

W. BURSTYN.
DIAPHRAGM FOR ACOUSTIC APPARATUS.
APPLICATION FILED FEB. 19, 1909.

954,715.

Patented Apr. 12, 1910.

Fig. 3.

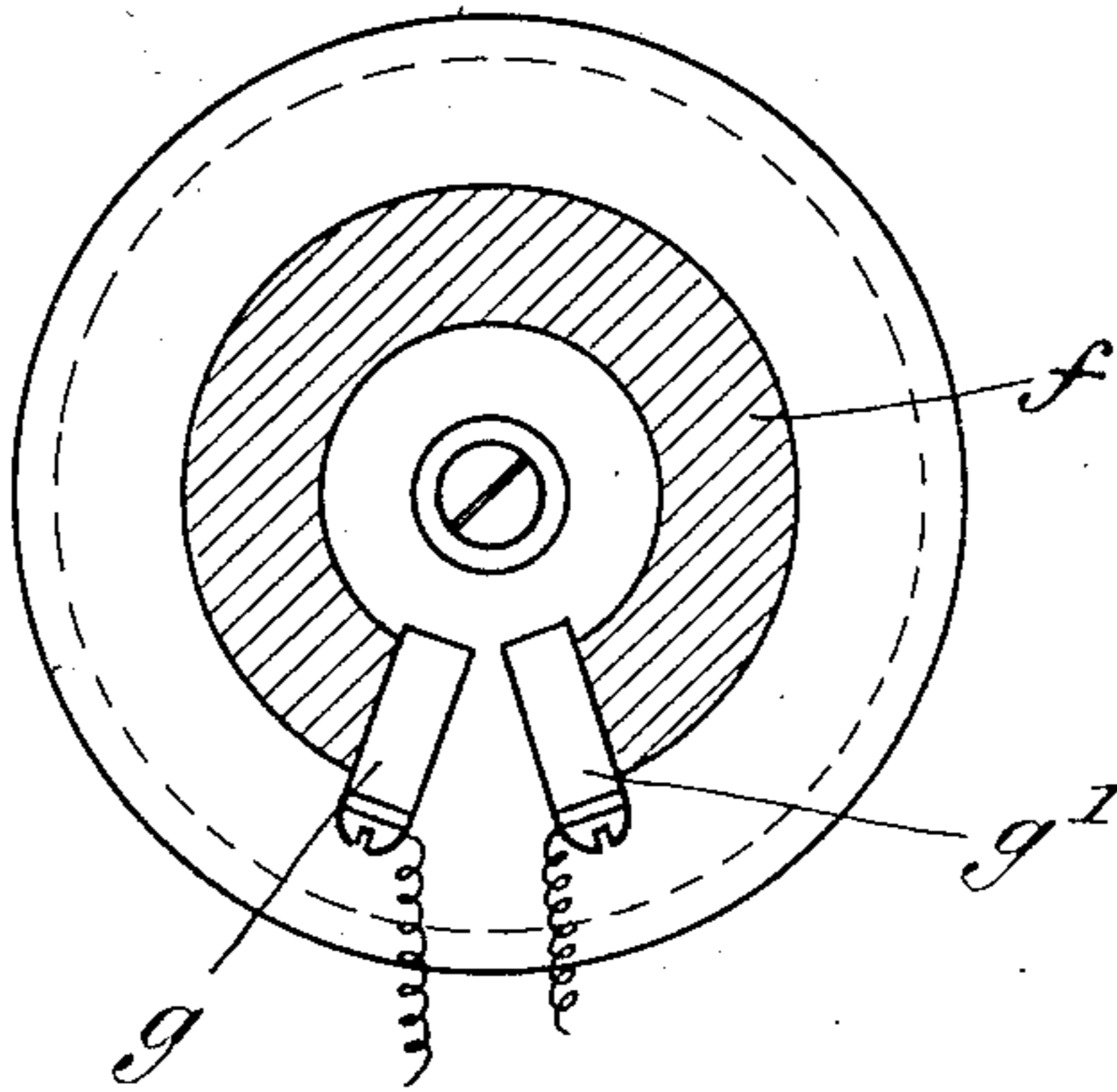


Fig. 1.

