Sept. 22, 1970 F. A. WESEMANN 3,529,691

TWIN EQUILATERAL SOUND SPEAKER ENCLOSURE

Filed May 27, 1969 2 Sheets-Sheet 1

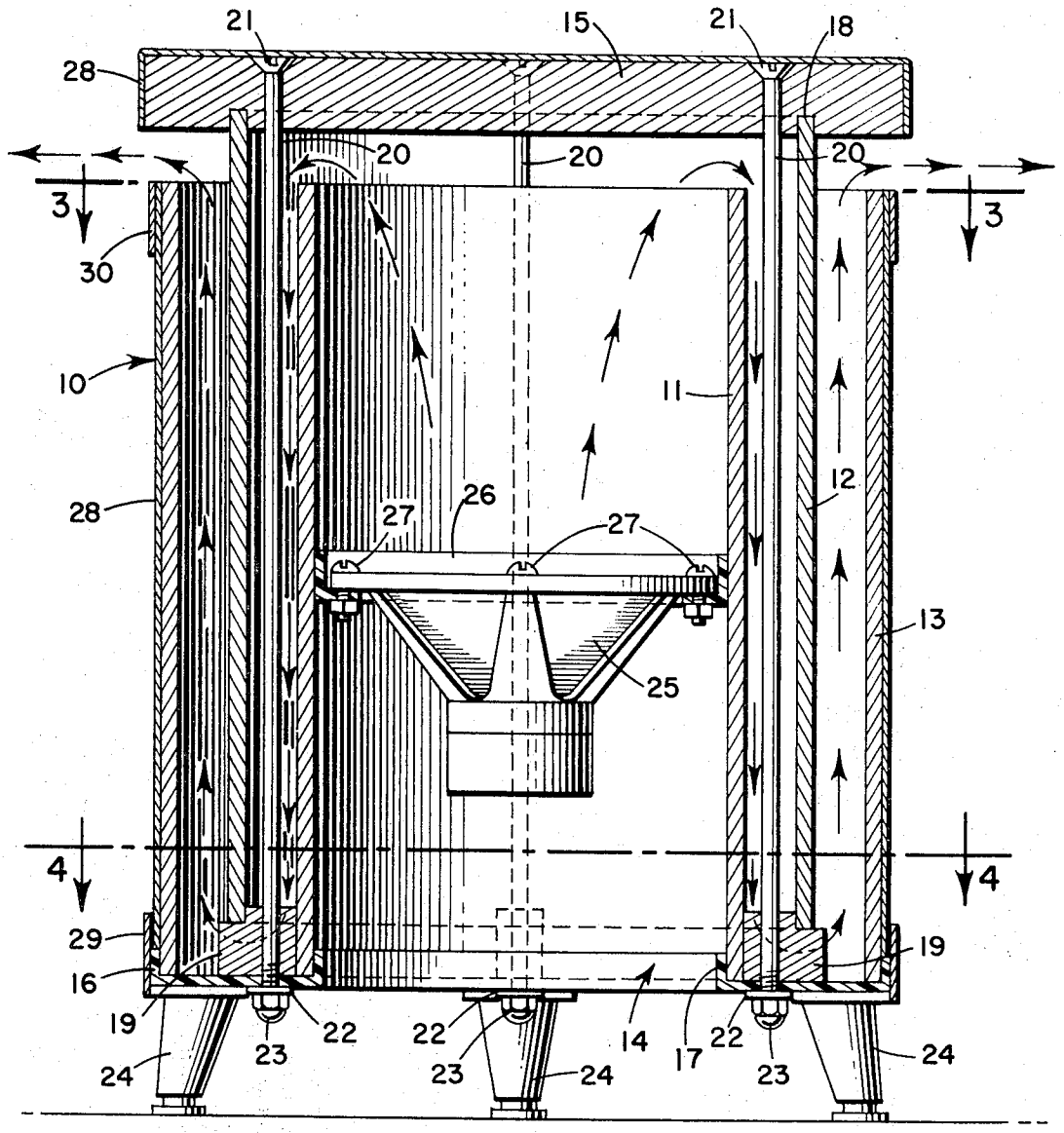


FIG. 1

