June 24, 1958 B. H. WILDMAN 2,840,181

LOUDSPEAKER CABINET

Filed Aug. 7, 1956

FIG_1

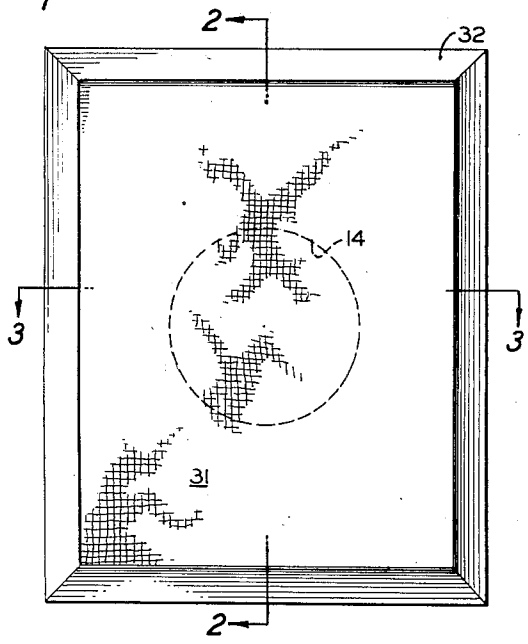
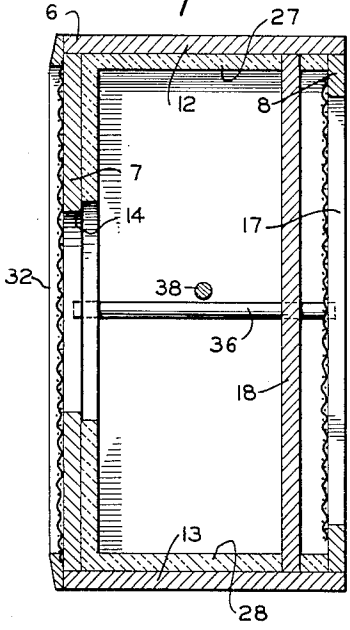


FIG_2



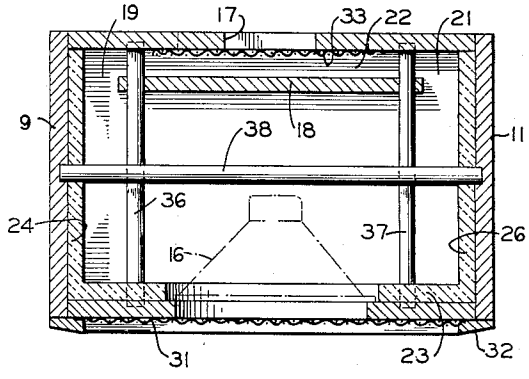


FIG_3

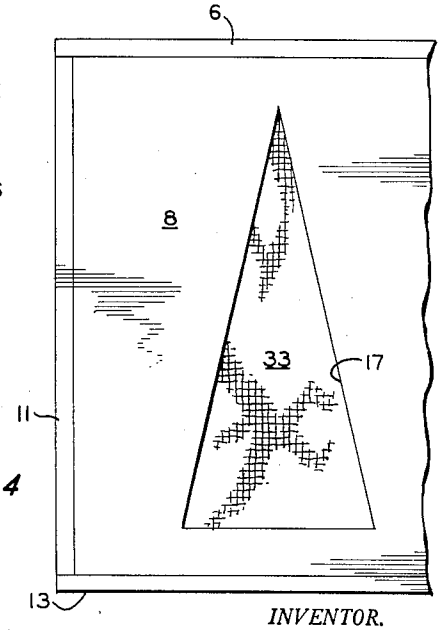


FIG_4

INVENTOR.
BENJAMIN H. WILDMAN
BY
Rothrop & West
ATTORNEYS

United States Patent Office 2,840,181 Patented June 24, 1958

2,840,181

LOUDSPEAKER CABINET

Benjamin H. Wildman, San Francisco, Calif.

Application August 7, 1956, Serial No. 602,561

1 Claim. (Cl. 181—31)

My invention relates generally to sound reproducing devices and is especially concerned with a cabinet to enclose and support a loudspeaker of the customary sort. Such a speaker usually includes a circular mounting frame on which a cone and an electromechanical driving unit are disposed. It is often important for reasons of cost, space, and the like to utilize a relatively small speaker; yet it is quite important to reproduce the sound from it as faithfully as possible, and furthermore to approximate, as nearly as can be, the original sound.

It is therefore an object of my invention to provide a loudspeaker cabinet for use with such a speaker with the cabinet assisting in the accurate and acceptable reproduction of the speaker sound.

Another object of my invention is to provide a relatively small loudspeaker cabinet which, nevertheless, has acoustical properties making it as satisfactory as cabinets of much larger size.

Another object of the invention is to provide a loudspeaker cabinet which is relatively regular in shape and construction, not only for aesthetic reasons but also for economy in manufacture.

Another object of the invention is to provide a loudspeaker cabinet in which relatively straightforward and simple parts can be employed.

Another object of the invention is to provide a loudspeaker cabinet suitable for use with various loudspeakers.

A still further object is, in general, to provide an improved loudspeaker cabinet.

While the loudspeaker cabinet of the invention can be embodied in a number of different forms and modifications, it has been successfully made in practice pursuant to the disclosure herein as described in the description and as illustrated in the accompanying drawings. In the drawings:

Figure 1 is a front elevation of a loudspeaker cabinet constructed in accordance with my invention.

Figure 2 is a cross section, the plane of which is indicated by the line 2—2 of Figure 1.

Figure 3 is a cross section, the plane of which is indicated by the line 3—3 of Figure 1.