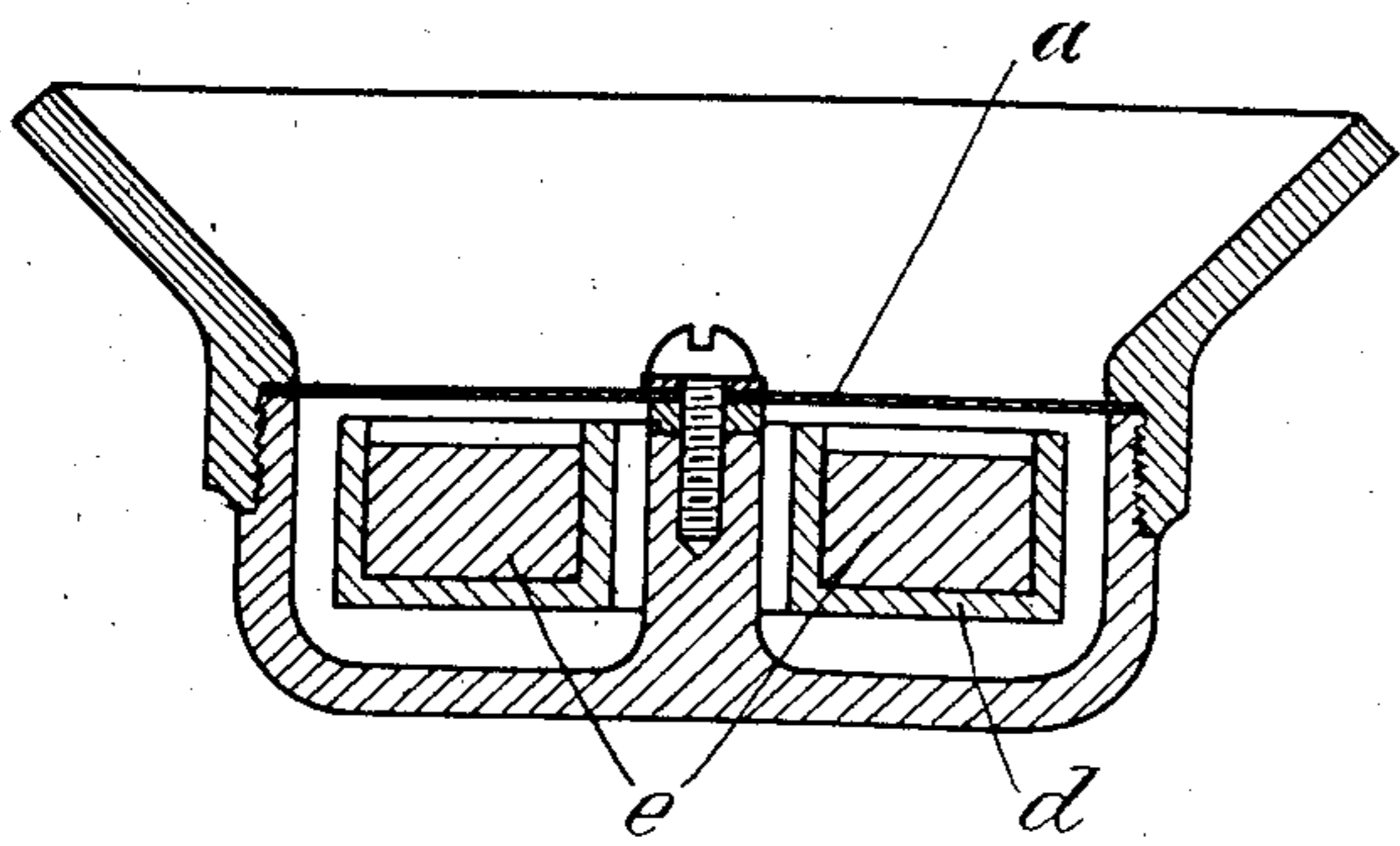


Fig. 2.

