

No. 765,480.

PATENTED JULY 19, 1904.

R. HANSEN.
BATTERY TRANSMITTER.
APPLICATION FILED JUNE 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

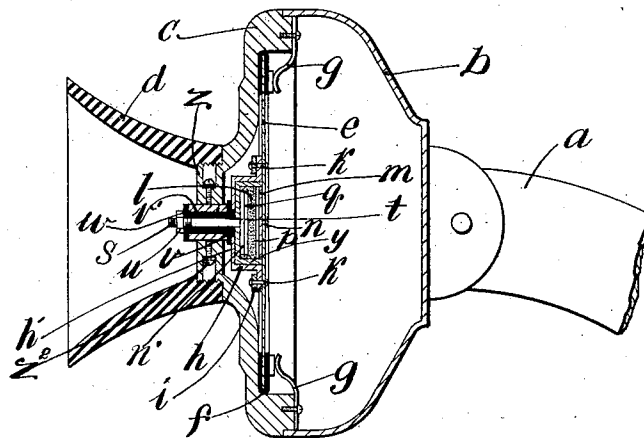


Fig. 1.

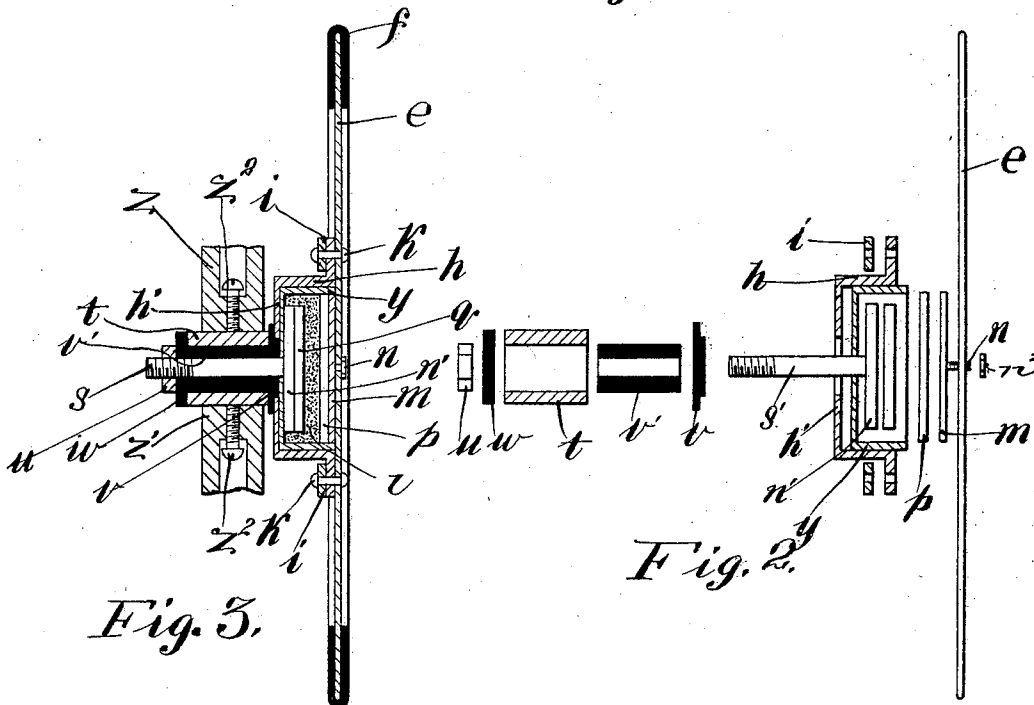


Fig. 3.

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2 SHEETS—SHEET 2.

