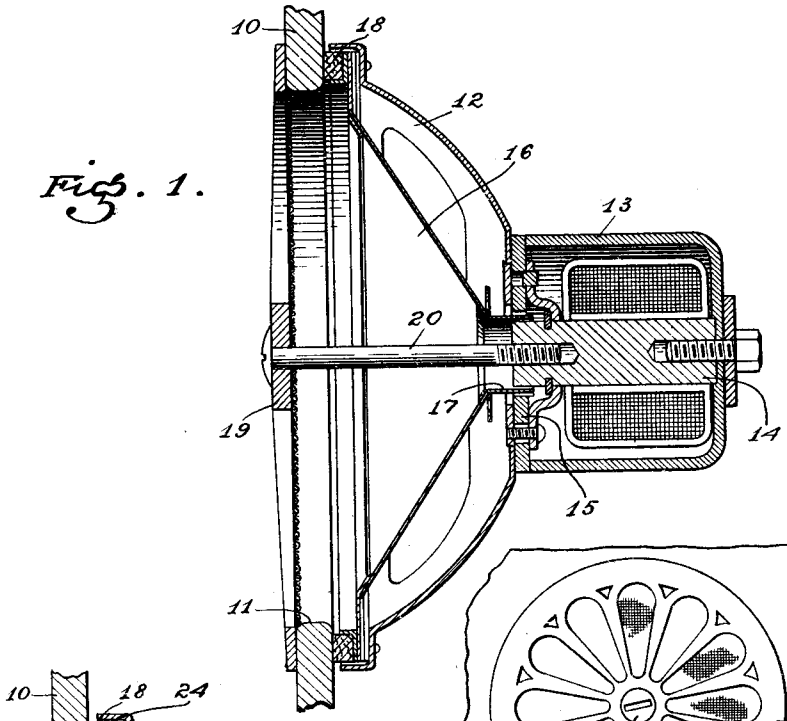
Sept. 13, 1932. L. D. TREFRY 1,877,085

LOUD SPEAKER

Filed July 15, 1931 2 Sheets-Sheet 1

Fig. 1.



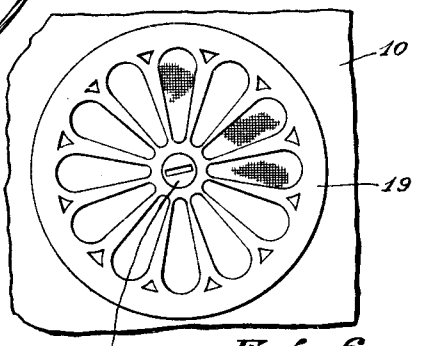


Fig. 6.

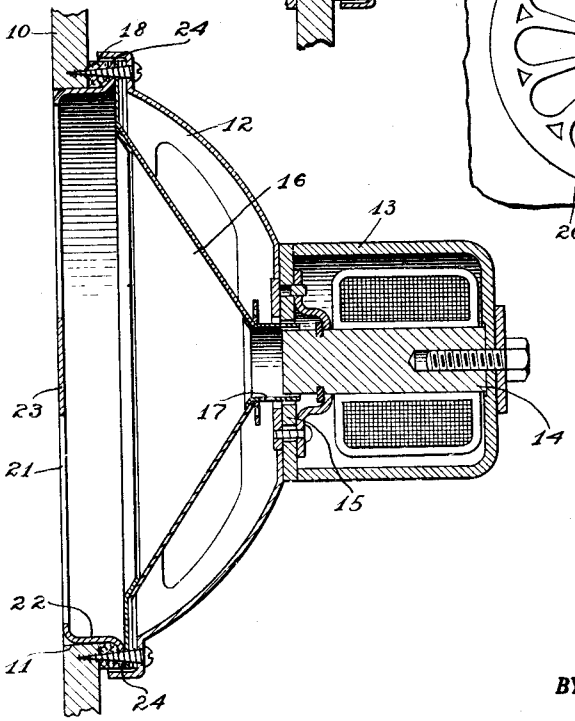


Fig. 2.

