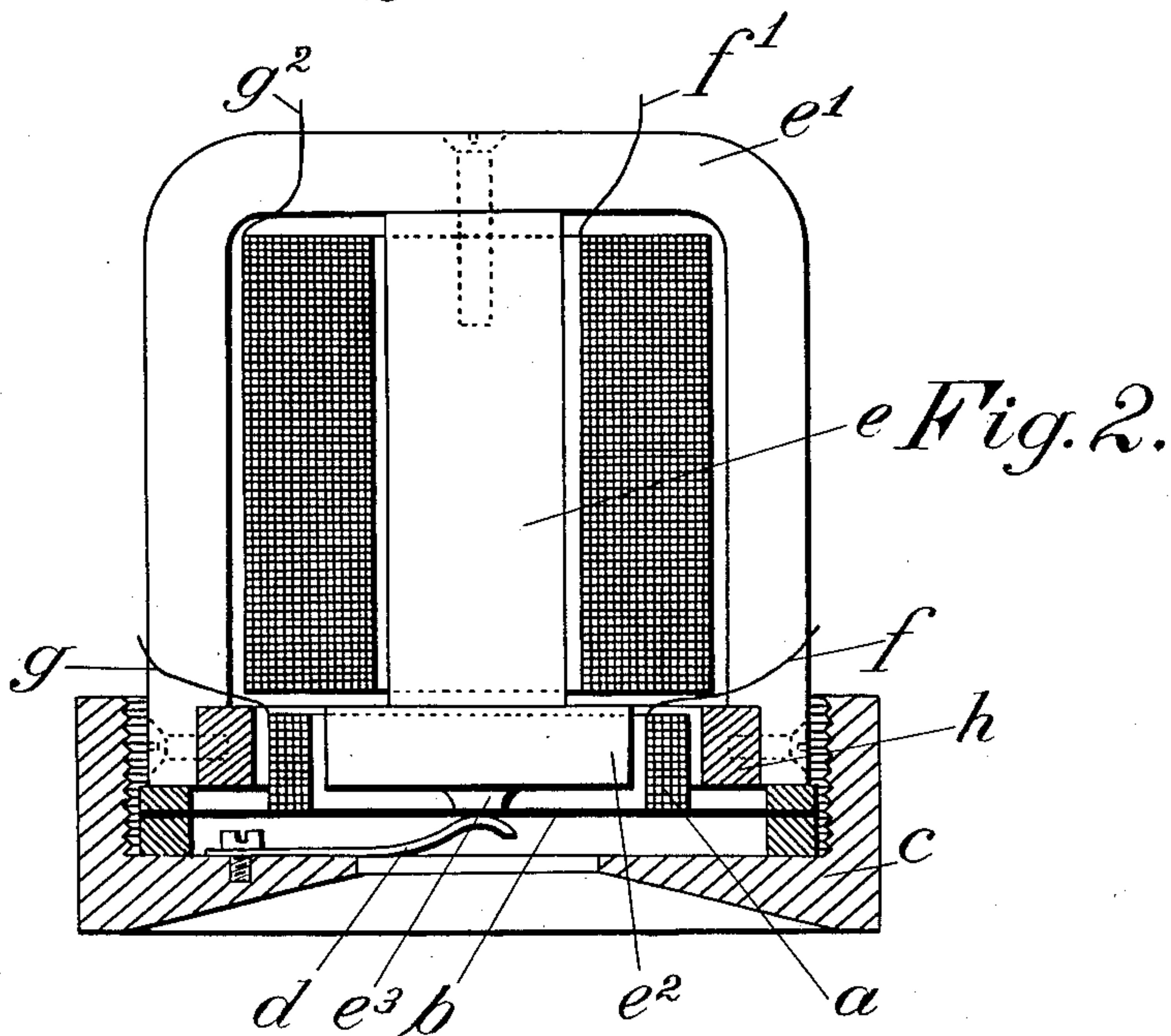