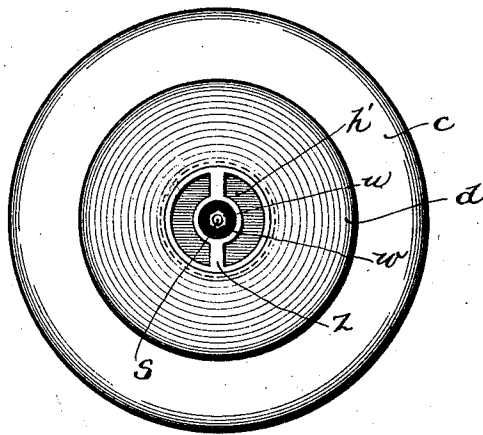


Fig. 4.

WITNESSES

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BATTERY-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 765,480, dated July 19, 1904.

Application filed June 23, 1902. Serial No. 112,931. (No model.)

To all whom it may concern:

Be it known that I, RASMUS HANSEN, a subject of the King of Denmark, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Battery - Transmitters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to battery-transmitters employing comminuted material, and has for its object the provision of an improved construction of such transmitter, whereby its parts are made very accessible and simple in form, producing a final structure which is easily assembled, with its parts readily accessible. In transmitters of this type there are employed electrodes having comminuted material between the same, one of the electrodes being carried by the diaphragm, while the other electrode is stationarily mounted. A containing-casing is employed for the comminuted material, being desirably completely closed and attached to the diaphragm and the fixed electrode. The containing-casing is preferably made in one integral construction, and that part thereof which is directly secured to the fixed electrode is preferably made flexible, so that there may be a relative movement between the electrodes, while at the same time the containing-casing may fully serve its function of holding the granules in place. I do not wish to be limited, however, to a construction possessing minutely the characteristics that have been set forth. This fixed electrode has hitherto been mounted upon a fixed support to the rear of the diaphragm and mouthpiece of the transmitter, having, as in a prior construction of my own, been provided with a stem that passes through a smooth hole in the rear support, whereby the electrodes can be relatively adjusted, there being used a set-screw passing through the sleeve into engagement with the stem to fix any adjustment that has been attained. Now this rear support is usually incased by the portion of the

transmitter-support intervening between the transmitter-diaphragm and the pivotal mounting of the transmitter that is usually employed. This inclosing portion of the support renders access to the adjustable connection between the mounting for the fixed electrode and the stem projecting from the said electrode difficult. Moreover, the expense of the construction is increased by reason of these dispositions of the transmitter parts. I have devised a construction wherein that portion of the transmitter-casing which carries the mouthpiece may also serve as a mounting for the stem projecting from the electrode that is to be fixed, whereby the provision of an especially-added support for the fixed electrode is obviated, this mouthpiece-support in the preferred embodiment of the invention being provided with a set-screw or equivalent means for fixing any adjustment that may be attained between the electrodes of the transmitter. As the preferred mechanical construction I employ a sleeve that is preferably coaxial with respect to the mouthpiece and the diaphragm and which is located in a bore of the threaded sleeve, upon which the mouthpiece is screwed, there being a set-screw passing through the threaded sleeve into the bore to there engage the stem projecting from the attached electrode. By having all of the parts (including the electrode that is to be fixed, the stem projecting therefrom, and the casing containing comminuted material) directly upon the diaphragm it will be seen that the parts may be readily separably formed and conveniently assembled and that adjustment may be readily attained between the electrodes and secured when attained. The stem that projects from the electrode that is to be fixed is preferably not directly engaged by means of the set-screw, there being preferably interposed between the set-screw and the stem a sleeve which engages a wall of the granule-containing casing at one end and a fastening-nut engaging the threaded stem at the other end, whereby the fixed electrode may be drawn and secured against the flexible wall of the granule-containing casing.

The sleeve when thus secured in mechanical adjustment partly constitutes a part of the stem, the stem and sleeve being only separable for the purpose named—that is, to readily secure close engagement between the electrode to be fixed and the flexible wall of the granule-containing casing.

I will explain my invention more fully by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a transmitter embodying the invention. Fig. 2 is an enlarged view showing the parts displaced; and Fig. 3 is a view on the same scale as Fig. 2, showing the parts assembled. Fig. 4 is a front view of the transmitter.

