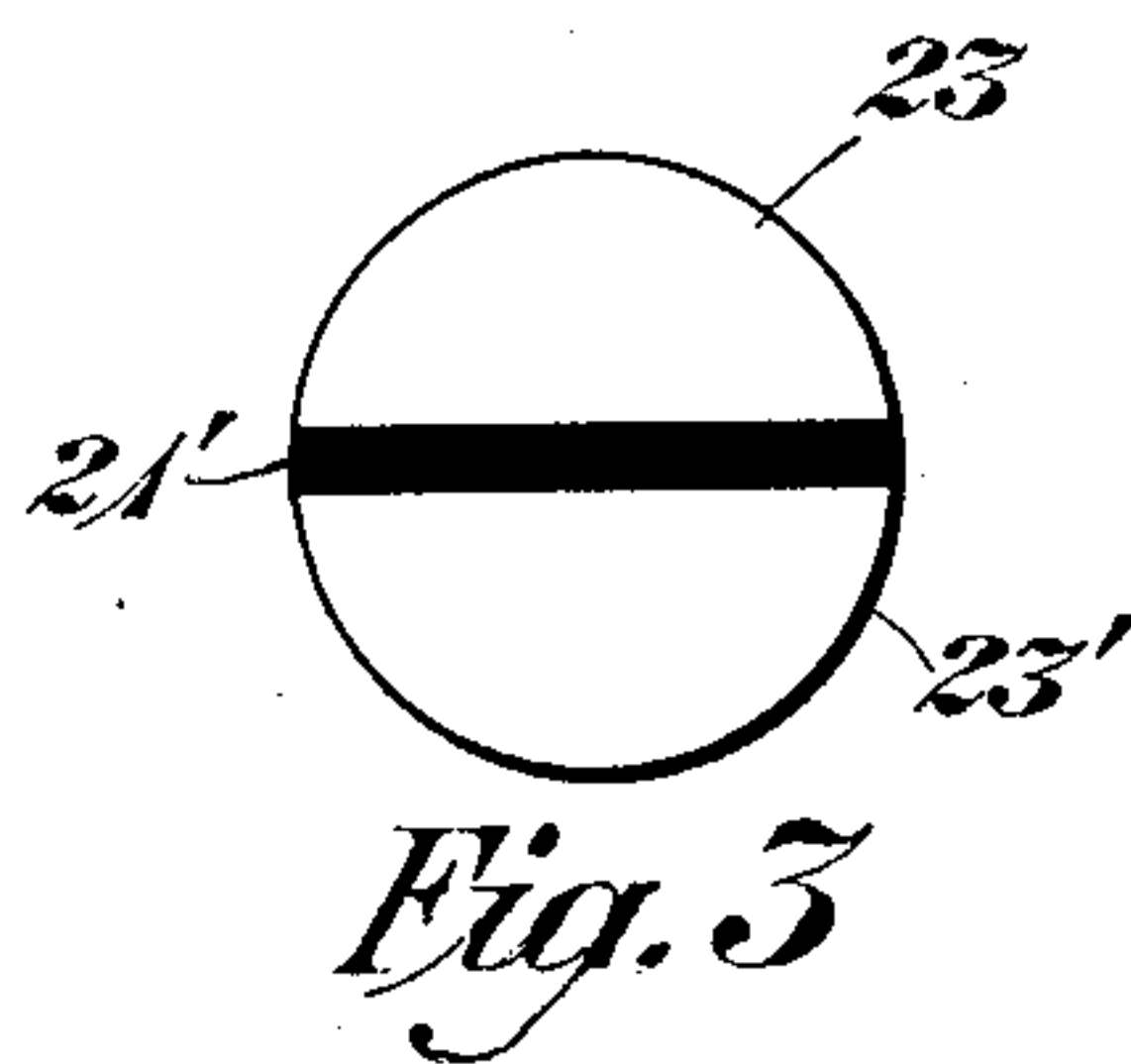
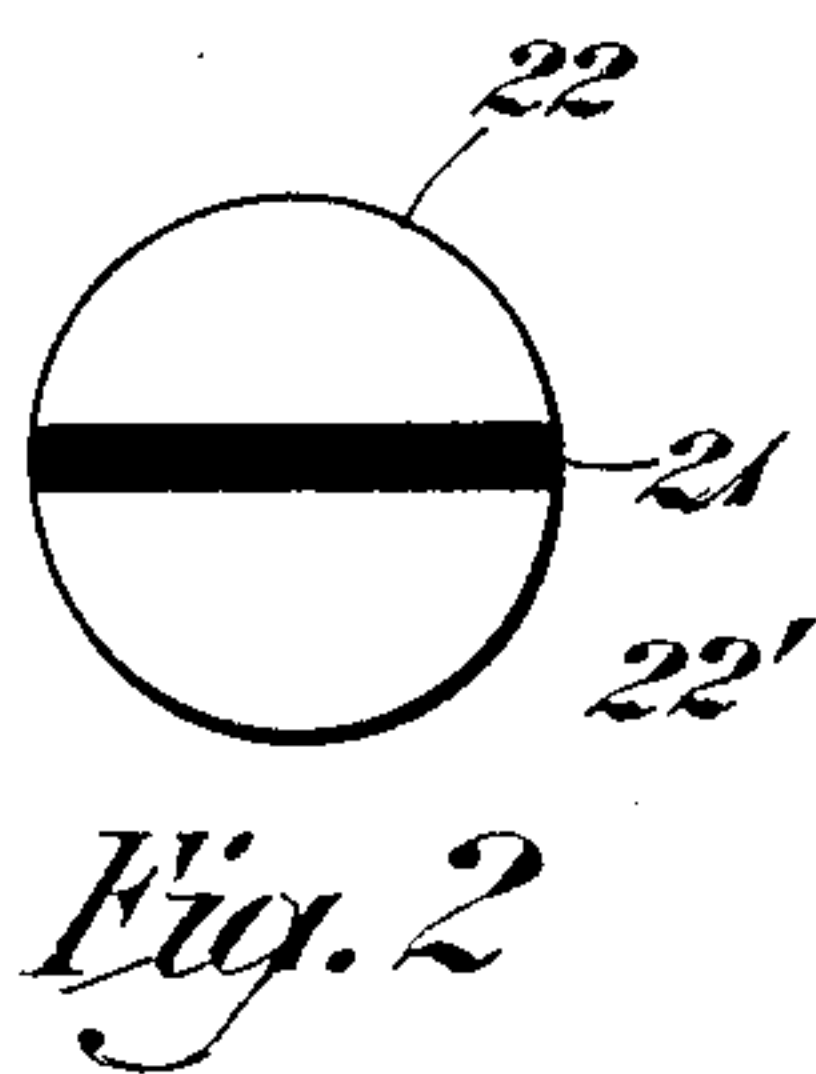
