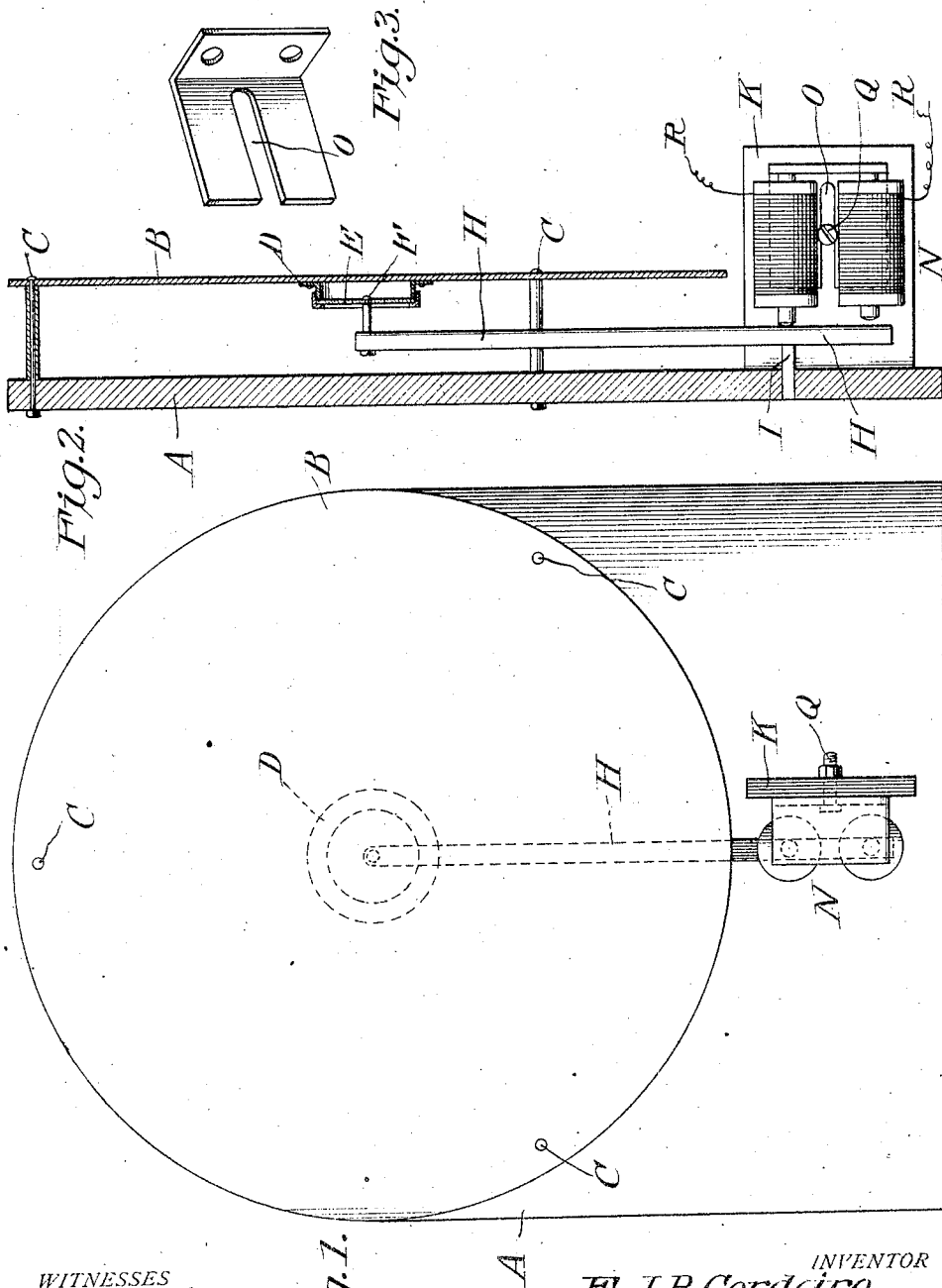


F. J. B. CORDEIRO.  
SOUND REPRODUCING AND AMPLIFYING APPARATUS.  
APPLICATION FILED MAR. 18, 1912.

1,046,982.

Patented Dec. 10, 1912.



WITNESSES  
Tenton Webb  
W. D. Lang

Fig. 1.

INVENTOR  
F. J. B. Cordeiro,  
By Franklin D. Hoyt  
Attorney

# UNITED STATES PATENT OFFICE.

FREDERICK J. B. CORDEIRO, OF NEWTON CENTER, MASSACHUSETTS.

