Dec. 27, 1938. R. E. TOLERTON 2,141,423

LOUDSPEAKER MOUNTING

Filed March 28, 1936

Fig. 1.

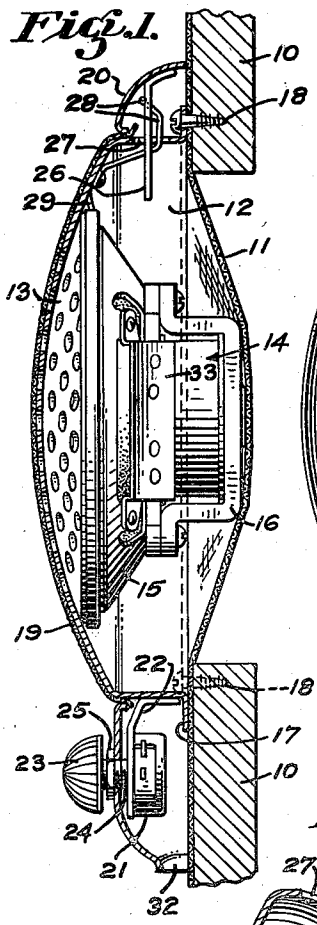


Fig. 2.

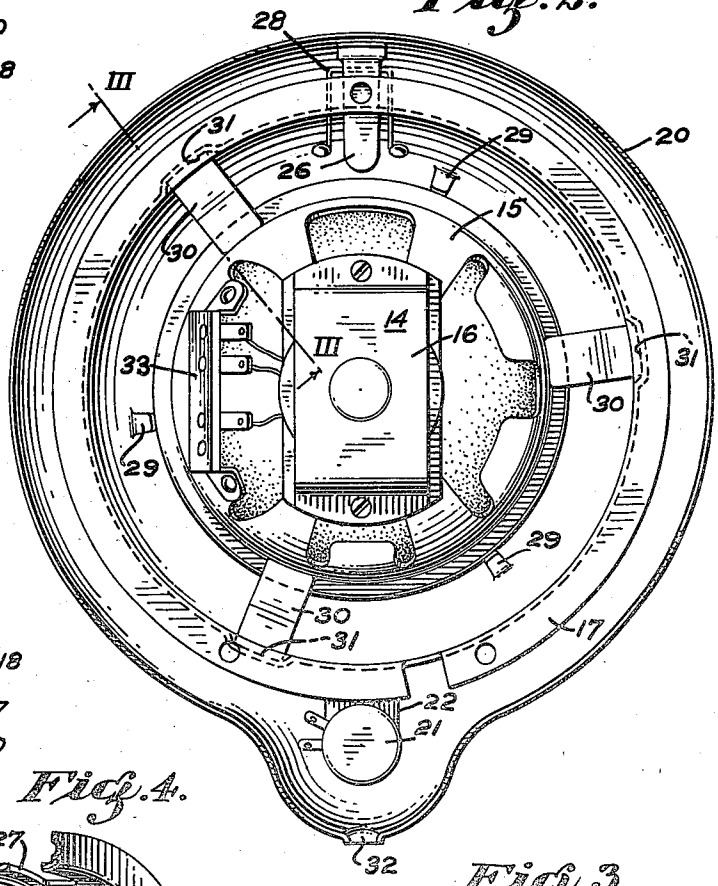


Fig. 4.

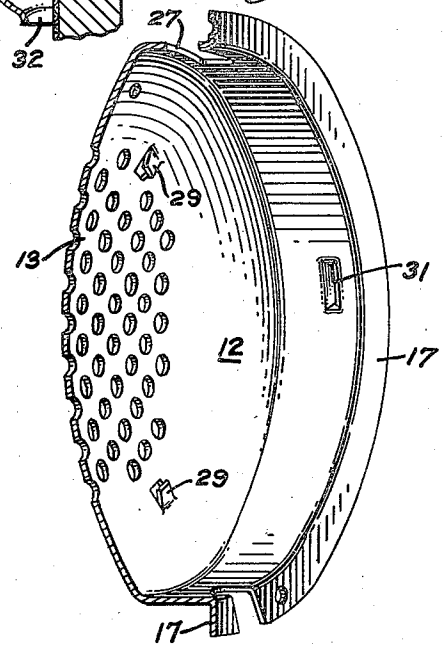
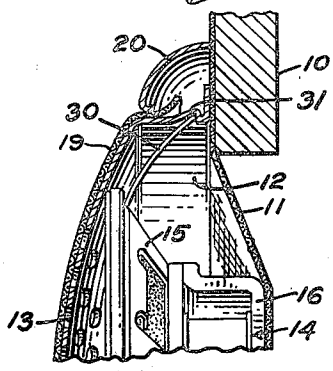


Fig. 3.



