

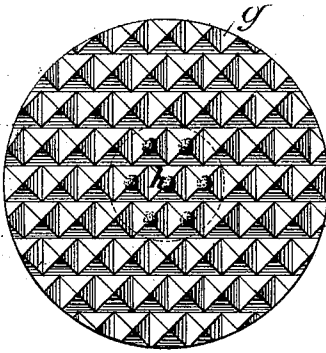
(No Model.)

W. DECKERT.  
MICROPHONE.

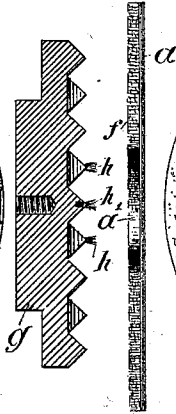
No. 517,564.

Patented Apr. 3, 1894.

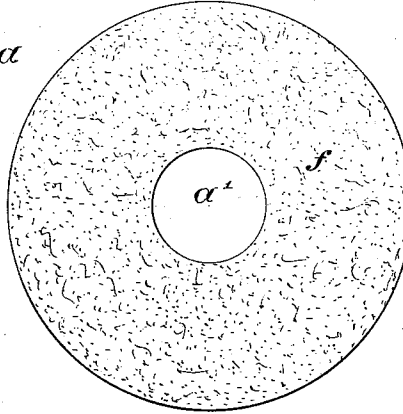
*Fig. 3.*



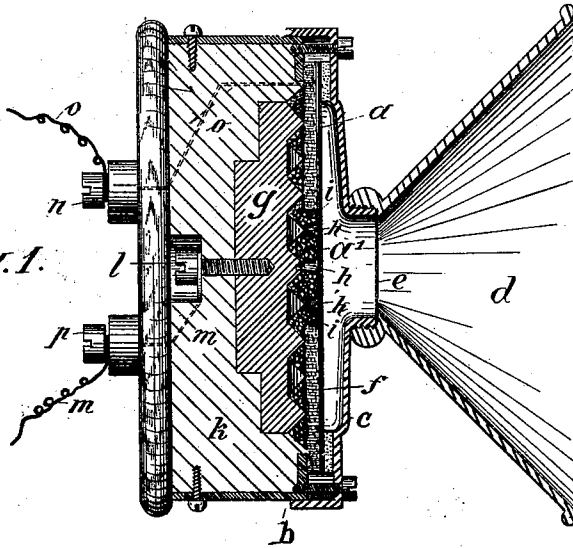
*Fig. 4. Fig. 6.*



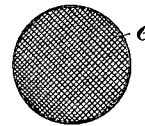
*Fig. 5.*



*Fig. 1.*



*Fig. 2.*



Witnesses.  
Niklaus A. Fischer  
John: Gloth

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*Wilhelm Teckert*  
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# UNITED STATES PATENT OFFICE.

WILHELM DECKERT, OF VIENNA, AUSTRIA-HUNGARY.

## MICROPHONE.

SPECIFICATION forming part of Letters Patent No. 517,564, dated April 3, 1894.

Application filed March 1, 1893. Serial No. 464,259. (No model.) Patented in France November 28, 1891, No. 217,736; in England December 9, 1891, No. 21,565, and in Austria-Hungary March 7, 1892, No. 49,855 and No. 2,654.

*To all whom it may concern:*

Be it known that I, WILHELM DECKERT, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements in Microphones, (for which I have obtained patents in Austria-Hungary, No. 49,855 and No. 2,654, dated March 7, 1892; in France, No. 217,736, dated November 28, 1891, and in Great Britain, No. 21,565, dated December 9, 1891,) of which the following is a specification.

My invention relates to grain- or powder-microphones, and has for its object the construction of an improved microphone transmitter of this kind.

In the annexed drawings, in which I have shown a microphone constructed according to my invention Figure 1 shows the same in side elevation, partly in section, and Figs. 2, 3, 4, 5 and 6 show details thereof.

In all figures similar letters of reference indicate corresponding parts.

My improved microphone essentially consists of a diaphragm or membrane *a* held or clamped in a casing *b* by a cover *c*, to which a mouthpiece *d* is screwed or attached in any other suitable manner.

