directed upon the diaphragm B, which is to be attached to the frame C of said mouth.

The diaphragm B, if of metal, may be one of the electrodes, but if not metallic should bear or have combined in contact with it a suitable electrode to be hereinafter specified.

The diaphragm B is connected by a proper conductor with the binding-screw D, and thereby with a line wire, E, and a battery. The electrode I, borne by or combined with said diaphragm, is to be formed of platinum or other similar refractory metal. F is the other electrode. It is shown in the drawings as a pointed ed pin mounted in a support, G, the pointed end being in contact with the electrode which is combined with the diaphragm B, at or about the center of the diaphragm.

The contact-point of the electrode F, I make of soft iron or other similar substance. I have discovered that the best results are obtained by contact between electrodes which are dissimilar in their qualities as to friability or fusibility, the fundamental idea being the employment of dissimilar electrodes, one of them more refractory than the other—as, for instance, an electrode such as platinum, or its equivalent, which is refractory and only fusible at a very high temperature, and an electrode, such as soft iron, brass, copper, tin, or other non-re-

fractory body, which is fusible at a much lower temperature than the other.

I have shown the electrode F as adjustably held in contact with the diaphragm by the support G; but it is evident that it may be held in contact by spring-pressure, as described by me in my application filed September 26, 1879, or in other well-known ways.

The electrode F is connected by a proper conductor with the binding-screw H, and thereby with the wire J. By this means the electric current is required to pass through the electrode which is in combination with the diaphragm and the electrode F, and at the place of contact between said electrodes the current encounters a resistance variable with the vibrations of the diaphragm under the impact of sound-waves.

It is important that one of the electrodes should be pointed, or present a small contact-surface, in order that delicacy of pressure may be secured.

Connected in voltaic circuit with said transmitting-instrument is a receiving-instrument, which it is not necessary to describe more fully, because such receiving-instrument forms no part of the invention claimed in the present specification.

I do not claim in the present application the combination of the transmitting-instrument with a special form of receiving-instrument, as that is the subject-matter of claim in the application of which this is a division.

What I claim is as follows:

In an acoustic telephone-transmitter, the combination of two electrodes, one of iron or similar friable metal and the other of platinum or similar refractory metal, substantially as and for the purposes described.

WILLIAM L. VOELKER.

Witnesses:
A. M. PIERCE,
THOMAS HUNT.