

(No Model.)

J. W. THOMSON.
TELEPHONE TRANSMITTER.

No. 593,255.

Patented Nov. 9, 1897.

Fig. 1.

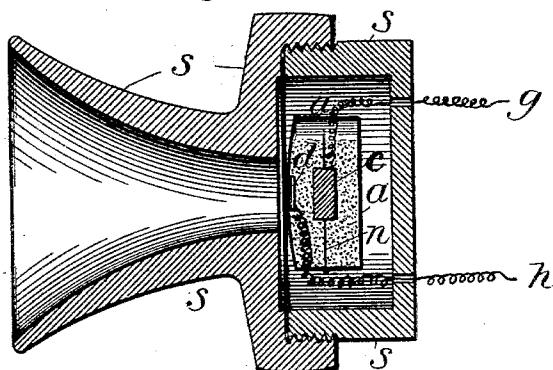
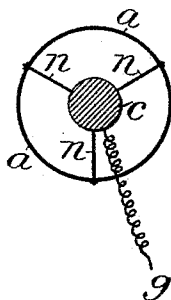


Fig. 2.



Witnesses.

Dunson B. Low

N. W. B. Rayburn

Inventor.

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UNITED STATES PATENT OFFICE.

JAMES W. THOMSON, OF BEDFORD, INDIANA.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 593,255, dated November 9, 1897.

Application filed March 1, 1897. Serial No. 625,681. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. THOMSON, a citizen of the United States, residing in Bedford, in the county of Lawrence, in the State of Indiana, have invented a new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

My invention relates to telephone-transmitters, the object being to produce an instrument in which the resistance-varying material lays so loosely as to produce a very great resistance, thereby producing a transmitter that will not "pack" and be efficient without the use of an induction-coil. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the transmitter, and Fig. 2 is a vertical section of the cell only. The vertical section shown by Fig. 1 is at right angles with the vertical section shown by Fig. 2.

An outer case *s s s s s*, made in two parts, is provided. The diaphragm, to which cell *a a a* is attached, is clamped between the two parts of said outer case in the usual way. The cell *a a a* is supported and carried by the diaphragm, being fastened thereto in the center. The cell *a a a* is made of some light non-conducting material, as wood or paper. One electrode, *d*, is fastened to the side of cell *a a a*, and this electrode may be used in fastening cell *a a a* to the diaphragm. The other electrode, *c*, is suspended by three cords or threads *n n n* in the center of the cell *a a a*. These suspension cords or threads allow the electrode *c* to move or swing backward and forward toward and from the other electrode *d*. Cell *a a a* is nearly filled with carbon granules, the quantity used being sufficient to cover the electrodes without filling the cell. Wires *h* and *g* are connected to electrodes *d* and *c* and pass out of the cell and thence out of the outer case. Electrode *c* is usually made of lead to insure increased inertia.

The lack of uniformity of results obtained from granular-carbon transmitters is largely due to the fact that the diaphragm in moving backward and forward alters the amount of space between the electrodes, and when the space between them becomes overcrowded with the granules there is a constant pressure between the electrodes due to the elasticity

of the diaphragm. The diaphragm, being set in vibration by sound-waves, moves one electrode toward and from the other, and when the electrodes are farthest apart the carbon granules settle down between them. When the electrodes move apart and the granules fill up the extra space, should a part of them form into such position as to lock together and not give way to the pressure of the diaphragm the diaphragm will then, on account of its elasticity, press upon this compact mass or clod of granules and form a path of low resistance through the transmitter.

In the transmitter herein described as my invention this packing cannot occur, because the suspended movable electrode does not tend to return to any given position or to its original position after having been moved by vibration or jar. The threads *n n n* tend to hold this electrode *c* opposite the electrode *d* and not at any given distance from it. I have found that however loosely electrode *c* is suspended it will never move enough to come in contact with the other electrode or the back of the cell. This may be explained by regarding it as a large granule among a lot of small granules. It is a fact of common observation that when a lot of granules are laid on a vibrating diaphragm the larger ones will work to the surface away from the diaphragm and the smaller ones work under or toward the diaphragm. I attribute this action of the electrode *c* to the same cause.

I do not claim to be the first inventor of a telephone-transmitter in which the cell and electrodes are carried by the diaphragm or one in which an electrode is actuated by inertia.

What I do claim is—

A telephone-transmitter provided with a diaphragm carrying a cell containing resistance-varying material and two electrodes, one fixed in relation to the diaphragm, the other loosely suspended in the midst of the granules.

In testimony whereof I have hereunto subscribed my name this 20th day of February, 1897.

JAMES W. THOMSON.

Witnesses:

HARLEY B. FOX,
JAMES A. ZARING,
J. N. SEARS.