

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in or relating to Microphones.

I, EUGEN REISZ, of 38, Goebenstrasse, Berlin-Dahlem, Germany (formerly of 12, Wilhelmstrasse, Berlin-Zehlendorf), a citizen of the Hungarian Republic, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to microphone transmitters of the diaphragmless carbon granule type, wherein the sound waves of the air impinge directly upon a soft and pliable insulating sheet extending
15 over the carbon granules. Such microphones comprise a granule chamber formed in a fixed, solid and substantially vibration-free base—for instance, a block of marble or the like—said granule chamber containing the fixed electrodes
20 between which the granules are spread in a layer of suitable depth.

The invention has for its object to increase the sensitiveness of such microphones as well as further to decrease parasitic noises. This is attained by so arranging each of the stationary electrodes in a deep trough in the granule chamber that its free external surface is
30 wholly surrounded by the loose granules.

A constructional example of a microphone of this kind is shown in the accompanying drawings, Figure 1 being a front elevation with the front cover omitted
35 and Figure 2 a horizontal cross section.

The electrodes *b* of carbon or a non-oxidisable metal are so fixed in two deep troughs *h* in the solid and substantially vibration-free body *a* that their free external surfaces are wholly covered by the loose granules of grains of contact powder *c*. The attachment may be effected by providing the electrodes *b* with screws *o*, for example, which are
40 screwed into the heads *k* of the screw threaded bolts *i* which are passed through the body *a* and the said heads of which

are adapted to fit the electrodes. These bolts are held on the back of the body *a* by nuts *l*, which simultaneously serve to
50 carry the current.

The two lateral deep troughs *h* communicate at the front of the body *a* with the granule chamber *g* which is subjected to the action of the sound waves
55 and which is made very shallow so as to remain of the same degree of sensitiveness to variations of pressure for all frequencies that may occur.

To prevent the granules from falling
60 out of the chamber *g* the whole of the chamber is covered in front by a thin skin of rubber *f* which holds the granules under a certain pressure when the chamber is in a vertical position. The use of a
65 rubber skin for this purpose is already known per se. This rubber skin is held in position by a grid *n* made of gauze or the like and provided with a projecting rim *m*. This rim extends over the fixed
70 electrodes *b*, thereby preventing the sound waves from impinging directly upon the coal dust which covers these said electrodes. The resistance at the
75 contact between electrode and coal dust thus remains uninfluenced by the sound waves of the air and the loud parasitic noises which would result from abrupt variations of such contact resistance are
80 avoided.

It will be clear at once that the variations of the electrical resistance of a pulverulent conductor when sound waves impinge thereon depend:—

1. Upon the height to which the layer
85 of contact powder is piled upon the base, the sound waves with the lowest frequencies being absorbed only in the deepest layers, while the sound waves with the higher frequencies disappear
90 even in the uppermost layers. This phenomenon is to be ascribed to the fact that air passages are formed between the granules or grains of the powder, which

are permeable by the lower tones but are impermeable to the higher ones.

2. Upon the size of the grains of contact powder, because the number and size of the passages formed between the said grains also varies therewith.

3. Upon the pressure to which the granules are subjected, because the number and shape of the air passages between the said granules also varies according to the degree of such pressure.

If therefore the wide frequency band of the musical tones is to be uniformly absorbed in the contact powder, these three values, the height at which the powder is piled up, the size of the grains thereof and the pressure to which it is subjected must be brought into a definite ratio to each other. In practice the following figures for these values are found to give the desired result:—

Distance between rubber diaphragm and adjacent parallel surface of chamber g : 3 to 4^m/_m.

Size of grain: Larger than would pass a sieve of 200 meshes per square inch.

Pressure: Rubber skin 0.15^m/_m thick, slightly stretched.

If therefore a definite size of grain be selected for use in the microphone the above mentioned magnitudes will bear a fixed ratio thereto.

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

A microphone transmitter device of the type herein defined, characterised by the fact that the stationary electrodes (*b*) are so arranged in deep troughs (*h*) in the fixed solid body (*a*)—for instance a block of marble or the like—that their free external surfaces are wholly covered by the granules (*c*) whereby the resistance of contact between said electrodes and said granules is not affected by the sound waves of the air.

Dated this 25th day of June, 1925.

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Fig. 1.

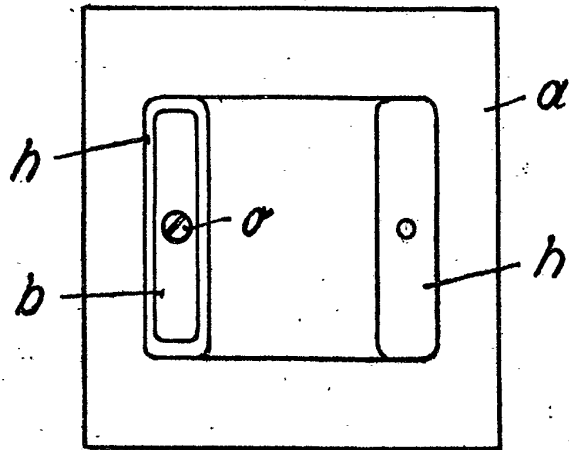
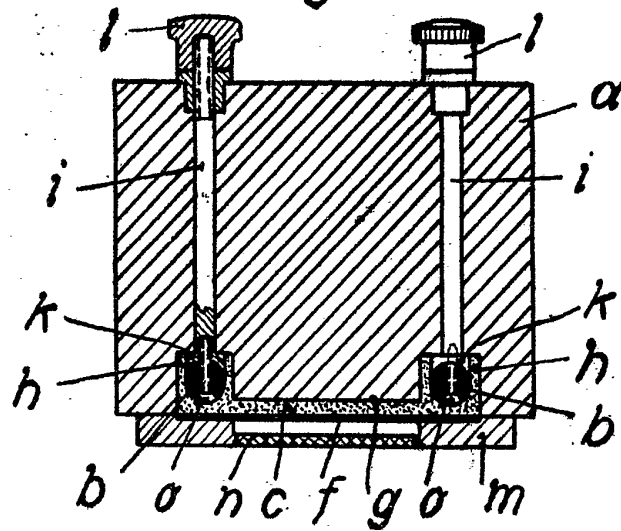


Fig. 2.



[This Drawing is a full-size reproduction of the Original]