

(No Model.)

W. BURNLEY.
TELEPHONE TRANSMITTER.

No. 326,269.

Patented Sept. 15, 1885.

Fig. 1.

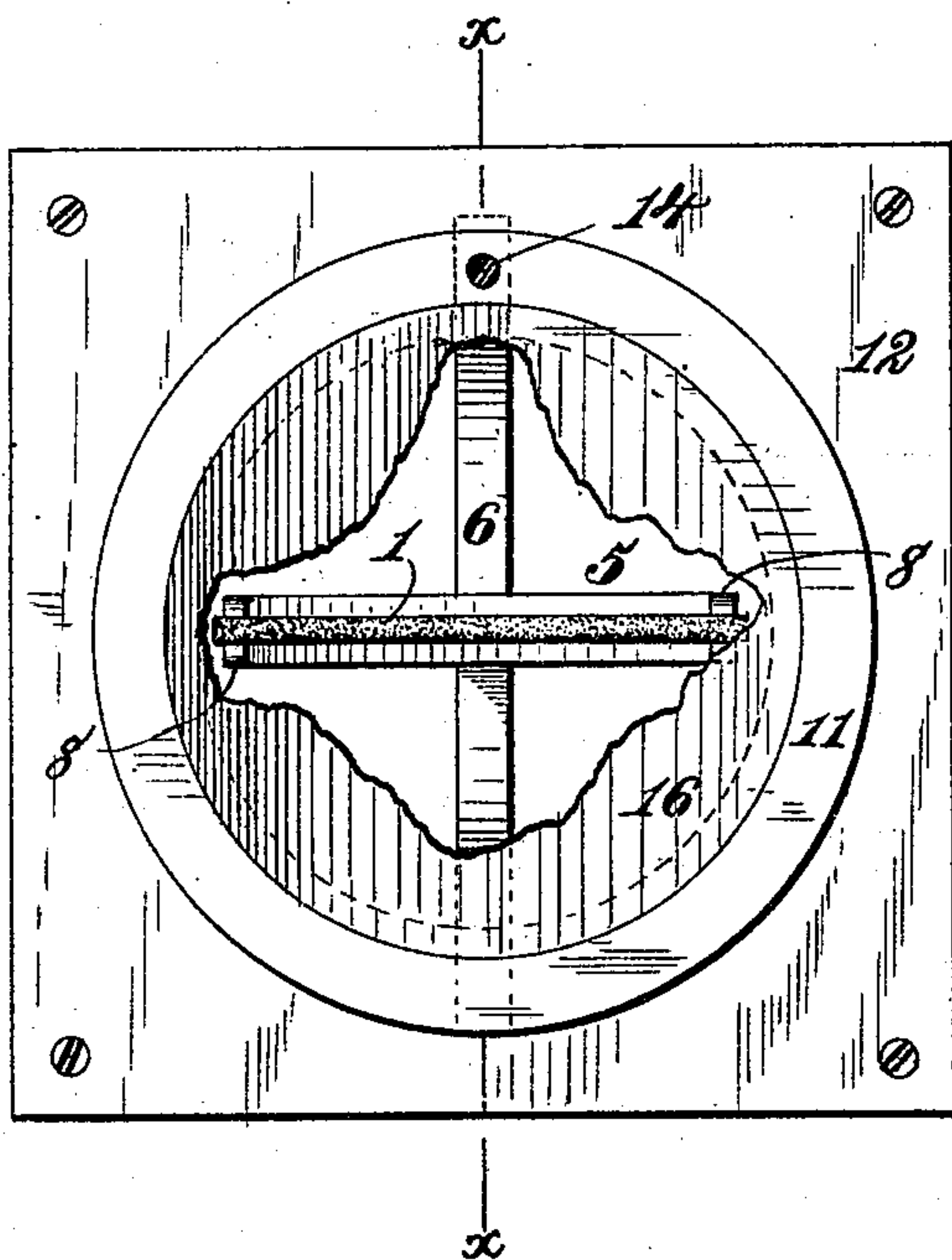


Fig. 2.