## SOUND REPRODUCING AND AMPLIFYING APPARATUS.

1,046,982.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed March 18, 1912. Serial No. 684,616.

To all whom it may concern:

Be it known that I, FREDERICK J. B. CORDEIRO, a citizen of the United States, residing at Newton Center, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Sound Reproducing and Amplifying 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in sound reproducing and amplifying apparatus, whereby notes of music, speech, etc., may be reproduced at distance, depending upon the strength of the electric current which may be employed.

My invention consists of a simple and efficient apparatus of this nature having various details of construction and combinations and arrangements of parts which will be hereinafter fully described, shown in the accompanying drawings and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a side elevation of my improved sound reproducing apparatus. Fig. 2 is a central vertical sectional view through the instrument, and Fig. 3 is a detail view of a part of the invention.

Reference now being had to the details of the drawings by letter, A designates an upright base board which may be of any suitable size and thickness and in the present instance I have illustrated the upper end of the board semicircular in outline.

A sounding board, designated by letter B, shown in the drawings as circular in outline and preferably of spruce, is secured to the base board by the bolts C, three in number being employed in the present instance, and affording means for holding the sounding board which should be of suitable thinness, the said bolts being spaced apart any suitable distances. Secured to the other face of the sounding board and projecting therefrom is a metallic ring D to the top of which is secured a glass diaphragm E of suitable diameter and which is apertured centrally

to receive a bolt F fastening the same rigidly to the lever H.

A cross-piece, preferably of wood and designated by letter K, is fastened to the base of the device at one side of the central meeting line of the latter. Mounted upon said cross-piece is an electro-magnet N and against the upper pole of which magnet said lever is firmly held by means of the stud I which projects from said base board. It will be noted that a small space or gap intervenes between the lower portion of the lever and the lower pole of the magnet. The yoke of the magnet has preferably right-angled flanges and in the center of which is a slot O through which the bolt Q passes and affording means for adjustment of the electro-magnet, said bolt passing through the cross-piece K. Said electro-magnet has wires R fastened thereto, forming means whereby the same may be placed in the circuit with the transmitter, not shown.

In operation, the parts being assembled as shown, any vibration, such as sounds of music, speed, etc. at a distance and being transmitted through the wires in which the apparatus is in circuit, will act upon the apparatus, causing an exact reproduction or amplification of the same, although the source from which the sounds are produced may be remote from the instrument.

What I claim to be new is:—

1. A sound reproducing and amplifying apparatus comprising a base board, a sounding board supported by and spaced apart therefrom, a ring upon the sounding board, a diaphragm secured to said ring, an armature lever, a bolt secured to the lever and passing through said diaphragm, an electro-magnet against one pole of which the lever is held and spaced apart from the other pole, said electro-magnet adapted to be in an electric circuit with the transmitter and battery, as set forth.

2. A sound reproducing and amplifying apparatus comprising a base board, a sounding board supported by and spaced apart therefrom, a metallic ring secured to the sounding board, a diaphragm secured to the upper portion of the ring, an armature lever, a bolt projecting from the latter and extending through said diaphragm, an electro-magnet against one of the poles of which said lever is firmly held and spaced apart

from the other pole, said electro-magnet adapted to be in circuit with a transmitter and battery, as set forth.

3. A sound reproducing and amplifying  
 5 apparatus comprising an upright base board, projections thereon, a sounding board mounted upon said projections and spaced  
 apart from the base board, a ring project-  
 10 ing from the rear of said sounding board, a lever, a glass diaphragm secured to the ring, an armature lever, a bolt secured there-  
 to and passing through said diaphragm, an electro-magnet against one of the poles of  
 15 which said lever is firmly held and spaced apart from the other pole, said electro-mag-  
 net adapted to be in circuit with the trans-  
 mitter and battery, as set forth.

4. A sound reproducing and amplifying apparatus comprising a base board, a cross-

piece projecting therefrom which is slotted, 20  
 an electro-magnet and bolt engaging the lat-  
 ter and adapted to hold the same in adjusted  
 position upon said cross-piece, a sounding  
 board supported by and spaced apart from 25  
 the base board, a ring projecting from the  
 sounding board, a diaphragm secured to said  
 ring, an armature lever, a bolt projecting  
 therefrom and passing through an aperture  
 in the diaphragm, said lever held in contact  
 with the one pole and spaced apart from the 30  
 other pole of the electro-magnet, as set forth.

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

FREDERICK J. B. CORDEIRO.

Witnesses:

STEPHEN E. BURKE,  
 URSA DUNBAR.