Nov. 10, 1936. W. A. ELLMORE 2,060,666

LOUDSPEAKER MOUNTING

Filed April 4, 1935

Fig. 1.

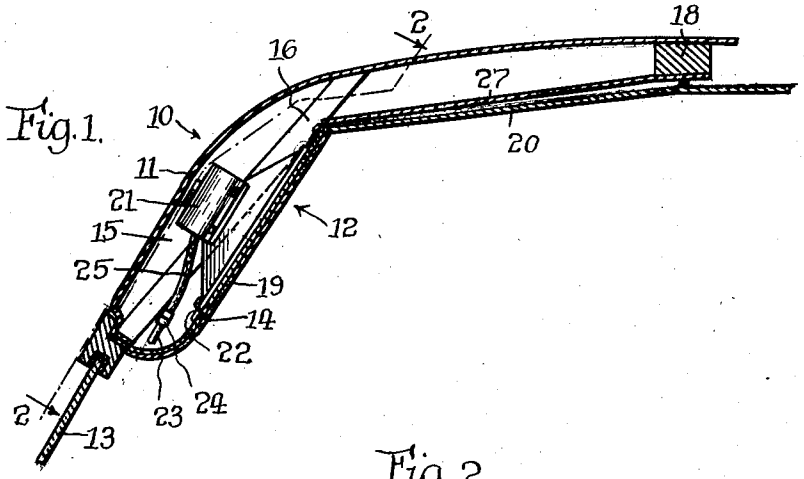


Fig. 2.

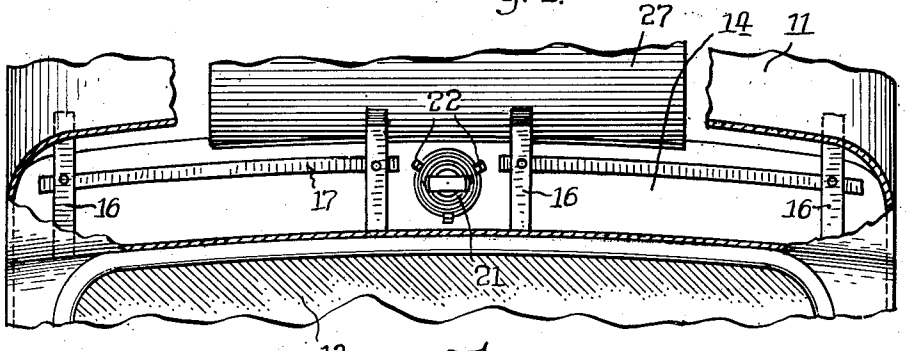
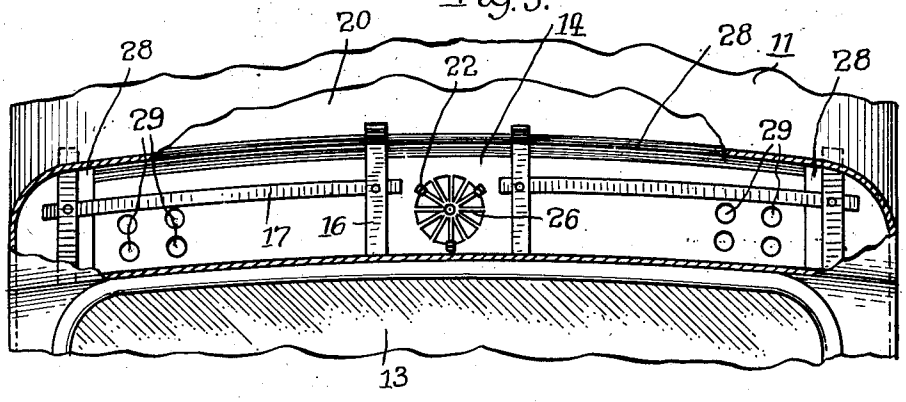


Fig. 3.