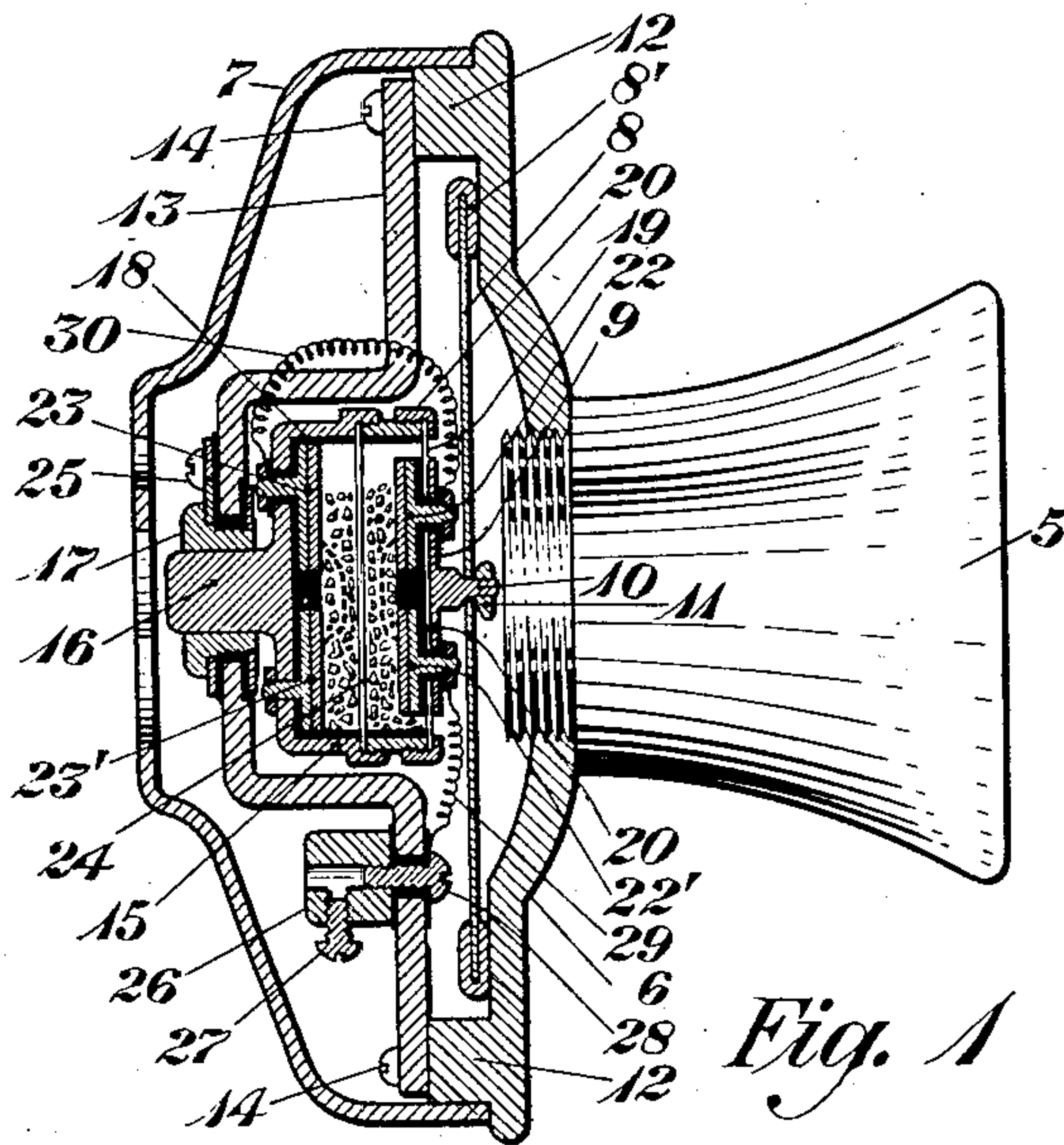


