No. 616,186. Patented Dec. 20, 1898.

L. M. ERICSSON.

MICROPHONE CONTAINING GRANULAR CARBON FOR RETAINING MATERIAL IN POSITION.

(No Model.) (Application filed Apr. 6, 1898.)

Fig. 1.

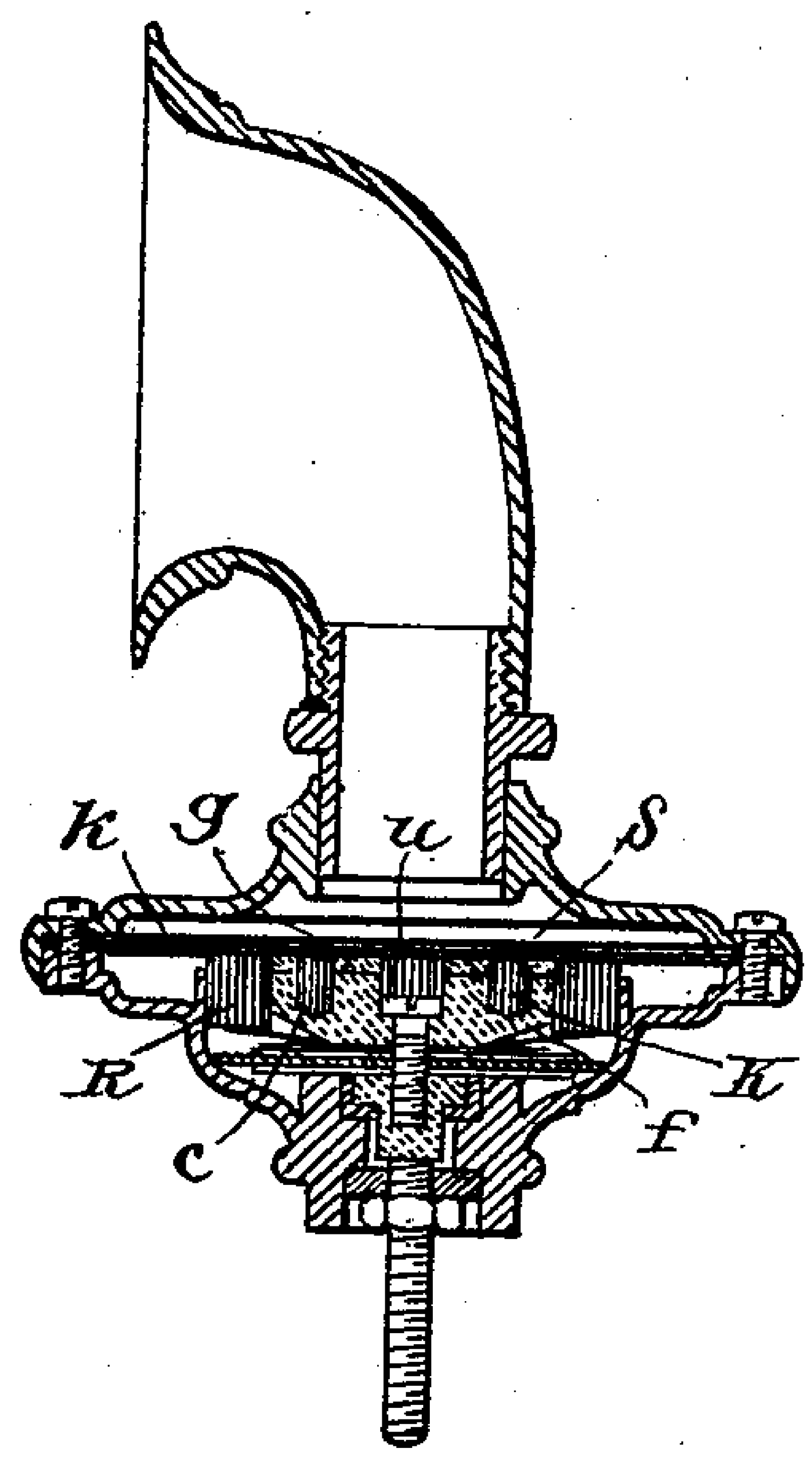


Fig. 5.