The transmitter may, if desired, be mounted upon an adjustable arm *a*. The transmitter is preferably provided with a suitable cup *b*, that has pivotal connection with the arm to secure angular adjustment with respect thereto. This cup *b* is closed by a front plate *c*, upon which is screwed the mouthpiece *d*, that is concentric with respect thereto. There is placed a diaphragm *e* before this mouthpiece, this diaphragm being preferably provided with a peripheral gasket *f*, that is forced into contact with the inner side of the front plate by means of spring-clips *g*. A cup *h* is concentrically arranged with respect to the diaphragm, being preferably formed in a separate piece from the diaphragm, though this construction is not absolutely essential to the invention. This cup *h* is provided with a rim *i*, that is secured to the diaphragm, upon the back face thereof, preferably by means of rivets *k*. This cup and the diaphragm constitute the casing that is designed to contain the carbon particles *l*. The cup is preferably disposed upon the front face of the diaphragm.

There is preferably provided upon the diaphragm, and preferably upon the front face thereof, a metal support *m*, that is secured to the diaphragm by means of a screw *n* and nut *n'*. A sheet or disk of carbon *p* is provided upon the inner face of the support *m*, that conforms in contour to the said carbon disk. There is also provided in the casing or chamber that is to contain the comminuted carbon particles a second carbon disk *q*, that is soldered to a supporting-plate *n'*. This supporting-plate is provided with a stem *s*, that projects through a metallic sleeve *t*. The outer end of the said stem is threaded, a nut *u* serving to secure the same, the support *n'*, and the sleeve *t* together. The front *h'* of the cup *h* is made of very thin material to constitute a flexible wall and is preferably formed in the same integral structure with the balance of the cup. A central aperture is provided in this wall *h'*, through which the stem *s* is passed. The said wall is partially fixed with relation to the stem and the electrode *q* by having a washer *v*, of insulating material, interposed between the sleeve *t* and the said wall. The

sleeve is provided with an inner shell of insulating material *v'*, while the cap-plate *w* covers the sleeve *t* and the shell *v'*. The nut *u*, by engaging the cap-plate, preserves a fixed relation between the sleeve *t*, the insulating-shell *v'*, the insulating-washer *v*, the electrode *q*, and its support. The space between the electrodes *p* and *q* is filled with comminuted material *l*. The casing containing the electrodes and the comminuted conducting material is preferably provided with a lining *y*, of insulating material, to prevent short-circuiting.

As the diaphragm is actuated the entire casing containing the comminuted material moves with respect to the fixed electrode, this movement being permitted by reason of the flexible diaphragm or wall *h'*. There is thus gained a structure wherein the diaphragm is not restricted by reason of the mechanical connection of the casing containing the comminuted material, the diaphragm, and the fixed electrode.

The construction is such that particles of carbon may, in the operation of the instrument, find access between the electrode *q* and the cup, thereby causing a more thorough agitation of the carbon particles.

Instead of, as hitherto, providing a fixed support for the electrode that is to be fixed to the rear of the diaphragm I provide said support in front of the diaphragm, to which end the threaded boss or sleeve *z* (which is engaged upon its exterior by correspondingly-threaded interior part of the mouthpiece) is caused to support a sleeve *z'*, through which the stem *s* and sleeve *t* are passed, the center of the sleeve being preferably coaxial with the diaphragm and the mouthpiece. Clamping-screws *z''* are passed through the sleeve *z*, preferably through extensions of the sleeve, constituting with the sleeve a bridge across the orifice of the sleeve *z*. It will be thus apparent that the electrodes may readily be adjusted with respect to each other and that the mouthpiece not being in place such adjustment may readily be secured by means of the screws passing through the central sleeve into engagement with the sleeve *z*. I do not wish to be limited, however, to the portion of the front plate *c* to which the electrode *q* is fixedly secured. It is obvious that other arrangements might be provided without departing from the particular features of my invention; but,