G. K. THOMPSON.
TELEPHONE TRANSMITTER.
APPLICATION FILED SEPT. 21, 1918.

1,354,229.

Patented Sept. 28, 1920.



INVENTOR.
G. K. Thompson
BY *G. E. Folk*
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE K. THOMPSON, OF MAPLEWOOD, NEW JERSEY, ASSIGNOR TO AMERICAN
TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

TELEPHONE-TRANSMITTER.

1,354,229.

Specification of Letters Patent.

Patented Sept. 28, 1920.

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To all whom it may concern:

Be it known that I, GEORGE K. THOMPSON, residing at Maplewood, in the county of Essex and State of New Jersey, have invented certain Improvements in Telephone-Transmitters, of which the following is a specification.

This invention relates to improvements in telephone transmitters and consists in the production of an instrument of this character which has an increased efficiency in operation.

An object of the invention is the provision of a transmitter possessing high normal resistance and capable of producing a wide variation in resistance in response to voice waves.

Another object consists in providing means whereby the electrodes with their associated elements, and the interposed granular material may be combined and inclosed in a compact and unitary structure. Other and further objects of the invention will more fully appear hereinafter.

In the drawing forming a portion of the specification, in which like numerals represent like parts throughout, Figure 1 is a side elevation of the improved transmitter shown in section; and Figs. 2 and 3 are views of the double front and back electrodes, respectively, used in connection with the improved transmitter, showing the insulating means which is provided for the separation of the two halves of said electrodes.

A transmitter mouthpiece 5 of ordinary form is secured to a front member 6 of a casing having a back member 7. A diaphragm 8 rests against the inner surface of the front member 6, but is suitably insulated therefrom by a rubber gasket 8' provided about its periphery. A front plate 9, preferably of metal, is provided with a screw threaded stud 10 which passes through a hole in the center of the diaphragm 8 and engages a nut 11. The front member 6 is provided with a peripheral flange 12 to which the ends of a bridge 13 are detachably secured by screws 14. The principal elements of the transmitter are preferably assembled directly upon the bridge 13 so as to form a compact unitary structure which is readily detachable from other parts of the transmitter. The central portion of the bridge 13 preferably extends rearwardly, as illustrated, so as to form a recess or space

for the accommodation of the multiple-unit resistance chamber 15 and its associated elements. The chamber 15 is supported by its shank 16 which coöperates with a conducting block or brass bushing 17 insulated from 60 and secured to the bridge member 13. The chamber 15 comprises a metal cup provided with an insulating lining 18 of any suitable material, such as mica or paper, and is provided at its front face with an auxiliary 65 diaphragm of insulating material 19 which is kept snugly in place, though capable of vibratory movement, by any suitable means such as a cap 20 peripherally secured to said chamber. Insulating members 21 and 21' 70 are provided as shown in Figs. 2 and 3 which serve as an insulating means to separate the front electrodes 22, 22' and back electrodes 23, 23' respectively. The electrodes 22 and 22' are semi-circular in form 75 and equipped with threaded projections which extend through apertures in the diaphragm 19, said projections being secured by means of nuts to the front-plate 9 and being suitably insulated therefrom. The 80 front plate 9 and diaphragm 19 are thus movable together and partake of the vibrations of the main diaphragm 8. The electrode members 23 and 23' are in like manner secured to the rear of the cup member 85 15, but the member 23' is not insulated from said cup member and serves to provide a conductive path to the terminal 25 by way of the flange 16 and metal bushing 17 as will presently appear.

