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CEILING MOUNTING FOR SPEAKER

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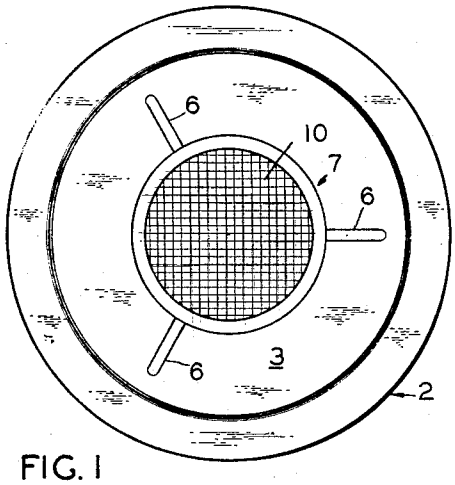


FIG. 1

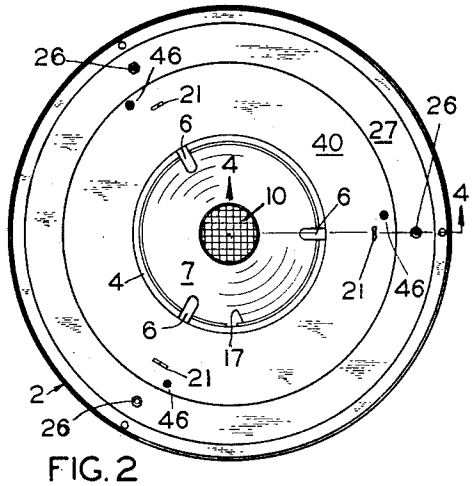


FIG. 2

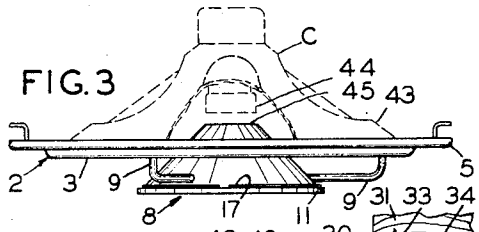


FIG. 3

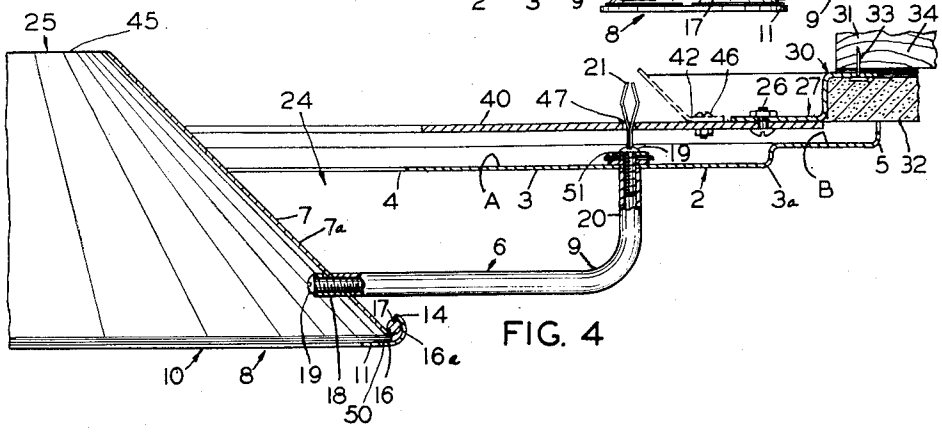


FIG. 4

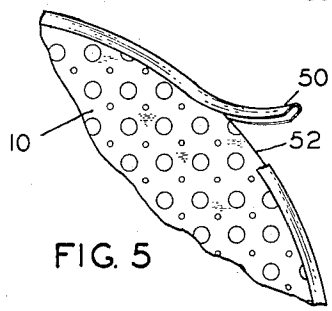


FIG. 5

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CEILING MOUNTING FOR SPEAKER

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4 Claims. (Cl. 181—31)

This invention pertains to audio reproducers and loud speaker grills.

More particularly the invention concerns a device which will fit into a circular opening in the ceiling of a room and will hold a combination high fidelity audio speaker which includes a large conical low tone reproducer and a small high tone reproducer in such a way that the sound will be evenly and properly distributed throughout the room.

A further object is to provide a holder for a reproducer, in the ceiling of a room, having low pitch sound reproduction and high pitch sound reproduction which is easily installed and serviced and will not interfere with the utilities contained in the room; such as electric wiring or gas fittings.

Still another object is to provide such a holding means in the form of a circular bracket which supports a centrally located sound directive device that is easily detachable from ceiling fixtures and which has means for removably attaching an ornamental fabric screen over a metal screen, or perforated plate to attain various ornamental effects.

Other objects will appear hereinafter.

I attain the foregoing objects by means of the construction, parts and combinations of parts shown in the accompanying drawing in which—

Figure 1 is a plan view of my audio speaker and reproducer holder and sound directive device as it would appear in position on a ceiling.

