United States Patent

[11] 3,566,047

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[54] DETACHABLE BRACKET ASSEMBLY FOR SPACED COAXIAL MOUNTING OF DUAL TRANSDUCERS

6 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **179/179**
[51] **Int. Cl.** **H04r 1/02**
[50] **Field of Search** 179/179, 178, 146, 121; 248/201, 200, 230, 309, 316, 360

[56] **References Cited**

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Primary Examiner—Kathleen H. Claffy
Assistant Examiner—Thomas W. Brown
Attorney—McGlew and Toren

ABSTRACT: A device for securing two transducer elements such as two microphones together includes a yoke member having an intermediate recess for receiving a head of a microphone of one of the transducer elements and with means at one end for interengaging with this transducer element. The opposite end includes inwardly directed tab elements or tongues defining stops for positioning the other transducer element or microphone at a spaced location from the head of the first transducer element. In addition this opposite end includes means for securing the second transducer element in a position abutting against the tabs.

As assembly of two transducer elements includes two yoke members arranged on respective opposite sides of the transducers to be joined together. The intermediate recesses of the opposite yokes surround opposite portions of the microphone head and the respective ends of the yokes extend outwardly into engagement with respective transducers. The yoke members are advantageously made of a resilient material or include additional spring elements to provide for a biasing connection between them and the associated transducers. In one embodiment the yoke member includes an open window which is engageable over a hook projection on one transducer at one end and the opposite end is provided with openings for receiving a threaded bolt which may be threaded into the other transducer. An alternate arrangement includes a hook-shaped formation on the yoke members which engages in recess on the transducer body.

