

No. 789,716.

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H. P. CLAUSEN.

TELEPHONE TRANSMITTER.

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Fig. 1.

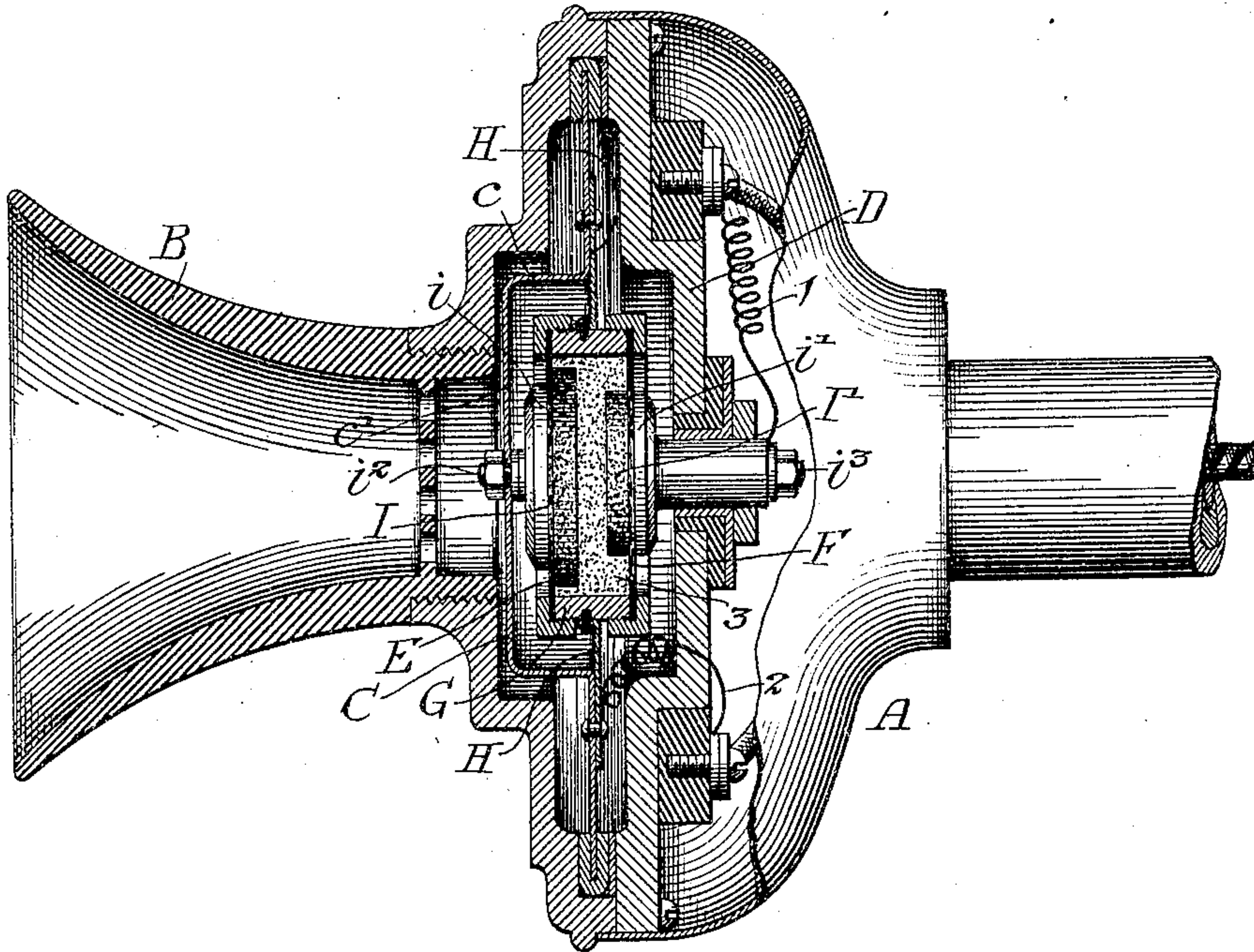
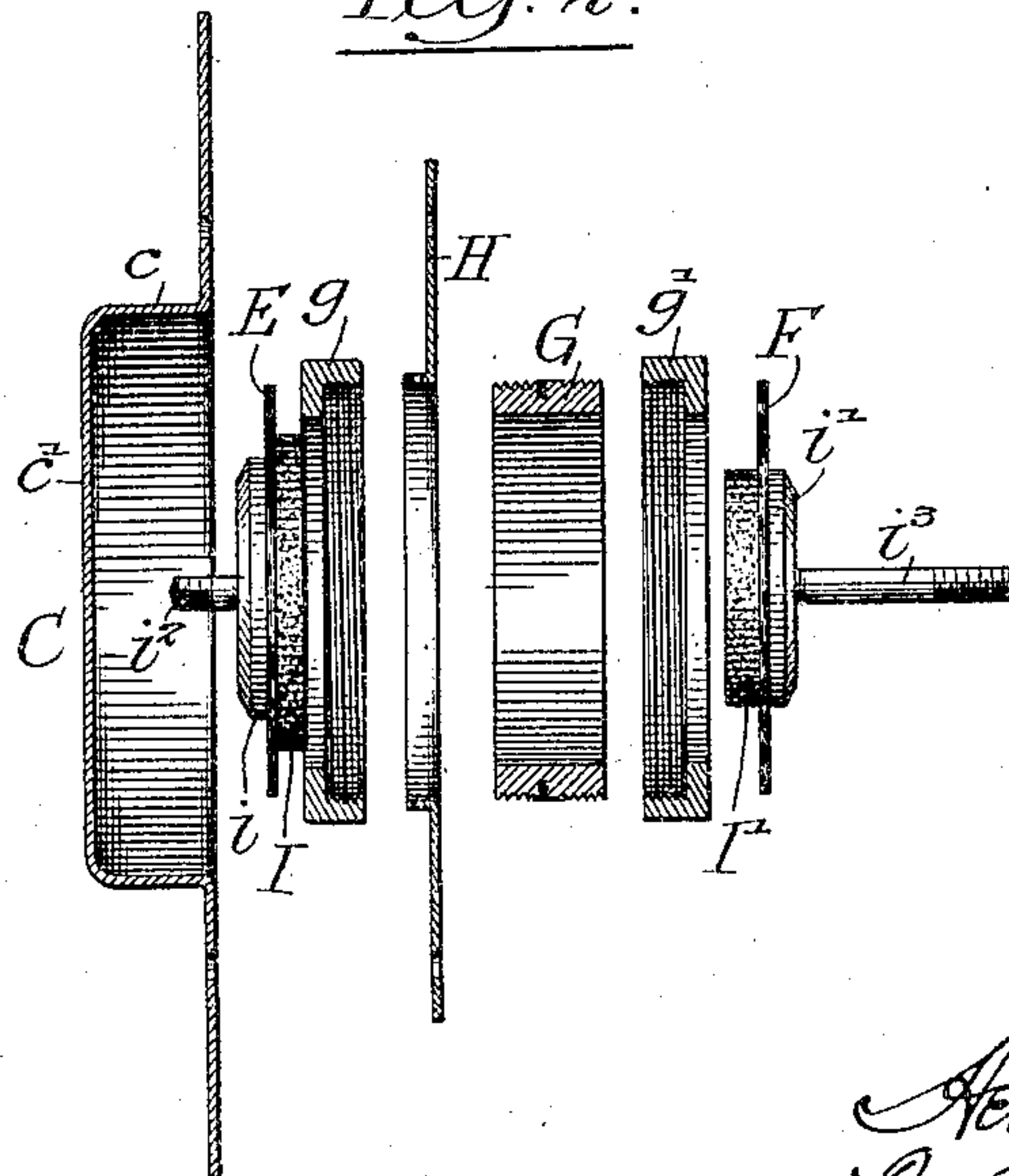