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2,141,423

LOUDSPEAKER MOUNTING

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Application March 28, 1936, Serial No. 71,517

3 Claims. (Cl. 179—146)

The present invention relates to a mounting for sound reproducing apparatus, and more particularly to an ornamental and concealing support for mounting a radio loudspeaker in an ornamental manner upon the ceiling, wall or header of an automobile body.

An object of the invention is to provide a simple, new and improved mounting means for securing a sound reproducing device upon a wall or other baffle forming surface.

Another object of the invention is to provide a means for securing a loudspeaker of the electrodynamic type in a concealed manner upon the wall or ceiling of an automobile body.

In the construction of radio apparatus for automobiles, it has been the practice in the past to mount the loudspeaker in a metal case with the radio set. Therefore, because of the shape and dimensions of the radio set, this has necessitated a location of the loudspeaker in the forward part of the automobile body and behind the instrument board. While such a location of the loudspeaker may be sufficiently satisfactory for the occupants of the front seat, it has been found that this location does not permit of a proper propagation of the reproduced program to the occupants of the rear seat, such as is provided in an automobile of the sedan type. To overcome this objection, it is now proposed to mount the loudspeaker upon the ceiling, wall or header of the automobile body independently of the radio set. To do this, it is a requirement that the loudspeaker be constructed so that its axial dimensions are reduced to a minimum, and even where this condition is fully met, it is found that the loudspeaker will extend outwardly from the surface upon which it is mounted.

It is, therefore, a further object of the present invention to provide a mounting means which will support the loudspeaker upon the inner surface of an automobile body by a simple and convenient means of attachment which will not detract from the interior appearance of the automobile.

Other objects and advantages of the invention will be in part evident to those skilled in the art, and in part pointed out as the description thereof proceeds.

For a better understanding of the invention reference should be had to the accompanying drawing wherein there is shown by way of illustration and not of limitation, a preferred embodiment thereof.

In the drawing;

Figure 1 is a vertical sectional view showing details of a preferred type of mounting means having a tone control device provided therewith,

Figure 2 is a view looking at the back of the arrangement illustrated in Figure 1 of the drawing,

Figure 3 is a fragmentary sectional view taken along line III—III of Figure 2, looking in direction of arrows, and

Figure 4 is a fragmentary perspective view showing a preferred form of construction for the support forming member.

The construction of automobile bodies at the present time is more or less standardized, in that they have an outside metal covering which is disposed and secured upon a suitable supporting frame. Most of these frames embody rib portions, in the form of bows and struts, to which an interior finishing fabric is attached. In addition to offering a means for securing the fabric lining in the body, these rib portions also provide a support to which other accessories may be attached.

In Figure 1 of the drawing, the improved loudspeaker mounting contemplated by this invention is shown as secured upon spaced frame members 10 having a lining fabric 11 disposed thereover. The form of mounting here shown is particularly adapted to the mounting of a loudspeaker upon the roof of an automobile of recent design, wherein the roof is curved downwardly and forms a header which meets the top of an inclined front wind shield frame. In this position the loudspeaker will be mounted against the top of the automobile body and slightly forward of the front seat. The mounting means, in its preferred form, comprises a dished or outwardly extending member 12 of sheet metal, having a perforated central portion 13 behind which a loudspeaker, designated by the numeral 14, may be disposed. The loudspeaker 14, which is of the electrodynamic type, has a conical diaphragm supporting frame 15 that is secured upon an electromagnetic field frame 16. The outwardly extending member 12 preferably has a convexo-concaved end, and at its rim there is a flange 17, through which suitable screws 18 may pass to secure the member 12 upon the frame members 10. In order to provide a neat and ornamental appearance, the outwardly extending supporting member 12 is provided with an overlying sound pervious fabric 19 of decorative design, which completely covers the convexed end thereof. Disposed over the edge of this fabric 19 there is a finishing ring or bezel 20, which is disposed around the supporting member 12. This ring 20, in addition to engaging the edge

