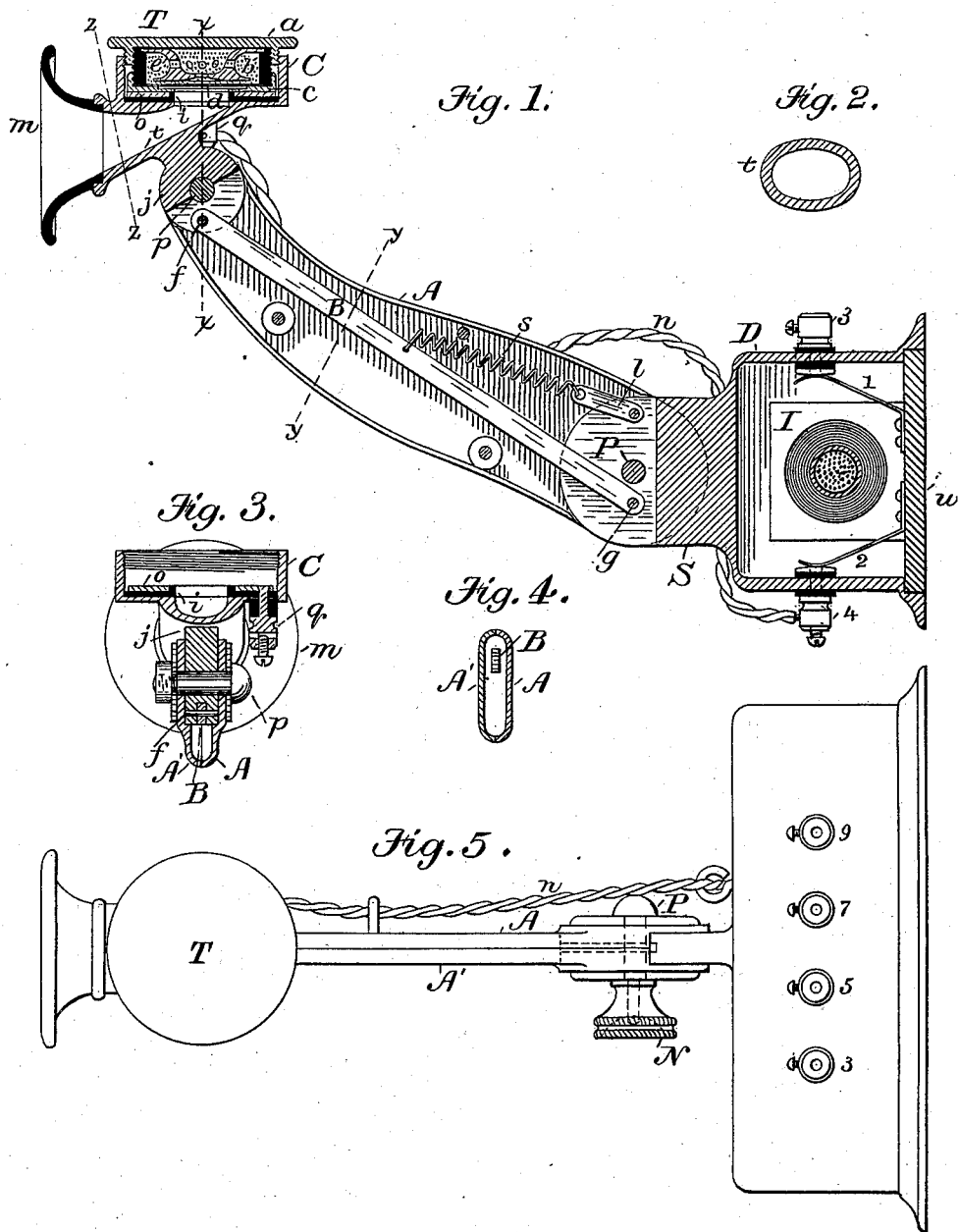


(No Model.)

E. T. GILLILAND.
TELEPHONE TRANSMITTER.

No. 384,201.

Patented June 5, 1888.



Witnesses.
Geo. Willis Pierce.
Wm. B. Vansize.

Inventor.
Egna T. Gilliland.

UNITED STATES PATENT OFFICE.

EZRA T. GILLILAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
AMERICAN BELL TELEPHONE COMPANY, OF SAME PLACE.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 384,201, dated June 5, 1888.

Application filed September 19, 1885. Serial No. 177,595. (No model.) Patented in Belgium January 27, 1886, No. 71,772, and
in England January 29, 1886, No. 1,310.

To all whom it may concern:

Be it known that I, EZRA T. GILLILAND, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Telephone-Transmitters, (patented in England, No. 1,310, January 29, 1886, and in Belgium, No. 71,772, January 27, 1886,) of which the following is a specification.

The present invention relates more particularly to the construction of battery telephones or transmitters of that class which employ as the current-varying medium a mass of mobile material—such as finely-divided carbon—resting upon a horizontal diaphragm; and it consists in supporting such transmitter upon a vertically-swinging arm provided with means whereby as the free end of the arm is raised or lowered the telephone is so turned upon its support that in any position of said arm the diaphragm remains horizontal. The invention also includes certain particular arrangements and combinations of parts as hereinafter fully set forth.