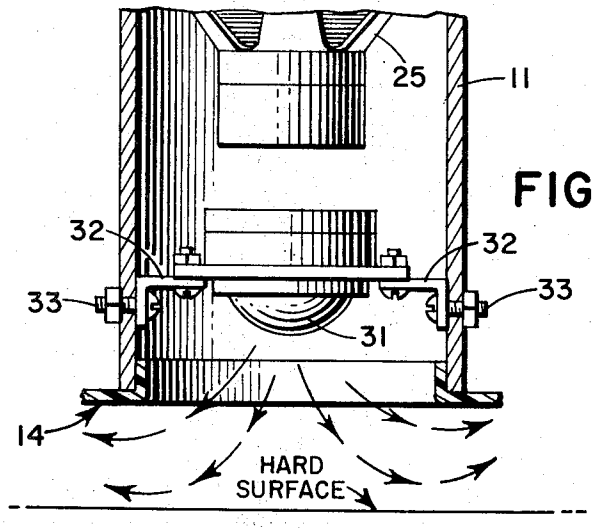


FIG. 2

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FIG. 3

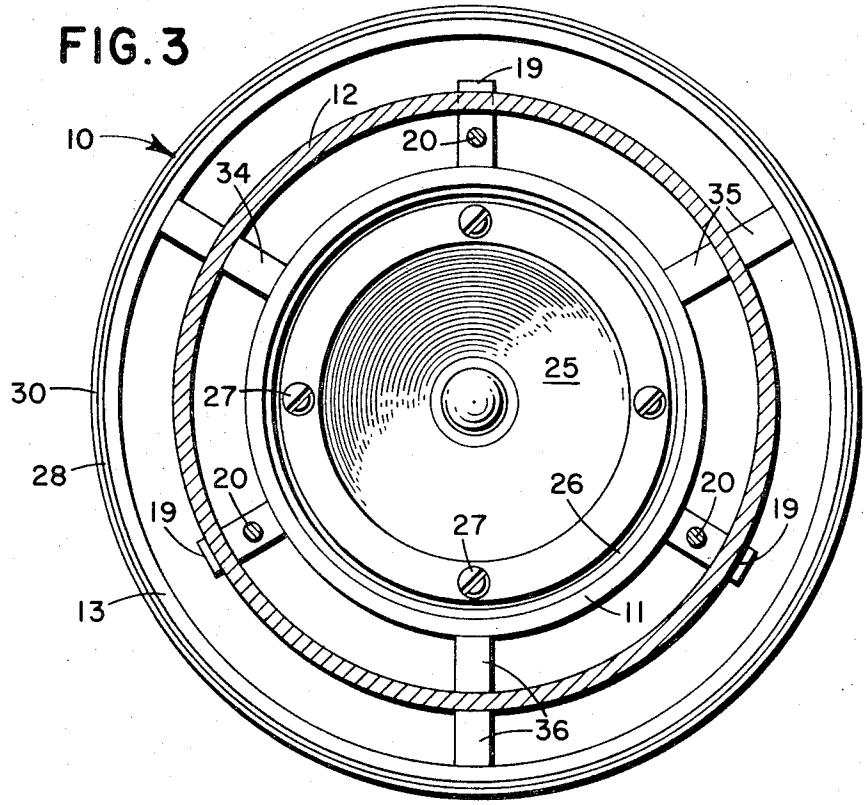
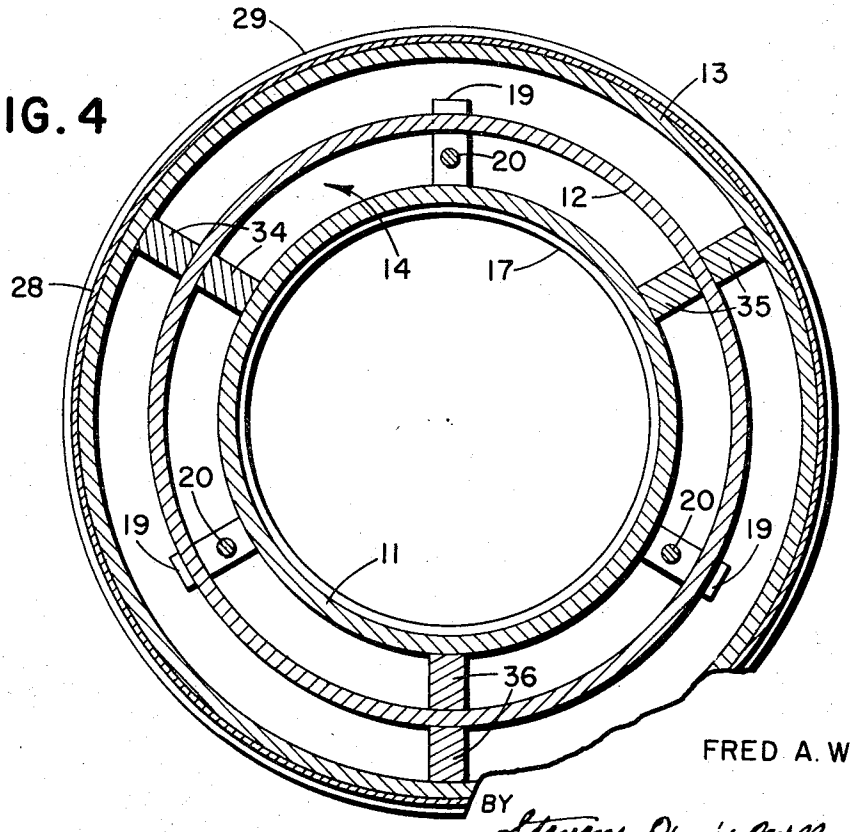