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LOUDSPEAKER MOUNTING

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3 Claims. (Cl. 296—1)

The invention relates generally to loud speaker mountings and more particularly to the mounting of such devices in motor vehicles.

A general object of the invention is to provide a new and improved mounting for loud speakers whereby the device is located for most efficient audibility as far as every passenger of the vehicle is concerned, is entirely concealed from view, and in which the structure of the associated vehicle part may be utilized in a novel manner to enhance the performance of the device.

Another object is to provide a speaker mounting which utilizes a part of a concealed space provided by the vehicle construction as a receiving chamber, and by a predetermined arrangement of means concealed within said space materially enhances speaker performance.

A further object is to provide a mounting for a loud speaker on the header of a motor vehicle and within the space partially defined thereby.

Still another object resides in the provision of a speaker mounted in the space between the outer wall of the vehicle top and the inner wall or header and having associated means in said space for utilizing it as an air column to increase the effectiveness of speaker performance in certain desired respects.

Other objects and advantages will become apparent in the following description and from the accompanying drawing, in which:

Figure 1 is a fragmentary longitudinal sectional view through the front portion of a representative vehicle top construction embodying the features of the invention.

Fig. 2 is a transverse section on a reduced scale taken along the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2 without the loud speaker and illustrates a modified form of structure.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawing and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

The objects of the invention are preferably attained by locating the loud speaker of a radio receiving apparatus of the type especially adapted for motor vehicle installation in the space formed between the outer and inner walls of the top construction and particularly in the space at the front end of the vehicle top at which point the inner wall comprises a plate member, known as the header or header bar, which is firmly secured in place and has an angular position facing generally rearwardly and downwardly of the vehicle body. This header serves admirably as a support for the speaker, may be apertured to permit the sound vibrations to pass freely from the speaker, and is usually covered with fabric or other suitable body lining material so that the speaker is entirely concealed. The angular position of the header, and consequently of the speaker, directs the sound vibrations in the proper manner to be most effectively received by every occupant of the vehicle. The space in which the speaker is mounted is much larger than the speaker itself and baffle or partition means may be provided for closing off a part of the space in such manner as to desirably enhance the performance of the speaker.

Referring more particularly to the drawing, the numeral 10 designates a section of the top of a motor vehicle of present day construction which embodies, in general, an outer top wall 11 and an inner top wall 12. For convenience in illustrating the invention, the top structure herein shown is substantially that of a Ford automobile but it is to be understood that the invention is not limited to this make of vehicle. The outer top wall, as shown in Fig. 1, slopes downwardly at the front and thence is turned rearwardly to meet the upper edge of the windshield assembly 13. The front of the inner top wall is defined by a plate or header 14 which is fashioned to join the rearward turn of the outer top wall, and is suitably secured in an angular plane which faces generally rearwardly and downwardly. Thus, a space 15 is provided between the two walls which extends across the top of the body. The header is normally detachably secured in place by screws or the like (not shown). Spaced braces 16 extend in a front to rear direction within the space 15, two such braces being located near the longitudinal center line of the body, and an elongated tacking strip 17 (Fig. 2) extends across and is secured to said braces. Normally this strip is continuous but in this instance it is cut away between the center braces to provide clearance for the speaker. Traversing the top structure rearwardly of the upper edge of the header is a top bow 18 (Fig. 1). The top interior is usually finished with a lining fabric or the like, a piece of which 19 is suitably secured as by adhesive to the exposed face of the header. Another strip 20

of the lining is secured to the tacking strip and rearwardly thereof to the top bow 18 and others (not shown but located toward the rear of the body). This strip rearwardly of the header is a continuation of the inner wall of the vehicle in the illustrated construction.