In the opening of cover *c*, between the latter and mouthpiece *d* is placed and held a disk of netting, by preference of metal, suitably protected against oxidation by a coating of gold, silver, nickel, varnish or any other suitable substance. This disk of netting *e* may also be made of any other non-hydroscopic fabric. The important object of this protective netting *e* is to prevent, in speaking, the condensation of the breath upon the diaphragm when the latter is cold, to prevent saliva and particles of food from the mouth reaching the diaphragm, so as to keep the latter dry and sensitive to the least waves of sound, and finally to protect the diaphragm also against mechanical injuries. This netting also offers advantages in a hygienical point of view, as it can easily be removed and cleaned or exchanged. The transmission of sound is in a very slight degree influenced by the interposition of this netting, but this imperceptible loss becomes insignificant compared with the great advantages the netting offers.

Diaphragm *a* (Figs. 1, 5 and 6) is made of electric conducting material, as for instance metal, but by preference I make the same of carbon. The surface of diaphragm *a*, facing the mouthpiece, is covered with a coating of varnish for protecting it against moisture, while the other inner surface is covered with a layer *f* of elastic, insulating material, such as cotton, wool, hair or such like, only leaving the central part *a'* of the diaphragm free for electric contact. This felting or covering of the entire inner surface of the diaphragm with the exception of the conducting central part thereof has the object, in speaking, to utilize only the strongest waves of sound, and this elastic coating further absorbs or collects the carbon dust formed in the microphone, which otherwise would disturb the proper operation of the latter. Coating *f* of the diaphragm also serves to prevent the sagging or settling of the granules of carbon, which in the vertical employment of the apparatus of this kind generally takes place by the own weight of the carbon grains. By preventing this in the manner described the resistances in the microphone remain constant, and an always clear reproduction of the sounds is obtained. Coating *f* finally acts as a damper, and forms a tight joint between casing *b* and cover *c*, and prevents short circuiting in the microphone by not permitting the carbon grains to get jammed between the diaphragm and the points of the electrode. The electrode, *g*, (Figs. 1, 3 and 4) is composed of conducting material, such as metal, by preference of carbon, and is at its side facing the diaphragm provided with or shaped into a number of diamond points, which I form by preference by cutting V shaped grooves across the surface of the electrode in one direction, and by intersecting these grooves by short alternate grooves of similar shape, so as to form the diamond points shown in Fig. 3. The points coming in juxtaposition with the conducting part *a'* of the diaphragm are hollowed out or provided with crater-shaped cavities, into which tufts or brushes *h* of elastic, non-conducting material are inserted; I employ by preference tufts of cotton, wool, felt-fiber, feathers or downs. These elastics, non-conducting tufts, which rest against con-

ducting part *a'* of the diaphragm so lightly as not to influence the vibrations of the latter in any perceptible degree, serve as dampers for excessive undulations caused by very strong sound waves, but their main object is to prevent any jamming of carbon grains between the electro points and the diaphragm. The space between the diamond pointed face of the electrode and the diaphragm is filled with carbon grains *i*. Electrode *g* is held in a body or box *k* of non-conducting material, inclosed in casing *b*, by preference by a screw *l*. Box *k* also carries the two binding screws *n* and *p*, of which *p* is in electric connection with screw *l* and electrode *g* by means of a wire *m*, and *n* in electric connection with diaphragm *a* by a wire *o*.

What I claim, and desire to secure by Letters Patent, is—

1. In grain- or powder- microphones the combination with a box or casing, a cover, and a mouth piece attached thereto, of diaphragm

*a* of electric conducting material, covered on its side facing the mouthpiece with a protective coating against moisture, and on its other side with a coating of elastic non-conducting material *f*, leaving an uncovered conducting surface *a'*, and of an electrode *g*; substantially as and for the purpose described.

2. In grain- or powder- microphones the combination with a box or casing a cover and a mouthpiece attached thereto of diaphragm *a*, an electrode *g* with alternately placed diamond points facing the diaphragm, and of tufts or brushes *h* of elastic non-conducting material attached to the diamond points opposite to conducting space *a'*; substantially as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILHELM DECKERT.

Witnesses:

ROBT. B. JENTZSCH,  
EDWARD WENSCH.