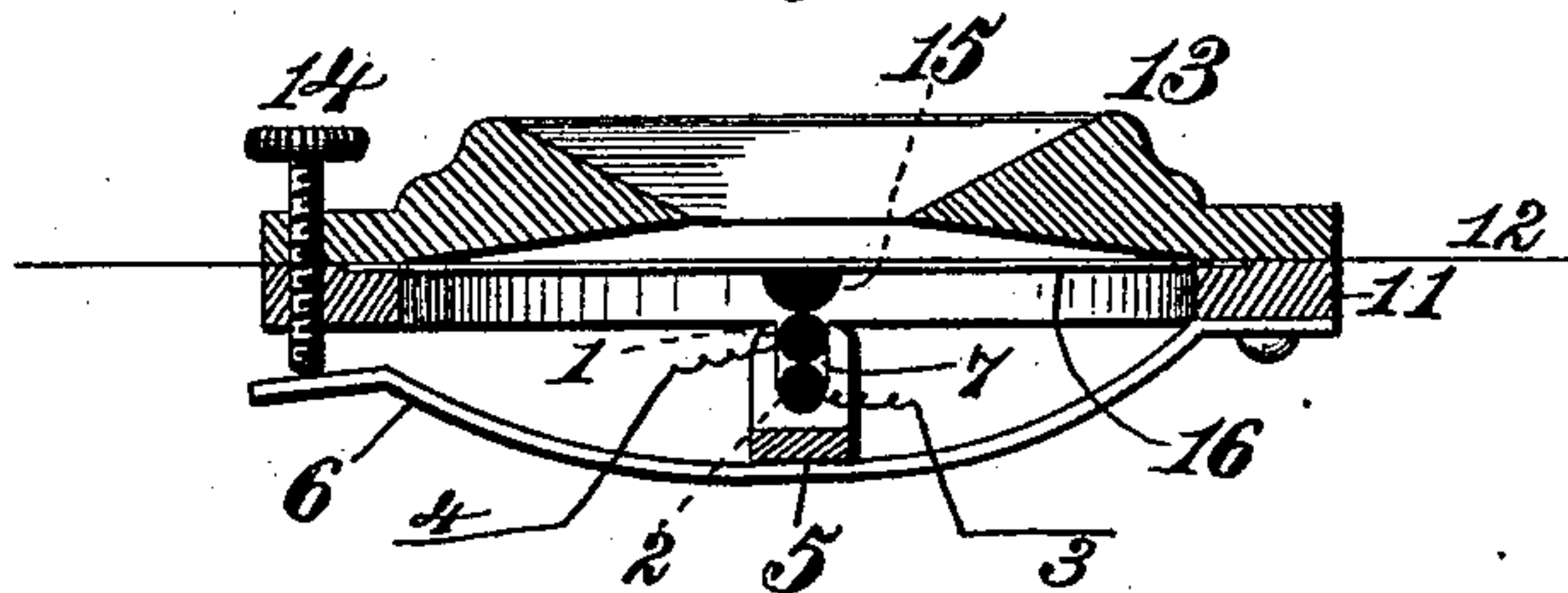


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM BURNLEY, OF NORTH EAST, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO CHARLES A. HITCHCOCK, OF SAME PLACE, AND LEWIS F. WATSON, OF WARREN, PENNSYLVANIA.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 326,269, dated September 15, 1885.

Application filed October 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BURNLEY, a citizen of the United States, residing at North East, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Telephonic Transmitters, of which the following is a specification.

My invention relates to that class of telephone-transmitters in which an electric current is thrown into vibrations or undulations corresponding to the vibrations or undulations of the sound acting upon a diaphragm controlling the movement of the electrodes or operative parts of the apparatus.

Its object is to produce a transmitter simple and novel in construction, yet of great sensibility to the influence of sound-waves, to which end it consists in the features more particularly hereinafter set out and claimed.

A diaphragm is secured between an ordinary mouth-piece and supporting-ring on a suitable base in any of the well-known manners. The electrodes are two carbon cylinders or pencils of a length approximating the diameter of the diaphragm. These are loosely mounted in a yoke formed of a base having ends turned up therefrom, these ends being slotted, the pencils lying therein, one upon the other, or parallel, and supported at their ends in the slots of this yoke. Attached at one end to the under side of the supporting-ring is a flat spring whose free end tends normally to bear up against this ring. A set-screw is provided passing through the edge of the ordinary mouth-piece and the supporting-ring and in such position that its inner end takes upon the flat spring and regulates and controls its force toward the ring. Between the spring and the diaphragm is placed the yoke carrying the pencil-electrodes, the yoke being supported and retained in position by the spring. Upon the under side of the diaphragm is placed a small metallic projection in such relation as to bear upon the upper-carbon pencil or electrode. To each electrode is made a circuit-connection, so that the two pencils form the electrodes of the telephonic circuit. This construction gives an extended area of contact of the electrodes and

provides for control and regulation of their normal pressure upon each other. Under the action of the diaphragm caused by sound-wave disturbances this normal pressure is varied throughout the entire length, giving thereby a large amplitude of variation of pressure in the contact, so that the instrument becomes exceedingly sensitive to even small sounds and reproduces with increased power greater disturbances.