INVENTOR.
LAURENCE O. TREFRY.
BY Wm. H. Atkinson
ATTORNEYS.

Sept. 13, 1932. L. D. TREFRY 1,877,085

LOUD SPEAKER

Filed July 15, 1931 2 Sheets-Sheet 2

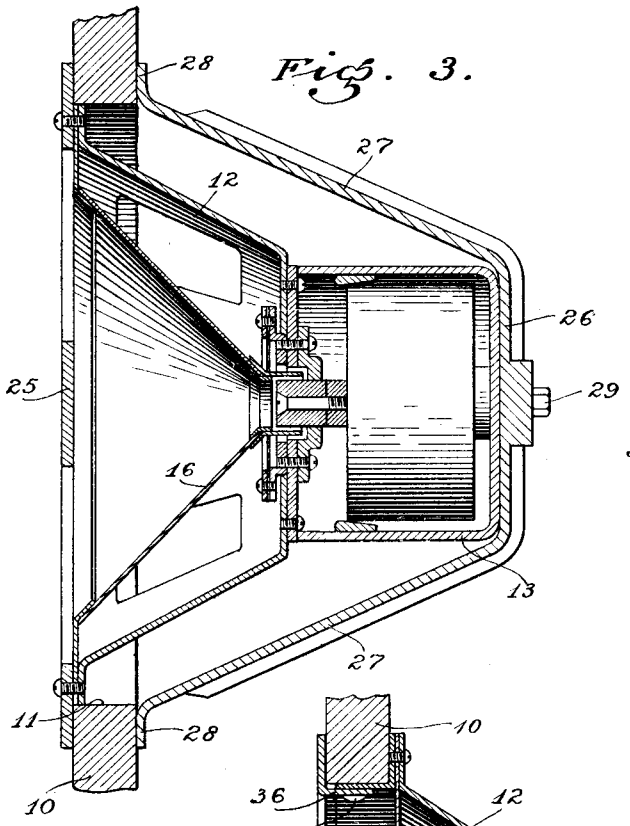


Fig. 3.

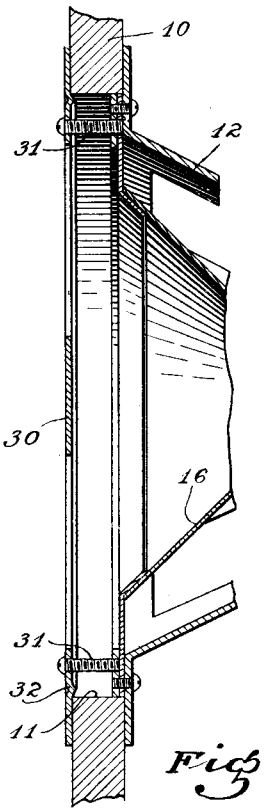


Fig. 4.

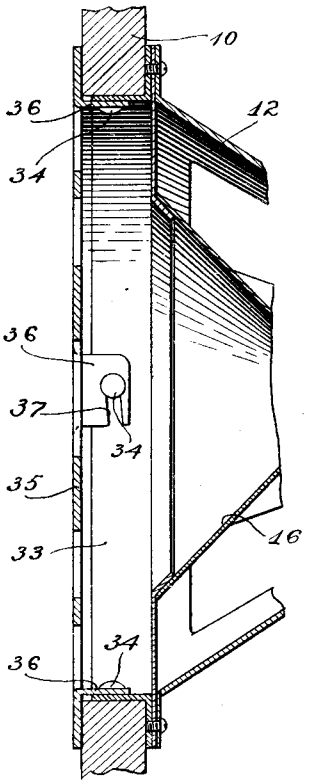


Fig. 5.

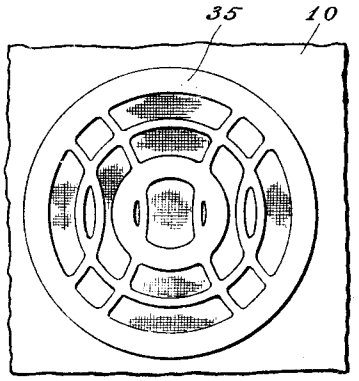


Fig. 7.

