No. 898,073. PATENTED SEPT. 8, 1908.

H. E. SHREEVE.

APPARATUS FOR SPEECH TRANSMISSION.

APPLICATION FILED OCT. 15, 1907.

Fig. 1.

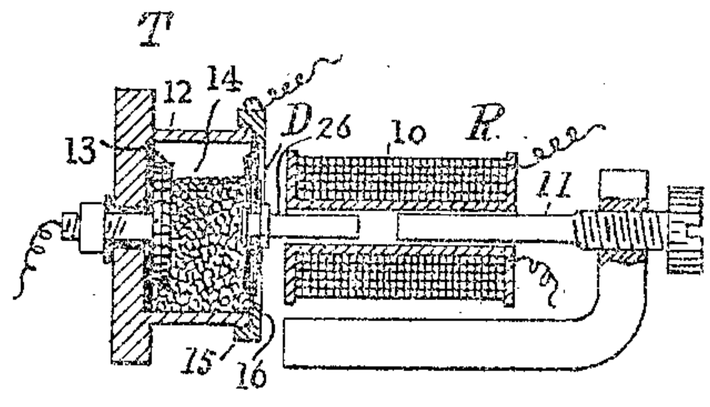


Fig. 2.

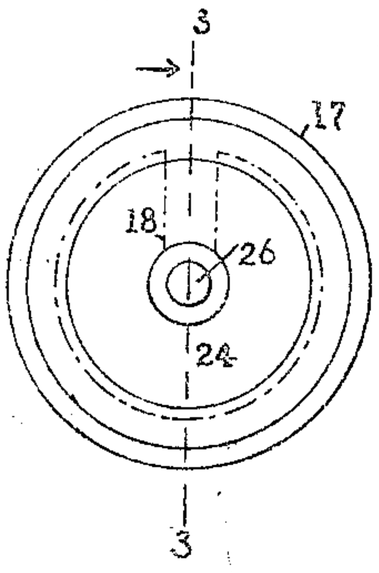


Fig. 3.

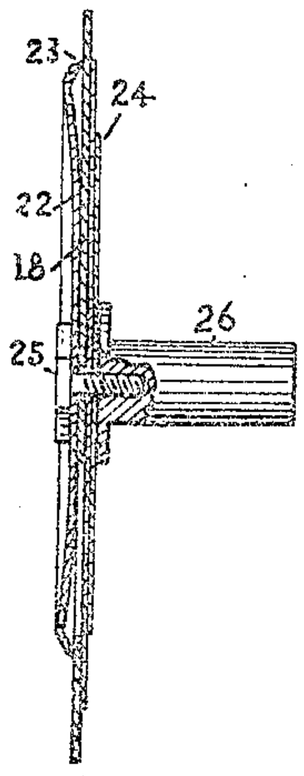
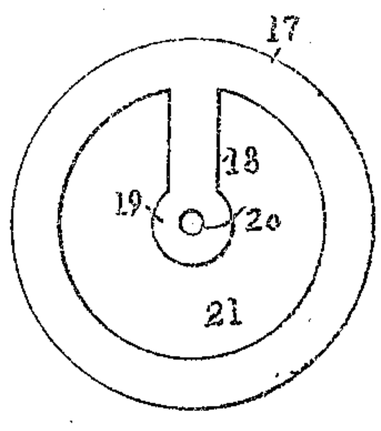


Fig. 4.



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APPARATUS FOR SPEECH TRANSMISSION.

No. 898,073. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed October 15, 1907. Serial No. 397,579.

To all whom it may concern:

Be it known that I, HERBERT E. SHREEVE, residing at Wyoming, in the county of Essex and State of New Jersey, have invented certain Improvements in Apparatus for Speech Transmission, of which the following is a specification.

This invention concerns the septa and electrodes of telephonic apparatus, it especially relating to means for supporting the vibratory electrodes and pole pieces belonging to the transmitting portion of telephone repeaters. In the microphonic buttons of these instruments considerable heat is generated by passage of the current, and when the septum carrying the movable pole piece is fixedly secured at its edge, in accordance with the usual practice, the resulting expansion causes said septum to assume a concavo-convex form independently of that imparted to it under the attraction of the receiving element of the repeater. This may give rise to two defects—the bowing of the septum tends to increase its rigidity and thus impair its freedom of vibration, and it affects the adjustment of the apparatus by advancing the vibratory pole piece toward, or withdrawing it from, the receiving element. My invention overcomes these difficulties by providing a composite septum, of which the vibratory electrode is an element, and all parts of which are free to expand laterally of the casing in which they are mounted. This and other novel features will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings, in which the same reference characters designate like parts throughout, Figure 1 represents the more essential portions of a telephone repeating apparatus to which is applied one embodiment of my invention; Fig. 2 is an enlarged front elevation of the septum with its attached pole piece, looking from the right in Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 2, further enlarged; and Fig. 4 is a front elevation of the supporting ring alone.