The construction may be better understood by reference to the drawings, in which Figure 1 is a plan view with the mouth-piece removed; Fig. 2, a section thereof on the line *xx*, Fig. 1, and Fig. 3 a detail view of the electrodes and supporting-yoke.

Referring to Figs. 1 to 3, inclusive, the reference-numeral 12 designates any suitable base upon which the operative parts may be supported. Upon it is secured the supporting-ring 11, between which and the rim of the mouth-piece 13 is secured the diaphragm 16, upon whose center is fixed a lead or other metal boss or projection, 15.

Attached to the ring 11 at one end by a screw, 10, is a flat spring, 6, preferably bow-shaped, as shown in Fig. 2. It tends normally to press toward the diaphragm and to contact at its free end with the ring 11. A set-screw, 14, passes through and is seated in the mouth-piece 13 and ring 11, its free end projecting so as to take upon 6 and control and regulate its pressure toward the diaphragm.

Between the diaphragm and the spring, and secured in position by the action of the spring, is a yoke consisting of a base, 5, having upwardly-turned ends, 8 8, in each of which is formed a slot, 7. In these slots rest, one upon the other and parallel, the two carbon pencils 1 2, which may be of any desired form in cross-section. Each forms an electrode for the circuit, circuit-connections 3 4 being shown as made to them. These connections 3 4 may be directly to and from the main line, or may be part of a local circuit, including the primary of an induction-coil whose secondary coil is connected to the main line, both of which methods of connection are well known in the art of telephony. This yoke and the

electrodes carried by it are placed at right angles to the spring 6, and in such position that the boss or projection 15 on the diaphragm takes upon the upper one.

5 From this description the operation of the devices is readily understood. By the screw 14 the normal contact-pressure of the electrodes is adjusted, and at any time, without
10 cessation of use of the transmitter, controlled, varied, or regulated. Properly adjusted, sound-waves impinging on the diaphragm cause a corresponding variation in its pressure on the electrode 1, and of the electrode 1 upon its
15 mate, 2, or the interposed platinum, the circuit, of which they are the electrodes, being correspondingly affected. As the electrodes are parallel to each other and in contact throughout their entire length, this variation extends over this enlarged area of contact and practically
20 multiplies the amount of variation over and above mere point contacts. This renders, as before stated, the transmitter exceedingly sensitive to minor wave disturbances, while ordinary disturbances are reproduced with
25 increased amplitude over mere point contacts, so that the disturbances may be transmitted and reproduced at an increased distance, or with increased force at non-increased distances.

30 Having thus described my invention, what I claim is—

1. In a telephonic transmitter, the combination, with the diaphragm, of two carbon-pencil electrodes influenced thereby and parallel
35 to the face thereof, both loosely supported in or by a suitable frame-work and in contact throughout their length, substantially as described.

2. In a telephone-transmitter, the combination
40 of a diaphragm, two carbon-pencil electrodes influenced thereby and parallel to the face thereof, a suitable frame-work, as shown, for loosely supporting both pencil-electrodes, and a boss or projection upon the face of the
45 diaphragm taking upon and against one of the pencil-electrodes, substantially as described.

3. In a telephone-transmitter, the combination of a diaphragm, a yoke secured beneath it, and two electrodes mounted loosely therein and contacting throughout their length, substantially as and for the purpose set forth. 50

4. In a telephone-transmitter, the combination of a diaphragm, two electrodes contacting throughout their length, a yoke supporting the electrodes, and a spring supporting
55 and retaining the yoke in position, substantially as and for the purpose set forth.

5. In a telephone-transmitter, the combination of a diaphragm, two electrodes controlled thereby and contacting throughout their
60 length, a yoke supporting and carrying the electrodes, and means for controlling and regulating the normal contact-pressure of the diaphragm and electrodes, substantially as and for the purpose set forth. 65

6. In a telephone-transmitter, the combination of the diaphragm 16, having boss or projection 15, the yoke 5, having slotted ends 8, and the electrodes 1 2, loosely supported therein, substantially as and for the purpose set
70 forth.

7. In a telephone-transmitter, the combination of the ring 11, diaphragm 16, yoke 5, electrodes 1 2, loosely supported therein, and
75 spring 6 retaining the yoke and electrodes in position, substantially as and for the purpose set forth.

8. In a telephone-transmitter, the combination of the ring 11, diaphragm 16, yoke 5, electrodes 1 2 supported thereby and contacting
80 throughout their length, spring 6, retaining the yoke and electrodes in position, and adjusting devices 14 for controlling the action of the spring, substantially as and for the purpose set forth. 85

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM BURNLEY.

Witnesses:

DYER LOOMIS,
C. A. HITCHCOCK.