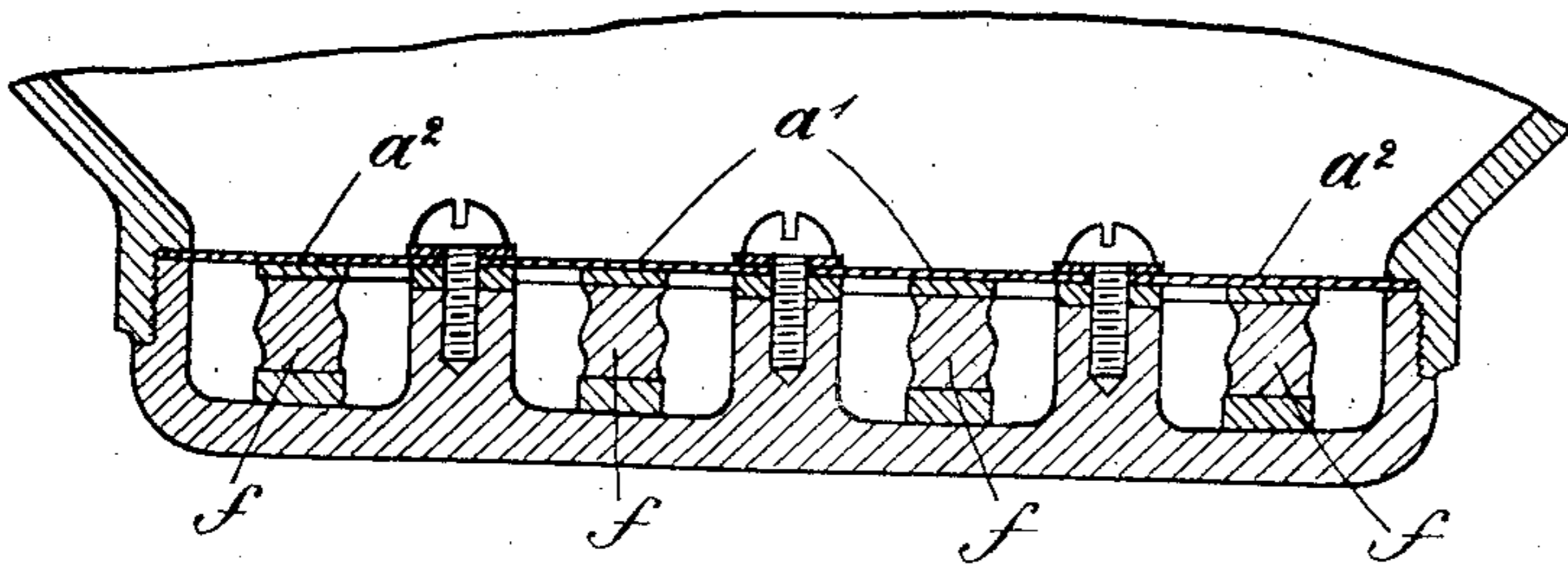