Figure 1 is a longitudinal cross section of the transmitter and its supporting-arm. Fig. 2 is a cross-section on line *z z*, Fig. 1. Fig. 3 is a cross-section on line *x x*, Fig. 1. Fig. 4 is a cross-section at *y y*, Fig. 1. Fig. 5 is a top plan view complete.

C is a metal casting, the upper section being cup-shaped to receive the transmitter *T*. The section *t* forms a passage or tube which in cross-section resembles an ellipse, Fig. 2. This terminates in a mouth-piece, *m*. The wall of *t* opposite the speaker or most remote is nearly flat, approximating to a plane surface. *j* is a projection integral with casting *C* and calculated to form a joint.

The transmitter proper, *T*, is composed of a ring of insulating material, *b*, threaded upon the exterior. The upper edge is countersunk to receive the rim of the electrode *e*, which is immersed in a finely-divided conducting material, as carbon. The electrode *e* is of brass plated with gold, so that foreign matter in the carbon cannot corrode or oxidize it. The cap *a* has a rim screw-threaded on both outside and inside surfaces. This screws down upon

ring *b* and holds electrode *e* firmly in position. A centrally-perforated ring, *c*, has a screw-threaded rim, and when the thin sheet of platinum forming the diaphragm *d* is in position it is screwed down upon insulating-ring *b* and holds the diaphragm in position. An air-space or vocalizing chamber is provided by turning a shoulder upon the interior of ring *c*, as shown in the drawings. The electrode *e* is connected with the battery through cap *a* and the adjustable arm *A*. The diaphragm is the complementary electrode, and for the purpose of connecting it with the induction-coil and battery a circular plate of brass, *o*, fitting the cup *C*, is insulated upon its under side by an insulating-bushing, *i*, and is placed in the bottom of cup *C*. The screw-post *q* is electrically connected to plate *o*. Diaphragm *d*, when the transmitter *T* is screwed into position in cup *C*, makes contact with plate *o*. From post *q* an insulated conductor, *n*, is carried to a screw-post, as 4, with which the primary of coil *I* is connected.

D is a cast-metal box, which may be screwed to the wall. The requisite number of insulated screw-posts, 3 5 7 9, are placed in the wall of box *D*. The inner ends of these screw-posts are headed, and the induction-coil *I*, fixed to the back-board, *w*, has the terminals of its two coils connected to springs or projections, as 1 2, which register or coincide with the insulated screw-posts. By this arrangement of connections I am enabled to readily change or substitute one coil for another, and this improved feature—that of the interchangeability of parts—is applied to the other elementary parts of the telephone.

The adjustable arm *A* is composed of two sections, *A* and *A'*, as shown in Figs. 1, 4, and 5. These two sections embrace the projection *S*, and are pivoted thereto by pivot *P*. The two sections *A A'* are also screwed together. The free end of the arm embraces projection *j* of the transmitter-frame, and a pivot, *p*, retains the transmitter in a movable position. A metal bar, *B*, is pivoted to the support *S* at *g* and to the frame of the transmitter *T* at *f*. Now as the transmitter is raised or lowered to vary its distance from any stationary object

the bar B holds the transmitter T in its initial position, as with its diaphragm in a horizontal position. This automatic adjustment of the relative position of the transmitter prevents the displacement and disarrangement of the mass of finely-divided conducting material forming the contact-varying medium, and prevents any disturbance of the normal adjustment. The same arrangement would be applicable to retain any other relative position in which it might be found desirable to set the instrument. The spring *s* and link *l* act as a counter-weight and counteract the tendency of the arm to drop.

The operation of the transmitter is similar to others of its class.

I make no claim to the specific form of electrode *e*, as that is the invention of others.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a telephone-transmitter, a hollow arm pivoted to said transmitter and to a fixed support, and a rigid bar enclosed in said hollow arm and pivoted at one end to said transmitter and at the other to said support, substantially as described.

2. A telephone-transmitter having a fixed horizontal diaphragm upon which the current-varying medium rests, a downwardly-projecting tube or passage through which the sound-waves are directed upon the diaphragm, combined with a hinged arm, upon the free end of

which the transmitter is pivoted, and a mechanical connection between the transmitter and a fixed support whereby the movement of the transmitter to vary its distance from a fixed point automatically turns the transmitter upon its pivot, so as to keep the diaphragm always in a horizontal position, substantially as described.

3. The combination, with a telephone containing a body of mobile material, of a vertically-swinging arm upon which said telephone is mounted, and means for maintaining said telephone in a horizontal position as the arm is swung up and down, substantially as set forth.

4. The combination, with a telephone containing a body of mobile material, such as finely-divided carbon particles, constituting the current-varying medium, of a vertically-swinging arm upon which said telephone is mounted, and means for maintaining said telephone in a horizontal position as the arm is swung up and down, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of September, 1885.

EZRA T. GILLILAND.

Witnesses:

WM. B. VANSIZE,
V. M. BERTHOLD.