of the sound pervious fabric 19, also provides what might be termed an ornamental frame for the assembly which will conceal the securing screws 18, and at the same time provide a smooth meeting line between the ring 20 and the interior finishing fabric 11 of the automobile body. As shown in this figure of the drawing, the lining fabric 11 will yield slightly between the frame members 10, and thus permit the mounting of a loudspeaker with a rearwardly projecting portion without requiring any cutting of the lining fabric. The finishing ring 20 may be of a continuous symmetrical character or it may, as illustrated in this figure of the drawing, be provided with an extension at one side, upon which a tone controlling unit 21 can be mounted. When the tone controlling unit 21 is provided with the loudspeaker 14, it will be secured upon a bracket 22 carried by the supporting member 12, so that its operating knob 23 will be disposed over the extension formed upon the ring 20. The tone controlling device 21 is here shown as having a threaded collar 24, upon which a nut 25 is threaded. With this arrangement, the nut 25 when threaded upon the collar 24 will serve as a means to hold the finishing ring 20 upon the supporting member 12 at this point. At an oppositely disposed point, the finishing ring 20 has an inwardly projecting tongue 26 that extends through a slot 27 in the supporting member 12, and adjacent this slot 27 the supporting member 12 carries a suitably formed spring 28, which is adapted to engage the tongue 26 and yieldingly hold the finishing ring 20 upon the supporting member 12 and in uniform contact with the fabric 11 disposed over the surface upon which the loudspeaker is mounted.

In assembling the ring 20 upon the supporting member 12, the tongue 26 thereupon is first placed under the projecting end of the spring 28 while the ring 20 is in a canted position. Then as the ring is brought down into its final position over the extending portion of the supporting member 12, the spring 28 will direct the tongue 26 through the slot 27 and hold the ring at this point firmly upon the extending portion of the member 12 and against the surface of the lining fabric 11. To permit this operation, the spring 28 is formed with an outwardly extending loop having an upwardly disposed saddle portion which passes over the tongue 26. This permits the saddle portion of the spring 28 to be flexed upwardly from the surface of the lining fabric 11 sufficiently far to permit an engagement of the tongue 26 therewith, when the ring 20 is being applied.

It will be understood that the loudspeaker 14 may be secured by screws, or in any other suitable manner, upon the inside of the supporting member 12. In accordance with a further feature of this invention, however, the loudspeaker 14 is secured upon the supporting member 12 without the use of screws or like securing means. This is accomplished, as is shown in Figure 2 of the drawing, by forming a plurality of spaced bosses 29 upon the concaved side of the supporting member 12, which will serve to center the diaphragm supporting frame 15 of the loudspeaker 14 over the central perforated portion 13 thereof, and providing a plurality of spaced diagonally disposed pressure exerting struts 30 between the rim of the diaphragm supporting frame 15 and the side wall of the dome-like member 12. In order to secure the outer end of the pressure exerting struts 30 in cooperating relation with the side wall of the dome-like member 12, there is provided a suitable recess or seat 31 into which the end of each strut 30 may be disposed. These pressure exerting struts 30 are preferably formed of a piece of flat spring steel which is slightly greater in length than the distance between the engaged surface upon the diaphragm supporting frame 15 and the bottom of its cooperating recess or seat 31.

As shown in Figure 3 of the drawing, the spring steel struts 30 will, because of this greater length, assume a bowed pressure exerting condition when they are pressed into their final loudspeaker securing positions, and as a result the diaphragm supporting frame 15 and the loudspeaker will be securely held in firm contact against the back or concaved surface of the outwardly extending supporting member 12.

Upon referring to Figure 4 of the drawing, it will be seen that the supporting member 12 may be formed as a stamping from sheet metal. As here shown, the loudspeaker centering bosses 29 are formed upon the supporting member 12 by striking out small inwardly projecting tabs on its surface during the stamping operation. At the same time, or by a subsequent operation, the side wall of the member 12 is stamped to provide the recesses or strut seats 31.

