

PATENT SPECIFICATION

592,492



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PROVISIONAL SPECIFICATION

Improvements in Ribbon Microphones

We, THE GENERAL ELECTRIC COMPANY LIMITED, of Magnet House, Kingsway, London, W.C.2, a British company and THOMAS ALBERT JULIAN, of the same address, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to microphones of the type comprising as essential elements a permanent magnet and a conducting ribbon (usually of corrugated aluminium foil) adapted to vibrate in the field of the said magnet under the influence of sound waves.

In such microphones the magnet is usually furnished with soft iron pole pieces, separable from the permanently magnetised part of the magnet, so shaped that the magnet field in which the ribbon lies is more uniform over the ribbon than it would be if the pole pieces were absent. Hitherto these pole pieces have usually been held to the magnet by bolts or the like; we have found that it is practicable and convenient to hold them by magnetic forces alone, that is to say, in such a manner that, if the permanent magnet were demagnetised without other change, some motion of the pole pieces that is inconsistent with the normal operation of the microphone would occur.

According to the invention, in a microphone of the type specified, the said ribbon lies between a pair of pole pieces that are held to the magnet by magnetic forces alone. Preferably each said pole piece is a right circular cylinder fitting at one part of its length into a semicircular recess,

either in a face of the magnet or in a flat plate held to a face of the magnet by magnetic forces alone.

One embodiment of invention will now be described by way of example with reference to the accompanying drawing, wherein Figure 1 is a section of the microphone in the plane of the ribbon and Figure 2 is a section in the plane AA of Figure 1.

1 is a permanent horse shoe magnet with at terminal faces perpendicular to its axis. Flat soft iron plates 2, 3 are held to these faces by magnetic forces alone. In the ends of these faces are semi-circular recesses into which fit straight soft iron rods 4, 5 of circular section. These rods are held in the recesses by magnetic forces alone. Insulating plates 6, 7 are fixed by screws 8 to the ends of these rods. It is to be observed that, though these plates hold the rods together and may prevent the rods from being completely removed from the magnet by sliding them along their length, they do not prevent the rods from sliding for a considerable distance along their length; they do not therefore hold the rods to the magnet in the sense defined above.

The ribbon 9 extends between the plates 6, 7. Leads 10 connect it to the output transformer 11. 12 is a wire gauze shield surrounding the ribbon, supported from the plates 2, 3.

Dated the 10th day of March, 1944.

For the Applicants,

A. F. CORNOCK,
Chartered Patent Agent.

COMPLETE SPECIFICATION

Improvements in Ribbon Microphones

We, THE GENERAL ELECTRIC COMPANY LIMITED, of Magnet House, Kingsway, London, W.C.2, a British company and THOMAS ALBERT JULIAN, of the same address, a British subject, 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 state-

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ment:—

This invention relates to microphones of the type comprising as essential elements a permanent magnet and a conducting ribbon (usually of corrugated aluminium foil) adapted to vibrate in the field of the said magnet under the influence of sound wave.

In such microphones the magnet is

usually furnished with soft iron pole pieces, separable from the permanently magnetised part of the magnet, and so shaped that the magnet field in which the ribbon lies is more uniform over the ribbon than it would be if the pole pieces were absent. Hitherto these pole pieces have usually been held to the magnet by bolts or the like; we have found that it is practicable and convenient to hold them by magnetic forces alone, that is to say, in such a manner that, if the permanent magnet were demagnetised without other change, some motion of the pole pieces that is inconsistent with the normal operation of the microphone would occur.

According to the invention, in a microphone of the type specified, the said ribbon lies between a pair of pole pieces that are supported on the magnet by magnetic forces alone. Preferably each of said pole pieces is a circular cylinder fitting at one part of its length into a semicircular recess, either in a face of the magnet or in a flat plate held to a face of the magnet by magnetic forces alone.

One embodiment of the invention will now be described by way of example with reference to the drawing accompanying the provisional specification wherein

Figure 1 is a section of the microphone in the plane of the ribbon and

Figure 2 is a section in the plane indicated at AA on Figure 1.

