

(No Model.)

W. H. ECKERT.
TELEPHONE TRANSMITTER.

No. 308,956.

Patented Dec. 9, 1884.

Fig. 1.

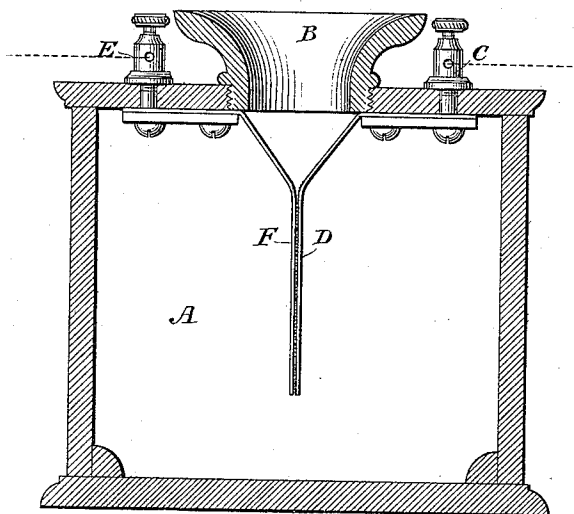


Fig. 2.

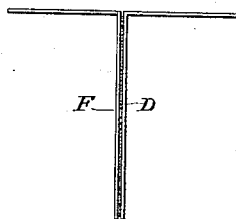
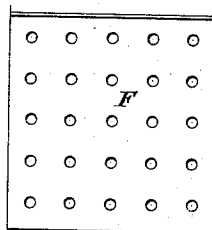


Fig. 3.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM H. ECKERT, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN BELL TELEPHONE COMPANY, OF BOSTON, MASSACHUSETTS.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 308,956, dated December 9, 1884.

Application filed December 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ECKERT, of the city, county, and State of New York, a citizen of the United States of America, have invented a new and useful Improvement in Telephonic Transmitters, of which the following is a specification.

I am aware that others have employed for a tension-regulator, or means for varying the resistance in a telephonic transmitter, finely-divided conducting material, such as finely-crushed carbon, coke, metallized carbon-powder, and powdered metal in a loose and free state within a chamber located in close proximity to the vibrating diaphragm of the mouth-piece; but in all such cases the operation of the instrument is uncertain, owing to an absence of capacity for maintaining adjustment between contact-surfaces.

My invention has for its object the obtaining of a vibratory contact between surfaces of large area which are covered or impregnated with particles of conducting material, whereby wide variations of electrical resistance may be effected under the influence of sound-vibration, while at the same time permanency and certainty of adjustment is attained, which is impossible where powdered particles in a free state of movement are used. To this end I employ two sheets of metallic foil, forming both electrode-plates and a diaphragm, suspended side by side in contact with each other and below the mouth-piece of the transmitter. The electrode-plates are so bent as to form a flat surface beneath the mouth-piece of the transmitter, or so as to form a V-shaped opening between them. The electrode-plates, being so bent, are attached by those parts which are at right angles to the contact-surfaces to the support or base-board of the mouth-piece, and the only diaphragm employed are those parts of the electrode-plates opposite the orifice of the mouth-piece. The contact-surfaces of the foil plates are coated with an adhesive gummy substance which is impregnated with fragments or particles of a conducting material which, when dried, forms a hard and elastic body. The material which I prefer to use for this purpose is a composition or liquid composed of gelatine and glycerine, gelatine be-

ing dissolved in water in the proportion of about one to five, in weight, and to this glycerine is added to an amount of about one-eighth the weight of the gelatine. Before applying the paste to the contact-surfaces of the electrode-plates a powder reduced from any good conducting material is mixed with the paste only in sufficient quantity to render the whole composition a conductor of high resistance. After being applied to the electrode-plates, and after nearly all of the moisture has been evaporated therefrom, the plates may be subjected to a sufficient pressure to form the coating into a durable body.

Figure 1 is a section view of the transmitter. Fig. 2 is a section view of a modified form of the electrodes. Fig. 3 is a face view of a perforated electrode.

Referring to the drawings, F and D are foil plates coated on their sides which are designed to face each other with a metallized paste, as above described; and thus prepared they are suspended, with their metallized surfaces facing each other and in contact with moderate pressure, beneath the orifice of the mouth-piece B of the transmitter.

C and E are binding-posts mounted upon a case or box, A, of the transmitter, and said binding-posts are electrically connected to the metallized contact-plates D and F. Plates D and F are shown in detail in Figs. 2 and 3. The electrical circuit from the battery of the transmitter is thus completed from binding-post C to contact-plate D, contact-plate F, binding-post E, and thence through the electrical circuit and battery back to binding-post C. The contact-plates, one or both, may be made from foil, paper, or thin sheet metal; and one only or both of said plates may be coated with the metallized paste, as hereinbefore described.

I find that iron scalings, filings, drillings, or any finely-reduced metal of good conducting quality is well adapted for my metallized coating.

Instead of making the foil-plates into perfect sheets, they may be perforated, leaving only a web for a body, as shown in Fig. 3. A blank sheet may be provided with interstices and then coated, leaving the interstices filled

with metallized material; or the plates may be coated with metallized material without filling the interstices, thus forming perforated plate-electrodes, which may in that form be attached to and used in a telephonic transmitter.

Vibrations of the atmosphere set up in the opening B are imparted to those parts of the electrode-plates which are exposed to the orifice, and cause an increase and decrease of pressure between the contiguous surfaces of F and D, and a consequent change of electrical resistance in the telephonic circuit, thereby enabling the reproduction of articulate speech through the medium of a telephonic receiver placed at any point in the electrical circuit.

I am aware that a telephone-transmitter consisting of two broad elastic electrode-plates inclined toward each other and in contact at their convex ends, and constituting the electrodes, is not new; but my invention differs from such form, in that the two plates have broad surfaces of definite magnitude, which are in contact with each other throughout said surfaces, but under varying pressure, while in the transmitter referred to the contact is merely tangential.

I am also aware that a comparatively rigid support for one electrode, in connection with a broad flexible electrode which makes variable surface contact with the first, has been used in transmitters.

I am also aware that an electrode consisting of a body of carbon composition which is subjected to variable pressure has been employed.

What I claim, and desire to procure by Letters Patent, is—

1. In a telephonic transmitter, the combi-

nation of two light elastic plates having broad contiguous surfaces, forming the electrodes, said surfaces being coated with an inferior conductor, for the purpose specified.

2. In a contact-transmitter, the electrodes having broad surfaces normally in contact, formed of a metallized paste, substantially as specified.

3. A light flexible electrode, substantially as described, for a contact-transmitter having a broad surface and a metallized coating consisting of an adhesive paste impregnated with particles of a metallic conductor, in combination with a second electrode of broad conducting-surface, with which it is in variable contact.

4. In a telephone-transmitter, the combination of two electrodes consisting of broad elastic plates with definite extended surfaces in contact with a mouth-piece arranged to concentrate the sound-waves upon the non-contacting portions of the electrodes, and to vary the pressure between them.

5. In a telephone-transmitter, the combination of two electrodes consisting of broad elastic plates having definite invariable extended surfaces in contact with each other.

6. In a telephone-transmitter, the combination of an electrode consisting of a broad elastic plate having a definite invariable extended surface adapted to make a variable electrical contact with a second electrode of broad surface of imperfect conducting material.

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Witnesses:

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