Dec. 20, 1927. 1,653,144

J. S. BACH

SOUND AMPLIFIER

Filed Sept. 4 1926

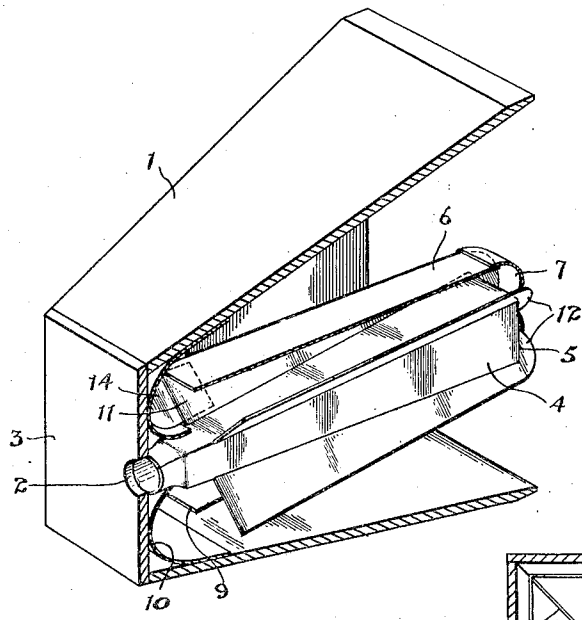


Fig. 1.

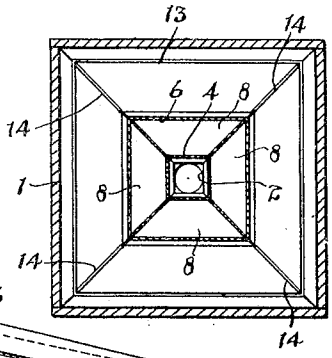


Fig. 4.

Fig. 2.

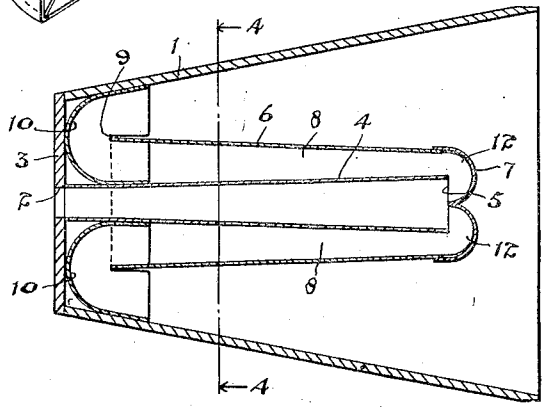


Fig. 3.

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SOUND AMPLIFIER.

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The principal objects of this invention are to enhance the acoustic properties of sound amplifiers used in dispersing the sound waves produced by phonographic or radio reproducers and to devise a construction of amplifying chamber which will separate the sound waves into clearly defined divisions, allowing each division of waves to amplify to a very considerable development by providing an extra long amplifying passage.

The principal feature of the invention consists in the novel construction and arrangement of a plurality of polygonal tubular casings whereby the sound waves are divided by a pyramidal structure and conducted in clearly defined separate directions into gradually increasing amplifying chambers.

In the drawings, Figure 1 is a part sectional perspective view of my improved form of amplifier.

Figure 2 is a perspective view showing the parts of the amplifier separated and drawn apart but arranged in their relative position in relation to one another.

Figure 3 is a longitudinal mid-sectional view.

Figure 4 is a cross sectional view through the line 4—4 of Figure 3.

In the construction of the device herein shown a casing 1 shaped in the form of the frustrum of a pyramid and closed at the small end has a central opening 2 in the end 3 and a tube 4 extends centrally of the pyramidal casing and is preferably of polygonal shape and gradually expanding to the open end 5.