INVENTOR.
LAURENCE D. TREFRY.
BY Wm. H. Atkinson
ATTORNEYS.

Patented Sept. 13, 1932 1,877,085

UNITED STATES PATENT OFFICE

LAURENCE D. TREFRY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MAGNAVOX COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ARIZONA

LOUD SPEAKER

Application filed July 15, 1931. Serial No. 550,869.

My present invention relates to loud speakers and more particularly to a new and improved speaker structure which can be rigidly mounted upon a suitable sound deflecting baffle in a simple, practical and convenient manner.

An object of my invention is to provide a new and improved loud speaker for use with sound deflecting baffles of the type having an opening therethrough for the passage of sound waves.

Another object of my invention is to provide an improved mounting for loud speakers which in combination with a loud speaker and baffle will serve to protect the loud speaker diaphragm, ornament the baffle opening and also serve as a securing means for retaining the loud speaker upon the baffle.

A further object of my invention is to provide upon a loud speaker a novel type of diaphragm protecting grille which will readily cooperate with a suitable baffle to support the speaker and also eliminate the need for the expensive fret saw or grille work provided upon baffles such as are now used with radio cabinets and like apparatus.

In the art to which my invention pertains it is customary where a loud speaker having a relatively large diaphragm is used to mount the loud speaker upon a sound deflecting baffle. Such a baffle as is well known serves to prevent an intermingling of the sound waves produced at opposite sides of the diaphragm by virtue of its movements and thus prevents any distortion of the sound being reproduced. At the present time these baffles are provided with a suitable opening through which the sound waves from the speaker pass. In order to protect the diaphragm of the speaker against damage and to also ornament the opening it is customary to provide a suitable ornamental and perforated grille work across the baffle opening. This grille work is usually provided by cutting out a suitable scroll or design from wood of a type corresponding to the cabinet structure, the scroll or grille work being cut out with a fret saw. The making of these grilles is an expensive operation and it is therefore a further object of my invention to provide, as a substitute for these wooden grilles, a metallic grille which can be manufactured and sold by the loud speaker manufacturer as a part of the speaker equipment.

In order to provide a baffle which will be free from warping due to changes in humidity it is customary to make the baffle of laminated wood of the proper thickness. Where the loud speakers are mounted upon such a baffle by wood screws passing into the laminated baffle, it has been found that the baffle very often splits and does not securely hold the speaker in place. It is therefore, another object of my invention to provide a novel type of securing means for mounting a loud speaker upon a baffle which will firmly clamp the speaker upon the baffle at the perimeter of its opening and thus secure the loud speaker in place without the use of other securing means or supports.

For a better understanding of my invention reference should be had to the accompanying drawings wherein I have shown by way of illustration and not of limitation preferred embodiments of my invention.

In these drawings wherein like numerals refer to like parts throughout the several views—

Figure 1 is a vertical sectional view showing a loud speaker mounted upon a baffle in accordance with one aspect of my invention,

Figures 2 and 3 are similar views showing modified forms of my invention wherein the ornamental grille is permanently secured upon the loud speaker structure,

Figures 4 and 5 are fragmentary vertical sectional views showing other forms which my invention may take, and

Figures 6 and 7 are front views in elevation showing the front of a baffle provided with my improved speaker and mounting.