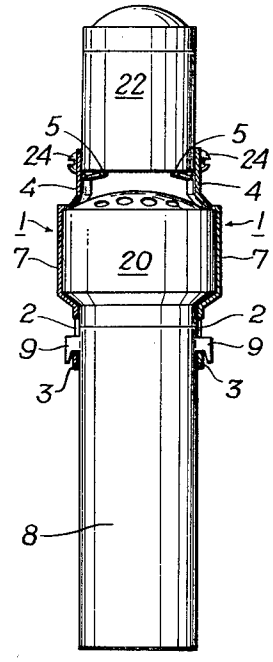


FIG. 1a

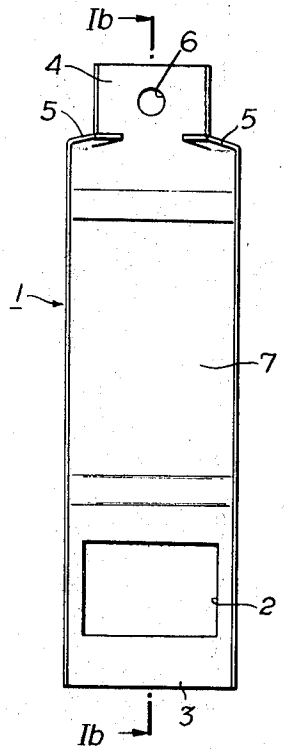


FIG. 1b

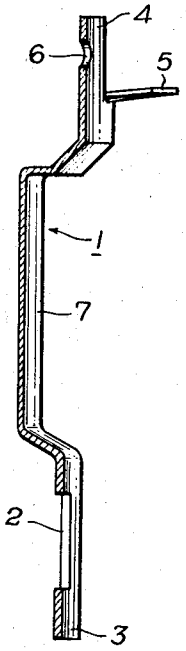


FIG. 3

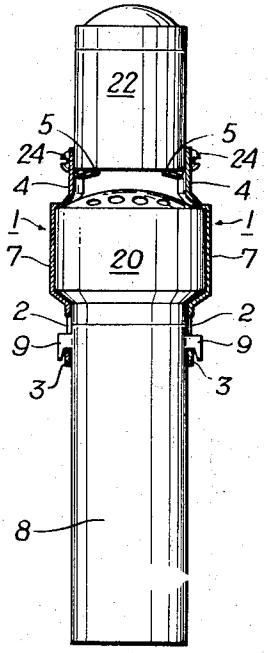


FIG. 2

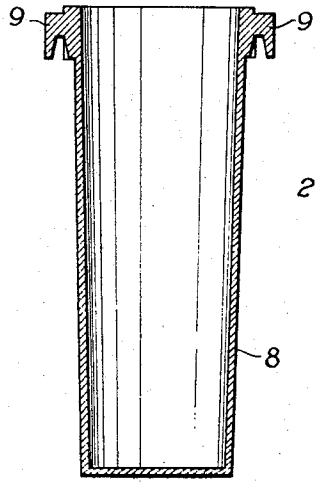


FIG. 1c

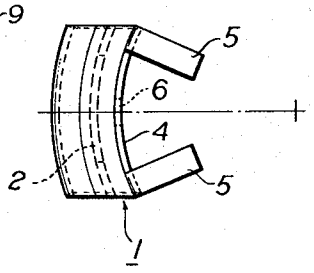
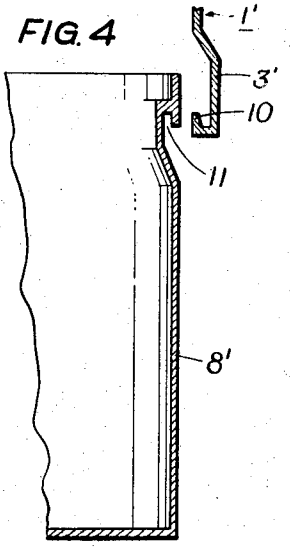


FIG. 4



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DETACHABLE BRACKET ASSEMBLY FOR SPACED COAXIAL MOUNTING OF DUAL TRANSDUCERS

SUMMARY OF THE INVENTION

This invention relates in general to apparatus for interconnecting two transducers such as microphone heads of different characteristics and, in particular, to a new and useful yoke construction to facilitate easy interconnection of two transducers and a proper positioning thereof relative to each other.

Sound transmitters having a unilateral directional pattern and comprising two or more electroacoustic transducers designed as individual systems are gaining significance in electroacoustic engineering because they enable a sharing of the frequency range to be transmitted by a plurality of transducers. This results in an excellent frequency response and in a virtually perfect independence of the directional pattern of the sound transducers from frequency. It has been recognized that the physical and mathematical requirements for a desired directional pattern can be met much more easily with individual transducers having a reduced bandwidth than with a single electroacoustic transducer which is designed to transmit all frequencies of the audible range.

For the above reasons, there are no theoretical difficulties opposing the dimensioning of the individual systems of a sound transmitter which comprises a plurality of sound transducers. In practice, however, difficulties in design have been encountered. The most important problem resides in that the transducers must be arranged so that they are reliably held together at an exactly defined distance apart and the mounting itself must not have any influence on the acoustic properties of the transducers.

It has already been suggested to employ a shaped resilient body to connect together the individual systems of a sound transmitter having at least two self-contained electroacoustic transducers. The use of such connecting elements requires a large space because great thicknesses of material are needed to provide for the necessary strength, and therefore the weight is considerably increased. In addition, disadvantages of an acoustic nature are also incurred.

In accordance with the present invention there is provided a simple and inexpensive device for securing two sounds transducers together in a manner such that they will be properly oriented one with the other and the sound characteristics will not be adversely affected.

The device includes a plurality of yoke members each having a central recess for accommodating and surrounding a portion of a widened microphone head of one transducer and an end which may be hooked into engagement with the body of the transducer. The opposite end of each of the yoke elements includes a supporting step extending inwardly therefrom for receiving and positioning a second transducer. In addition, means are located adjacent this end for securing the second transducer in position overlying the supporting step. The yokes permit simple interengagement of the first transducer by the hooking of a projection on the first transducer body into an opening at the end of the yoke members, alternatively, the yoke and the transducer body may be provided with interengaging hooklike elements. The yoke members advantageously include resilient portions or separate resilient elements disposed between the yokes and the transducers so that the connection between the parts is effected under an outward biasing so that they are tightly oriented in relative positions once the yokes are secured. The yoke members may advantageously be made of a resilient metal or resilient plastic material or even rubber. The interengagement of the yokes with the two separate transducer elements of microphones may be easily affected.

Accordingly, it is an object of the invention to provide a device for securing together two transducer elements such as microphones in a manner such that they are properly oriented with respect to each other and with an arrangement which permits easy connection or disassembly and using elements which will not adversely affect the sound characteristics of the two transducers after they are joined together.

A further object of the invention is to provide an assembly of transducers with a plurality of yoke members which include an intermediate recess and which are aligned to receive and bear against a portion of the periphery of a microphone head and to position this head in respect to a second transducer which is connected at one end of the yoke members.

