(No Model.)

H. O. HENNEBERG.

ADJUSTABLE MICROPHONE.

No. 472,806. Patented Apr. 12, 1892.

Fig. 1.

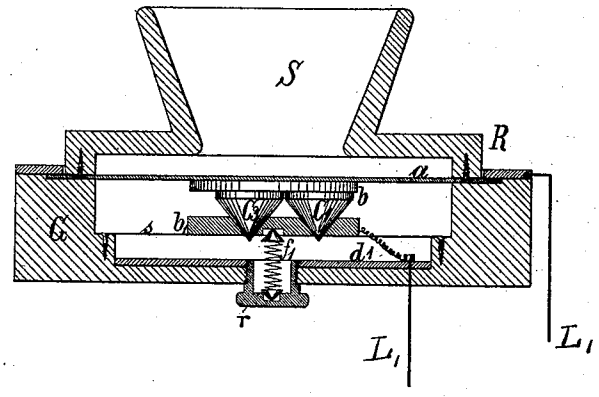
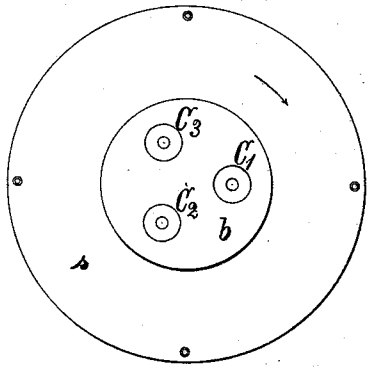


Fig. 2.



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UNITED STATES PATENT OFFICE.

HERMANN OTTO HENNEBERG, OF BERLIN, GERMANY, ASSIGNOR TO SIEMENS & HALSKE, OF SAME PLACE.

ADJUSTABLE MICROPHONE.

SPECIFICATION forming part of Letters Patent No. 472,806, dated April 12, 1892.

Application filed October 10, 1891. Serial No. 408,378. (No model.)

To all whom it may concern:

Be it known that I, HERMANN OTTO HENNEBERG, a subject of the King of Prussia, German Emperor, residing at the city of Berlin, Prussia, Germany, have invented certain new and useful Improvements in Adjustable Microphones; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

A known form of microphones consists, substantially, in placing a carbon cone with its base against a carbon plate and its apex in a central position relative to the membrane. This carbon cone, freely movable about its axis, is arranged in a hollow cone of metal or of any other conductive or non-conductive material. By moving the whole system around the axis of the cone new points of contact between the base of the cone and the carbon plate are obtained. This arrangement has, however, the inconvenience that great care is required in the manufacturing of the carbon cone, and consequently the cost of the microphone becomes too high. Moreover, with the wear and tear of the surfaces of the carbon the pressure under which the said surfaces are resting upon each other gradually decreases and the purity of the transmission of sound is diminished.

The object of this invention is to avert the above-stated inconveniences.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters.

Figure 1 represents a central transverse section of the microphone, and Fig. 2 represents a view of the bottom of the membrane *s*, and shows the location of the three carbon cones.

The membrane *a* is firmly connected with the sounding-funnel S, and has attached to its interior face the carbon plate *b*. Carbon cones C' C^2 C^3 (it is best to use three cones) are in contact with but not attached to the said carbon plate *b*, and are kept in position by a second plate *b'* of carbon or metal. To this end this plate is provided with conical holes. (That the carbon bodies C' C^2 C^3 be conically-shaped is not absolutely necessary, but I give preference to that form, as it is the most simple.) The plate *b'* is attached to a disk *s* of very flexible material—such as metal foil, paper, or textile fabric, which disk is fastened by its edge in the frame G. Upon the center of the plate *b'* presses a spring *f*, which, by means of a screw *r*, can be adjusted at will, and thus a uniform pressure of the three bases of the cones upon the plate *b* is effected. By turning the sounding-funnel, which is firmly connected with the membrane, the carbon plate *b* will slide on the bases of the carbon cones, and thus create new points of contact. From the plate *b'* a light flexible conductor *d'* conveys the current to the conductor L', while the connection between *b* and the conductor L' is established by the membrane and by the sliding ring R.

The operation of the device is simple. When the carbon cones are so much worn or set as to cause imperfections in the transmission of sound, by turning the funnel S, with its attached plates *a* and *b*, through a small angle new contact-points are made between the carbon plate *b* and the base of the carbon cones and the tone of the instrument is restored and its life prolonged. Three cones are used because by having a multiplicity of contact points irregularities in resistance of the circuit due to flaws in the manufacture of the carbon are largely obviated and the instrument becomes much more durable.

What I claim as my invention, and desire to have protected by Letters Patent, is—

1. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane secured together and rotatably mounted in said frame, a carbon plate secured to said membrane, a plurality of carbon bodies supported on a flexible disk and pressing against said carbon plate, and means for regulating the pressure between said carbon bodies and said carbon plate, substantially as and for the purposes described.

2. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane rotatably mounted in said frame, a carbon plate attached to said plate or membrane, a plurality of carbon cones with their bases pressing against said carbon plate, a support for said cones, mounted upon a flexible disk, and means for regulating the press-

ure upon said support and so adjusting the pressure between the bases of said cones and the carbon plate attached to the membrane, substantially as and for the purposes described.

3. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane rotatably mounted in said frame, a carbon plate attached to said plate or membrane, a plurality of carbon cones with their bases pressing against said carbon plate, a support for said cones, mounted upon a flexible disk, a spring pressing upon said support and holding the bases of said cones in contact with the said carbon plate, and a screw for adjusting the tension of said spring, substantially as and for the purposes described.

In testimony whereof I do affix my signature.

HERMANN OTTO HENNEBERG.

Witnesses:
PERCY C. BOWEN,
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