April 2, 1940. H. E. HOLLIDAY 2,195,651

SOUND APPARATUS

Filed Feb. 17, 1938

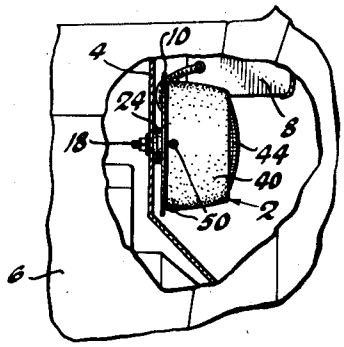


Fig. 1

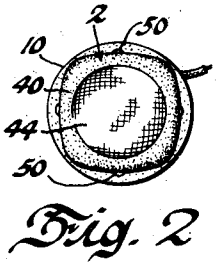


Fig. 2

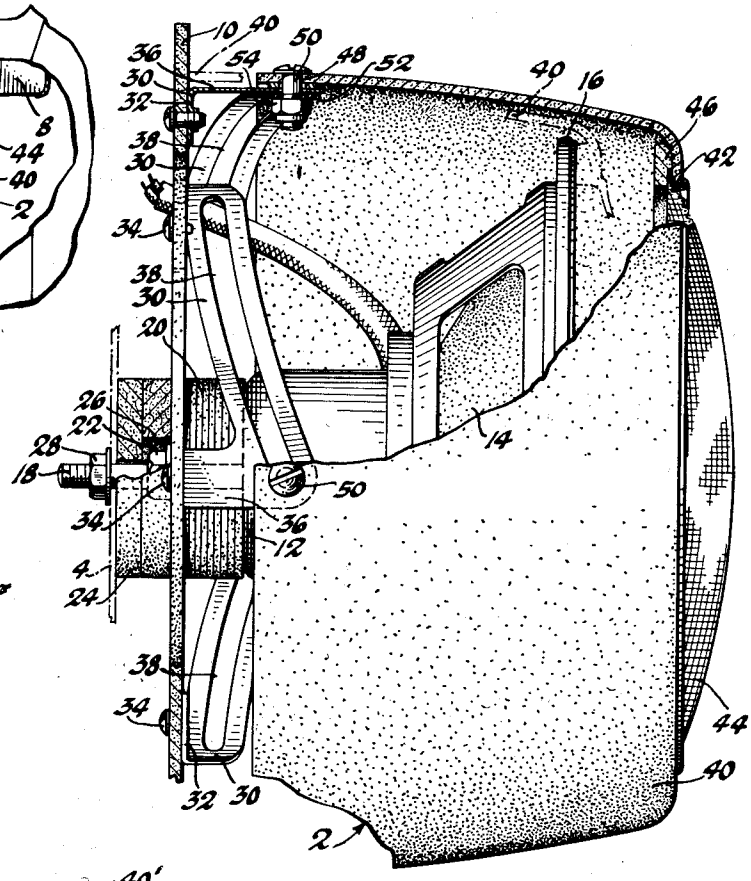


Fig. 3

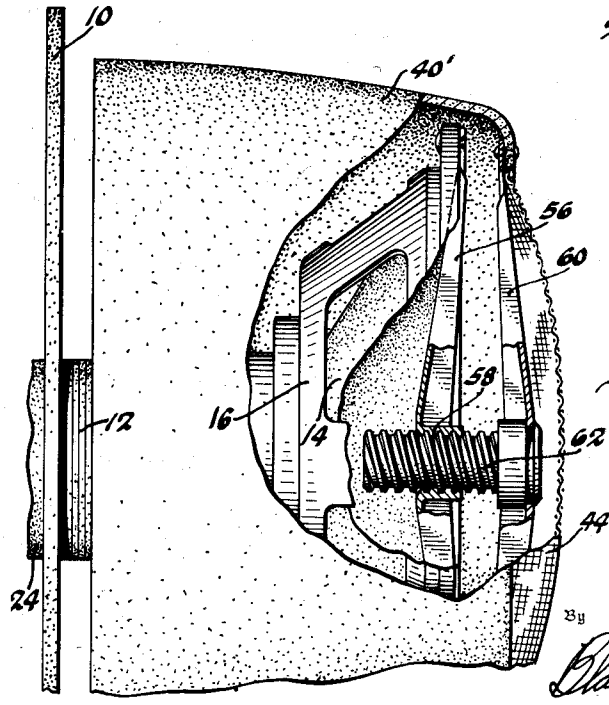


Fig. 4

Inventor

Herbert E. Holliday

By Blackmon, Spencer & Flint

Attorneys

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SOUND APPARATUS

Herbert E. Holliday, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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2 Claims. (Cl. 181—31)

This invention relates to sound apparatus and more particularly to apparatus for translating electrical pulsations into sound waves.

It is often desirable in mounting a loud speaker unit in a cabinet or at some other location within an inclosure, to vary the characteristics of the enclosing chamber to better cooperate with the acoustic characteristics of the surroundings to give a well balanced resultant sound wave. Particularly with regard to the mounting of the separate speaker units as employed in automotive sets is it desirable to have such a unit. This is true because the acoustic properties of the interior of the different cars vary a great deal even in the same model of one particular make and widely between makes. This is due to the different cubic content of the bodies; the location of the panel upon which the speaker is mounted; the type of upholstering; position of the sets, etc.