In Figure 1 of the drawings the numeral 10 designates a baffle having a circular opening 11 cut there through. Disposed at the rear of the baffle 10 and carried by a suitable diaphragm housing 12, I show a magnetic field producing structure 13. This magnetic field structure 13, as is well known, comprises an outer casing having an inner pole 14 and an outer annular pole 15 between which there

is formed a magnetic air-gap. Mounted upon the diaphragm housing 12, I show a suitable conical diaphragm 16 that is provided with an actuating coil 17. The coil 17 is disposed in the magnetic air-gap between the poles 14 and 15 and is adapted to actuate the diaphragm 16 when a modulated current is passed there through. The outer rim of the diaphragm 16 is suitably secured to the diaphragm housing 12 so that it can move freely in an axial direction. At this point the housing 12 is provided with a yielding packing 18 which is adapted to engage the rear surface of the baffle 10. Disposed in front of the baffle 10, I show a rigid perforated grille member 19 having a rim which is adapted to engage the baffle 10 opposite the packing 18. Passing through the center of the grille 19, I provide a suitable bolt or screw 20 that is threaded into the magnetic frame structure 13. In the present instance this screw 20 is shown as threaded into the central pole or core 14.

In mounting a loud speaker of the type here illustrated upon a baffle it is only necessary to properly locate the speaker and the grille 19 with respect to the opening 11 and then by turning the screw 20 the parts can be drawn into clamping engagement with the baffle adjacent the sound passageway in a simple and convenient manner.

In the embodiment of my invention illustrated in Figure 2, instead of providing a removable grille member 19 as previously described, I may form the grille member so that it can be permanently secured upon the diaphragm housing 12 at the time the diaphragm 16 is assembled thereupon. In this figure of the drawings I have shown the grille designated by the numeral 21 as secured upon the diaphragm housing 12 and as having a cylindrical portion 22 which is adapted to project outwardly into the opening 11 in the baffle 10 so that its front surface 23 will be flush with the front surface of the baffle. A flange 24 as shown upon the grille 21 will serve as a clamping ring for the diaphragm. With this type of grille it will be possible to provide practically any design of scroll work as there is no necessity that it be rigid or provide a bearing at its center, such as is required for the screw 20 of the previously described arrangement.

In Figure 3 of the drawings I have illustrated another form of my invention wherein the grille work may be permanently secured to the loud speaker structure at the factory. In this embodiment of my invention I provide a substantially flat grille member 25 which can be secured directly to the diaphragm supporting flange of the housing 12. The grille 25 is adapted to be disposed against the front surface of the baffle 10 and cooperate with a suitable clamping bracket 26 when the speaker is in its operating position. The bracket 26 is adapted to be secured upon the magnetic frame portion 13 of the loud speaker and exert a pressure against the back of the baffle so as to hold the loud speaker rigidly thereupon. As illustrated, the clamping bracket 26 has two oppositely disposed legs 27 which extend along the top and bottom of the speaker and terminate with a turned-out foot or pad 28. The bracket 26 is provided at its center point with an enlarged reenforced portion through which a suitable securing screw 29 may pass. This screw 29 may, as illustrated, be the screw which is customarily used for securing the inner pole 14 in place upon the magnetic field structure 13.

As illustrated in Figure 4 of the drawings, I provide a protecting grille which can be removed from the speaker when mounting the latter upon the baffle 10. This grille designated by the numeral 30 is provided with a suitable ornamental scroll work or other form of perforation. Suitable screws 31 are shown for securing it to the diaphragm housing 12 when the speaker is mounted upon the baffle. In order to properly locate the grille 30 and the loud speaker within the opening 11 of the baffle I may provide upon the grille a depressed beading or other means 32 which will engage with the edge of the opening 11. As here illustrated, the diaphragm housing 12 and its diaphragm securing means may also be arranged to properly center the loud speaker structure with respect to the baffle opening 11.

In Figure 5 of the drawings wherein I have shown a still further modified form of my invention, I contemplate providing the diaphragm housing 12 with an outwardly projecting annular flange 33 that will project into the baffle opening 11 when the loud speaker is in place. This outwardly projecting flange 33 carries suitably spaced studs or other projections 34. The grille in this instance designated by the numeral 35 is so ornamented that ears 36 may be turned outwardly therefrom at the points where the studs or projections 34 are located upon the flange 33. These ears 36 are so disposed that they will fit snugly within the annular flange 33 and are provided with angularly disposed slots 37 in which the studs 34 may repose when the loud speaker is mounted upon the baffle. By varying the angle of disposition and length of the slots 37 it will be seen that with this construction a firm clamping engagement can be obtained upon baffles of different thicknesses.

