

(No Model.)

A. GRÖPER.
MICROPHONE.

No. 513,181.

Patented Jan. 23, 1894.

Fig. 3.

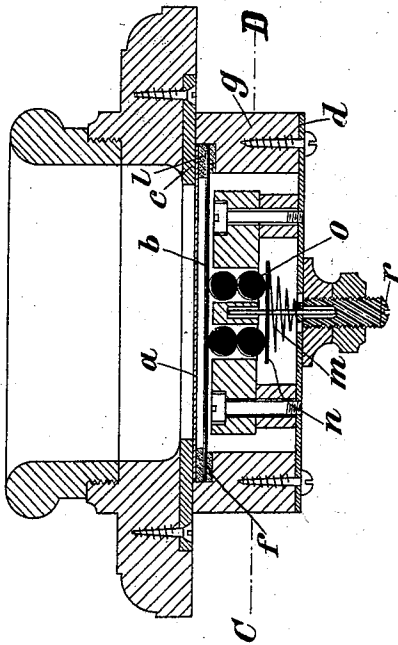


Fig. 4.

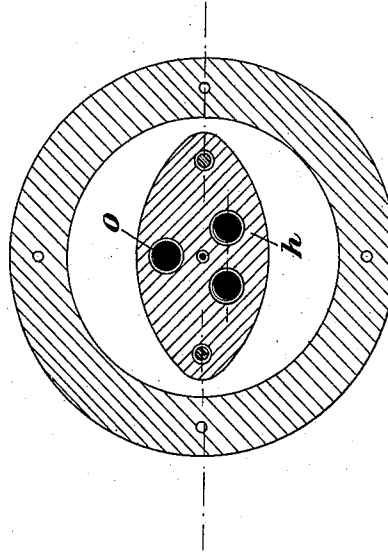


Fig. 2.

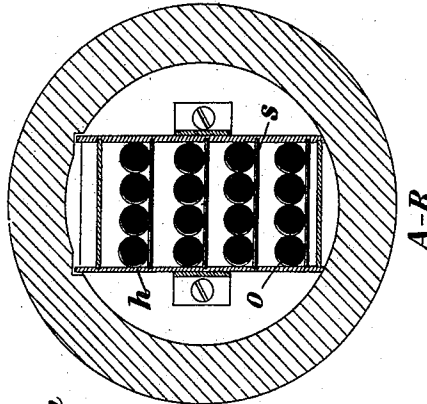
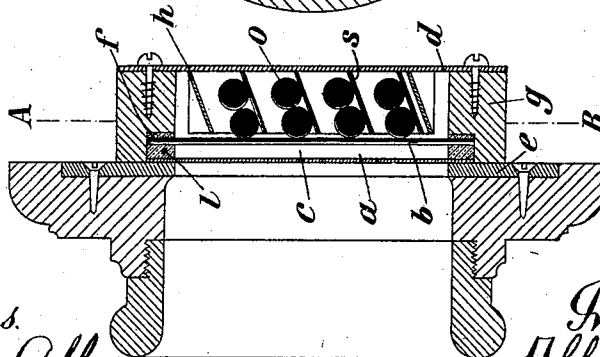


Fig. 1.



Witnesses.
Walter E. Allen.
S. Allen.

Inventor.
Albin Gröper.
By Knight Bros
Attorneys

UNITED STATES PATENT OFFICE.

ALBIN GRÖPER, OF DUSSELDORF, GERMANY.

MICROPHONE.

SPECIFICATION forming part of Letters Patent No. 513,181, dated January 23, 1894.

Application filed January 14, 1893. Serial No. 458,398. (No model.)

To all whom it may concern:

Be it known that I, ALBIN GRÖPER, of Dusseldorf, in the Kingdom of Prussia and German Empire, have invented a new and useful
5 Microphone, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in microphonic telephone transmitters, or those
10 in which variation of the resistance of the electric circuit in which they are placed is caused by subjecting bodies of carbon through which such circuit passes to various pressures; and has for its object the construction of a
15 transmitter which shall be capable of accurately transmitting the sound of words spoken into it to a great distance and at the same time be free from external or secondary sounds or noises.

20 In the drawings hereunto annexed Figure 1 illustrates in vertical section one form of telephone transmitter according to my invention, Fig. 2 being a cross section through same, taken on the line A, B, Fig. 1. Fig. 3
25 illustrates a modified form of the instrument shown at Fig. 1, and Fig. 4 is a cross section of same, taken on the line C, D, Fig. 3.

With reference to the drawings, *e* and *d*
30 are metallic plates carrying between them the ebonite ring *g* to which they are screwed. A recess is formed in the ring *g* for the reception of an india rubber washer *b*, and mica diaphragm *a*. The diaphragm *a* is the first
35 to receive the sound waves entering the transmitter, and measures about 0.04 millimeters in thickness and is therefore influenced by the slightest sound wave. The carbon diaphragm *b* is separated from *a* by an air space *c*, and thus the vibrations of *a* are transmitted
40 to *b* and the carbon balls *a* are subjected to greater or less pressure alternately. The cur-

rent passes by way of the diaphragm *b*, balls
o, case *h*, and plate *d*.

A case *h* is attached to the rear plate *d* for the reception of the carbon balls *o*. The
45 case *h* may be formed in various shapes. For instance it may be rectangular and provided with inclined shelves *s* as shown in Figs. 1 and 2, or be of solid form and circular in
50 shape, as shown in Figs. 3 and 4, and provided with holes or cavities for the reception of the carbon balls. In the form of case shown
at Figs. 1 and 2, the inclined surface of the shelves *s* is utilized for keeping the balls *o* in
55 loose contact with the diaphragm *b*, while in the form of case shown in Figs. 3 and 4 this is effected by means of a carbon plate *n* and
spring *m*, the force exerted by the spring being regulated by the nut and bolt *r*.

Having now particularly described and as-
60 certain the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In a telephone transmitter of the type described, the combination of a mica diaphragm
65 and a carbon diaphragm arranged with air space between them, the mica diaphragm being adapted to receive sound waves and to
transmit them to such carbon diaphragm, and a number of carbon balls normally in
70 contact with such carbon diaphragm, whereby such carbon balls are subjected to varying pressures and the electric current passing
through them to a varying resistance; substantially as and for the purposes herein set
75 forth.

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

ALBIN GRÖPER.

Witnesses:

D. J. PARTELLO,
GUYER LOHR.