Oct. 20, 1925. 1,557,664

P. E. DAVENPORT

MICROPHONE TRANSMITTER FOR GRAMOPHONES

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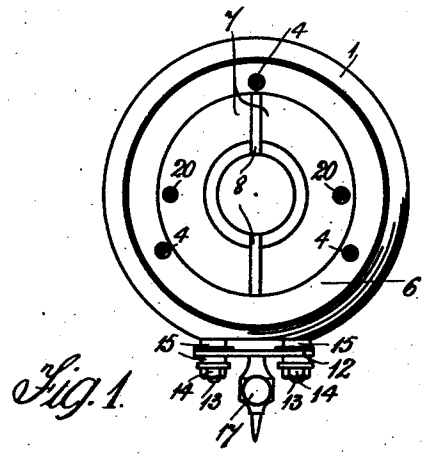


Fig. 1.

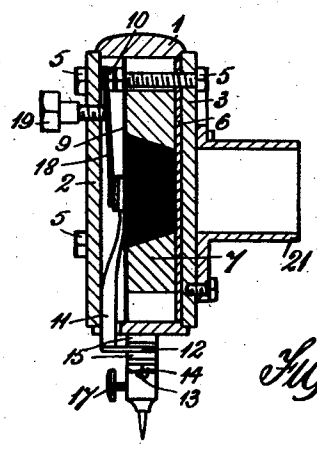


Fig. 2.

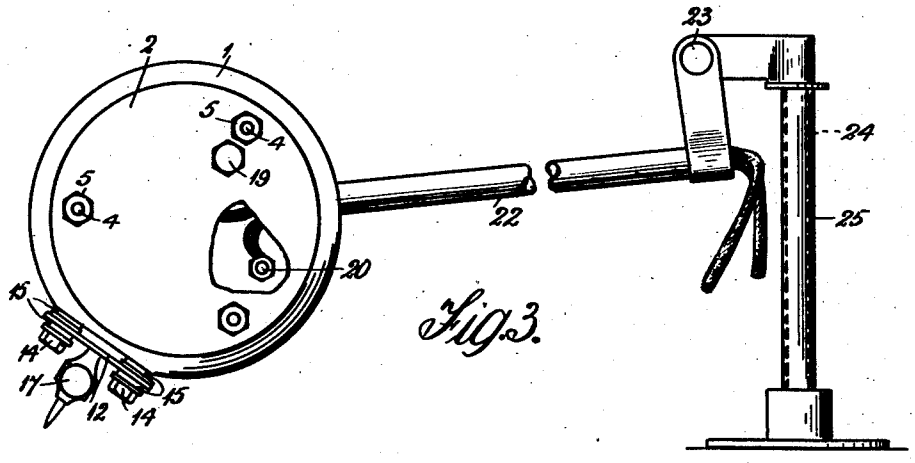


Fig. 3.

INVENTOR.
Philip Eric Davenport
by: Andrew J. Crighton
Attorney.

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UNITED STATES PATENT OFFICE.

PHILIP E. DAVENPORT, OF LONDON, ENGLAND.

MICROPHONE TRANSMITTER FOR GRAMOPHONES.

Application filed January 2, 1924. Serial No. 684,041.

To all whom it may concern:

Be it known that I, PHILIP ERIC DAVENPORT, a subject of the King of Great Britain and Ireland, residing at 6 Meeting House Lane, London, S. E. 15, England, have invented new and useful Improvements in Microphone Transmitters for Gramophones, on which application has been made for Letters Patent in Great Britain, No. 641, filed the 8th January, 1923, of which the following is a specification.

This invention relates to an improved construction of microphone transmitter intended to be actuated through a stylus from a gramophone record and to modify in accordance with the recorded speech vibrations the current supplied to a telephone receiver employed as a reproducing device, or supplied to a wireless transmitter or the like.

According to the present invention, the vibrations produced in the stylus are transmitted directly and mechanically to the microphone. The stylus bar operates the variable contacts through a cover of some highly flexible material such as rubber so that external sounds do not affect the microphone and no energy is wasted in reproducing sounds. Various other features of the invention will be apparent from the description of the accompanying drawings, in which—

Figure 1 shows a front view of an embodiment of the invention with certain features removed.

Figure 2 shows a side sectional view of Figure 1 adapted for use in an ordinary gramophone having a tone arm.

Figure 3 shows an outside view of Figure 1 adapted for use in apparatus only intended to be employed as a microphone transmitter, a portion of the cover plate being broken away to show one of the terminal screws.