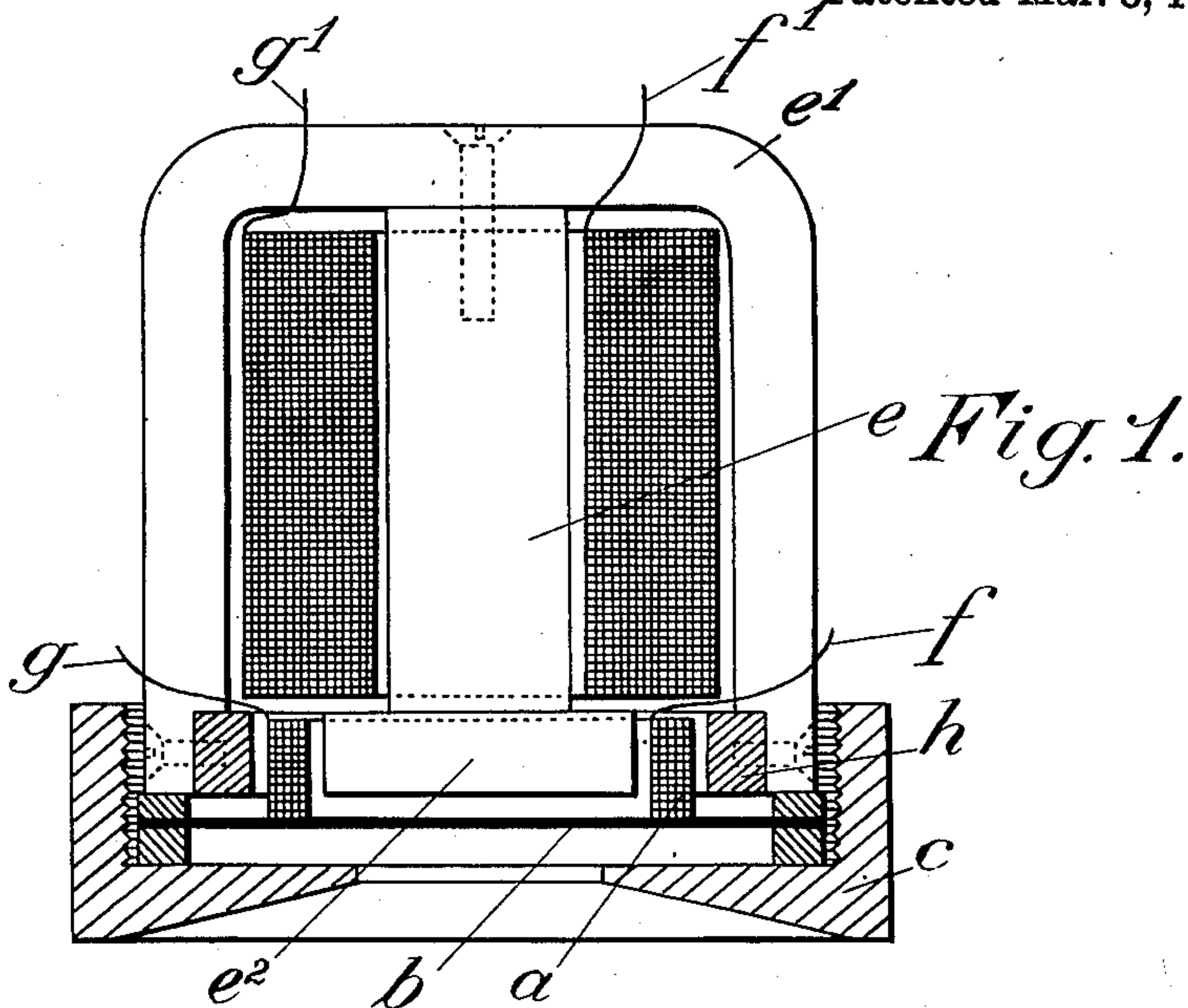