A further object of the invention is to provide a securing device for securing two transducer elements together and to an assembly of transducer elements together and to an assembly of transducer elements which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1*a* is a rear elevational view of a yoke member constructed in accordance with the invention;

FIG. 1*b* is a section taken along line 1*b*, 1*b* of FIG. 1*a*;

FIG. 1*c* is a top plan view of the yoke member;

FIG. 2 is a partial elevational and partial sectional view of a microphone housing;

FIG. 3 is a partial elevational and partial sectional view of an assembly of two transducers in accordance with the invention; and

FIG. 4 is a partial elevational and partial sectional view of an alternate embodiment of microphone housing and yoke member.

GENERAL DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in particular, the invention embodied therein in FIG. 1*a*, 1*b*, and 1*c* comprises a device for connecting two transducer elements together which comprises at least two securing elements each being of a configuration of a yoke member or bracket 1. The yoke member 1 in the embodiment illustrated is curved about its longitudinal axis in order to permit it to be used with a cylindrical microphone head and housing.

In accordance with the invention each yoke 1 is provided with an offset intermediate portion or recess 7 of the configuration to bear around a portion of the outer periphery of a microphone head of a transducer. In addition the yoke 1 includes a first end or lower end portion 3 having a window 2 to permit interengagement with a hooklike element 9 of a microphone housing 8. An upper end or second end portion 4 includes an opening 6 to permit insertion of a bolt member for threading it into a housing 22 of another transducer or microphone assembly. In addition, this end includes tabs or stops 5 which extend inwardly at a precise location from the end of the hook to define positioning stops and supports for a second transducer which is to be connected into the assembly.

As indicated in FIG. 3 an assembly of two transducers includes a base transducer housing 8 having a microphone head 20 at its upper end and including hooklike projections or hook formations 9 which engage through the openings 2 and against the exterior wall of each yoke element 1, 1 which are positioned around respective opposite sides of the microphone head 20. A second transducer 22 is inserted between the yokes 1, 1 to abut against the supports 5 and it is oriented so that taped holds therein align with the opening 6 of the yoke 1. A threaded securing bolt 24 is then inserted through the opening 6 and threaded into the bores of the second transducer or microphone 22. The first transducer is advantageously a bass

system and the second transducer 22 is preferably a treble system.

The yoke members are advantageously made of a resilient material and are spaced such that when they are firmly connected in the manner indicated in FIG. 3 the two systems are held under stress in the yokes 1, 1. In some instances it is desirable to increase this stress by using separate spring elements (not shown) which are interposed between the yoke elements and the associated transducer systems.

Instead of the hooklike extension 9 which are formed on the first transducer housing 8 a housing 8' (FIG. 4) may advantageously include a recess 11 to permit engagement of a hooklike element 10 of a yoke member 1' therewith.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

We claim:

1. A sound transducer assembly comprising a first transducer having a first housing portion and a widened microphone head portion adjacent one end of said first housing portion, a second transducer having a second housing arranged with its axis in alignment of said first housing, a plurality of brackets equally spaced around the periphery of said first and second transducer housings, said brackets each including an offset portion defining a recess complementary to the configuration of the microphone head and engaging a portion of the periphery thereof, each bracket also including an inwardly extending tab at a spaced location from said microphone head defining a stop abutting against the end of said second transducer housing and positioning said second transducer housing at a spaced location from said first transducer housing, and securing means adjacent each end of said bracket for securing said bracket to the associated transducer housing.

2. An assembly according to claim 1, wherein said means adjacent each end of said bracket for securing said yoke to an associated transducer housing includes at one end an opening through said bracket, and a threaded bolt member extending through said opening and threaded into said second transducer housing.

3. A device according to claim 2, including a second opening adjacent the opposite end of said bracket, said first transducer housing having a hooklike projection extending through the said second opening of said bracket and engaged over the exterior of said first transducer housing.

4. An assembly according to claim 1, wherein said means adjacent each end of said bracket includes an inturned hook formation adjacent one end engaged with a hook-shaped recess formed in said first housing.

5. An assembly according to claim 3, wherein said securing means includes an opening at the end adjacent the second transducer housing, a threaded bolt extending through said opening and threaded into second transducer housing, a second opening defined at the end of said bracket adjacent said first transducer, said first transducer having a hook-shaped projection including a portion extending through the second opening, and a portion overlying the exterior of said bracket member.

6. A device according to claim 1, wherein there are two brackets arranged at respective opposite sides of said first and second transducer housings and said microphone head.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,566,047 Dated Feb. 23, 1971

Inventor(s) Bernhard Weingartner et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [72], line 2, "Maverberg" should rea -- Vienna --; [73], line 1, "Akustischi" should read -- Akustische --.

Signed and sealed this 18th day of April 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Pate