Figure 4 is a rear elevation (a portion being broken away) of the loudspeaker cabinet of the invention.

The present device includes a box, generally designated 6, having a substantially planar front wall 7, a substantially parallel and planar rear wall 8, a pair of side walls 9 and 11, as well as a top wall 12, and a bottom wall 13. Not only are the front wall 7 and the rear wall 8 mutually parallel, but also the side walls 9 and 11 are mutually parallel; and, in addition, the top wall 12 and the bottom wall 13 are also mutually parallel. Preferably the general proportions of the various walls are substantially as illustrated in the drawing.

In accordance with the invention, the front wall 7, preferably at a central location therein, is provided with a circular aperture 14 in a position and of a size to

receive easily a conical loudspeaker frame 16. Since the loudspeaker is no direct part of the present invention, it is referred to only generally. It is sufficient to say, however, that the speaker includes a vibrated cone, the diameter of which is approximately that of the aperture 14. The cone is effective to dissipate sound waves in both directions from its conical surface; that is, from its forward surface and from its rearward surface.

The rear wall 8 is likewise provided with an aperture 17. This aperture is generally in registry with, or in alignment with, the aperture 14, but is not of the same shape. Preferably the aperture 17 is of a triangular configuration with the apex of the triangle adjacent to the top of the cabinet and the base of the triangle about equally spaced from the bottom of the cabinet.

In order that there be no direct path of sound travel between the front aperture 14 and the rear aperture 17, despite the fact that such apertures are in substantial alignment, I preferably provide within the box 6 a baffle wall 18. This is preferably a planar sheet which extends from the top wall 12 to the bottom wall 13 and is substantially parallel to the front wall 7. The wall 18 extends transversely of the box stopping short of the sidewalls 9 and 11 by intervals 19 and 21.

The dimension of the intervals 19 and 21 is approximately the same as the interval 22 and between the rear face of the baffle wall 18 and the front face of the rear wall 8.

In order that the acoustic properties of the cabinet be appropriate for the speaker 16, I preferably line certain parts only of the cabinet with an acoustic material such as sound absorbent material; for example, glass fiber or the like. For that reason, the rear portion of the front wall 7 is provided with a lining sheet 23 of sound absorbent material on all portions except around the aperture 14 and around the speaker 16. Both of the side walls 9 and 11 are lined with sheets 24 and 26 of the acoustic material. The top wall 12 is likewise provided with an acoustic lining sheet 27, and the bottom wall 13 is comparably provided with an acoustic sheet 28. The baffle wall 18 is preferably left quite bare as is the back wall 8.

In order to provide a more attractive appearance and for other reasons, the entire front of the cabinet is preferably provided with a cover cloth 31 of the usual sort extending entirely across the aperture 14 and, in fact, preferably covering substantially all of the front face of the front wall 7. A surrounding frame 32 secures the cloth in position and also affords an appropriate finish to the forward portion of the cabinet. To balance the obstruction provided by the cloth 31 to the passage of sound, the rear aperture 17 is likewise covered with a comparable cloth 33, which extends entirely over the aperture but does not necessarily occupy any substantial other portion of the front face of the rear wall 8. In this way, there is provided a substantially closed cabinet except for the two apertures which are substantially equal in impedance to sound flow.

The speaker cabinet as so far described is sufficient for relatively small installations and provides an excellent mounting and cabinet for a speaker.

In some instances, particularly where the speaker cabinet is relatively large, the operation is not as good as otherwise expected because some of the walls move relative to the others in undesired ways. For that reason, and even though relatively light wall material is utilized, I can provide an improved result by fastening some of the walls togther. For this reason, in a relatively large size cabinet or in one with relatively thin walls, I preferably span the space between the front wall 7 and the back wall 8 by means of rods or struts 36 and 37. These struts are fastened in depressed sockets in the front and rear walls being preferably glued into position. The

struts also preferably pass through suitable apertures in the baffle wall 18 and are likewise glued to that wall. By that construction the rear wall, the baffle wall and the front wall are all firmly tied together so that in the event they vibrate they vibrate not only in unison but also in the same direction. Since the sound waves tend to reach such walls at slightly different times, the acoustic value of the box is enhanced particularly if the walls are sufficiently extensive or thin as otherwise to tend to vibrate independently.

In a similar fashion, the side walls 9 and 11 are tied together by a bar 38 extending transversely of the box. The bar is set at its opposite ends in depressed sockets in the side walls and is preferably glued in position. It is disposed slightly above the struts 36 and 37 in order not to interfere therewith.

In any form of the invention, there is provided a relatively small, relatively light cabinet in which a speaker can easily be mounted and in which the production of the speaker is delivered to the listener with little impairment. In fact, in most instances the performance of the speaker is substantially improved over its performance in an ordinary enclosure or on an ordinary baffle plate. The size

of the cabinet relative to the speaker is quite small relatively, yet the sound emaneting from the speaker, when mounted in the cabinet, is of superior caliber so that the results of this speaker cabinet are comparable to those obtained with much larger cabinets and are substantially improved in general.

I claim:

A loudspeaker cabinet comprising a box having six walls including a front wall and a rear wall, said front wall having a circular aperture therein and said rear wall having a triangular aperture therein, a baffle wall within said box and extending from the top to the bottom thereof but stopping short of the sides thereof and disposed parallel to said front and rear walls, struts connecting said front and rear walls and extending through said baffle wall, and a bar connecting said side walls between said baffle wall and said front wall.

References Cited in the file of this patent

UNITED STATES PATENTS

2,315,896	Dumas	Apr. 6, 1943
2,713,396	Tavares	July 9, 1955