



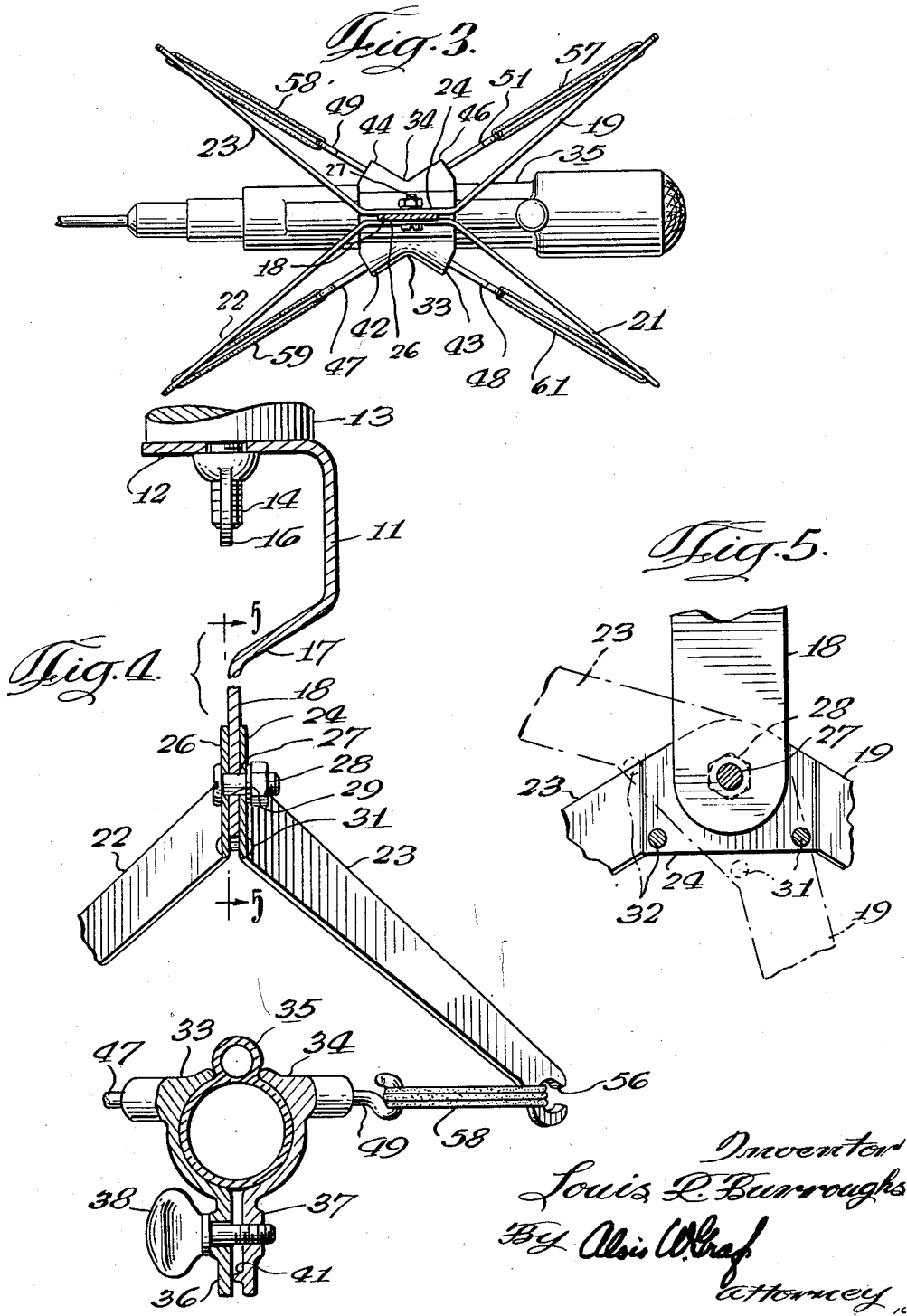
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SUPPORT FOR MICROPHONES

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## SUPPORT FOR MICROPHONES

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This invention relates generally to devices for supporting microphones, or similar transducers, and more particularly to devices for supporting sensitive microphones in such a fashion as to eliminate pick up of unwanted or extraneous sounds.