Fig. 2.



Witnesses:-

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UNITED STATES PATENT OFFICE.

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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 789,716, dated May 16, 1905.

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To all whom it may concern:

Be it known that I, HENRY P. CLAUSEN, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have
 5 invented a certain new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

My invention relates more particularly to telephone-transmitters constructed on the microphone principle and of that type in which a quantity of granulated carbon is interposed between a pair of oppositely-arranged electrodes, the latter being caused to move relatively toward and away from each other when
 15 the diaphragm of the transmitter is vibrated.

Generally stated, it is the object of my invention to provide a simple, compact, and highly-efficient transmitter of the foregoing type.

20 A special object is to provide a construction and arrangement by which a beneficial and highly-effective action may be obtained by the use of a plurality of supplemental diaphragms arranged in conjunction with the
 25 main diaphragm.

Another object is to simplify the construction of the box or chamber for inclosing the granular carbon and the electrodes.

It is also an object of my invention to provide certain details and features of improvement tending to increase the general efficiency of a device of this character.

To the foregoing and other useful ends my invention consists in matters and things hereinafter set forth and claimed.

35 In the accompanying drawings, Figure 1 is a longitudinal section of a telephone-transmitter constructed in accordance with my invention. Fig. 2 is a view showing the different diaphragms and adjacent parts slightly separated.

As thus illustrated my improved transmitter comprises, preferably, a body or casing A, a mouthpiece B, and a main diaphragm C.
 45 A bridge D can be employed as a solid or stationary backing for the microphone. The front and back supplemental diaphragms E and F are preferably arranged between the

said main diaphragm and the said bridge. In order to secure compactness, the said main diaphragm can be provided with an outwardly-deflected central portion adapted to provide a recess or chamber *c*. The two supplemental diaphragms are preferably separated by a separating-ring G and are held together by a pair of clamping-rings *g g'*, secured upon the said separating-ring. In order to improve the action of the instrument and with a view to securing a more accurate and satisfactory transmission of speech, I preferably connect
 50 said separating-ring with the main diaphragm by means of an intermediate or supporting diaphragm H. This supporting-diaphragm is, it will be observed, preferably secured to the main diaphragm and has a central opening
 55 in which the separating-ring of the microphone is mounted. Within the inclosure provided by the supplemental diaphragms and the separating-ring I provide a pair of front and back carbon electrodes I and I'. The construction may be such that the two supplemental diaphragms are clamped between these carbon blocks on the inside and the metal blocks *i i'* on the outside. The screws or bolts *i² i³* can be arranged to connect the front
 60 and back supplemental diaphragms, respectively, with the main diaphragm and the bridge. In this way the central portion of the back supplemental diaphragm F is held positively against movement by the bridge or
 65 solid backing.

The central portion of the front supplemental diaphragm will have a slight vibratory movement in unison with the thin vibratory portion *c'* of the main diaphragm. The thin
 70 supporting-diaphragm H will also vibrate slightly and yield to the thrust of the front portion of the main diaphragm. The supplemental diaphragms E and F can be of any suitable material—as, for example, mica or other
 75 like sheet material. It will be understood, however, that these diaphragms can be of metal, if such is desirable. If they are of metal, the ring G can then be made of insulating material; but any other arrangement
 80 of insertion can be adopted if the two dia-

phragms are of metal which will prevent shunting or short-circuiting of the granular carbon.

The conductor 1 can lead from the screw or bolt I³ of the back electrode, while the conductor 2 can lead to the diaphragm C and in this way connect with the screw i² of the front electrode. With this arrangement the granular carbon 3, interposed between the electrodes, together with the latter and the main diaphragm, will all be connected up in series. Consequently the vibratory movement of the thin front portion c' of the main diaphragm will cause the two electrodes to move relatively toward and away from each other and to in this way vary the resistance of the transmitter-circuit. The relative movement of the two electrodes will of course be accompanied by a slight vibratory movement of the front supplemental diaphragm E and also by a slight vibration of the marginal portion only of the back supplemental diaphragm F. In this way it will be seen that the main diaphragm is connected with the bridge or solid backing by means of a yielding connection, which insures efficient reactive action. The chamber c, it will be observed, partially incloses the box-like structure composed of the rings of front and back supplemental diaphragms. With a construction thus provided the microphone can be readily assembled and can also be readily taken apart for the purpose of repair or substitution.

What I claim as my invention is—

1. A telephone-transmitter comprising a main diaphragm with a forwardly-projecting central portion providing a recess or chamber, a springy front supplemental diaphragm within said recess or chamber, a springy back supplemental diaphragm, a bridge, a non-yielding connection between said back supplemental diaphragm and said bridge, a non-yielding connection between the front supplemental diaphragm and said main diaphragm, a non-yielding connection between the marginal portions of the two supplemental diaphragms, relatively movable electrode-surfaces carried by the said supplemental diaphragms, and granular carbon interposed between said electrode-surfaces.