The microphone transmitter is enclosed in a case 1 which may be of metal, between a front plate 2 and a back plate 3. These plates are of ebonite or other insulating material and butt against shoulders in the case 1. They are held in position by screws 4 and nuts 5. The screws 4 are threaded through holes tapped in an inner plate 6 of insulating material on which the microphone proper is built up. A pair of half ring carbon electrodes 7 are secured to the plate by cement or other suitable means, a space 8 being left between them, which may be filled with insulating material. Alternatively four quarter ring electrodes might be used. The inner circumferences of the electrodes 7 are bevelled and the space between them filled with finely divided carbon preferably in the form of shot. The electrodes are covered by a flexible cover 9 of insulating material bearing on the shot. This is of highly flexible material such as rubber so that external sounds do not affect it and no sounds are mechanically reproduced when the instrument is in use. The cover 9 is held in place by nuts 10 on the screws 4. A stylus bar 11 having a cross-piece 12 threading into studs 13 secured in the case 1 is fastened by nuts 14, rubber washers 15 being interposed to allow the stylus bar to vibrate. It will be readily understood that the stylus bar may be mounted in any other well known manner in use for gramophone reproducers. The longer end 16 of the stylus bears on the cover 9 and may be secured thereto by cement or by means of a screw or the like. The short end of the stylus bar forms a socket in which the stylus is secured by a screw 17. A spring 18 is secured conveniently between nuts on one of the screws 4 so that it bears on the end 16 of the stylus bar and therefore in the cover 9 and the carbon shot in the microphone. The pressure of the spring can be varied by turning a screw 19 in the front plate 2, so that the average pressure and therefore mean resistance of the microphone can be adjusted, even when it is in use. The carbon electrodes are each provided with a contact screw 20 so that connection may be made. These screws may either project forwardly through the cover 9 as shown in which case the connections are made internally and the conductors led out at any suitable point, or they may project backwardly through the back plate 3, the connections being made outside the case.

In the form shown in Figure 2 a spigot 21 is secured to the back plate 2 so that it may be employed in an ordinary gramophone, by removing the sound box and replacing it with the microphone transmitter.

Where apparatus solely for use therewith is employed a convenient construction for supporting the transmitter is shown in Figure 3. Here a horizontal tubular arm 22 is secured to the side of the case 1 and forms a convenient channel through which the conductors pass. The arm 22 is secured in such a position that the stylus bar 11 is at a suitable angle to the surface of the record. The

arm 22 is hinged at 23 to a vertical pivot rod 24 working in a tubular standard 25 secured to the framework of the apparatus.

Any form of stylus, according to the type of record, may be used. For ordinary gramophone records in which the vibrations are produced by lateral displacement, ordinary steel or other needles are used. With records in which the vibrations are produced by vertical displacement, a bent wire carrying a sapphire or other suitable stylus is used, the transmitter being carried so that the intersection of the plane of the cover with the plane of the record is perpendicular to the record groove.

What I claim is:

1. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, a microphone mounted therein, a cover of soft fibrous material stretched across the front of said microphone adapted to prevent external sounds from affecting the microphone and means mounted on said casing for mechanically transmitting the vibration of the stylus to said cover.

2. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, a microphone mounted therein, a cover of soft fibrous material stretched across and forming the front of said microphone adapted to prevent external sounds from affecting the microphone and a stylus bar pivoted on said casing having its end in operative connection with the microphone.

3. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, a microphone susceptible only to mechanical vibrations mounted therein, a stylus bar pivoted on said casing having its end in operative connection with the microphone, and an adjustable spring mounted in said casing so as to bear on said stylus bar.

4. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, a microphone mounted therein, a flexible cover forming the front of said microphone adapted to prevent external sounds from affecting the microphone, a stylus bar pivoted on said casing having its end in operative connection with the microphone and an adjustable spring mounted in said casing so as to bear on said stylus bar.

5. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, an insulated backing mounted therein, a plurality of carbon electrodes insulated from one another mounted in ring formation on said backing, finely divided carbon in the space formed by said electrodes, a flexible insulating cover on said electrodes, means mounted on said casing for mechanically transmitting the vibrations of the stylus to said cover and means for adjusting the normal pressure on said cover.

6. A michophone transmitter adapted to be operated by gramophone and like records comprising a casing, an insulated backing mounted therein, a plurality of carbon electrodes insulated from one another mounted in ring formation on said backing, finely divided carbon in the space formed by said electrodes, a flexible insulating cover on said electrodes, a stylus bar pivoted on said casing having its end in operative connection with said cover and an adjustable spring bearing on said stylus bar.

7. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, an insulated backing mounted therein, a pair of half ring shaped electrodes insulated from one another mounted in said backing, carbon shot between said electrodes, terminal screws on said electrodes, a flexible insulating cover secured over said electrodes, a stylus bar pivoted to said casing having its end in operative connection with said cover, a front cover secured to said casing, a spring mounted on said front cover and bearing on said stylus bar and a screw in said front cover for adjusting the pressure of said spring.

8. A microphone transmitter adapted to be operated by gramophone and like records comprising a casing, an insulated backing mounted therein, a pair of half ring shaped electrodes insulated from one another mounted on said backing, carbon shot between said electrodes, terminal screws on said electrodes, a flexible insulating cover secured over said electrodes, a pair of screws in the lower end of said casing, resilient washers on said screws, a cross-bar mounted on said screws clamped between said washers, a stylus bar secured to said cross-bar having its inner end in operative connection with said cover, a socket and screw at the outer end of said stylus bar, a front cover in said casing, a spring connected on said cover and bearing on the inner part of said stylus bar, a screw in said cover for adjusting the pressure of said spring, and means on said casing for mounting the transmitter in operative position.

In testimony whereof I have signed my name to this specification.

PHILIP E. DAVENPORT.