Since the present mounting contemplates a location of the loudspeaker at a point remote from the radio receiving set, it will be apparent that provision must be made for the electrical connections from the radio set to the loudspeaker 14. In the present embodiment of the invention, these connections are provided for by forming a notch or opening 32 in the finishing ring or bezel 20 adjacent the tone controlling device 21. In practice, the mounting chosen for illustration will be located, as previously stated, upon the heading of the automobile top immediately above the wind shield, and when so located, the connections from the radio receiving set will extend along a suitable moulding at the top of the wind shield, and from this moulding through the opening 32 to the loudspeaker terminal board, designated by the numeral 33, in Figures 1 and 2 of the drawing.

With the above arrangement, it will be seen that after the loudspeaker 14 has been secured upon the supporting member 12 in the manner above described, the securing of the loudspeaker upon the wall or the ceiling of the automobile body can be accomplished by removing the ornamental ring or bezel 20, and then by means of the screws 18 the supporting member 12 can be fastened upon the surface to which the loudspeaker 14 is to be attached. At this point it might be stated that the decorative fabric 19, which is disposed over the convexed end of the member 12, may be free or it may be attached thereto by means of a suitable adhesive. In any event, after the dome-shaped supporting member 12 has been thus secured upon the interior surface of the automobile body, the ring or bezel 20 will be placed thereover so as to engage the edges of the fabric 19 by first passing the tongue 26 upon the ring 20 under the spring 28 and then forcing the ring down over the edges of the fabric 19 and about the extending portion of the member 12 until the collar 24 of the volume control 21 extends a sufficient distance through the ring to permit an application of the nut 25. After the nut 25 has been tightened it will, in conjunction with the spring 28, serve to yieldingly hold the ring or bezel 20 upon the supporting member 12 and against the fabric 11. Then as a final opera-

tion, the knob 23 may be applied to the operating shaft of the tone controlling device 21.

While the present invention has been illustrated and described as having three pressure exerting struts 30 for securing the loudspeaker 14 upon the dome-like member 12, it is to be understood that a greater or lesser number of these struts may be used. As an example of the latter arrangement, it is conceivable that the inner surface of the supporting member 12 may be provided with two radially disposed centering bosses 29 of a character which will overhang the rim of the diaphragm supporting frame 15. Then a single pressure exerting strut 30, located at an oppositely disposed point in cooperating relation with said two centering bosses 29, will be sufficient to firmly hold the rim of the loudspeaker supporting frame 15 thereunder and against the inner surface of the supporting member 12.

While I have, for the sake of clearness and in order to disclose the invention so that the same can be readily understood, described and illustrated a specific arrangement, I desire to have it understood that this invention is not limited to the specific form disclosed, but may be embodied in other ways that will suggest themselves to persons skilled in the art. It is believed that this invention is new and it is desired to claim it so that all such changes as come within the scope of the appended claims are to be considered as part of this invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In an ornamental mounting for sound reproducing apparatus, the combination of a sheet metal member having means by which it may be secured upon a surface, and an outwardly disposed perforated central portion behind which a sound reproducing device may be mounted, a fabric disposed over the outwardly disposed perforated portion of said member, an ornamenting ring disposed over the edge of said fabric and extending over the means for securing said member upon said surface, a tongue upon said ring projecting inwardly through a slot in said member, means opposite said slot for securing one side of said ring upon said sheet metal member, and spring means carried by said member engaging said tongue and cooperating with said means for yieldingly securing said ring over the edge of said fabric and against said surface.

2. In an ornamental mounting for sound reproducing apparatus, the combination of a dished sheet metal member having a perforated central area behind which a sound reproducing device may be disposed and a flange at its rim by means of which it may be secured upon a surface, a fabric disposed externally over the perforated area of said member and extending down over the side thereof, an ornamenting bezel disposed over the edge of said fabric and extending over the flange at the rim of said member, an inwardly projecting tongue upon said bezel, means opposite said tongue for securing one side of said bezel upon the supporting member, and spring means carried by said supporting member engaging said tongue and cooperating with said means for yieldingly securing said bezel over the edge of said fabric and against the surface upon which said sheet metal member is secured.

3. In a mounting for sound reproducing apparatus, the combination of a supporting member which may be secured upon a baffle forming surface, said supporting member having a central perforated and outwardly disposed portion behind which a sound reproducing device may be mounted, a sound pervious fabric disposed over the perforated end portion of said supporting member, a finishing ring disposed over said fabric about the perforated central portion of said support and engaging said baffle forming surface, and spring means carried by said supporting member for securing said finishing ring in yielding engagement with said baffle forming surface.

RAY E. TOLERTON.