United States Patent

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[54] **ACOUSTICAL-ELECTRICAL TRANSDUCER AND SUPPORT ASSEMBLY**
4 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **179/152**
[51] **Int. Cl.** **H04r 1/00**
[50] **Field of Search** 179/146, 147, 148, 148F, 149, 150, 151, 152, 1A, 111; 248/123, 124, 125, 162, 348

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ABSTRACT: An acoustical-electrical transducer and support assembly is composed of an elongated tubular member which supports a microphone capsule of a condenser microphone at one end and the preamplifier of the microphone at the other end with electrical circuitry extending through the tubular member connecting the capsule and the preamplifier. A counterweight member is movably positionable on the end of the tubular member opposite the microphone capsule and incorporates the preamplifier. The tubular member and its attached parts are pivotally supported on a support member at the center of gravity of the assembly. In this arrangement the microphone capsule can be selectively positioned about the support member with its preamplifier disposed in a spaced nonobstructing location on the tubular member.

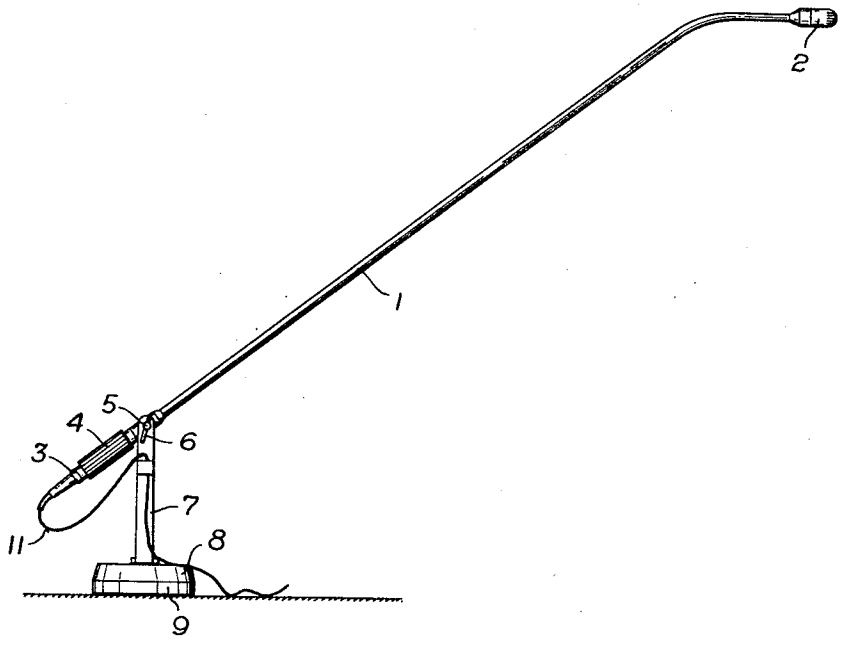


FIG. 1

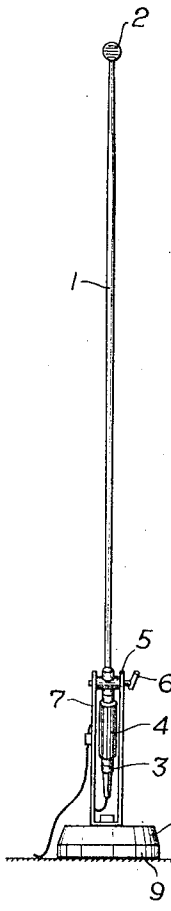
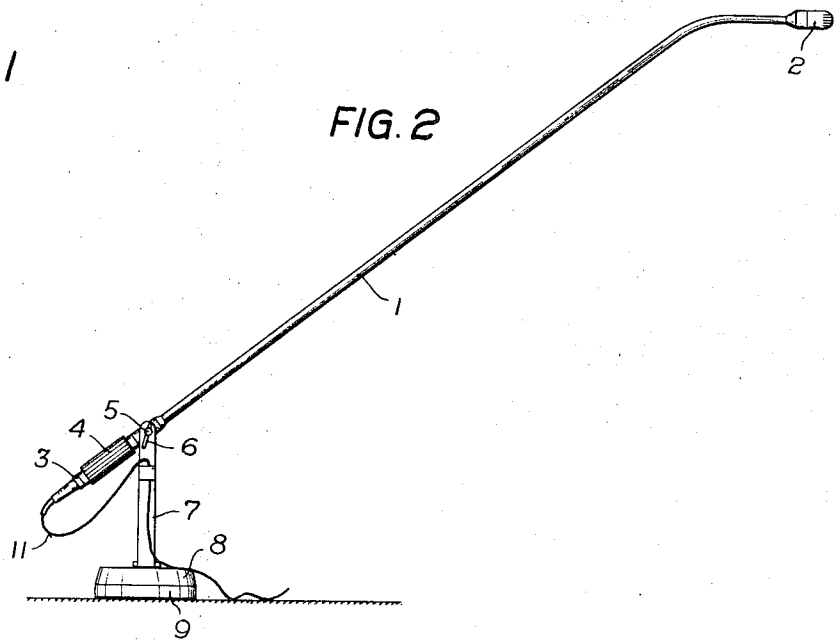


