

No. 792,927.

PATENTED JUNE 20, 1905.

DE ELBERT A. REYNOLDS.
TELEPHONE TRANSMITTER.
APPLICATION FILED FEB. 25, 1905.

Fig. 1,

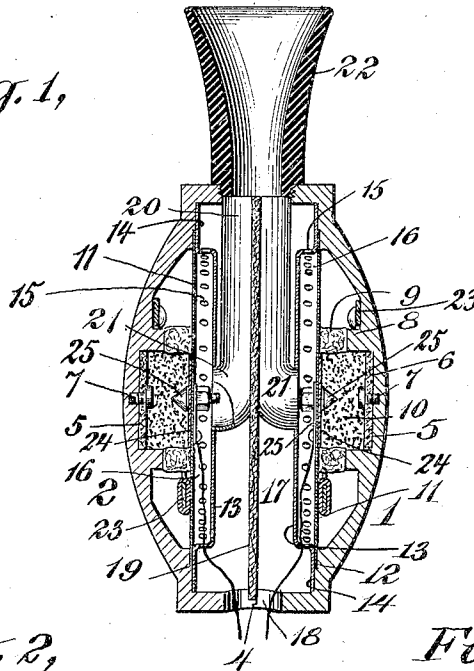


Fig. 2,

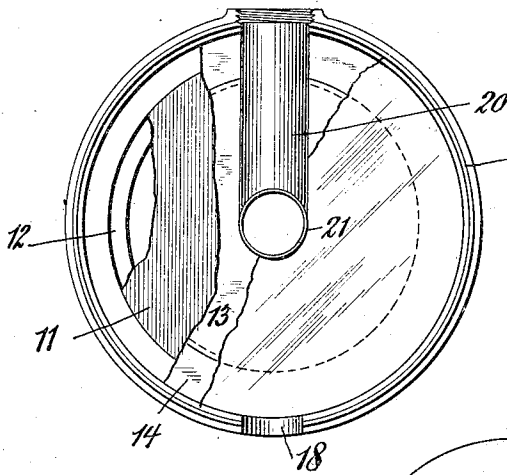


Fig. 3,

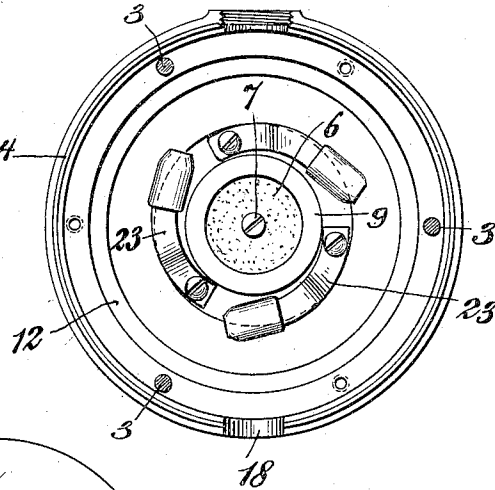
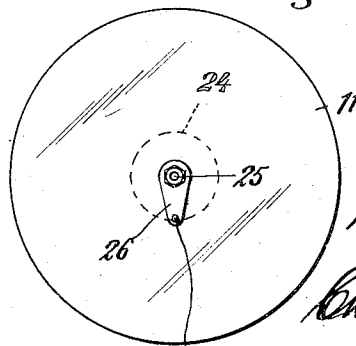


Fig. 4,



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UNITED STATES PATENT OFFICE.

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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 792,927, dated June 20, 1905.

Application filed February 25, 1905. Serial No. 247,229.

To all whom it may concern:

Be it known that I, DE ELBERT A. REYNOLDS, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in telephone-transmitters and kindred devices, and particularly to transmitters and such devices employing a plurality of diaphragms.

My invention consists, first, in certain improvements in the general construction of such devices and, second, in improved means for dissipating the sound-waves after they have been employed to vibrate the diaphragms.

The main objects of my invention are to secure greater volume of sound, coupled with more perfect articulation, and to simplify and lessen the cost of manufacture and construction.

For the purpose of dissipating the sound-waves after they have been employed to excite the diaphragm or diaphragms I preferably provide a sound-dissipating chamber which when employed in a transmitter having two diaphragms and two sound-chambers may be conveniently located between the two said sound-chambers and may conveniently be provided with a layer of sound-deadening material, dividing the said sound-dissipating chamber into two compartments, one for each of the said chambers, respectively.

My invention also consists in certain novel details of construction and combination of parts, as will be hereinafter fully set forth.

In order that my invention may be fully understood, I will now proceed to describe an embodiment thereof with reference to the accompanying drawings and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in central transverse section through a telephone-transmitter embodying my invention. Fig. 2 is a face view of one member of the same removed from the other member and viewed from the interior thereof, certain portions being broken away in order to show the con-

struction of other portions at the rear thereof. Fig. 3 is a face view of the interior of one of the casing members with the sound-transmitting tube, the diaphragm, and the walls of the sound-chamber removed, showing particularly certain dampeners employed. Fig. 4 is a detail view of one of the diaphragms removed.

The general form of the transmitter herein shown is similar to that known as the "Pape" instrument, such as is illustrated in United States Patent No. 752,921. The device is of the duplex variety, including two diaphragms with their respective sound-chambers and microphones, but having a common receiving and transmitting tube, sound-waves introduced therein being deflected simultaneously toward both said diaphragms.

I preferably construct the device in two independent units or members separable for purposes of manufacture, adjustment, inspection, and repair, but connected together rigidly when in use.