The receiving element R and transmitting element T of the repeater shown in Fig. 1 may be, in general, of any suitable type, as, for example, that illustrated in my Patent #836,612, dated November 20, 1906. The receiver has a coil 10 traversed by the currents which are to be reinforced, and a pole piece 11, the varying magnetization of which influences the transmitting element. Said transmitting element may comprise a casing 12, provided with a solid rear wall upon which is mounted the back electrode 13, and having its opposite extremity closed by a septum D, thus furnishing a chamber for the reception of the granular microphonic material 14. This septum is shown as retained in place by a member 15 threaded upon the casing and having a flange 16 overhanging its end.

To consider the element more properly constituting the present invention, there is clamped between the casing and flange 16 a ring 17 serving to support and position the other parts of the septum. This ring may be stamped from sheet metal, copper being suitable as a good conductor not possessing too great capability for vibration and therefore not tending to impress its own rate upon the septum. Inwardly from one side of the ring projects a preferably integral reduced portion or tongue 18, which is shown as provided at its end, about the center of the septum, with an enlargement 19 in which is an opening 20. The main opening 21 of the ring 17 is closed at its inner side by a circular plate or disk 22 of iron, preferably gold plated, which gives the principal contact surface for the microphonic material at this end of the casing and therefore may be considered as the front electrode of the receiver. The disk 22 is slightly dished, the inclined edge 23 resting against the ring 17. This furnishes more uniform contact than would a flat plate and also increases the resistance of the member to distortion. The opposite or outer side of the opening 21 in the supporting ring is covered by a plate 24, and this is joined to the front electrode and to the tongue 18 by a screw 25 passing through the opening 20 and alined openings in the electrode and plate 24 into a vibratory pole piece 26, which extends into proximity with the pole piece 11 of the receiving element. The member 24 is preferably formed of a thin disk of some such material as mica, and for the sake of uniformity in product and a somewhat improved vibratory action it may be in two separate laminæ of different diameter, the smaller being outward. The plate 24 coöperates with the relatively rigid edge of the disk 17 and retains the electrode 22 against undue movement longitudinally of the casing, thus removing the stress in that direction from the

comparatively frail tongue 18, which need only act to center the electrode and to conductively connect it with the casing. The mica plate also has a useful dampening effect upon the electrode, and, when of mica, the transparency of this substance permits the opening 21 of the supporting ring to be seen, so that any leakage of the granular material under the edge 23 of the electrode may be observed.

The general operation of the repeating apparatus is too familiar to require description. It therefore seems only necessary to point out that as the receiver becomes heated by the passage of current through it, the septum is not materially distorted by the resulting expansion, since this is allowed to take place laterally. That is, the electrode 22 and retaining member 24 are both free to move outwardly over the supporting ring 17, while the latter may expand inwardly into the opening 21. The last mentioned movement may affect the alinement of the pole pieces, but this is not material while the normal position of the diaphragm and of the vibratory pole piece longitudinally of the apparatus remains unaltered. Therefore the adjustment of the repeater is substantially constant, and this, with the structural characteristics already defined, leads to an increased and uniform efficiency.

I claim and desire to secure by Letters Patent:

1. In a telephone apparatus, a transmitting element comprising a casing, a vibratory electrode, and means for supporting the electrode upon the casing, both electrode and supporting means being capable of free lateral expansion.

2. In a telephone apparatus, a transmitting element comprising a casing, a supporting member carried by the casing said member having a central opening into which a reduced portion or tongue of the member extends, and an electrode bearing upon one side of said supporting member about the opening through the middle thereof and connected to the inner end of the reduced portion of the supporting member.

3. A transmitting element comprising an annular supporting member, an electrode in the form of a disk on one side of the supporting member bearing at its edge against said member about the central opening therein, and a retaining disk bearing upon the opposite side of the supporting member about the central opening therein and connected to said electrode.

4. A transmitting element comprising a casing, an annular supporting member carried by the casing and having a reduced inwardly extending portion, an electrode on one side of the supporting member, a retaining member situated upon the opposite side of the supporting member, and a pole piece connected to the retaining member, the electrode and the reduced portion of the supporting member, substantially as described.

5. A septum comprising a ring provided with an inwardly extending tongue, and a plate covering the opening in the ring and being attached to the tongue.

6. A septum comprising a ring provided with an inwardly extending tongue, and a disk having an inclined edge contacting with the ring, said disk being attached to the tongue.

7. A septum comprising a ring, and plates contacting with opposite sides of the ring and secured to one another.

8. A support for transmitter electrodes comprising an annular member having a projection extending into proximity with its center.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this eleventh day of October 1907.

HERBERT E. SHREEVE.

Witnesses:
P. F. REMSEN,
W. B. WALLACE.