FIG. 2



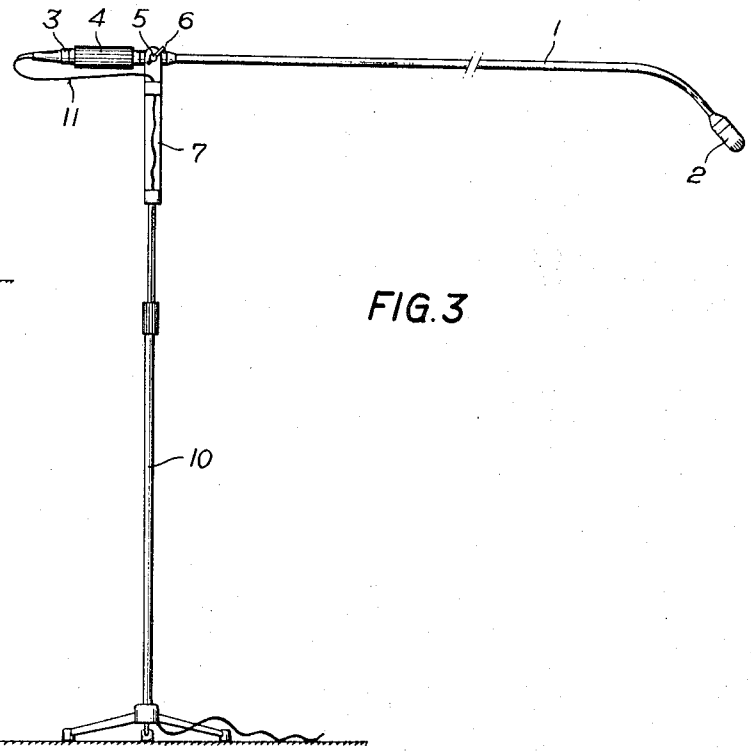


FIG. 3

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ACOUSTICAL-ELECTRICAL TRANSDUCER AND SUPPORT ASSEMBLY

SUMMARY OF THE INVENTION

This invention relates to mounting an acoustical-electrical transducer, preferably for a condenser microphone, in which mounting the acoustical-electrical transducer is carried at one end of a long arm and the other end of the arm contains an amplifier.

Such mountings are used on theater stages, in concert halls and very often for television programs because they enable the use of very small microphones very close to the artist whereas the visual impression is not disturbed or the overall impression of the stage scenery is not unduly affected.

With the present state of the art, a microphone, particularly a condenser microphone, can be reduced in diameter and also in length, although this is less significant, to such an extent that the transducer can be secured at one end of a slender tube and a preamplifier is provided at the other end of the tube and is electrically connected to the microphone by a low-capacitance line. The latter consists in most cases of a concentric radio-frequency cable having a copper core 0.3 millimeters in diameter and an insulating covering of foamed polyethylene. Alternatively, the connecting tube itself may constitute the outer sheath of the cable and the inner conductor may be spaced from the inside surface of the tube by ceramic elements or the like. This design enables the use of a particularly slender tube for connecting the microphone and the amplifier.

For a fixation of the assembly comprising the microphone capsule, connecting tube and preamplifier, the previous practice has been to provide an extension at the free end of the housing in which the amplifier is accommodated and to connect the assembly by means of a clip or another suitable adapter to a heavy base, a stand or the like. In the known assembly, the center of gravity may be close to the periphery of the supporting surface so that the assembly may tilt or a certain inclination must not be exceeded unless the base is unduly heavy.

Another disadvantage of the known assembly is the fact that the attenuation of impact sound is reduced when the connecting tube is highly inclined and the floor stand is unevenly loaded. In this case the resilient layer of the stand is excessively compressed on one side so that its resilience is much reduced.

