

E. M. C. TIGERSTEDT.
MICROPHONE.
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1,235,510.

Patented July 31, 1917.

Fig. 1

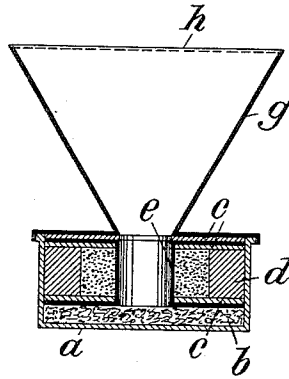


Fig. 2

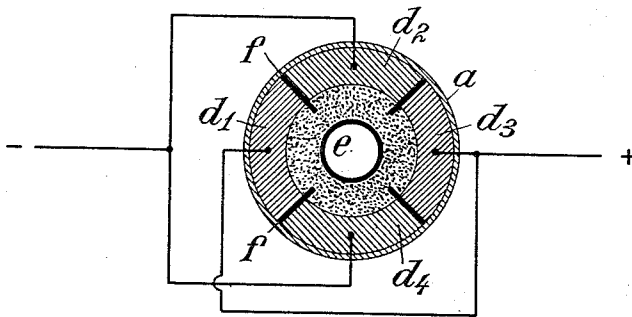
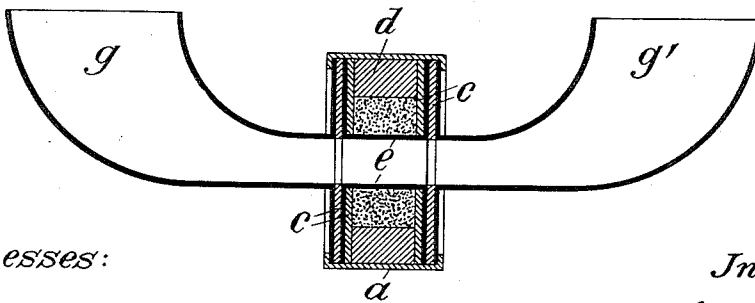


Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

ERIC MAGNUS CAMPBELL TIGERSTEDT, OF COPENHAGEN, DENMARK.

MICROPHONE.

1,235,510.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ERIC MAGNUS CAMPBELL TIGERSTEDT, a subject of the Emperor of Russia, residing at Copenhagen, Denmark, have invented certain new and useful Improvements in Microphones, of which the following is a specification.

This invention relates to improved means for transmitting sound waves in telephone exchanges or the like and has for its object to provide a transmitter or microphone in which the diaphragm has such a form and is so arranged that the sound waves will simultaneously operate in the same direction upon the whole surface of the diaphragm.

With this object in view the invention comprises a microphone having a diaphragm of tubular form and arranged with its axis parallel to the direction of sound propagation so that the sound waves will not only be effective in the longitudinal direction of travel but also transversely thereto.

Another object of the invention is to increase the cross-section for the electric current and thus the amount of electric energy at which the microphone will operate. For this purpose the carbon grains are preferably arranged around about the outer surface of the tubular diaphragm.

The accompanying drawing represents, by way of example, two constructional forms of the new microphone according to the invention.

Figure 1 is a longitudinal section, and Fig. 2 a cross-sectional view of one form of construction of a microphone according to the invention.

Fig. 3 shows a longitudinal section of a modification.

At the bottom of a casing *a* is provided a plate *b* of felt or the like. On this plate is supported a thin tubular structure or skin *e* of soft rubber or collodion by means of two annular disks *c* of ebonite or the like and a carbon collar *d* forming a distance piece for the two disks. The space between the outer surface of this tubular structure or cylindrical diaphragm *e* and the carbon-collar *d* is preferably filled with grains or powder of carbon or other conducting material. The collar *d* is divided into four segments by means of partitions *f* of ebonite, or other non-conducting material, as shown in Fig. 2. The collar segments *d*₁, *d*₂, and *d*₃, *d*₄, respectively, which are opposite each

other, are connected with the corresponding poles of a telephone exchange circuit. A mouth piece *g* which, if desired, may be provided by a thin cover or rubber plate *h*, communicates with the interior of the structure *e*. The thin rubber plate covering the mouth piece *g* provides a guard of the interior of the microphone against dirt and dust without anyway preventing a transmission of the sound.

It will be apparent that the sound waves are transmitted to the carbon grains in a radial direction. This method of transmission is more effective than the mode of propagation of the sound waves attained by microphones heretofore known. This results in greater fluctuations of current in the telephone circuit, so that the efficiency is materially increased.

The plate *b* of felt which may be of any other suitable material has the object to decrease the resonance and to prevent the entrance of the sound waves from behind.

In order to increase the efficiency of the sound action and to replace the felt plate, a second mouth piece *g'* may be provided at the other end of the structure or cylindrical diaphragm *e*, as shown in Fig. 3.

I claim:

1. In a microphone transmitter with a cylindrical diaphragm and a telephone circuit, supporting disks for said diaphragm, a collar forming a distance piece holding said supporting disks, a space between said diaphragm, said disks and said collar, conducting material in said space and connections with said telephone circuit.

2. In a microphone transmitter with a cylindrical diaphragm and a telephone circuit, supporting disks for said diaphragm, a collar forming a distance piece holding said supporting disks, a space between said diaphragm, said disks and said collar, conducting material in said space, connections with said telephone circuit and resonance preventing means at said diaphragm.

3. In a microphone transmitter having a mouth piece, a cylindrical diaphragm, and a telephone circuit, supporting disks for said diaphragm, a collar forming a distance piece holding said supporting disks, a space between said diaphragm, said disks and said collar, conducting material in said space, connections with said telephone circuit and resonance preventing means at said diaphragm.

4. In a microphone transmitter having a mouth piece, a cylindrical diaphragm, and a telephone circuit, supporting disks for said diaphragm, a collar divided into segments and forming a distance piece for said supporting disks, partitions of non-conducting material between said collar segments, connections between said collar segments and said telephone circuit, a space between said diaphragm, said disks and said collar, grains of conducting material in said space and resonance preventing means at said diaphragm.
5. In a microphone transmitter having a mouth piece, a cylindrical diaphragm, and a telephone circuit, supporting disks for said diaphragm, a collar forming a distance piece for said supporting disks, a space between said diaphragm, said disks and said collar, conducting material in said space, connections with said telephone circuit, and two mouth pieces at said diaphragm for preventing resonance.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERIC MAGNUS CAMPBELL TIGERSTEDT.

Witnesses:

I. KNUDSEN,

A. WAHLSTADT.