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INSTRUMENT PANEL SPEAKER UNIT

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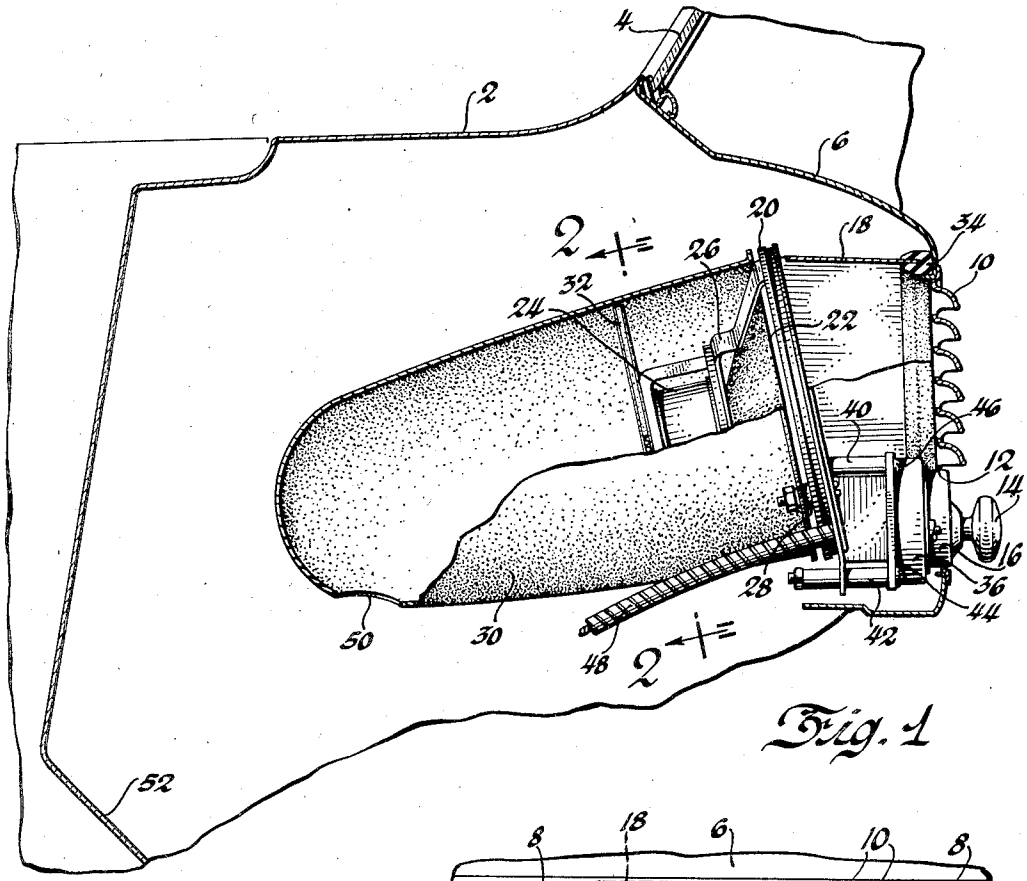

Fig. 1

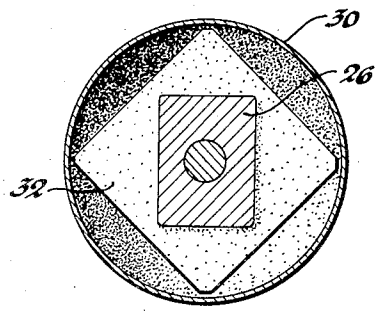

Fig. 2

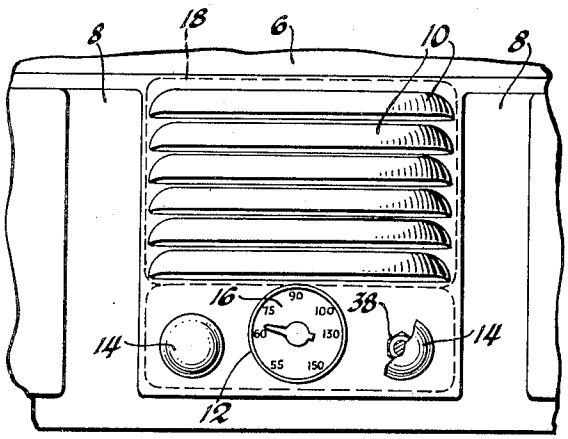

Fig. 3

Inventors
Bertram A. Schwartz &
William C. De Roo

By Blackmore, Spencer & Flint
Attorneys

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INSTRUMENT PANEL SPEAKER UNIT

Bertram A. Schwarz and William C. De Roo, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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6 Claims. (Cl. 181—31)

This invention pertains to apparatus for reproducing sound from electric currents and more particularly to loud speaker design relating to automotive construction.

Loud speakers mounted upon vehicle chassis have been applied to a number of different positions in an attempt to find a satisfactory position in which the sound waves would travel to the occupants of the motor car with the least distortion and interference. The most satisfactory location for such speakers has been behind the instrument panel and they have been secured either to the rear face of the instrument panel or to the forward face of the dash. However in the different cars to which any commercial set might be applied, the distances between the instrument panel and dash vary and also the acoustic chambers caused by the differing apparatus carried by any particular motor car would also cause different resonance chambers and interference with the propagated wave.

It is therefore an object of our invention to provide a loud speaker assembly having an acoustic chamber of definite proportion surrounding the loud speaker to control the back wave from the speaker.

It is a further object of our invention to provide an acoustic baffle surrounding the rear face of the loud speaker to prevent interference between the waves emanating from the two faces of the speaker.