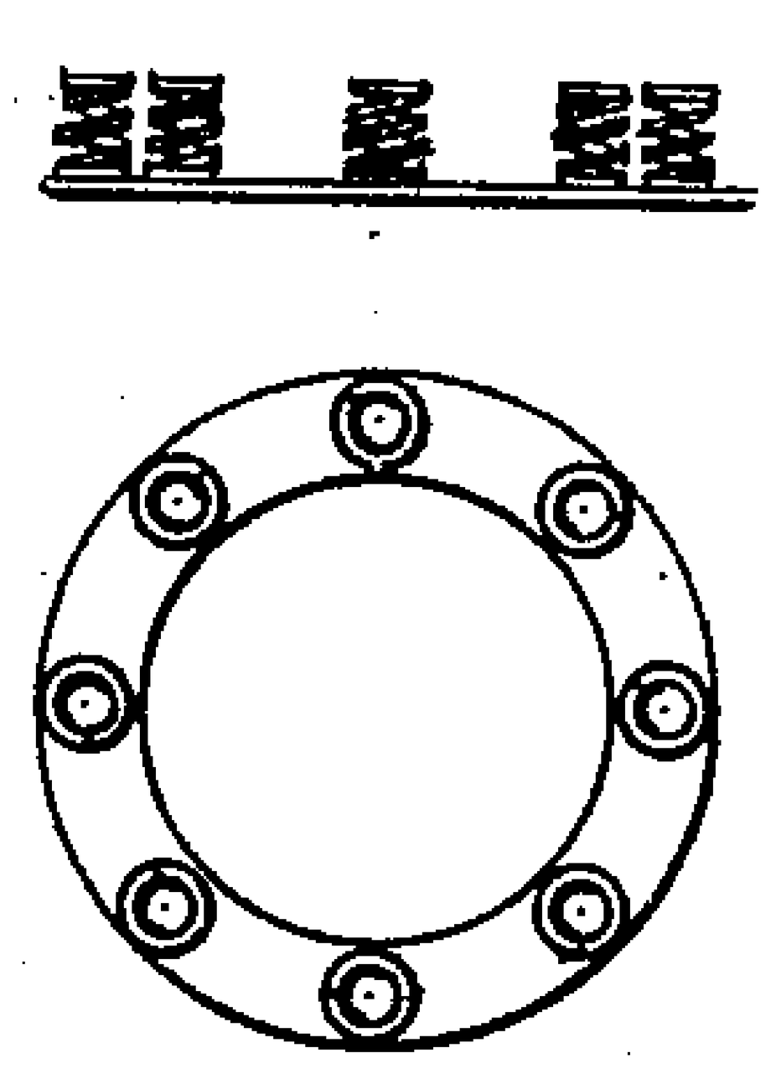


Fig. 2.

