(No Model.)

# M. G. FARMER.

## TELEPHONE TRANSMITTER.

No. 380,426. Patented Apr. 3, 1888.

Fig. 1.

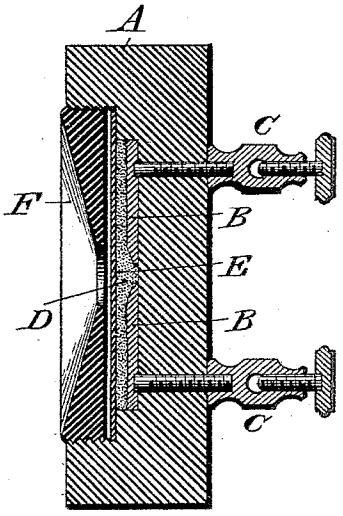



Fig. 2.

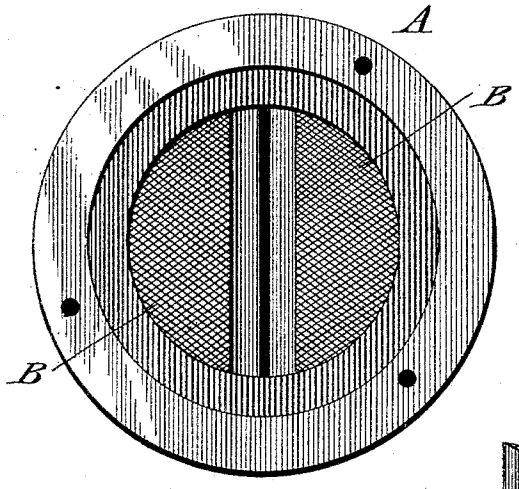



Fig. 3.

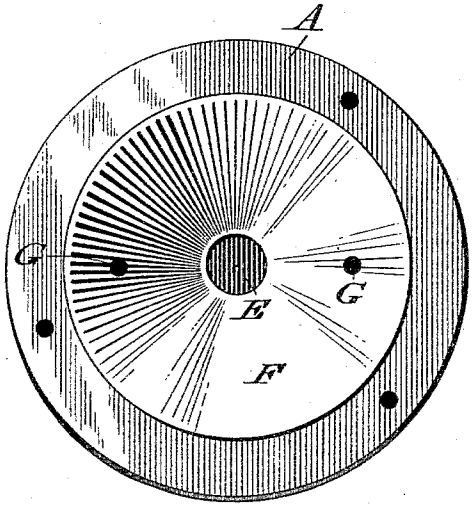
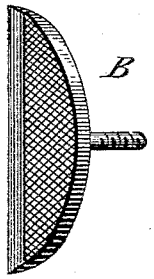



Fig. 4.




WITNESSES:

P. F. Dagle.

L. Douville

INVENTOR:

Moses G. Farmer

BY Wiedersheim & Kintner

ATTORNEYS

# UNITED STATES PATENT OFFICE.

MOSES G. FARMER, OF ELLIOT, MAINE.

## TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 380,426, dated April 3, 1888.

Application filed April 14, 1887. Serial No. 234,795. (No model.)

*To all whom it may concern:*

Be it known that I, MOSES G. FARMER, a citizen of the United States, residing at Elliot, in the county of York, State of Maine, have invented a new and useful Improvement in Telephone-Transmitters, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in telephone-transmitters of the Hunnings type, or those having comminuted or carbon-dust electrodes; and the objects of my improvements are, first, to provide a simple, compact, and effective transmitter; second, to maintain sure and absolute electrical connection at all times between the electrodes; and, third, to so generally simplify this form of a transmitting-telephone as to make it cheap and durable, and to adapt it for such general use that careless handling and use will not disturb the parts or destroy the adjustment. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section through the body of the instrument, showing the electrodes and their binding-posts, together with the diaphragm and loose carbon powder. Fig. 2 is a plan view looking into the mouth of the instrument, the diaphragm, mouth-piece, and carbon powder having been removed. Fig. 3 is a plan view of the mouth-piece and diaphragm-retaining ring. Fig. 4 is a detail perspective view of one of the electrodes.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, the body of the instrument, A, is made of hard rubber, wood, or any desired non-conducting material, being in the nature of a cup, as shown in Fig. 1, and has at its bottom two or more metal or other conducting-electrodes, B, one of which is clearly shown in the detail view, Fig. 4. These two electrodes are firmly held in place by extension screw-bolts passing through the back of the instrument and adapted to receive the binding screw-nuts C, which, as will be seen, serve a double function. These electrodes have extended metal surfaces, roughened, if desired, and fit snugly into the bottom of the cup, as shown in Figs. 1 and 2.

D represents the granulated carbon powder, of the kind usually employed; E, the diaphragm, held in place against the carbon powder by the mouth-piece F, screw-threaded on its outer surface, and adapted to be screwed into position with an instrument which will fit in the holes G G, as shown in Fig. 4. It will be seen that with this arrangement the diaphragm can be held firmly in place and the carbon powder securely retained between it and the electrodes B.

The operation is not essentially dissimilar to that of telephones of this general type other than that the change of contact-pressure in this apparatus is between the two rigid stationary electrodes and the carbon situated between said electrodes, and the current does not pass through the diaphragms, as is the custom in the Hunnings instrument, in which instrument the carbon powder is located between two diaphragms, both being adapted to vibrate, so that the current variation is had between said diaphragms, or between a single diaphragm and a back plate located in a retaining-cup, the diaphragm always being one of the electrodes.

With such an instrument the powder will pack and become less effective, while with my apparatus the electrodes are rigid and stationary, the current variations being had by varying the pressure on the carbon located between the stationary electrodes by causing the diaphragm to change such pressure. The electrode-surfaces are rigidly secured and not liable to vary their position under abnormal disturbances, while the diaphragm is held firmly in position and prevents any possible shifting of the powder away from the two closely-allied electrodes.

With my improvement a metal diaphragm is not absolutely necessary, as is shown on inspection, inasmuch as this diaphragm forms no part of the circuit.

Having thus described my invention and its mode of operation, what I claim as new, and desire to secure by Letters Patent, is—

1. A telephone-transmitter having a set of fixed electrodes with roughened surfaces, a comminuted conductor connecting said electrodes, and a diaphragm resting against said comminuted conductor, substantially as described.

2. A telephone-transmitter having fixed electrodes, in combination with a conducting-powder resting thereon, and a diaphragm adapted to hold the powder in contact with said fixed electrodes, substantially as described.

3. A telephone-transmitter having rigid or fixed electrodes secured to the body of the instrument, in combination with a comminuted conductor resting directly on said fixed electrodes, and a diaphragm adapted to hold the comminuted conductor in place and vary the conducting capacity of the instrument as it is vibrated, substantially as described.

4. A telephone-transmitter consisting of fixed electrodes having roughened surfaces, and comminuted powder resting thereon, with a diaphragm for holding said powder in place, and a retaining-ring, as described, for adjusting the diaphragm to and from the electrodes, substantially as described.

5. In a telephone-transmitter, the combination of fixed electrodes fitted in the base of the instrument and but slightly separated from each other, with carbon or other powder resting thereon, a diaphragm resting on the powder, and an adjustable retaining-ring fitted in the mouth of the instrument for adjusting the powder with relation to the fixed electrodes, substantially as described.

MOSES G. FARMER.

Witnesses:
M. F. KEEFE,
TIMO. DAME.