FIG. 4



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TWIN EQUILATERAL SOUND SPEAKER ENCLOSURE

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U.S. Cl. 181—31 7 Claims

ABSTRACT OF THE DISCLOSURE

A speaker enclosure formed by at least three concentrically mounted tubes forming a tortuous path therebetween and with a speaker mounted in the innermost of the tubes. A solid top covers the enclosure and contacts the intermediate of the tubes. A donut-shaped bottom covers the bottom of the enclosure contacting the innermost and outermost of the tubes.

The present invention relates to a speaker enclosure for producing equilateral sound over a wide frequency range. The unique design of the inventive enclosure fully utilizes the output of a high compliance speaker.

High compliance speakers have free vertical action thus giving substantially distortion free sound reproduction. The design of the present invention allows complete freedom of movement of the voice coil and cone so that a speaker enclosure, according to the present invention, having a one-half cubic foot volume enclosure reproduces sounds of a quality equal to enclosures of much larger size and of far greater expense.

A system formed by twin equillateral sound enclosures amplifies up to twice the input and provides a full twin 360° of rich, full and suspended sound.

The inventive speaker enclosure is light in weight and is compact, thus making it ideal for difficult installations such as in corners or relatively small and confined areas. The enclosure is also designed so that it can serve as an attractive piece of furniture, such as a stool or table. The inventive enclosure is extremely rugged and resistant to mildew and other deteriorating factors.

It is therefore an object of the present invention to provide an improved speaker enclosure giving a full equilateral sound over a wide frequency range.

It is a further object of the present invention to produce a speaker enclosure which may be readily and economically produced.

It is also an object of the present invention to provide a speaker enclosure which is substantially unaffected by environmental conditions and which may be readily decorated to suit any decor.

The means for accomplishing the foregoing objects and other advantages, which will be apparent to those skilled in the art, are set forth in the following specification and claims and are illustrated in the accompanying drawings dealing with a basic embodiment of the present invention. Reference is made now to the drawings in which:

FIG. 1 is a vertical section through a speaker enclosure according to the present invention;

FIG. 2 is a view similar to FIG. 1 showing an alternate embodiment of the present invention;

FIG. 3 is a section taken along line 3—3 of FIG. 1; and

FIG. 4 is a section taken along line 4—4 of FIG. 1.

Turning now to the drawings, FIG. 1 shows the speaker enclosure **10** which is comprised of an inner tube **11**, an intermediate tube **12**, and an outer tube **13**. The enclosure also comprises a bottom member **14** and a top member **15**. The bottom member **14** is formed in the general shape of a donut having an outer peripheral flange **16** and an inner peripheral flange **17**, both of which are upwardly directed. The outer and inner flanges engage with the outer surface of the outer tube **13** and the inner surface of the inner tube **11**, respectively. The intermediate tube engages in a circular groove **18** formed on the under side of the flat circular top member **15**. The bottom end of the intermediate tube **12** rests on a series of blocks **19** which are spaced about the periphery thereof and serve to space the lower end of the intermediate tube from the bottom member **14**.

