

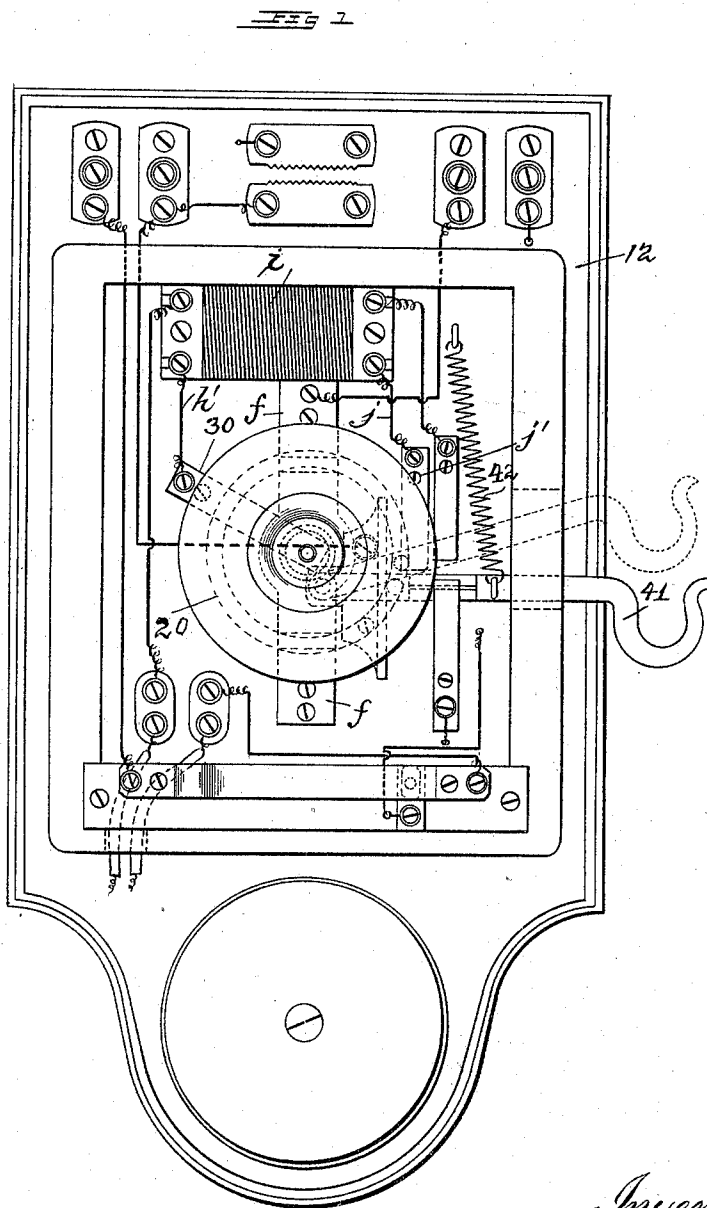
(No Model.)

2 Sheets—Sheet 1.

J. T. GENT, A. W. STAVELEY & I. H. PARSONS.
TELEPHONE.

No. 584,868.

Patented June 22, 1897.



Witnesses:
C. W. Graham
W. T. Tompkins

Inventor:
John T. Gent
Alwyn W. Staveley
& Isaac H. Parsons,
By Chas. C. Buckley atty.