In order to simplify the drawings I have omitted from Figures 2, 3, 4 and 5 a showing of any silk or other dust obstructing or concealing means, such as is now commonly used upon the grilles of radio sets. It is to be understood, however, that I contemplate using such a material upon the back of any

one or all of my improved grilles where it is desired. This silk or other material can be glued or otherwise secured to the baffle structure at the factory.

In Figures 6 and 7 of the drawings I show two distinct forms of ornamentation for the grilles. In Figure 6 the grille is cut so as to provide for a central securing means and in Figure 7 the grille is shown of a design suitable for the arrangement illustrated in Figure 5.

In addition to providing a simple, efficient and practical construction for loud speakers my invention also provides a neat and novel form of mounting which is inexpensive and convenient to use. It also provides a reenforcing frame for the baffle opening and thus prevents any warping should a thin baffle be used.

While I have, for the sake of clearness and in order to disclose my invention so that the same can be readily understood, described and illustrated several specific devices and arrangements, I desire to have it understood that this invention is not limited to the specific means disclosed but may be embodied in other ways that will suggest themselves, in view of this broad disclosure, to persons skilled in the art. It is believed that this invention is broadly new and it is desired to claim it as such 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 sound reproducing apparatus and the like, the combination of an outwardly extending sound deflecting baffle having an opening therethrough for the passage of sound waves, a conical sound producing diaphragm disposed in the opening of said baffle, a support for the rim of said diaphragm adapted to engage the back of said baffle and also carry a diaphragm actuating means, and a grill like member adapted to engage the front of said baffle and cooperate with said diaphragm support to retain the diaphragm in operative relation with the opening through said baffle.

2. In sound reproducing apparatus and the like, the combination of an outwardly extending sound deflecting baffle having an opening therethrough for the passage of sound waves, a conical sound producing diaphragm disposed adjacent the opening in said baffle, a support for the rim of said diaphragm adapted to engage the back of said baffle and also carry a diaphragm actuating means, and an ornamental grill like member disposed over the front of the opening in said baffle and cooperating with said support to retain the diaphragm and actuating means upon said baffle and also protect the front of said diaphragm against damage.

3. In sound reproducing apparatus and the like, the combination of an outwardly extending sound deflecting baffle having an opening therethrough for the passage of sound waves, a conical sound producing diaphragm disposed upon one side of the opening in said baffle, a support for the rim of said diaphragm adapted to engage said baffle and also carry a diaphragm actuating means, and a grill like member adapted to engage the other side of said baffle and cooperate with said support to retain the diaphragm and its actuating means in operative relation with the opening in said baffle.

4. A mounting for loud speakers of the electromagnetic type such as are used with a baffle having an opening in which the loud speaker is mounted, comprising a loud speaker structure having a diaphragm disposed in a supporting frame which is adapted to engage the outline of the baffle opening, a grill like member adapted to cover the opening in the baffle without interfering with the passage of sound waves therethrough, and means carried by said diaphragm supporting frame adapted to cooperate with said grill to maintain the loud speaker upon said baffle without additional securing means.

5. A mounting for loud speakers of the electromagnetic type such as are used with an outwardly extending baffle having an opening in which the loud speaker is mounted, comprising a loud speaker structure having a diaphragm, a supporting frame for said diaphragm having a rim which is adapted to engage the outline of the baffle opening, a grill like member adapted to cover the opening in the baffle without interfering with the passage of sound waves, and means adapted to cooperate with said grill to maintain the loud speaker upon said baffle.

6. The combination of a sound deflecting baffle having an opening in which a loud speaker may be mounted, a loud speaker having a diaphragm for producing sound waves, a frame forming a part of said loud speaker adapted to engage one side of said baffle, a grill like member adapted to engage the other side of the baffle and be disposed across the opening therein, and means carried by the loud speaker adapted to cooperate with said grille like member and clamp the loud speaker upon said baffle.