In carrying out the invention, a mounting bracket is connected to a microphone boom and is arranged to be oriented with respect thereto in any desired position. The mounting bracket is provided with spaced arms which extend in directions substantially to define elements of a right rectangular base pyramid. The microphone is located substantially in the plane defined by the ends of these arms and is held in a fixture clamped to the microphone and having stub mounting arms which extend in a plane and in directions corresponding to the ends of the aforesaid arms, the distance between each pair of the stub and the aforesaid arms being spanned by a length of resilient material of low natural resonant frequency, as for example, an elastomer like a rubber band or the like.

One of the principal objects of this invention is to provide a microphone support characterized by absence of any substantial tendency to transmit unwanted vibrations to the microphone, even though it may be mounted at an end of a long boom which must be moved rapidly in following the action of a television program, or the like.

Another object of the invention is to support a microphone in a manner so that it will be isolated from any vibrations or shocks resulting from rapid movement of the microphone, and to provide a microphone support having a natural resonance frequency outside the normal frequency response range of the microphone, the vibrations of which may be damped rapidly.

Other objects and important features of the invention will be apparent from a study of the following specification taken with the drawings, which together show a preferred embodiment of the invention and what is now considered to be the best mode of practicing the principles thereof. Other embodiments of the invention may be suggested to those having the benefit of the teachings herein, and it is therefore intended that the scope of the invention not be limited by the precise embodiment herein shown, the scope of the invention being intended to be limited only by that defined in the subjoined claims.

In the drawings:

Figure 1 is a front elevation of a microphone support according to the present invention, said support being shown with a microphone supported thereby;

Figure 2 is a side elevation view of the support seen in Figure 1;

Figure 3 is a sectional view of the support seen in Figure 1 taken along the line 3—3 of Figure 1;

Figure 4 is an enlarged vertical sectional view taken through the support seen in Figure 1, taken along the line 4—4 thereof, and looking in the direction of the arrows;

Figure 5 is an enlarged fragmentary front elevation view showing the manner in which the support may be adjusted in position with respect to a microphone boom

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or the like, said view being taken along the line 5—5 of Figure 4, and looking in the direction of the arrows; and

Figure 6 is a section taken along the line 6—6 of Figure 1 and looking in the direction of the arrows, showing details of a construction for clamping the microphone supported by the apparatus according to the present invention.

Referring now to the drawings, the microphone support according to the present invention is referred to generally by the reference numeral 10 and consists of a depending bracket 11 having a mounting ear 12 to be secured to a boom 13 by means of a mounting stub 14 and a wing nut 16. As seen in Figure 4, the bracket 11 is offset as at 17 so that a vertical limb 18 thereof lies on the same axis as the depending portion 13 of the microphone boom.

The depending limb 18 provides a place of support for microphone support arms 19, 21, 22 and 23. Mounting arms 19 and 23 extend as shown from a central mount 24 and are integral therewith, while mounting arms 21 and 22 extend as shown from a similar central mount 26 and are also integral therewith.

The center mounting members 24 and 26 for the respective arms 19, 23 and 21, 22 are held to the depending limb 18 by means of a bolt 27 and a nut 28 threaded thereto, the bolt 27 passing through aligned apertures 29 in the center mounting members 26, 24 and the depending limb 18. The two center mounts 24 and 26 are arranged to pivot as a unit about the bolt 27 by means of rivets 31 and 32. See also Figure 5, which shows how the assembly thus far described may be so swiveled with respect to the depending arm 18.

As seen particularly with respect to Figures 1, 2 and 3, the arms 19, 21, 22 and 23 define in space elements of a pyramid having a rectangular base. A microphone referred to generally by the reference numeral 35 is arranged to be supported by means as will now be described substantially in the plane defined by the ends of the spaced arms 19, 21, 22 and 23.

The microphone 35 is arranged to be held in a split clamp consisting of members 33 and 34, member 33 having a clamping ear 36 depending therefrom, and member 34 likewise having a clamping ear 37 depending therefrom, the two ears being held together by means of a clamping screw 38 as seen particularly in Figure 2 and Figure 4. In order to provide a fulcrum point for the clamping action of the clamping screw 38 upon the microphone 35, each of the ears 36 and 37 has small bosses 39 and 41 extending therefrom which also space the two clamping ears 36 and 37, as shown.