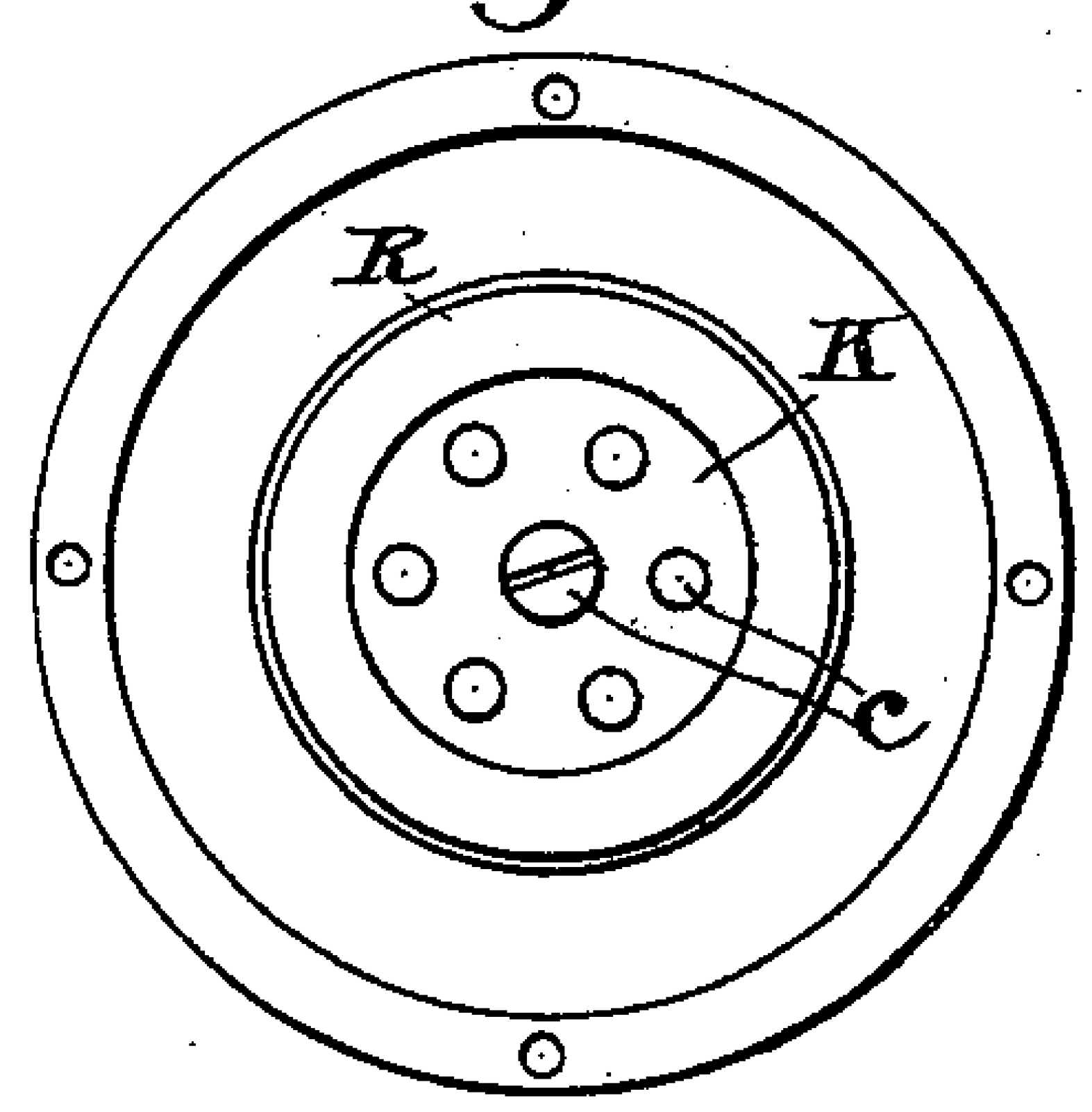


Fig. 6.

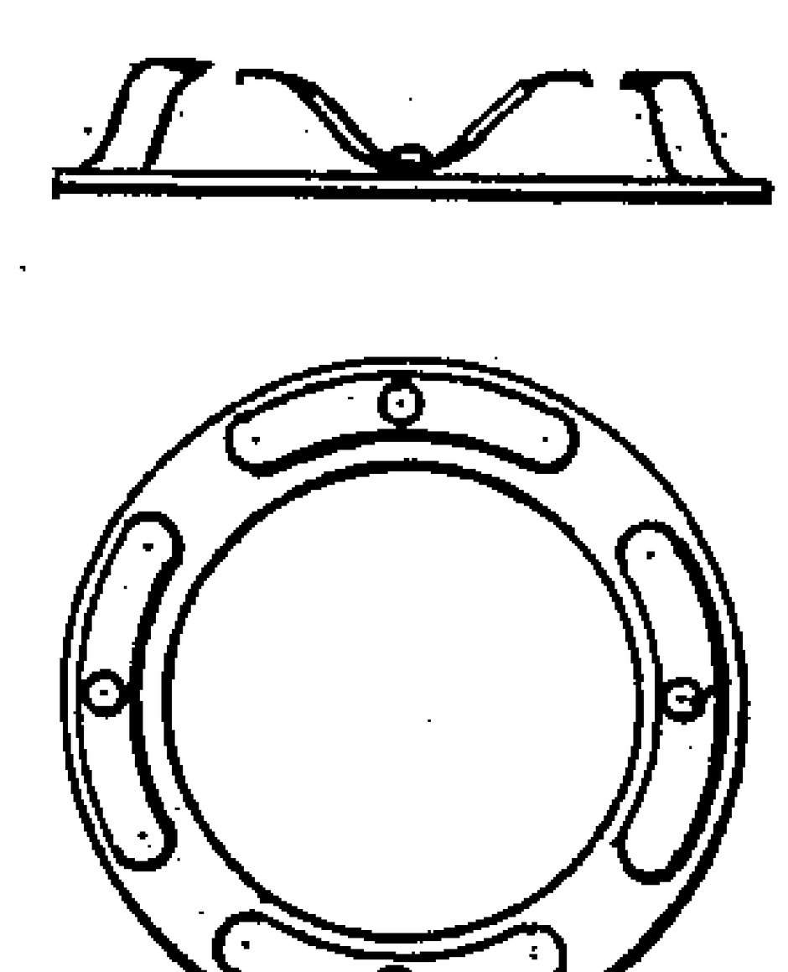
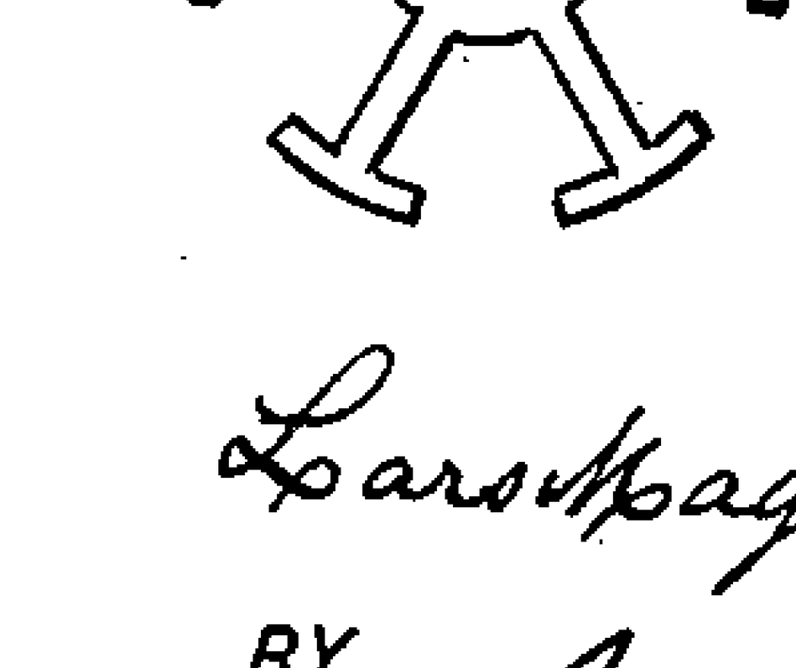