A thin flexible partition or diaphragm 24 90 preferably of mica is centrally located within the chamber 15 between the electrode members 22, 22' and 23, 23'. As the diaphragm 24 functions to transmit freely the vibrations conveyed to it from its associate 95 members, it is necessary that said diaphragm be sensitive and to this end it is preferably composed of thin mica in the order of 1/1000 of an inch or less. As the space on 100 either side of the central diaphragm 24 and the electrodes is the same, an equal amount of comminuted material such as granular carbon is provided in each space so that the normal resistance of the granular material 105 in both spaces is approximately the same.

Secured to the upper part of the rearwardly extended portion of the bridge 13 is a terminal 25 to which may be attached an outside conductor entering through an ap- 110

erture in the back member 7 of the casing. Another terminal in the form of a block also adapted to engage with an outside conductor in a manner similar to terminal 25, is shown at 26, said terminal being provided with binding post screws 27 and 28. Both terminals are suitably insulated from the bridge member 13.

The circuit connections are made from the terminal 26, binding post screw 28, conductor 29, lower front electrode 22', through the granular material in the front portion of the chamber 15, as shown by dotted lines, to the upper front electrode 22 and thence by conductor 30 to the upper back electrode 23 through the granular material in the back portion of the metal cup or chamber 15, as shown in dotted lines, to the lower back electrode 23'. The current in this manner traverses the electrodes and granular material in the compartments in series. The electrode 23' as previously mentioned is conductively connected to the rear of the metal cup 15 and a path for current is provided therefrom over the shank 16 and metal bushing 17 to the terminal 25.

In the operation of the improved transmitter the movements of the main diaphragm 8 are communicated to the front electrodes mounted on the diaphragm 19 and upon the vibration of said electrodes the granular carbon in the front and rear compartments are compressed since the central diaphragm also acts in conjunction with the granular material and partakes of the movement of the front electrodes and vibrates simultaneously therewith. As a consequence of this action a greater variation in resistance results from the voice waves impressed upon the transmitter, while the peculiar structural arrangement above described secures a transmitter of high normal resistance thereby permitting of very efficient operations, especially in connection with long lines.

While there is shown and described herein one preferred form of the invention by way of illustration, it is understood that it is not limited or confined to the precise details of construction herein described and delineated, as modification and variation may be made within scope of the claims without departing from the spirit of the invention.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. In a telephone transmitter, a variable resistance chamber comprising a casing, movable electrodes within the casing, a diaphragm cooperating with said movable electrodes, means for insulating the electrodes from each other and from the diaphragm, fixed electrodes secured to the casing, means for insulating the fixed electrodes from each other, one of said electrodes being insulated from the casing and the other electrode being conductively attached to said casing, a second diaphragm between the movable electrodes and fixed electrodes, a compartment on either side of said second diaphragm, and a body of granular material provided in each of the compartments cooperating with the second diaphragm and movable and fixed electrodes.

2. In a telephone transmitter, a variable resistance chamber comprising a casing, a diaphragm, movable electrodes of approximately semi-circular form attached to said diaphragm, fixed electrodes of approximately semi-circular form attached to the casing, a central diaphragm flexibly attached to the casing between the electrodes, compartments on either side of said central diaphragm, bodies of granular conducting material in each of said compartments cooperating with the central diaphragm and movable and fixed electrodes respectively, and means between the movable electrodes and fixed electrodes for individually insulating said electrodes from each other.

3. In a variable resistance chamber, a diaphragm, movable electrodes fixed to the diaphragm, fixed electrodes, a flexible diaphragm between said movable and fixed electrodes, and independent bodies of granular conducting material between the movable electrodes and fixed electrodes and the flexible diaphragm respectively, and circuit connections whereby the current flows through the two bodies of granular material in series and in a direction parallel to the flexible diaphragm.

In testimony whereof, I have signed my name to this specification this 19th day of September, 1918.

GEORGE K. THOMPSON.