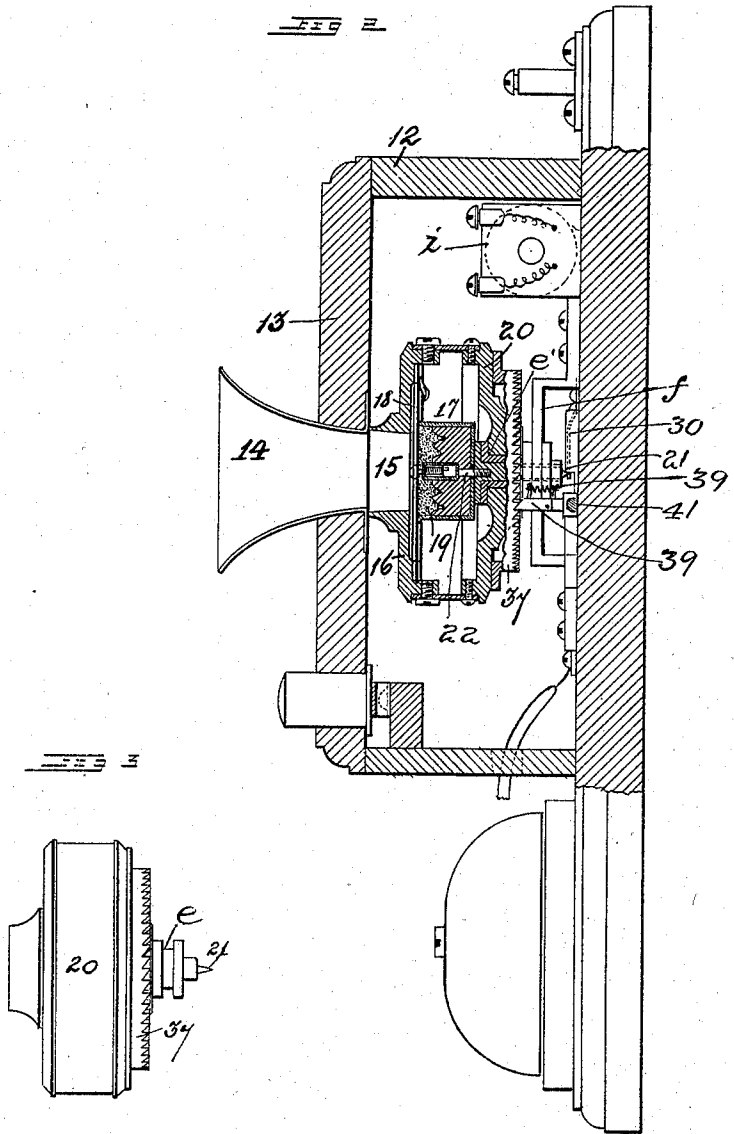
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UNITED STATES PATENT OFFICE.

JOHN THOMAS GENT, ALWYN WALTER STAVELEY, AND ISAAC HARDY
PARSONS, OF LEICESTER, ENGLAND.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 584,868, dated June 22, 1897.

Application filed December 11, 1895. Serial No. 571,762. (No model.) Patented in England November 11, 1892, No. 20,415.

To all whom it may concern:

Be it known that we, JOHN THOMAS GENT, ALWYN WALTER STAVELEY, and ISAAC HARDY PARSONS, subjects of the Queen of England, residing at Leicester, in the county of Leicester, England, have invented certain new and useful Improvements in Telephones, (which have been patented in England, No. 20,415, dated November 11, 1892,) of which the following is a specification.

In that class of telephones in which, as now commonly used, granulated carbon is employed as a variable resistance through which a current of electricity passes from a source of current generation it has been found in practice that the particles or granules of the carbon settle and pack together into a common mass of inert material, whereby these particles lose the capacity of maintaining the desirable range of variation in resistance. Our invention relates to means by which this difficulty may be overcome, and has for its object the provision of a device whereby the particles or granules of the material constituting the variable resistance are subjected to a movement causing a gradual and uniform relative change of position of said particles to each other, thereby maintaining a uniform separation of said particles or granules throughout the mass of the same.

Our invention has certain other objects in view; and it consists in certain features about to be described, and particularly pointed out in our claims, reference being now had to the accompanying drawings, in which—

Figure 1 is an elevation of a telephone-transmitter provided with a microphone adapted to be rotated, the front of the casing of the apparatus being removed. Fig. 2 is a side elevation, partly in section, of the apparatus. Fig. 3 is a side elevation of the casing containing the microphone detached.

The transmitter-box inclosing the apparatus as a whole is designated at 12, to which is secured the cover 13, holding the mouth-piece 14, the inner open end of which coincides with the concentrating-orifice 15 in the cap 16 of the receptacle 17, holding the mass of conducting material 19, constituting

the variable-resistance medium. The diaphragm 18 extends across the receptacle 17, with its mass of material, and is held by the cover 16. The circular receptacle 17, having therein the conducting material in a granulated or comminuted state, consisting of the cap 16 and the body part 20, is pivotally or axially mounted in a bracket *f*, extending from the back board of the casing, the journal of the body part 20 being shown at *e* in Fig. 3. Through the center of the bearing *e*, but insulated therefrom by the material *e'*, passes the pin 21, which is pointed and bears upon a spring 30, connected by a wire *h'* with the primary coil of an induction-coil *i*, said primary coil being connected by a wire *j* with a contact-spring *j'*, against which the pivoted lever 41 is adapted to come in contact when the said lever is in the position of the dotted lines in Fig. 1, owing to the receiver being removed from the hooked end of said lever.