It is an object of the invention to reduce these disadvantages. The invention is characterized in that the amplifier or the like is accommodated in a housing which is designed to form a counterweight, the long tubular arm connecting the microphone and the amplifier is pivoted at the center of gravity of the subassembly consisting of the arm, microphone and counterweight in a forked bracket, and the counterweight is designed so that said center of gravity is close to the amplifier housing.

According to another feature of the invention, the housing which contains the amplifier or the like has an elongated cylindrical or prismatic shape and the counterweight is substantially constituted by a heavy part which entirely or partly surrounds the peripheral surface.

According to the invention, this heavy part, which substantially constitutes the counterweight of the housing, is slidably mounted to enable an adjustment of the counterweight exactly to the position which is required in view of the weight of the microphone and the lever arm associated therewith. In a further development of the invention, an adjusting device, e.g., a screw or the like, may be provided for this purpose, and may be provided with a scale and a pointer so that the correct adjustment of the counterweight, e.g., for different types of microphones, can be visually indicated and time-consuming attempts to find the correct adjustment are not required.

The invention will now be described more fully hereinafter with reference to the drawing, in which FIGS. 1 and 2, respectively, are front and side elevations showing an assembly according to the invention which is secured to a floor base and FIG. 3 shows the fixation of the assembly to a stand.

As is apparent from FIGS. 1 and 2, the assembly according to the invention comprises a tube 1, which carries at one end a acoustical-electrical transducer, e.g., a condenser microphone capsule 2. The amplifier housing 3 has suitably an elongated cylindrical or prismatic shape and is carried at the other, lower end of the tube 1 in FIGS. 1 and 2. The peripheral surface of the housing 3 is formed in part by a preferably slidable sleeve 4, which is designed to form together with the other parts of the housing a counterweight for balancing the weight of the long lever arm and the microphone carried thereby if the connecting tube between the microphone and amplifier is pivoted according to the invention close to the amplifier. In other words, the counterweight is so heavy, in accordance with the invention, that the center of gravity of the subassembly consisting of the tube 1, microphone 2 and housing 3 is close to the amplifier housing.

The connecting tube is pivoted at said center of gravity in a fork 7 by means of a resilient joint 5, which can be locked by a setscrew 6. As is shown by way of example in FIGS. 1 and 2, the fork is combined with a base, which consists of a massive cast-iron plate 8 and an elastic interlayer 9, e.g., of rubber.

FIG. 3 shows the assembly according to the invention carried by a stand 10. It is apparent that the overhang of the assembly can be larger in this case than with a simple base as shown in FIGS. 1 and 2.

A cable guide is secured to the forked bracket 7 and serves to retain the cable 11 extending from the amplifier 3.

I claim:

1. An acoustical-electrical transducer and support assembly comprising a condenser microphone, said condenser microphone comprising a microphone capsule, a preamplifier, and electrical means connecting said microphone capsule and preamplifier, an elongated tubular member for supporting said condenser microphone, said microphone capsule secured to one end of said tubular member, a counterweight member adjustably positioned on said tubular member adjacent the opposite end thereof from said microphone capsule, said preamplifier mounted within said counterweight member, said electrical means connecting said microphone capsule and preamplifier extending through said tubular member and comprising a low-capacitance line, a support member for pivotally supporting said tubular member condenser microphone and counterweight member at the center of gravity thereof with a short section of said tubular member on which said counterweight is mounted extending from one side of said support member and a considerably longer section of said tubular member having said microphone capsule mounted on its end extending from the other side of said support member and the length of the longer section being a multiple of the length of the short section, so that a relatively small microphone capsule can be positioned on the end of a lightweight boomlike said tubular member for positioning the counterbalanced microphone capsule for sound pickup with its preamplifier spaced at the other end of said tubular member in a nonobstructing position.

2. An acoustical-electrical transducer and support assembly, as set forth in claim 1, wherein said counterweight member is a sleevelike member disposed about said tubular member and incorporating said preamplifier.

3. An acoustical-electrical transducer, as set forth in claim 1, wherein said support member is a fork-shaped bracket, and a pin extending through said tubular member and supported in said bracket for pivotally positioning said tubular member about said support member.

4. An acoustical-electrical transducer and support assembly, as set forth in claim 1, wherein a base member supports said support member, said base member comprises a heavily weighted plate and a layer of resilient material secured to the lower surface of said plate and arranged to contact the supporting surface on which said assembly is positioned.