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SOUND PICK-UP DEVICE

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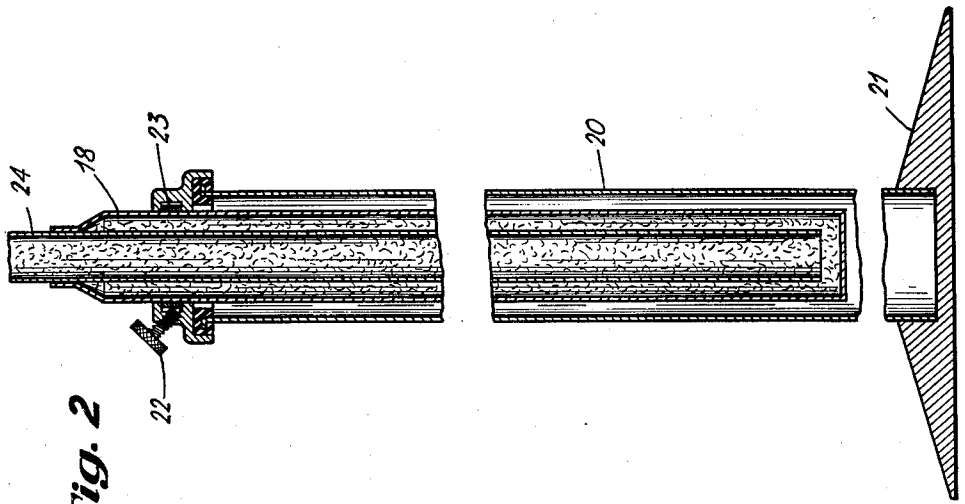


Fig. 2

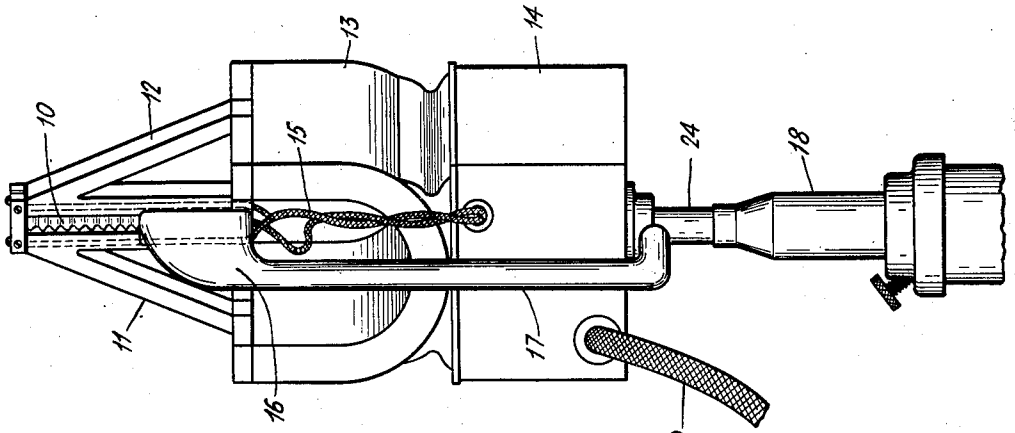


Fig. 1

INVENTOR
LESLIE J. ANDERSON
BY
ATTORNEY

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SOUND PICK-UP DEVICE

Leslie J. Anderson, Westmont, N. J., assignor to Radio Corporation of America, a corporation of Delaware

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3 Claims. (Cl. 179—138)

This invention relates to sound pick-up devices such as that disclosed in United States Reissue Patent 19,115 of Harry F. Olson and Julius Weinberger, and has for its principal object the provision of an improved arrangement of the acoustic labyrinth of the pressure responsive element of such devices.

As pointed out in the aforesaid patent, a sound pick-up device or microphone of the ribbon type may be operated in response both to the pressure of a sound wave and the pressure gradient of a sound wave by terminating a part of the ribbon diaphragm in a pipe or tube containing damping material. Such a microphone has the advantage that its response is substantially uniform throughout a comparatively wide angle. The terminating tube or labyrinth as heretofore constructed, has resulted in increasing the bulk of the microphone and militating somewhat against its appearance and portability. In accordance with this invention, this disadvantage is avoided by incorporating the labyrinth or acoustic resistance tube in the pedestal of the stand which supports the microphone. The invention will be better understood from the following description when considered in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

Referring to the drawing:

Fig. 1 is a perspective view of the improved microphone, and

Fig. 2 is a sectional view of the acoustic labyrinth arranged to cooperate with the pressure gradient responsive section of the microphone ribbon.

The microphone in Fig. 1 includes a corrugated ribbon diaphragm or conductor 10 which is loosely suspended in an intense magnetic field produced between the pole pieces 11 and 12 of a magnet 13 mounted on a casing 14 which may contain suitable amplifying equipment having its input circuit connected through leads 15 to the opposite ends of the loosely suspended ribbon 10. Mounted at the back of the ribbon 10 is a tubular member 16, the mouth of which covers the lower section of this ribbon and communicates through tube 17 with the acoustic labyrinth contained within the casing 18. Through lead 19 the microphone amplifier is connected to suitable amplifying or other associated apparatus.

Fig. 2 shows the arrangement of the casing 18 and its relation to a microphone stand 20 provided with a base 21. It will be observed that the casing 18 is readily adjusted within the stand 20 by means of a thumb screw 22 and a collar 23 and that a tube 24 communicating with the tube 17 extends into the adjustable casing 18.

As explained in the aforementioned patent, the exposed or upper section of the ribbon 10 operates in response to the pressure gradient of the sound waves applied to it and the lower section of the ribbon, which is adjacent the opening of the tubular member 16, operates in response to the pressure of the sound wave. The phase relation of the voltages generated in these sections is such that the directional response characteristic of the microphone is approximately a cardiac of revolution.

The pressure operated portion of the microphone should theoretically be terminated in a tube of infinite length but is in practice terminated in a relatively long tube packed with damping material such as "Ozite". The path of the damping cavity extends from the lower section of the ribbon 10 downwardly through tubes 17 and 24 and upwardly through tube 18 in the annular space surrounding the tube 24. In a satisfactory microphone construction in accordance with this invention, the length of this path is 90 inches.

This arrangement of the acoustic resistance or damping path has the advantage that it is better balanced mechanically, has a neater appearance, is more readily moved from one position to another and presents no difficulty in the adjustment of the microphone height. In cases where additional damping space is desired the path may obviously be extended to include the microphone base.

Having thus described my invention, I claim:

1. The combination of a microphone mounted upon a support and provided with a diaphragm one section of which is responsive to the pressure gradient of a sound wave, and means extending into said support for rendering another section of said diaphragm responsive to the pressure of said wave.

2. The combination of a microphone mounted upon a support and provided with a diaphragm one section of which is responsive to the pressure gradient of a sound wave, means extending into said support for rendering another section of said diaphragm responsive to the pressure of said wave, and means for adjusting the height of said microphone.

3. The combination of a pick-up device including a hollow support and a diaphragm, an acoustic labyrinth extending into said support for rendering a part of said diaphragm responsive to the pressure of a sound wave and for supporting said diaphragm, and means for adjusting the position of said labyrinth within said support.

LESLIE J. ANDERSON.