The clamping member 33 has short stub arms 42 and 43 which extend respectively in directions toward the ends of the arms 22 and 23. Clamping member 34 likewise has stub arms 44 and 46 which extend respectively in the direction of the end of the arms 23 and 19. Each of the stub arms 42, 43, 44 and 46 has affixed thereto respectively hooks 47, 48, 49 and 51.

The respective arms 19, 21, 22 and 23 terminate at each end in a hook 52, 53, 54 and 56. As seen particularly with reference to the several figures, the hook 51 is joined to the hook 52 at the end of the arm 19 by means of a plurality of resilient strands 57, while hook 49 is joined to the hook 56 at the end of arm 23 by similar strands 58. Hook 47 is likewise joined to the hook 54 at the end of arm 22 by means of similar strands 59, while hook 48 is joined to the hook 53 at the end of arm 21 by similar strands 61.

The several resilient strands 57, 58, 59 and 61 may be made from an elastomer, as for example, rubber bands or the like, such substances having a low natural frequency outside the normal response of the microphone

35. Such substances have the property also of damping their vibrations rapidly, so that if the assembly shown with respect to the several figures is moved about rapidly, as would be the case when the boom 13 is moved in following the action of a television program or the like, any oscillation of the microphone 35 by reason of the fact that it is resiliently supported upon the strandlike members 57, 58, 59 and 61 would be damped rapidly by reasons of the properties of said strands.

The support for the microphone 35 has been shown as mounting the microphone below the substantial plane passing through the ends of the spaced arms 19, 21, 22 and 23. However, other clamping means than that shown for the microphone may be so arranged so that the microphone is disposed well below such plane while the resilient support strands seen in the several figures occupy the plane of the ends of the arms.

While the support arms 19, 21, 22 and 23 describe elements of a right pyramid with a rectangular base, it is well within the scope of the invention that such arms describe, by way of example, a right pyramid having a triangular base, and it is contemplated that the strands supporting the microphone will in such case be three in number. However, for purposes of simplicity of construction it is a preferred embodiment to have the arms supporting the microphone described in space, such a right pyramid having a rectangular base.

The structure according to the present invention enables a microphone to be supported in such a fashion that the support therefor will not transmit its natural resonant frequency into the microphone, since it is isolated by resilient strands having a natural resonant frequency well below that of normal response of the microphone 35.

While the invention has been described in terms of an embodiment which it has assumed in practice, the invention is not intended to be limited by the precise embodiment herein shown, nor otherwise than by the claims here appended.

I claim as my invention:

1. A microphone and support assembly comprising a bracket having arms extending in directions defining in space elements of a pyramid and a limb secured to the arms at the vertex of the pyramid and extending therefrom normal to the base of the pyramid, means disposed substantially in a plane parallel to the base of the pyramid defined by said arms for mounting a microphone,

said microphone supporting means having stub arms extending in directions toward said first named arms, a microphone having a frequency response range mounted on said mounting means, and a plurality of resilient strands each connecting one of said stub arms and a corresponding one of said arms, said strands and microphone being resonant at a frequency below the response range of the microphone.

2. A microphone and support assembly comprising a bracket having arms extending in directions defining in space elements of a pyramid, microphone supporting means disposed substantially in a plane parallel to the base of the pyramid defined by said arms, a microphone mounted to the microphone supporting means having a frequency response range, and an elastomer strand mounted between the end of each of the arms and the microphone supporting means, the strands and microphone having a resonant frequency below the response range of the microphone.

3. A sound responsive device comprising a stand having a limb adapted to be vertically disposed, a bracket attached to one end of the limb having four arms extending from the limb defining in space the elements of a pyramid, the limb being disposed normal to the base of the pyramid, a clamp, a resilient strand attached to the clamp and mounted on the end of each of the arms, each of said strands being disposed on the base of the pyramid parallel to an arm thereof, and a microphone having a response range mounted in the clamp, said strands and microphone being resonant at a frequency below the response range of the microphone.

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