2. A telephone-transmitter comprising a main diaphragm, front and back supplemental diaphragms, a ring separating said supplemental diaphragms, a supporting-diaphragm connecting said ring with said main diaphragm, electrode-surfaces carried by said supplemental diaphragms, and granular carbon interposed between said surfaces.

3. A telephone-transmitter comprising a main diaphragm, front and back supplemental diaphragms, a ring separating said diaphragms, clamping-rings clamping the said supplemental diaphragms upon the said separating-ring, a non-yielding connection between the said main diaphragm and said front sup-

plemental diaphragm, a bridge, a non-yielding connection between said bridge and said back supplemental diaphragm, relatively movable electrode-surfaces within the chamber provided between said supplemental diaphragms, granular carbon interposed between said surfaces, and a connection between said ring and said diaphragm.

4. A telephone-transmitter comprising a main diaphragm, a box-like structure containing electrode-surfaces with interposed granular carbon, a supporting-diaphragm connecting said box-like structure with said main diaphragm, and a solid backing for said box-like structure.

5. A telephone-transmitter, comprising a main diaphragm, a box-like structure inclosing electrode-surfaces with interposed granular carbon, said box-like structure having front and back supplemental diaphragms, and a supporting-diaphragm encircling said box-like structure and connecting the latter with the said main diaphragm.

6. A telephone-transmitter comprising a main diaphragm, a box-like structure inclosing oppositely-arranged electrode-surfaces with interposed granular carbon, said box having front and back supplemental diaphragms, a non-yielding connection between the center of said main diaphragm and the front of said box-like structure, a supporting-diaphragm encircling said box-like structure and connecting the latter with said main diaphragm, and a solid backing having a non-yielding connection with the back of said box-like structure.

7. In a telephone-transmitter, the combination of a main diaphragm, front and back supplemental mica diaphragms, a non-yielding connection between said front supplemental diaphragm and the main diaphragm, a member suitably connected with the said back supplemental diaphragm and adapted to oppose vibrations of the latter, a non-yielding connection between the marginal portions of said supplemental diaphragms, a springy connection between said non-yielding connection and said main diaphragm, relatively movable electrode-surfaces within the chamber between the two supplemental diaphragms, and granular carbon interposed between said surfaces.

8. In a telephone-transmitter, the combination of a recessed main diaphragm, a box arranged within said recess and provided with front and back supplemental diaphragms, carbon electrodes carried by said supplemental diaphragms, a connection between the front electrode and the said main diaphragm, a stationary backing, a connection between said backing and the back electrode, a flat supporting-diaphragm connecting the peripheral portions of said box with the said main diaphragm, and granular carbon between the said electrodes.

9. A telephone-transmitter comprising a suitable diaphragm, a box-like structure provided internally with electrodes and granular carbon, a connection between said box-like structure and the center of said diaphragm, a springy connection between said box-like structure and the marginal portions of said diaphragm, and a vibration-opposing member suitably connected with the back of said box-like structure.

10. A telephone-transmitter comprising a diaphragm, a stationary electrode, a movable electrode connected with the diaphragm, a box-like structure inclosing said electrodes and having a springy wall connected with said stationary electrode, a springy connection between said diaphragm and the peripheral portions of said box-like structure, and granular carbon between said electrodes.

11. A telephone-transmitter comprising a diaphragm, a stationary electrode, a movable

electrode connected with said diaphragm, a box-like structure inclosing said electrodes and provided with a springy wall connected with said movable electrode, granular carbon between said electrodes, a springy connection between said diaphragm and the peripheral portions of said box-like structure, and a vibration-opposing member suitably connected with the back of said box-like structure.

12. A telephone-transmitter comprising a diaphragm, a suitable resistance-varying device, and a springy ring encircling and connecting the said resistance-varying device with said diaphragm.

Signed by me at Chicago, Cook county, Illinois, this 21st day of July, 1902.

HENRY P. CLAUSEN.

Witnesses:

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