It is therefore an object of my invention to provide a housing for the loud speaker which may be adjusted after the speaker has been permanently mounted to cooperate with the acoustic enclosure within which the whole is mounted.

It is a further object of my invention to provide a housing which may be manually and simply adjusted and which will not raise the cost appreciably over that of the usual housing.

With these and other objects in view my invention will be best understood by reference to the following specification and claims, the content of which is illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation, parts being broken away and shown in section, of a speaker mounted within an automotive vehicle.

Figure 2 is a front view of the speaker.

Figure 3 is an enlarged side view of the speaker mounted on the panel, parts being broken away and shown in section.

Figure 4 is a side elevation similar to Figure 3 of a modified form of my invention.

As is customary in the present cars, the separate speaker such as that shown generally at 2, is usually mounted upon the dash 4 of a car 6 and connected by a cable to a radio receiving set 8 located behind the instrument panel. The particular construction in this case consists of a circular backing disk 10 to which is rigidly secured the loud speaker unit 12 which carries the vibrating diaphragm 14 and a metallic enclosing structure 16 at the opposite end. The member 12 has protruding therefrom a threaded bolt 18 which proceeds through a spacing member 20 between the member 12 and the plate 10 and there is threaded thereon a nut 22 to secure this assembly together.

To the rear face of the disk 10 is applied a plurality of washers 24, the inner one having a center cavity such as shown at 26 to fit over the nut 22. The bolt 18 then proceeds through the disc 4 and there is applied to the opposite face a suitable washer and nut 28 to clamp the assembly to the dash or supporting panel.

Secured at certain spaced intervals around the periphery of the disk 10 are angled slotted brackets 30 which have a bent-over ear 32 secured to the plate by machine screws 34. The opposite end of the bracket extends to a greater distance from the disk 10 and has a leg portion 36, the lower end of which is bent at right angles thereto and also secured to the disk 10 by a screw such as 34. This provides a partially circular track 38 at spaced portions of the periphery, there being in this case four of these members secured to the backing disk 10.

Mounted over the whole assembly on the forward face of the disk 10 there is a large drum-shaped member 40, the forward face of which has a large opening 42 therein coincident with the forward face of the loud speaker and in this opening there is provided a cloth grille 44 through which the sound waves may pass. Adjacent the inner surface of this opening there is an annular soft washer 46 which at certain positions of the drum is adapted to seal with the forward face of the edge of the member 16 supporting the diaphragm.

In the surface of the drum at spaced points around the inner periphery there are a series of openings 48 through which bolts 50 are inserted having threaded to their inner surfaces a washer 52 and nut 54, the latter not being tightened to too great a degree and the washer 52 having a certain resiliency. These bolts 50 proceed through a portion of the slots 38 in the members 30 so that as the drum 40 is rotated they will cause the drum to move axially of the speaker mounting. When the drum is rotated in a clockwise direction, looking at the speaker from the right-hand side of Figure 3, the bolts will cause the drum to be drawn in and the drum to contact the plate 10 and the annular washer 46 to seal against the forward face of the diaphragm. When it is rotated in a counterclockwise direction, however, the drum will tend to move to the right, as shown in Figure 3, and allow an opening between the drum and the disk 10 and also to allow sound waves to proceed

around the edges of the diaphragm. Thus it will be seen that a change in the tonal qualities of the speaker may be had by merely manually twisting this outer housing and after the speaker has been mounted in the car the operator may tune in a desired station and then set the housing at what he deems to be the point of maximum efficiency in receiving.

The modification shown in Figure 4 is substantially the same except that in this instance a cross member **56** supported on the means holding the diaphragm is provided with a central threaded opening **58** and the housing **40'** has supported across its center opening a similar supporting bracket **60**. This latter bracket has firmly secured to its center a screw-threaded member **62** which may be threaded into the member **58** in the bracket **56**. Otherwise the speaker and speaker mounting are supported in exactly the same manner on the disk **10** and of course in this instance as the housing **40'** is rotated it will be moved axially of the speaker to adjust or change the loading of the back face of the speaker by changing the rear chamber and also by varying the acoustic chamber in front of the speaker.

I claim:

1. In a sound device assembly, a mounting plate, a sound device comprising a vibratile diaphragm mounted on said plate and having an outwardly extending peripheral portion, supporting brackets on said plate arranged concentrically of the axis of said sound device and having slots inclined to the plane of said plate, a substantially cylindrical housing surrounding and spaced from the peripheral portion of said sound device and having an opening in alignment therewith, a sealing member secured to said housing adjacent and around the edge of said opening, projections on said housing engaging the slots in said brackets for rotatably supporting the housing relative to said plate, whereby rotation of the housing relative to said plate will cause axial movement of the housing between a position in which the sealing member contacts the sound device and a widely open position, and the air loading on said vibrating diaphragm may be varied.

2. In a sound device assembly, a mounting plate, a sound device having an outwardly extending peripheral portion mounted on said plate, supporting brackets on said plate arranged concentrically of the axis of said sound device and having slots inclined to the plane of said plate, a housing surrounding said sound device and spaced from said peripheral portion, projections on said housing slidably engaging the slots in said brackets for rotatably supporting the housing relative to said plate to cause axial movement of the housing relative to said plate on rotation of the housing.

HERBERT E. HOLLIDAY.