The top and bottom members are interconnected by rods **20** which have slotted flanges **21** on one end thereof countersunk in top member **15**, and which are threaded on the other end to be secured to the bottom member by means of a washer and acorn nut **22** and **23**, respectively. The rods **20** preferably pass through the blocks **19** to provide a solid backing for the washer and nut. Legs **24** are secured to the bottom side of the bottom member **14**.

A speaker **25** is mounted within the inner tube **11** by bolts **27** and a flange member **26** secured to the inner surface of the inner tube. The speaker is directed upwardly in the enclosure.

The exterior of the outer tube **13** and top member **15** may be finished with any suitable decorative material such as a laminated coating **28** and a decorative belting **29** and **30**. The top member could also be covered by a material suitable for the surface of a table or stool and, for the latter case, could also have a cushion secured thereto.

FIG. 2 shows an alternate arrangement of the present invention wherein a high frequency speaker **31** is mounted in the inner tube **11** pointed in a downward direction. The speaker **31** is secured in position by means of brackets **32** secured to the inner tube by means of bolts **33**.

Turning now to FIG. 3, this figure is a sectional view of the enclosure showing the positioning of a series of three spacer elements **34** to **36**. The spacer elements are in the form of wedges which are driven between the tubular members to assure the proper positioning thereof as well as serving to tend to suppress boominess thus giving a clean bass response to a low as forty cycles per second.

FIG. 4 is a further sectional view showing that the spacer elements extend the entire length of the enclosure. It should also be noted from this figure that the rods **19** and blocks **20** are uniformly spaced about the enclosure.

Returning to FIG. 1, it will be noted that the path of the sound, as noted by the arrows, is generally upward through the inner tube, through a space between the top end thereof and the top member, downwardly between the inner and intermediate tubes, around the lower end of the intermediate tube and upward between the intermediate and outer tubes until it passes outward between the top end of the outer tube and the top member.

The present invention is particularly advantageous in that it can be sold as a finished product or in kit form with hundreds of sizes and styles of finish. The cylindrical tubes are readily made from materials having a six inch to a thirty inch diameter, such as the tubular members used for concrete column construction called "sleek tube" (a tubular product of pressed paper or cardboard having a resin binder incorporated therein). The tubes can be cut into desired lengths with the wedges driven between the three different diameter tubes to equally space them apart. The speaker may then be simply mounted in the innermost tube and the top assembled by inserting the intermediate tube into a groove formed therein. The top and bottom are then secured together with the rod members to form the finished product. The top and bottom members may be formed of vacuum-formed, high impact styrene. The bottom member can be formed as sort of a Mexican hat, then the top portion of the hat may be cut

off and, since it is of suitable diameter, sliced into a smaller portion to form the flange member for mounting the speaker. The blocks supporting the intermediate member on the bottom portion are preferably of wood and the material covering the outer surface may be any decorative material such as formica, leather, vinyls, or paint with any sort of decorative band such as brass or the like secured thereto.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of equivalency of claims are therefore to be embraced therein.

What is claimed is:

1. A speaker enclosure having a wide frequency range comprising at least three concentrically mounted tubular members, the intermediate of said members being longitudinally displaced with respect to the other said tubular members, a bottom member secured to the inner and outer of said tubular members, a top member secured to the intermediate tube at the end thereof remote from said bottom member, means for spacing said tubular members uniformly, means between said bottom member and said intermediate tube to ensure said longitudinal displacement thereof, means interconnecting said top and bottom members, and a speaker mounted in said intermediate tube directed towards said top member.

2. A speaker enclosure according to claim **1**, wherein said tubes are formed of tubular material of pressed paper with a resin binder impregnated therein.

3. A speaker enclosure according to claim **1**, wherein said spacer members comprise wedges driven between said tubes and which members serve as fins tending to suppress boominess in said enclosure.

4. A speaker enclosure according to claim **1**, further comprising legs secured to the bottom of said bottom member.

5. A speaker enclosure according to claim **1**, wherein said bottom member is donut-shaped with upwardly extending annular flanges on the inner and outer peripheries thereof, the inner surface of said inner tube engaging with the inner side of said inner flange and the outer surface of said outer tube engaging with the inner side of said outer flange.

6. A speaker enclosure according to claim **1**, wherein said top member includes a groove therein, said intermediate tube being engaged in said groove.

7. A speaker enclosure according to claim **1** further comprising a decorative material laminated to the outer surface of said outer tube and the top of said top member.

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STEPHEN J. TOMSKY, Primary Examiner