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a telephone-transmitter, the combination with a front plate having an opening to permit the passage of sound-waves, of a mouthpiece carried by said front plate and registering with said opening, a diaphragm, an electrode secured to said diaphragm, a bridge across the opening in said front plate, a second electrode, a stem for said second elec-

trode, a bushing of insulating material surrounding said stem, a metal sleeve covering said bushing and secured thereto, said sleeve being adapted to fit within an opening in said
 5 bridge, clamping means adapted to clamp said sleeve in adjustment relatively to said bridge, a chamber containing said electrodes, and comminuted material in said chamber interposed between said electrodes.

10 2. In a telephone-transmitter, the combination with a front plate having an opening to permit the passage of sound-waves, of a screw-threaded boss on said front plate, a mouth-
 15 piece having threaded engagement with said boss and registering with the opening in said front plate, a diaphragm, an electrode secured to said diaphragm, a bridge across the opening in said front plate, a second electrode,
 20 a stem for said second electrode, a bushing of insulating material surrounding said stem, a metal sleeve covering said bushing and secured thereto, said sleeve being adapted to fit within an opening in said bridge, a countersunk
 25 set-screw in said boss adapted to engage said metal sleeve to clamp said second electrode in adjustment with respect to said bridge, the removal of said mouthpiece from said boss serving to expose the head of said set-screw, a
 30 chamber containing said electrodes, and granular carbon in said chamber interposed between said electrodes.

3. In a telephone-transmitter, the combination with a front plate having an opening to permit the passage of sound-waves, of a screw-
 35 threaded boss on said front plate, a mouthpiece having threaded engagement with said boss and registering with the opening in said front plate, a diaphragm, an electrode secured to said diaphragm, a bridge across the opening
 40 in said front plate, a second electrode, a stem for said second electrode, a bushing of insulating material surrounding said stem, a metal sleeve covering said bushing and secured thereto, said sleeve being adapted to fit within an opening in said bridge, a countersunk
 45 set-screw in said boss adapted to engage said metal sleeve to clamp said second electrode in adjustment with respect to said bridge, the removal of said mouthpiece from

said boss serving to expose the head of said
 50 set-screw, a chamber containing said electrodes, the front wall of said chamber being flexible to permit a relative movement between said electrodes due to vibrations of said diaphragm, and granular carbon in said chamber
 55 interposed between said electrodes.

4. In a telephone-transmitter, the combination with a front plate having an opening, of a mouthpiece carried by said front plate and registering with said opening, a diaphragm,
 60 an electrode-chamber secured to said diaphragm and having a flexible front wall, an electrode secured to said diaphragm and extending within said chamber, a second electrode in said chamber, a stem extending forwardly from said second electrode, a bushing
 65 of insulating material surrounding said stem, means for clamping the flexible front wall of said chamber between said bushing and said second electrode, a metal sleeve in which said
 70 bushing is secured, a bridge across the opening in said front plate, and an opening through said bridge for receiving said sleeve.

5. In a telephone-transmitter, the combination with a front plate having an opening, of
 75 a mouthpiece carried by said front plate and registering with said opening, a diaphragm, an electrode-chamber secured to said diaphragm and having a flexible front wall, an electrode secured to said diaphragm and extending
 80 within said chamber, a second electrode in said chamber, a stem extending forwardly from said second electrode, a bushing of insulating material surrounding said stem, means for clamping the flexible front wall of
 85 said chamber between said bushing and said second electrode, a metal sleeve in which said bushing is secured, a bridge across the opening in said front plate, an opening through said bridge for receiving said sleeve, and means
 90 for adjustably securing said sleeve within said bridge-opening.

In witness whereof I hereunto subscribe my name this 19th day of June, A. D. 1902.

RASMUS HANSEN.

Witnesses:

HARVEY L. HANSON,
 GEORGE L. CRAGG.