Fig. 3.

Fig. 4.



WITNESSES:

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ATTORNEYS

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UNITED STATES PATENT OFFICE.

LARS MAGNUS ERICSSON, OF STOCKHOLM, SWEDEN, ASSIGNOR TO THE AKTIEBOLAGET L. M. ERICSSON & COMPANY, OF SAME PLACE.

MICROPHONE CONTAINING GRANULAR CARBON FOR RETAINING MATERIAL IN POSITION.

SPECIFICATION forming part of Letters Patent No. 616,186, dated December 20, 1898.

Application filed April 6, 1898. Serial No. 676,676. (No model.)

To all whom it may concern:

Be it known that I, LARS MAGNUS ERICSSON, manufacturer, a subject of the King of Sweden and Norway, and a resident of Thulegatan 5, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Microphones Containing Granular Carbon for Retaining the Granular Material in Position and Damping the Vibrations of the Diaphragm, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to microphones containing granular carbon for retaining the granular material in position and damping the vibrations of the diaphragm.

One of the principal difficulties encountered in attempting to produce a good carbon microphone containing granular carbon has been to invent an arrangement for retaining the granular material securely in place without exerting an undue and varying pressure on the diaphragm. This invention relates to an arrangement by means of which the difficulty referred to has been overcome. The arrangement consists in inclosing the mass of granular carbon by an elastic material which is made to exert a uniform (not a varying) pressure on the diaphragm, while taking part in its vibrations, and thus at the same time damping the latter to a certain extent.

In the accompanying drawings, Figure 1 shows a microphone in a vertical section and Fig. 2 in a plan view. Figs. 3, 4, 5, and 6 show details of the spring arrangement, serving as examples.

The microphone consists of a round cylindrical carbon disk K, Fig. 3, in the portion of which that faces the diaphragm *k* are arranged cavities *c*, (here seven in number,) in which, as previously known, are placed small cylinders, made of felting, cloth, or some other elastic material, for keeping the granular carbon in a loose condition. The carbon disk K is fastened to the metal casing of the microphone by means of the screw *u*, passing through the central one of the cavities *c*. Around the said carbon disk K is placed a ring R of felting, cloth, or other elastic material. The ring is pressed against the carbon diaphragm *k* by means of the springing plate *f*, Figs. 1 and 4, and spiral or leaf springs, Figs. 5 and 6. In place of springs of one kind or another a hollow ring of rubber, gutta-percha, or other similar material may be used. The space bounded by the carbon disk K, carbon diaphragm *k*, and felt ring R is filled with a suitable quantity of granulated carbon *g*. The elastic springing ring R thus serves both to retain the granulated carbon in its place and to exert an even constant pressure on the diaphragm during its vibrations. By this arrangement a good articulation is effected, and at the same time the sound will not be disagreeable to the ear even when the speech in the microphone is loud or screeching.

In order to protect the interior parts of the microphone from dampness and dust, a waterproof membrane S of impregnated silk or other suitable material is located in front of the carbon diaphragm *k*.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In combination, in a microphone, a disk, a ring of elastic material surrounding the same and projecting beyond the face thereof, a diaphragm opposite the disk, carbon granules in the space bounded by the elastic ring the disk and the diaphragm, and the spring for pressing the elastic ring toward the diaphragm, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LARS MAGNUS ERICSSON.

Witnesses:

PEDER HAMMARSHJOLD,

E. O. SAURBERG.