The pin 21 is electrically connected with the diaphragm 18 through the microphone, the said diaphragm being placed in electrical connection with the case 20 through the cover 16, mechanically and electrically connected with the case.

The microphone is electrically connected with the pin 21 by the screw 22, and this also forms the mechanical connection between these parts.

On the body part 20 of the containing-receptacle 17 is an annular rack 37, engaged by a pawl 39, pivoted to a stud on the lever 41. This pawl is held up by a spring 39', and the arrangement is such that when the receiver is lifted from the hook of lever 41 this lever will move up into the position shown in dotted lines, Fig. 1, under the action of the spring 42 and the pawl 39 will ride freely over the rack 37 without effect by reason of its pivotal connection; but when the receiver is hung on the hook of the lever 41 this lever will fall and the pivoted pawl being stiff when moved downward it will turn the body 20 one step, and thus the body, with the containing-receptacle 17, will be turned step by step, one movement taking place for each movement of the lever 41.

The circuit of the primary coil is completed through the lever 41, the pawl 39, the ratcheting ring 37, and the body 20.

5 The secondary coil of the induction-coil is arranged in the line-circuit in any well-known manner, not necessary to be described herein.

10 It is now evident that by rotating the receptacle 17 the granules or particles of the mass of conducting material 19 are made to undergo a continual change in their relative position, this change being gradual from the center to the periphery as the particles arise from the bottom and fall over the center at the top. In the continued use of the tele-
15 phone the receptacle is completely revolved, and by this means all of the lower strata of the particles are brought to the surface gradually and continuously and an average condition of looseness and free separation is constantly maintained from the center to the
20 periphery of the mass of conducting material, thus counteracting that tendency of the particles or granules to settle and pack together into an inert, closely-assembled, and dense
25 mass.

The rotary motion of the receptacle 17 keeps the particles in a favorable condition of increasing separation toward the periphery in all radial directions from the center, thereby
30 preventing packing, and also permits expansion of the particles in all directions when heated by the passage of the current, this heating of the particles heretofore being also a cause of packing.

35 The slow continued rotation of the receptacle 17 is a constantly-applied preventive whereby the conducting material is maintained in a constant state or condition of free separation and looseness.

40 Whenever the term "conducting material" is employed throughout the specification and claims, we do not desire to be understood as having limited ourselves of necessity to the use of material commonly designated as "conductors" or "non-conductors," but we desire
45 to be understood as employing this term to designate any kind or character of material which may be suitable as a variable-resistance medium through which the current passes.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. In a telephone, the combination with the diaphragm, of a variable-resistance device consisting of suitable conducting material in a granulated or comminuted state, a movable containing or holding receptacle for said material, a movable telephone-support and intermediate connections between said support and the containing or holding receptacle whereby the latter is moved when the telephone is removed from or replaced upon the support.

2. In a telephone, the combination with the diaphragm, of a variable-resistance device consisting of suitable conducting material in a granulated or comminuted state, a pivotally or axially mounted containing or holding receptacle for said material, a movable telephone-support and intermediate connections between said support and the containing or holding receptacle whereby the latter is rotated when the telephone is removed from or replaced upon the support.

3. In a telephone, the combination with a diaphragm, of a variable resistance consisting of a suitable conducting material, a rotatable containing or holding receptacle for said material, a movable telephone-support and intermittently-operated intermediate connections between said support and the receptacle.

4. In a telephone, the combination with the diaphragm, of a variable resistance consisting of a suitable conducting material, a pivotally or axially mounted containing-receptacle for said material, a rack secured to said receptacle, a pawl adapted to engage said rack and a pivoted telephone-supporting lever carrying said pawl.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN THOMAS GENT.
ALWYN WALTER STAVELEY.
ISAAC HARDY PARSONS.

Witnesses:

WILLIAM VAUGHAN ICKE,
GEORGE WILLIAM COLTMAN.