P. M. OLIVER.
TELEPHONIC APPARATUS.
APPLICATION FILED JUNE 10, 1909.

951,695.

Patented Mar. 8, 1910.



Witnesses:
F. R. Pitton
J. S. Pineta

Inventor.
Pedro Marcer Oliver
By *[Signature]*
his Atty.

UNITED STATES PATENT OFFICE.

PEDRO MARCER OLIVER, OF BARCELONA, SPAIN.

TELEPHONIC APPARATUS.

951,695.

Specification of Letters Patent.

Patented Mar. 8, 1910.

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To all whom it may concern:

Be it known that I, PEDRO MARCER OLIVER, clergyman, a subject of the King of Spain, residing at Barcelona, in the Province of Barcelona and Kingdom of Spain, have invented certain new and useful Improvements in Telephonic Apparatus; 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.

My invention relates to improvements in telephonic receiving apparatus and consists in the combination with the receiving apparatus of an annular coil secured to the vibratory plate, and a magnet having one of the poles located within the coil, without making contact therewith, while the other pole is out of the coil, without contacting therewith and wholly or partially surrounding said coil.

In order that this invention may be clearly understood, I have represented it in the accompanying drawings, in which—

Figure 1 is a sectional view of my improved telephonic receiving apparatus and Fig. 2, is a sectional view of a modification thereof.

In the receiving apparatus shown in Fig. 1, the vibratory plate or diaphragm *b* is fitted with an annular coil *a*, suitably secured to the face of said plate opposite to the outer casing *c*; an electromagnet *e* has one of its poles *e*² within the coil *a* and the other pole *e*¹ in the form of a U shaped bar or bridge stands outside the coil and terminates at the level of same. The wires *f* *g* of the annular coil are electrically connected to the telephonic line and the wire *f*¹ *g*¹ of the electromagnet coil are connected to an independent circuit. The outer pole of the magnet *e* is fitted with a ring *h* of magnetic material surrounding the annular coil *a*.

The arrangement of parts above referred to has the effect of largely amplifying the vibrations of the plate, the results thus obtained being most efficient and higher than those now available in similar apparatus. This will be apparent when it is remembered that any strength of magnetic field desired may be produced between the poles *e*² and *h* by suitably regulating the current passing through the wires *f*¹ and *g*¹, so that the variations in the field of the coil *a* due to

the currents received from the distant station, can be utilized to a high degree of efficiency in reproducing speech. Furthermore, since these currents are alternating in character each current received will cause an attractive and a repulsive force to be exerted on the diaphragm *b*, so that the movements of said diaphragm will be sharp and clear and this effect is also capable of being magnified within limits by increasing the turns of wire in said coil *a*.

The acoustical effects of the receiving apparatus will increase by arranging the parts as shown in Fig. 2. In this form of apparatus the pole *e*² of the magnet *e* bears a heel *e*³ in close contact with the central part of the vibratory plate *b*; the opposite part of this plate is in contact with a spring *d* secured to the outer casing *c*, so that the vibratory plate *b* is caught at the center and remains between the spring and heel. The heel *e*³ may be dispensed with, in which case the central part of the plate *b* is only in contact with the spring *d*.

A great advantage of the arrangement above described is that it greatly neutralizes or diminishes the self vibrations of the plate.

The receiving apparatus described may be also employed as a transmitting apparatus.

Having thus described the nature of my invention and in what manner the same is to be performed, I declare that what I claim and desire to secure by Letters Patent, is:

1. In a telephonic receiving apparatus, the combination of an annular coil secured to the vibratory plate, and a magnet having one pole provided with a heel within the annular coil and adapted to contact with the vibratory plate, while the other pole terminates outside the annular coil; substantially as described.

2. In a telephonic receiving apparatus, the combination of an annular coil secured to the vibratory plate, a magnet having one pole provided with a heel within the annular coil contacting with said plate, and the other pole terminating outside of the annular coil, and a ring attached to said last named pole and located outside the annular coil; substantially as described.

3. In a telephonic receiving apparatus, the combination of an annular coil secured to the vibratory plate, a magnet having one pole within the annular coil and contacting with said plate, and the other pole termi-

nating outside the annular coil, at substantially the same level, and a ring attached to said last named pole and surrounding the annular coil, substantially as described.

5 4. In the telephonic receiving apparatus, the combination of an annular coil secured to the vibratory plate, a magnet having one pole within the annular coil, provided with a heel contacting with said plate while the
10 other pole surrounds the said coil, and a spring in close contact with the vibratory plate opposite said heel; substantially as described.

15 5. In the telephonic receiving apparatus, the combination of an annular coil secured to the vibratory plate, a magnet having one pole within the annular coil, while the other pole or an expanded part thereof surrounds the annular coil, a heel at the end of the in-
20 ner pole of the magnet, in contact with the center of the vibratory plate, and a spring

in contact with the opposite side of said vibratory plate; substantially as described.

6. In a telephonic receiving apparatus provided with a vibratory plate, the combination of a coil secured to said plate; a magnet having a U-shaped piece provided with a ring constituting one of its poles and surrounding said coil; a piece *e* constituting the other pole secured at the center of said
30 U-shaped piece and projecting into said coil; a second coil surrounding said piece *e*; a casing C, and clamping means for said plate between said casing and said U-shaped piece, substantially as described. 35

In testimony whereof, I affix my signature, in presence of two witnesses.

PEDRO MARCER OLIVER.

Witnesses:

CONSTANTINO LOPER Cid,
HENRY MARTINEZ.