A permanent horseshoe magnet 1 has flat terminal faces perpendicular to its axis. Flat soft iron plates 2, 3 are held to these faces by magnetic forces alone. In the adjacent opposed ends of these plates are semi-circular recesses into which fit straight soft iron rods, 4, 5, of circular section which constitute the pole pieces. These rods are a driving fit in the recesses and the rods and plates constitute a pole piece assembly which is held to the magnet by magnetic forces alone. Insulating plates 6, 7, are fixed by screws 8 to the ends of these rods.

The ribbon 9 extends between the plates 6, 7. Leads 10 connect it to the output transformer 11. 12 is a wire gauze shield surrounding the ribbon, supported from the plates 2, 3.

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

1. A microphone of the type hereinbefore defined wherein the ribbon lies between a pair of pole pieces that are supported on the magnet by magnetic forces alone.

2. A microphone as claimed in claim 1 wherein each said pole piece is a circular cylinder fitting at one part of its length into a semi-circular recess in a face of the magnet.

3. A microphone as claimed in claim 1 wherein each of said pole piece is a circular cylinder fitting at one part of its length into a semi-circular recess in a flat plate held to a face of the magnet by magnetic forces alone.

4. A microphone as claimed in claim 2 wherein the recesses are formed in adjacent opposed pole faces of a horseshoe magnet.

5. A microphone as claimed in claim 3 wherein the recesses are formed in adjacent opposed ends of the flat plates which seat on the end pole faces of the magnet which is of the horseshoe type.

6. A microphone as claimed in claim 4 or 5 wherein the pole pieces are vertical rods fixed together top and bottom by insulating plates.

7. A microphone of the type hereinbefore defined and substantially as described with reference to the drawing accompanying the provisional specification.

Dated this 21st day of March, 1947.

For the Applicants,

A. F. CORNOCK,
Chartered Patent Agent.

[This Drawing is a reproduction of the Original on a reduced scale.]

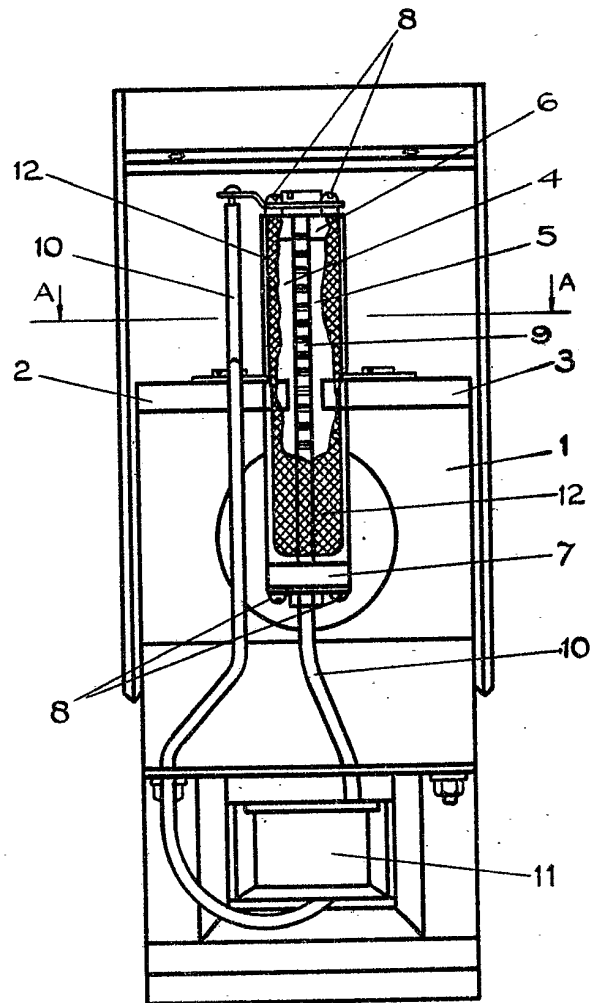


FIG. 1

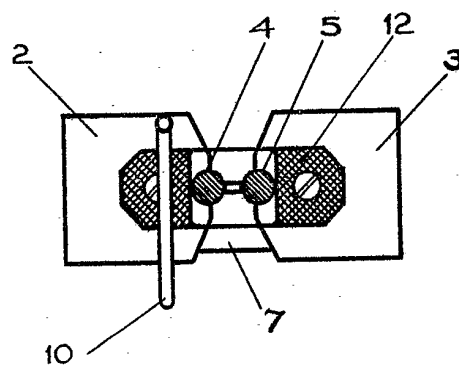


FIG. 2