7. The combination of a sound deflecting baffle having an opening in which a loud speaker may be mounted, a loud speaker having a diaphragm for producing sound waves, a loud speaker adapted to engage one side of said baffle, a grille like member adapted to engage the other side and be disposed over the opening in said baffle, and means carried by the loud speaker adapted to cooperate with said grille like member and clamp the loud speaker upon said baffle.

8. A securing means for loud speakers of

the type used with an outwardly extending sound deflecting baffle having an opening in which the loud speaker is mounted comprising, an outwardly extending diaphragm housing having a diaphragm and a diaphragm actuating means secured thereto, an ornamental grille adapted to cooperate with said diaphragm housing to protect said cone diaphragm and provide an ornamental finish at the front of the baffle, and means carried by said ornamental grille adapted to cooperate with said diaphragm housing to clamp the loud speaker upon the baffle.

9. A securing means for mounting loud speakers upon a sound deflecting baffle of the type having an opening for the speaker comprising, an outwardly extending diaphragm housing having a diaphragm and actuating means secured thereto, a detachable ornamental metallic grille adapted to cooperate with said diaphragm housing to protect said diaphragm and provide an ornamental finish at the front of the opening in the baffle, and means adapted to cooperate with said ornamental grille and the diaphragm actuating means to secure the diaphragm and actuating means upon the baffle.

10. A mounting for loud speakers of the type used with a sound deflecting baffle having an opening for the mounting of a loud speaker comprising, a rigid perforated grille member adapted to be disposed upon the front of a baffle and over the opening therethrough, a sound reproducing loud speaker having an annular portion adapted to engage with the rear side of the baffle and cover the opening therein, and means extending through said opening cooperating with said loud speaker structure and said perforated grille member to clamp the baffle there between.

11. A mounting for securing loud speakers upon a sound deflecting baffle of the type having an opening for the mounting of a loud speaker comprising, a rigid perforated metallic grille member adapted to be disposed upon the front of a baffle and over the opening therethrough, a sound reproducing loud speaker having an annular portion adapted to engage with the rear side of the baffle and be disposed over the opening therethrough, and means extending through said opening between said loud speaker structure and said perforated grille member adapted to hold the loud speaker and the grille in clamping engagement with the baffle.

12. In a loud speaker for sound deflecting baffles of the type having an opening for the mounting of a loud speaker, the combination of a diaphragm housing having an outwardly projecting flange adapted to conform to the outline of the opening through said baffle, and a grille like member secured upon said diaphragm housing and adapted to be disposed over the opening in the baffle to provide a protective and ornamental grille at the front of the loud speaker.

13. In a loud speaker for vertically extending sound deflecting baffles of the type having an opening in which the speaker is mounted, the combination of a diaphragm housing adapted to conform to the outline of the opening through said baffle, a perforated grille member secured upon said diaphragm housing and adapted to be disposed over the opening in the baffle to provide a protective and ornamental grille at the front of the diaphragm housing, and means cooperating with said grille member for securing the loud speaker upon the baffle.

14. The combination of a baffle having a round opening therethrough for the passage of sound, a loud speaker having a diaphragm corresponding in size substantially to the opening through said baffle, a supporting housing for said diaphragm having a diaphragm actuating means carried thereby, an annular flange upon said housing adapted to project into the opening through said baffle, an ornamental grille adapted to be disposed against the front of said baffle and over the opening therethrough, and means carried by said ornamental grille adapted to cooperate with said annular flange to retain the loud speaker upon said baffle.

15. The combination of an outwardly extending vertical baffle having an opening therethrough for the passage of sound, a loud speaker having a diaphragm corresponding in size substantially to the opening through said baffle, a supporting housing for said diaphragm adapted to be disposed against the back of the baffle, an ornamental grille adapted to be disposed against the front of said baffle and over the opening therethrough, and means cooperating with said grille for securing it and the loud speaker in clamping engagement upon the baffle.

LAURENCE D. TREFRY.