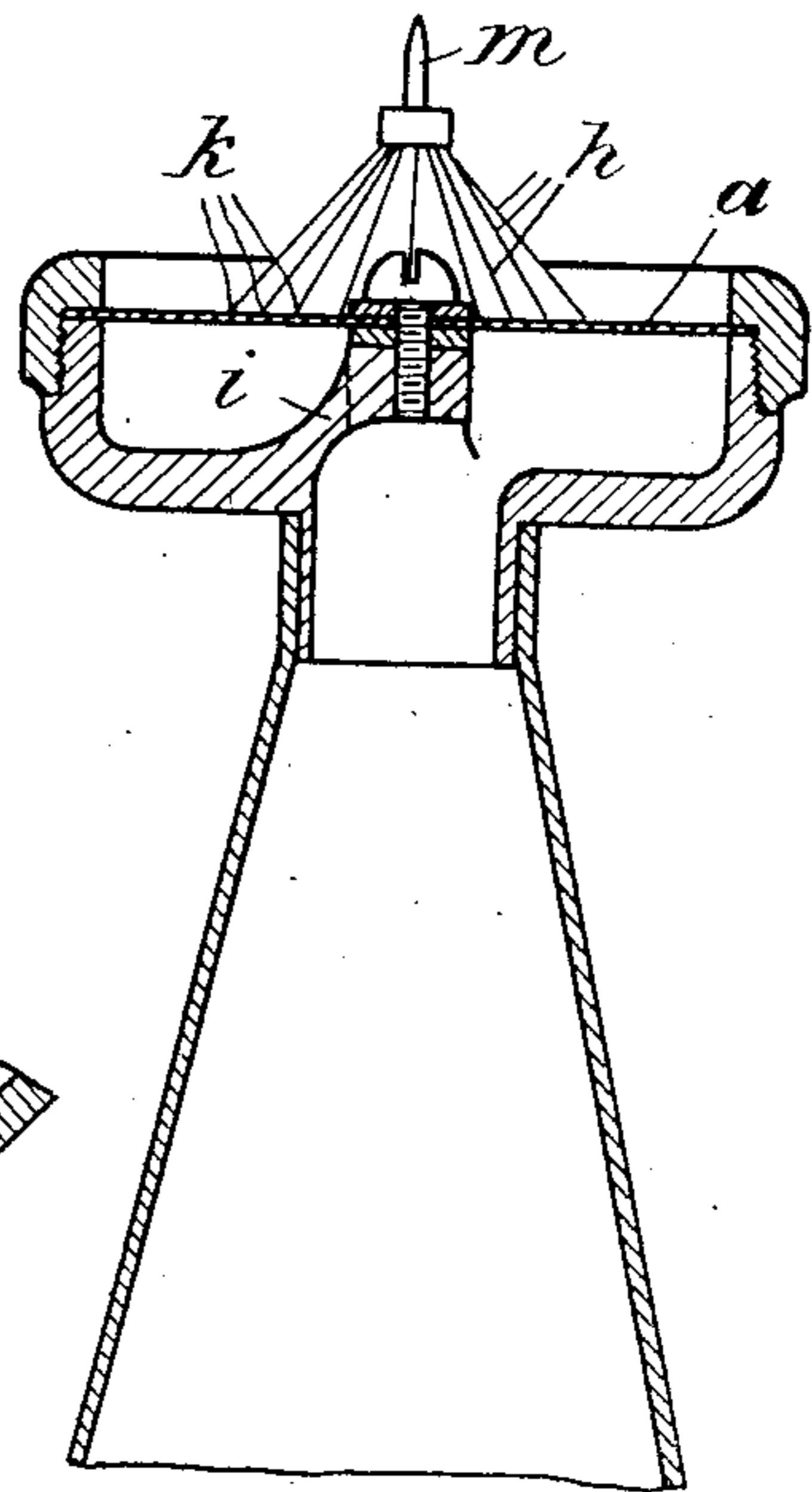