A loud speaker 21 of a construction having dimensions which will permit of its insertion between the outer wall 11 and the header 14 is suitably secured in place preferably between the center braces. It is also preferred that the speaker be secured to the header so that the sound vibrations produced by the speaker are directed downwardly and rearwardly within the body resulting in substantially perfect audibility to every occupant of the vehicle. For securing the speaker to the header, such holding means as a plurality of detachable clamps 22 on the inner side of the header for engaging the rim of the cone support are most suitable. If such clamps are supplied on the header a speaker may be quickly installed by merely removing the header holding screws, lowering the upper edge of the header, clamping the speaker in place, and restoring the parts to their original position. The wiring connections 23 to the set may be built in the body and terminate in one section of a detachable connector 24, the other section of which is attached to the leads 25 from the speaker. In fashioning the header, suitable apertures, formed on the order of grille work 26 (Fig. 3), are provided opposite the predetermined location of the speaker cone to provide for substantially unimpaired transmission of sound vibrations. The lining material 19 on the header covers these apertures and completely conceals them as well as the speaker when it is installed.

The speaker occupies only a relatively small portion of the substantially closed space defined by the outer wall, header, lining material, top bow and sides of the top, and it has been found advantageous to provide means for utilizing a portion of this space and the parts defining it materially to improve speaker performance. This means generally comprises partitions or the like for blocking off the space in a predetermined manner to effect the desired result.

As shown in Figs. 1 and 2, a panel 27 which may be formed, among other things, of wood, cardboard, fibre or similar composition material, is mounted in the space to extend rearwardly and upwardly from the upper edge of the header to the top bow 18. The panel extends only through the central portion of the space so stops short of either side of the top and may be conveniently secured in place to bear firmly against the header by tacking or otherwise fastening it to the top bow 18 at the rear edge and by extending at least parts of the front edge across the upper edge of the header into engagement with the center braces 16. The panel thus mounted serves as a baffle and enhances speaker performance in that it prevents sound vibrations produced by the rear side of the cone from cancelling those created by the front side.

Referring to the structure shown in Fig. 3, the space is suitably partitioned off along the upper edge of the header and at each end thereof by such means as strips of sponge rubber 28 whereby to provide a closed air column extending transversely of the top from opposite sides of the speaker. Near one or both ends of the closed column, apertures 29 of predetermined dimensions, number and location may be provided in the header to form partially open air columns. These columns will have double frequency characteristics, selected to bring out or increase the intensity of desired audio frequencies, particularly those of the low notes, which might otherwise be lost due to the failure of a speaker with a normal baffle to reproduce them or not produce them with suitable intensity.

From the foregoing, it will be evident that a novel arrangement has been provided wherein a space provided as a part of a vehicle construction is combined with a loud speaker to enhance the reproduction thereof. Moreover, the present invention provides a speaker mounting in which the device may be quickly and easily installed, and is entirely concealed from view. As a further feature, the position of the speaker near the top and front avoids to a considerable extent interference with reproduction by the audio vibrations incident to vehicle operation and its generally downward and rearward direction results in most efficient transmission of the sound vibrations to each occupant of the vehicle.

I claim as my invention:

1. A loud speaker mounting comprising the combination with the outer wall of the top of a vehicle and a spaced inner wall including a header, a loud speaker mounted behind said header in the space between said header and said outer wall, and a baffle extending rearwardly of the vehicle from the header and laterally beyond opposite sides of the speaker and effective to close off a portion of the space between the walls.

2. A loud speaker mounting in a motor vehicle comprising the combination with the outer top vehicle wall, the header spaced therefrom and a fixed part of the top construction positioned rearwardly from the header, of a speaker mounted in the space between said wall and header, and baffle means extending beyond opposite sides of the speaker and from the rearward edge of the header to said fixed part.

3. A loud speaker mounting in a motor vehicle comprising the combination with the outer top vehicle wall and the header spaced therefrom, of a speaker mounted in the space between said wall and header, and baffle means secured to extend beyond opposite sides of the speaker and rearwardly from the rearward edge of the header to close off a part of the air space affected by operation of the speaker.

WILLIAM A. ELLMORE.