It is a further object of our invention to provide a satisfactory control housing around the back face of the speaker mounted on the instrument panel to eliminate interference of the sound waves with various cavities formed on the dash or floor boards.

It is a still further object of our invention to provide an assembly and mounting for a loud speaker unit so that the whole may easily be applied to the rear face of the instrument panel.

With these and other objects in view, the embodiments of our invention are described in the following specification and claims and illustrated in the accompanying drawing, in which:

Figure 1 is a vertical section showing the device of our invention mounted upon the instrument panel of a car.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a front elevation of the assembly in place in the instrument panel.

In the present cars such as that designated generally at 2, there is provided in the front portion a windshield 4 and from the windshield the front portion of the body slopes downwardly as at 6 and provides a vertical section in the forward portion of the driving compartment as shown at 8 which is conventionally termed the instrument panel. In the central portion of this instrument panel there is provided a series of louvers 10 and directly below the louvers there is provided a series of circular openings designated generally at 12 in which there are adapted to be secured the various indicating and control apparatus for a radio set such as indicated by knobs 14 and an indicating dial 16.

The invention of our device is adapted to be supported directly behind this center panel as shown roughly in dotted outline in Figure 3 and comprises a roughly rectangular frame member 18 to which is adapted to be secured a rim 20 supporting the edge of a diaphragm 22 of a loud speaker, the actuating unit 24 of which is supported from the rim by suitable strap means 26.

Also attached adjacent the rim 20 on the same frame and by suitable spacer means 28 is an elongated hollow housing 30 which may be of substantially parabolic shape as shown, which is, of course, merely illustrative and any other desired form may be used and which is formed of any suitable sound deadening material such as felt or cardboard covered with felt. To the rear portion of the speaker actuating unit is secured a plate 32 of corrugated paper, the edge portions of which touch the inside of the elongated member 30 to assist in supporting the baffle unit. The forward edge of the rectangular frame member 18 is covered with a sponge rubber member 34 so that when the member is drawn tightly against the inner face of the instrument panel there will be no metal contact to cause rattling.

On the lower portion of the frame 18 there is secured thereto a conventional remote control unit 36 having mounted therein the control knobs 14 and the dial 16. This unit is adapted to be clamped directly against the rear face of the instrument panel and the control shafts should project through the openings provided therein, said control shafts having therearound an exteriorly threaded housing with suitable securing nuts 38 which housing of course also projects through the face of the panel and by tightening up the nuts 38 adjacent each of the control knobs the control box 36 is rigidly secured against the instrument panel. The dial 16 also projects through a suitable opening to be visible.

The two ends of the control box 36 are rigidly secured to the frame 18 by suitable spacing sleeves

40—42 and long bolts 44—46. The frame 18 is of course provided with suitable openings so that the control cables such as 48 may project back to the radio set. In this manner it will be seen that there is provided a compact unit of control box, loud speaker and baffle therefor which is secured to the instrument panel only by the insertion of the control knobs through the instrument panel and suitable tightening means thereon which draw the frame 18 up tightly against the rear face of the panel adjacent the louvers.

In the rear portion of the member 30 there is provided a vent 50, the design of which will alter the damping characteristics of the enclosing chamber. It is therefore obvious that all of the sound emanated by the forward portion of the speaker 22 will go through the frame 18 and out through the louvers and into the car while substantially all of the waves emanated by the rear face will be damped in the acoustic chamber in the rear and will therefore not cause any interference with the forwardly projected waves nor will there be any interfering back wave from the dash or floor boards such as 52 and the pressure on the rear face of the diaphragm will remain substantially constant.

We claim:

1. In a sound reproducing device, a panel, a hollow frame secured thereto, a speaker unit secured to the frame, and a hollow parabolic member formed of sound deadening material secured to the frame enclosing the speaker unit having an opening at the end opposite to the secured end, said parabolic member serving as a baffle to damp the vibrations from the rear face of the speaker.

2. In a sound reproducing device, a panel provided with louvers, means for mounting a sound propagating device on the panel adjacent the louvers, a hollow parabolic member formed of sound deadening material and means for mounting said member to the panel to enclose the sound propagating device to damp the waves emanating from one face of the device.

3. In a sound reproducing device, a panel having louvers therein, means for securing a hollow frame to the panel adjacent the louvers, sound insulating material between the frame and the panel, a sound propagating device supported on the frame, a hollow parabolic member formed of sound deadening material supported on the frame enclosing the sound propagating device to damp the waves from one face thereof and act as a baffle.

4. In a device of the class described, an instrument panel having a plurality of openings therein, a control unit having portions adapted to project through said openings for assembly and support, a frame carried by the unit and held in juxtaposition to the panel, insulating means between the frame and panel and a sound propagating device carried by the frame to project sound through the panel.

5. In a device of the class described, an instrument panel having a plurality of openings therein, a control unit having portions adapted to project through said openings for assembly and support, a frame carried by the unit and held in juxtaposition to the panel, insulating means between the frame and panel, a sound propagating device carried by the frame to project sound through the panel and baffle means surrounding the rear face of the sound propagating device.

6. In a device of the class described, an instrument panel having a plurality of openings therein, a control unit having portions adapted to project through said openings for assembly and support, a frame carried by the unit and held in juxtaposition to the panel, insulating means between the frame and panel, a sound propagating device carried by the frame to project sound through the panel and baffle means surrounding the rear face of the sound propagating device, said baffle means comprising an elongated parabolic nonresonant member secured to the frame having an opening in its remote end.

BERTRAM A. SCHWARZ.
WILLIAM C. DE ROO.