Fig. 4.



Witnesses.

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Inventor.

Walther Burstyn
by his attorney
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UNITED STATES PATENT OFFICE.

WALTHER BURSTYN, OF BERLIN, GERMANY.

DIAPHRAGM FOR ACOUSTIC APPARATUS.

954,715.

Specification of Letters Patent.

Patented Apr. 12, 1910.

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To all whom it may concern:

Be it known that I, WALTHER BURSTYN, an engineer and a subject of the Emperor of Austria-Hungary, residing at 4 Teltowerstrasse, Berlin S. W., Germany, have invented certain new and useful Improvements in Diaphragms for Acoustic Apparatus, of which the following is a specification.

When, in a certain size of an acoustic diaphragm of the usual disk form, the thickness of the diaphragm decreases, it will be found that, in consequence thereof, there is increased not only the sensitiveness but also the period of natural vibration which, however, is not allowed to pass a certain size. By the aforesaid contradiction of these conditions, one is prevented from passing that size of diaphragms as it is now customary in telephones, microphones, phonographs etc. If greater acoustic energies are to be converted, one is forced to use simultaneously a number of single apparatus of the customary size, for instance to connect several microphones in parallel.

My invention has for object to obviate this difficulty by putting the diaphragm into such a shape that it possesses, in spite of its small thickness, a high periodicity of natural vibration.

In the accompanying drawing: Figure 1 is a cross section through part of a telephone, showing my improved diaphragm; Fig. 2 a similar section, showing a modification; Fig. 3 a plan of a further modification, and Fig. 4 a cross section through a phonograph-diaphragm and adjoining parts.

According to my invention a diaphragm *a*, is employed which is supported in one or several spots. In the most simple construction, a disk shaped diaphragm *a* is fastened, except in its edge, in its center so that the oscillation loop has the form of a circle. Fig. 1 shows a sectional view of a particularly advantageous arrangement in which the diaphragm *a* has the form of a ring. As will be seen from the drawing, the iron case *d* preferably forms a ring of a U-shaped section the opening of which is opposite to the center-line of the annular diaphragm *a*, and in the cavity of which is located the ring-shaped magnetizing coil *e*. The telephone according to Fig. 1 does not contain a steel-

magnet. In this construction, either an additional magnetizing direct current is sent through the coil, or case *d* is made of steel and permanently magnetized.

It will be understood that, instead of one ring *a*, there may be arranged several concentric rings *a'* *a''*, as represented in Fig. 2. In a microphone having such a diaphragm, the cloth bags *f* containing the carbon powder, or their substitute means, are also suitably arranged in the shape of a ring, the spots of contact touching the oscillation loops of the diaphragm. If the microphone is intended to possess a high resistance, the carbon powder ring *f* is suitably cut up, as shown in Fig. 3, at *g g'*, the ends *g g'* serving for introducing the current.

In a diaphragm for phonographs, the means for transmitting the movement consist in little staffs or needles *h*, as represented in Fig. 4 showing a diaphragm *a* for phonographs, the diaphragm being supported in its center by appropriate arms *i*. The said staffs *h* suitably form the envelop of a cone, the base-circle of which is formed by those points *k* of the diaphragm *a* to which the staffs *h* are secured, the said points *k* lying simultaneously in the center-line of the diaphragm *a*. The apex of the cone bears the recording stylus *m*.

It will be understood that the diaphragm may be divided into sections or strips of other shape as above described, without differing from the principle of my invention. This principle is not only applicable to plane diaphragms but also to cylindrical or spherical ones.

What I claim, and desire to secure by Letters Patent of the United States, is:—

1. In a device of the character described, an annular case, a diaphragm clamped thereto at its circumference, and rigid means for supporting the diaphragm at its center.

2. In a device of the character described, an annular case, a diaphragm clamped thereto at its circumference, rigid means for supporting the diaphragm at its center, and vibration receiving means located intermediate the circumference and center of the diaphragm.

3. In a device of the character described, an annular case, a diaphragm clamped there-

to at its circumference, rigid means for supporting the diaphragm at its center, and a layer of carbon powder located below the diaphragm and intermediate the circumference and center thereof.

4. In a device of the character described, an annular case, a diaphragm clamped thereto at its circumference, rigid means for supporting the diaphragm at its center, and a concentric ring on the case that supports the

diaphragm intermediate its circumference and center.

In witness whereof I have hereunto set my hand this sixth day of February 1909, in the presence of two subscribing witnesses. 15

WALTHER BURSTYN.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.