Oct. 22, 1929. G. HIBACSKO 1,733,013

SOUND REPRODUCING DEVICE

Filed Jan. 25, 1924

Fig. 1.

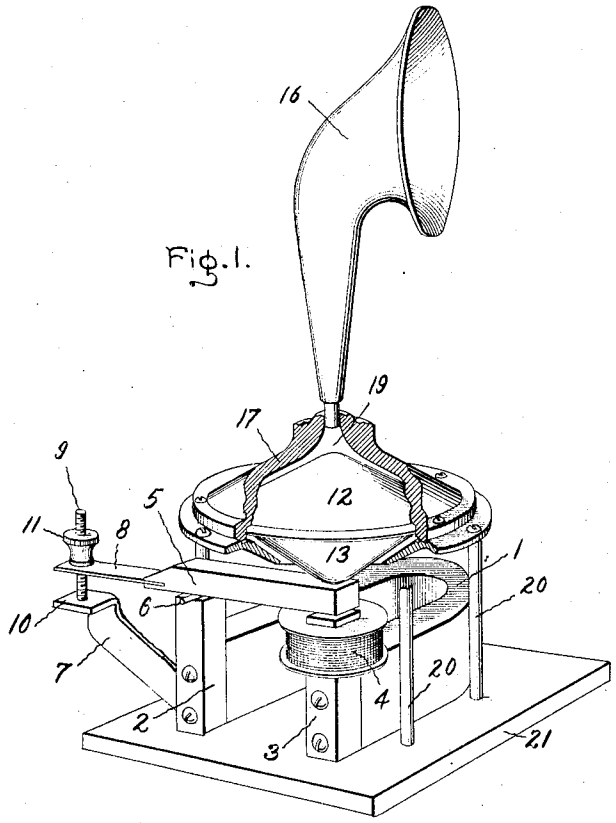
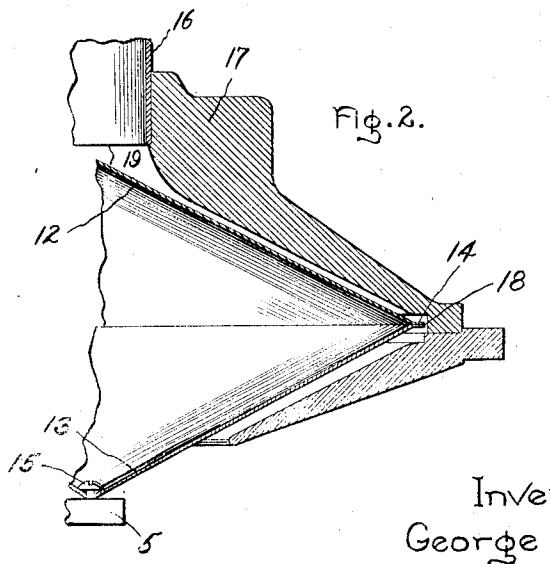


Fig. 2.



Inventor:
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by
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UNITED STATES PATENT OFFICE

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SOUND-REPRODUCING DEVICE

Application filed January 25, 1924. Serial No. 688,565.

My present invention relates to devices for the reproduction of sound, and more particularly to devices of the type commonly known as loud speakers.

The object of my invention is to provide a device which may be especially adapted to produce a large volume of sound and to reproduce with accuracy in response to electric currents the original sounds by which such currents are produced.

In carrying out my invention I provide a light rigid diaphragm which is adapted to vibrate as a whole. It is well known that the ordinary diaphragm which is fastened at its edges responds most readily to certain frequencies for which it may be resonant, and if the diaphragm is large there may be several resonant frequencies to which it responds most readily. By providing a diaphragm which is not restrained at its edges and which is adapted to vibrate as a whole, or which is so constructed that all parts of it will have the same amplitude of vibration, the difficulty mentioned may be largely overcome.

In carrying my invention into effect I provide a diaphragm made up of two oppositely disposed conical members fastened together at their bases. I have found that it is possible with this construction to produce a very rigid diaphragm which at the same time will not be so heavy as to have highly objectionable amount of inertia.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims; my invention itself however, both as to its organization and method of operation will best be understood by reference to the following description taken in connection with the accompanying drawing in which Fig. 1 is a perspective view with certain parts broken away of one embodiment of my invention; and Fig. 2 is a sectional view of a diaphragm showing the relation thereto of the housing which forms a sound chamber.

I have indicated in the drawing a diaphragm actuating mechanism comprising a U-shaped permanent magnet 1, having at its ends pole pieces 2 and 3. Pole piece 3 is surrounded by a coil 4 to which the actuating currents may be applied. The armature 5 is pivoted on the roller 6, which rests on top of the pole piece 2. The back end of armature 5 is provided with a flexible portion 8 through which an adjusting screw 9 passes. The adjusting screw 9 is held by a bracket 10 and by turning the nut 11 the relation of the other end of the armature 5 with respect to the pole piece 3 may be adjusted as desired.

The diaphragm is made up of two conical members 12 and 13, which are preferably of the same size and having flanges provided at their bases whereby the two members may be rigidly secured together, as indicated at 14. The diaphragm may be of aluminum or other suitable light metal. The diaphragm is secured to the end of the armature 5 in any suitable way, for example, as by means of a screw 15. A diaphragm such as described may be made of such size that it will produce the suitable volume of sound. Preferably, however, the device is provided with a horn 16, which fits into an opening in the top of the housing 17. This housing is arranged to closely surround the edge of the diaphragm at 18 without touching it in order to prevent as far as possible the leakage of air past the edge of the diaphragm. The sound chamber formed at 19 between the housing and the diaphragm serves to direct the sound into the horn. The housing 17 may be supported as indicated, by means of posts 20, which are suitably secured to the base 21.

While I have shown and described the preferred embodiment of my invention, it will be apparent that many modifications in the structural details thereof as well as in the manner in which the diaphragm is actuated, may be made without departing from the scope of my invention as set forth in the appended claims.

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

1. A diaphragm for sound reproduction comprising two oppositely disposed conical members which are fastened together and driving means for said diaphragm which is secured to only one of said members.

2. A diaphragm for sound reproduction comprising two conical members which are

fastened together at their bases and driving means for said diaphragm which is secured to only one of said members.

3. An apparatus for sound reproduction comprising a hollow diaphragm formed of two oppositely disposed conical members, the apex of only one of said conical members being rigidly secured to a member adapted to vibrate.

4. An apparatus for sound reproduction comprising a hollow diaphragm formed of two oppositely disposed conical members, the apex of one of said conical members being rigidly secured to a member adapted to vibrate, the connection formed thereby constituting the sole support for the diaphragm.

5. An apparatus for sound reproduction comprising a hollow diaphragm formed of two oppositely disposed conical members, the apex of one of said conical members being rigidly secured to a member adapted to vibrate, and a sound chamber formed by a housing closely surrounding the edge of said diaphragm but out of contact therewith.

6. A diaphragm for sound reproduction comprising two oppositely disposed conical members having abutting flanges at their base and secured together by means of said flanges, and driving means for said diaphragm which is secured to only one of said members.

7. A diaphragm for sound reproduction comprising two oppositely disposed conical members having abutting flanges at their bases and secured together by means of said flanges, and driving means for said diaphragm which is secured to only one of said members at its apex.

In witness whereof, I have hereunto set my hand this 23rd day of January, 1924.

GEORGE HIBACSKO.