A similar tube 6 of considerably larger dimensions encloses the open ends of the tube 4 and the smaller end of the tube 6 is formed with inwardly curving surfaces from each of the sides forming a pyramidal shaped end 7. The apex of the end 7 is arranged central of the large end of the tube 4. The sound waves travelling through the tube 4 are thus directed with an outward sweep by curved annularly disposed faces of the pyramidal end.

The sound waves thus diverted from the open end of the tube 4 are directed through the expanding passage 8 around the outside of the tube 4 and within the tube 6.

At the smaller end of the main casing 1 and spaced from the open end 9 of the tube 6 are a plurality of curved surfaces 10 which correspond in number to the sides of the tube 4 and the casing 1 and these curve outwardly from the periphery of the tube 4 to the inner side of the walls of the casing 1, thus the sound waves that are divided by the pyramidal end 7 of the tube 6 are continued in their direction without the tendency to eddy and the result is that four streams of sound waves are projected in a parallel direction from the open end of the casing 1.

The structure as herein shown is extremely simple and the inner tube may, as shown in the drawings, be provided with angular wings 11 which project from the corners thereof into the corners of the tube 6, thus providing a physical means of dividing the spaces into four clearly separated channels. The ends 12 of the wings are curved to fit snugly into the corners of the pyramidal shaped end 7 of the tube 6 and the smaller end of the main casing has fitted thereinto the cup-shaped structure 13 which has wings 14 extending on the diagonal from the corners of the pyramidal shaped metal. These diametrical partitions are adapted to receive the open end edges of the large end of the tube 6.

This arrangement of structure forms a very rigid support for the tube 6 and particularly when the wings 11 are used said wings 11 lie flat against the diagonal wings in the cup 13 and they may be secured thereto in any suitable manner desired or they may be merely a snug sliding fit.

A sound amplifier constructed as thus described is extremely simple to construct, can be manufactured at very low cost and it produces very remarkable results in the amplification of sounds produced by a phonograph or other form of diaphragm reproducer.

What I claim as my invention is:

1. In a sound amplifier, a polygonal casing having diverging side walls, a polygonal tube centrally arranged within said casing and having diverging side walls extending towards the open end of the casing, a polygonal tube spaced from the aforesaid tube and arranged within said casing and curved walls disposed opposite the diverged ends of said tubes receiving the sound waves therefrom and directing them backwardly and forming with said tubes and casing continuous progressively expanding chambers.

2. A sound amplifier, comprising a polygonal casing having diverging side walls, a polygonal tube supported centrally within

said casing, having side walls diverging in the same direction as the walls of said casing, a polygonal tube inserted over the aforesaid tube and spaced therefrom and having side walls diverging toward the small end of said casing, said latter tube having a pyramidal-shaped end, the point of which extends into the large open end of the central tube, and a plurality of curved deflectors arranged at the large inward end of the other tube directing the sound waves outwardly into the main casing.

3. A sound amplifier, comprising a casing having four diverging walls, a tube supported centrally and extending longitudinally of said casing toward the open end, said tube having four walls diverging in the same direction as said casing and terminating in an open end, a plurality of wings extending diagonally from the corners of said casing, a four-sided tube having walls diverging in a direction opposite to those of the casing and said former tube and adapted to fit over said wings and having a pyramidal-shaped end curving from the walls thereof inwardly to an apex arranged in axial alignment with and opposite the large end of the inner tube, and a metal cup having four curved walls fitting snugly around the inner tube and sweeping outwardly to the walls of the casing, and diagonal partitions in said cup engaging the large open end of the intermediate tube and supporting it therein.

4. In a sound amplifier, a casing having diverging side walls, a tube centrally arranged within said casing and having diverging side walls extending toward the open end of the casing, a tube spaced from the aforesaid tube and arranged within said casing, curved walls disposed opposite the diverged ends of said tubes receiving the sound waves therefrom and directing them backwardly and forming with said tubes and casing continuous progressively expanding chambers, and a plurality of radial partitions extending longitudinally of said chambers.

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