The casing herein comprises two cup-shaped members 1 2, secured together by bolts or screws 3. The members preferably interlock peripherally, as at 4, in order to correctly center them. Each casing member has a cup-shaped central recess 5, at the base of which is secured a carbon disk 6 by means of a screw 7, the head of which projects beyond the face of the carbon disk. Surrounding the recess 5 is a circular wall or abutment 8, upon which is suitably secured an annulus 9, of felt or similar flexible elastic material, the annulus 9 and the wall or abutment 8 forming a recess or pocket for granular carbon or similar electrical conductive material 10. The diaphragm 11 is peripherally supported by the casing and rests upon the felt annulus 9, as is shown. The diaphragm may be conveniently supported by being fitted, as at 12, into a recess in the casing, being clamped in position by means of a member 13, the flange 14 of which is fastened to the casing and engages the peripheral edge of the diaphragm. The member 13 is depressed centrally, the vertical wall thus formed between the central portion and the flange having a plurality of orifices 15, as shown. The central portion of the member 13

and the diaphragm 11 form a sound-chamber 16, and the orifices 15 permit the dissipation of sound-waves admitted into the said chamber therethrough into a central chamber 17, 5 formed between the two sound-chambers 16. This central chamber 17 then forms a sound-dissipating chamber open to atmosphere through an opening 18. I preferably provide a layer 19 of sound-deadening material, such 10 as felt, which divides the chamber 17 into two compartments, as will be readily understood by reference to Fig. 1 of the drawings.

A sound receiving and transmitting tube 20 is suitably supported in the device located in the central sound-dissipating chamber 17 and 15 having two laterally-extending branches 21 entering the two said sound-chambers 16, respectively. A suitable mouthpiece 22 is provided, which connects with the sound transmitting and receiving tube, as will be well understood.

To prevent reverberation of the diaphragms, I provide a plurality of dampeners 23, arranged 25 around the microphones and spaced equidistantly apart, whereby in bearing upon the diaphragm they press equally, so that the diaphragm may remain properly balanced. By this means I effectively dampen the diaphragm and yet do not interfere with its proper movements under influence of the impinging sound- 30 waves.

The diaphragm 11 is preferably constructed of some mineral, but electrically-non-conductive material, such as glass or mica. To the 35 center of this diaphragm I secure a carbon disk 24, fastened in place by means of a bolt and nut 25, the head of the bolt extending beyond the carbon disk into the granular carbon 10 of the microphone. Upon the opposite side of the diaphragm I conveniently provide 40 a terminal 26, to which an electric wire may be connected.

In employing the device I may connect the diaphragms in series with each other or in 45 multiple, the casing in either event forming a common return, or, if desired, I may employ independent batteries and independent induction-coils for each of the diaphragms, the secondary windings of the two induction- 50 coils being connected either in series or multiple with the line. I connect the transmitter one way or the other, in accordance with the volume and quantity of sound required. With the latter form of connection I can use 55 a very heavy battery and can obtain a large volume of sound, while with the diaphragms connected in multiple I obtain a smaller volume of sound, but greater distinctness.

It will be seen that my transmitter is 60 exceedingly simple in construction and comprises but very few parts, each member comprising but three main parts—the casing member, the diaphragm, and the member 13, forming one of the walls of the sound-chamber— 65 and three auxiliary parts—the carbon disk,

the granular disk, and carbon button. The transmitter will work with or without the dampeners, according to whether it is designed to take sound-waves at close or long range. It will work well with a heavy battery, the 70 current passing from the carbon disk on the diaphragm to the carbon button in the casing, or if the current is light the current will be confined to a smaller surface, passing from the cone-shaped head of the bolt or screw at 75 attached to the diaphragm to the head of the screw holding the carbon button to the casing, thus finding a path of less resistance through the granular carbon. The cone-shaped head of the screw or bolt upon the diaphragm 80 also prevents the granular carbon from packing.

It will of course be understood that while I have described the transmitter throughout as a duplex transmitter the general principles 85 thereof are equally applicable to a transmitter employing but a single diaphragm, and it will be further understood that the improved form and construction of diaphragm *per se* may be employed in transmitters of other con- 90 structions than that shown.

What I claim is—

1. In a telephone-transmitter or the like, the combination with two sound-chambers and two diaphragms therefor, of an intermediate 95 chamber, and a transmitting-tube located therein having a single inlet and two laterally-extending branches, said branches arranged to connect respectively with the said sound-chambers. 100

2. In a telephone-transmitter or the like, the combination with two sound-chambers and two diaphragms therefor, of an intermediate sound-dissipating chamber, in connection 105 through a plurality of orifices with both the said sound-chambers.

3. In a telephone-transmitter or the like, the combination with two sound-chambers and two diaphragms therefor, of an intermediate sound-dissipating chamber, in connection 110 through a plurality of orifices with both the said sound-chambers, and a layer of sound-deadening material dividing the said sound-dissipating chamber.

4. In a telephone-transmitter or the like, 115 the combination with two sound-chambers and two diaphragms therefor, of an intermediate sound-dissipating chamber, in connection through a plurality of orifices with both the said sound-chambers, and a tube having a single 120 inlet with branches connecting respectively with said sound-chambers, said tube arranged within said intermediate chamber.

In witness whereof I have hereunto set my hand, in the presence of two witnesses, this 125 21st day of February, 1905.

DE ELBERT A. REYNOLDS.

Witnesses:

D. HOWARD HAYWOOD,
LYMAN S. ANDREWS, Jr.