

(No Model.)

W. W. JACQUES.
TELEPHONE TRANSMITTER.

No. 262,784.

Patented Aug. 15, 1882.

Fig. 1.

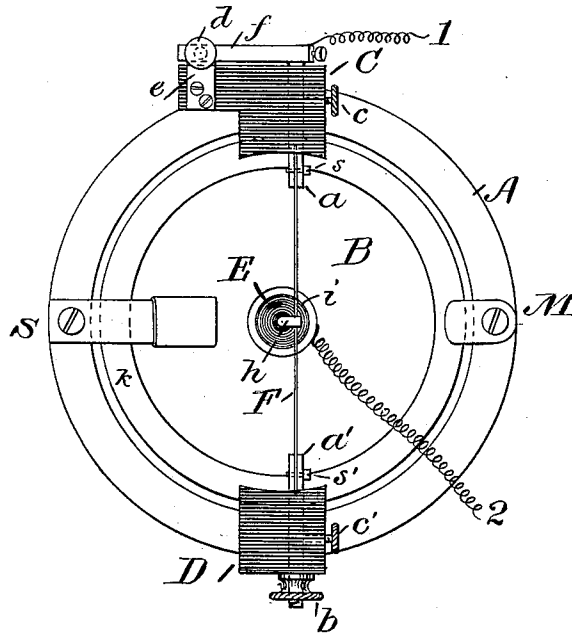


Fig. 2.

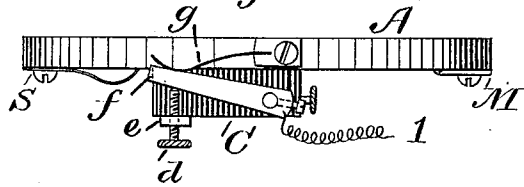
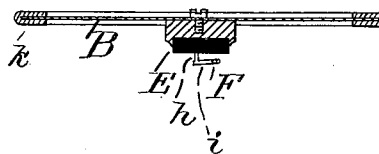


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM W. JACQUES, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
AMERICAN BELL TELEPHONE COMPANY, OF SAME PLACE.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 262,784, dated August 15, 1882.

Application filed January 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. JACQUES, of Boston, in the county of Suffolk and State of Massachusetts have invented certain Improvements in Telephone-Transmitters, of which the following is a specification.

My invention relates to telephones which are vitalized by a battery or other suitable source of electricity, and which operate to throw the electric force into undulations corresponding to the sound-waves representing articulate speech or other sounds by varying the resistance of the battery-circuit, these instruments being comprised under the names of "telephone-transmitters" or "variable-resistance telephones."

The present invention has reference to the attachment and adjustment of the contact points or electrodes, which, by the greater or less force with which they come together and the degree of perfection with which the contact between them is maintained, regulate and vary the resistance of the circuit.

In the well-known Blake transmitter the outer electrode is carried on the end of a long-weighted spring, and the variations of contact-pressure are due chiefly to the inertia of the weight.

My invention consists in carrying the outer electrode on a short arm which is itself carried by a torsion-spring, to which the pressure between the electrodes is due. In this construction the electrode is brought so close to the axis of motion that it offers very little inertia resistance to the efforts of the spring to preserve contact during the retreating movement of the vibrating diaphragm of the apparatus, while the changes in the pressure of the spring produced by a very small range of motion in the electrode are so great that the vibrations of the diaphragm under the influence of the sound-waves will cause a substantial variation in the pressure of the two electrodes on each other at the point of contact. By this contrivance the weight can be wholly or mostly dispensed with.

In the drawings which form a part of this specification, the figures show different views of the frame-work of the instrument with the

improved form of contact-spring and adjusting appliances.

Figure 1 is an inside or rear view of the frame-work, diaphragm, and variable-resistance contacts of a telephonic transmitter embodying my invention. Fig. 2 is a view of the upper edge of the same, and Fig. 3 is a horizontal section of the diaphragm and electrodes through the center.

Upon the usual cast-iron frame, A, is fixed the diaphragm B, loosely held thereon by the clamp M, and the damping-spring S, insulated from frame A by rubber ring k. A carbon button, E, is attached in any well-known manner to the center of the diaphragm, and by means of the wire 2 forms one of the electrodes of the battery-circuit and one of the contact-pieces of the variable resistance.

Fastened to the upper and lower edges of the frame A are two blocks of non-conducting material, C D, which act as standards for two sockets, *a a'*, which may be made of any convenient metal or alloy, and to which a torsion-spring, F, is affixed by means of the small set-screws *s s'*. The torsion-spring F is so mounted that it crosses the diaphragm a short distance on one side of the center thereof. It carries a short radial arm or lever, *l*, of aluminum, platinum, or other metal, which at its end is furnished with a platinum point, *h*, which, by its continuous metallic connection with the wire 1, (which is attached to the uppermost end of the socket *a*,) forms the second or complementary contact-point of the variable resistance, and when the instrument is properly adjusted rests with some degree of initial pressure upon the carbon button E. The torsion-spring F is stretched to a suitable degree of tightness and rigidity by the adjusting-screw *b*, after which the socket *a'* may be fastened in the position thus obtained by the set-screw *c'*. The upper socket, *a*, is also, when the torsional adjustment is secured, as hereinafter described, fixed immovably in the standard C by a set-screw, *c*. The requisite torsion is given to the spring F by means of the device shown most clearly in Fig. 2. A lever, *f*, is fastened to the end of the metal socket *a* and its free end placed under the influence of an adjusting-screw, *d*,

which works in the upright *e*. By turning the said screw *d* the lever is pressed inward against the restraining force of the spring *g*, and thus gives the electrode-carrying spring *F* the torsion requisite to bring the platinum point *h* into the necessary contact with the carbon button *E*, and the pressure thus obtained may be varied at will by turning the screw *d* inward or outward, as may be required.

10 The torsion-spring *F* is preferably made of steel of the best quality, and I have obtained good results by using wire about five-thousandths of an inch in diameter. Yet, although steel is preferable, if more convenient, 15 it may be made of other metals; and, except for the liability of fracture, a fiber of glass might readily be employed.

I have ascertained by experiment that conversation transmitted by this apparatus is of 20 a very loud tone, and its articulation is very distinct.

It will be found convenient to use an induction-coil in connection with this transmitter in a manner well understood in order to amplify the changes of strength of the current 25 when used on long circuits; but as neither this appliance nor the ordinary inclosing case forms any part of my invention, I have not regarded them as necessary features in the drawings or 30 description of my apparatus.

I do not confine myself to the precise manner of mounting which is herein shown, as I

may modify or alter the same greatly without departing from the essence of my invention.

Having now described my invention, I 35 claim—

1. The combination of the diaphragm, the vibrating electrode operated thereby, the opposing electrode, and the torsion-spring connected with said opposing electrode, substantially as described. 40

2. The combination, with the diaphragm and electrode carried thereby, of a torsion-spring carrying the second electrode, substantially as described. 45

3. In a contact-telephone, the combination, with a diaphragm or vibratory plate carrying one electrode or contact of a varying resistance, of a torsion-spring, a radial arm attached thereto, and carrying the second or complementary electrode or contact-piece, and means, 50 as indicated, whereby the degree of torsion is adjusted for the purpose of varying the initial pressure between the electrodes, substantially as hereinbefore set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of January, 1882. 55

WILLIAM W. JACQUES.

Witnesses:

J. H. CHEEVER,
GEO. WILLIS PIERCE.