Figure 2 is a view of the holder as viewed from above.

Figure 3 is a side elevational view of the device as it would appear attached to a ceiling.

Figure 4 is a partial side sectional view of the device as taken on line 4—4 of Figure 2 and drawn on an enlarged scale; and

Figure 5 is a fragmentary portion of an ornamental grill together with an attaching part that closes the bottom of a frusto-conical sound directive device that is positioned in the center of the device.

Similar numerals refer to similar parts in the several views.

It is to be understood that the device here concerned which is a grill and ornamental ring for closing a circular aperture in the ceiling of a room so that audio reproduction apparatus and loud speakers above the device will operate efficiently, while at the same time, the device forms an ornamental cover for the circular aperture.

The annular speaker bracket 2 consists of a semi ornamental bracket ring 3 which has annular flat areas A and B connected by an annular double bend or drop 3*a*, which disposes the inner annular flat A below the level of the outer annular flat ring portion B.

Numeral 4 indicates a central circular hole in ring 3 and 5 is an upturned rim flange which extends around the periphery of ring 3.

A spider 6 includes three legs 9 which extend radially outward from the frustum of a centrally positioned

conic body 7 which is held in position in the center of hole 4 with its larger end 8 extending downwardly. The lower edge of the conic body is covered by a round perforated grill 10. A support ring 11 fits over the grill and holds it upward against the lower edge 16 of the conic body. This rim has an upturned annular flange 16*a* which is rolled inward slightly forming a retaining lip 14. This flange lip 14 extends a short distance above the lower edge 16 of the conic body 7 but not far enough to prevent its placement and removal. An inwardly compressed snap ring 17 engages between the lip 14 and the lower edge 16 of body 7 and holds the grill retaining ring 11 in place on the lower edge 16 of body 7.

A plastic annular folded cushion 50 may enclose the peripheral edge 52 of the grill 10 to prevent vibration between the body 7 and ring 11.

Legs 9 which compose spider 6 are attached to the sides 7*a* of conic body 7 by providing angularly cut inner ends which face angularly faced bushings 18. Screws 19 extend through these bushings and thread axially into the inner ends of legs 9 which are held so that they extend horizontally and radially, at a position intermediate the width of ring portion A of ring 3 the outer ends of legs 9 turn upward, as at 20, so that their ends bear on the horizontal under face of the flat A of ring 3.

Screws 19 extend downward through washers 51 and are threaded into the ends of upturned portions 20 of each leg 9. The slots of each screw 19 are fitted with a double expanding spring wire clip 21. As shown, there are three legs 9 which considered together, constitute the spider 6. The sides of clip wires 21 are retained on the edges of holes 47 of adapter ring 40.

A plaster ring 30 is attached to the wood or lath 31 of the ceiling 34 of a room in which this device is to be installed. Nails 33 are driven upward through holes in the rim of plaster ring 30 and into the lath or wood of the ceiling. These hold the plaster ring in place. Plaster 32 is then applied to the lath, or its equivalent, and this is troweled level with the bottom face of flange 27 of the plaster ring. This installation of metal plaster rings in circular openings in the ceiling of dwellings is common practice and is well known to the trade. The plaster ring forms a basis for holding and attaching the parts here concerned.

An adapter ring 40 is then applied to the inner flange 27 of the plaster ring. This adapter ring is perforated with holes near its outer edge which register with holes in flange 27. Bolts 26 hold the adapter ring in place. The flange 42 of the frame 43 of the loud speaker C rests on the outer portion of adapter ring 40. It is intended that the loud speaker or reproducer C shall be of the coaxial high fidelity type wherein the inner speaker 44, which is responsive to high frequency sound, is centrally positioned within the large conic speaker C and will occupy a space just above the top opening 45 of conic body 7. Thus, the speaker unit C, when mounted, is supported by its outer rim which rests on the adapter ring and is held by screws 46. At the same time the high frequency reproducer 44 is in coaxial position relative to the conic body 7. The clips at 21 on the ends of legs 9 extend upward through holes 47 in adapter ring 40. These holes 47 are positioned to register with the axes of leg portions 20 so that these clips will extend upward through the holes 47 and again support for the device here concerned including the ring 3 and the body 7.

When in position, as indicated in Figures 1 and 4, the ring 3 provides an ornamental edging for the device and spider 6 forms an ornamental means for holding the body 7. The lower opening of body 7 is closed by the ornamental grill 10 which is preferably formed

of perforated sheet aluminum. Where such material does not match the decor of the room wherein the device is installed this grill area may be covered by fabric of any desired color. A fabric disk can be placed over the grill **10** with its edges secured by the ring **11** and this ring secured, in turn, by the snap ring **17**.

From the foregoing it will be understood that the device forms an ornamental closure for the loud speaker C and at the same time provides an audio duct **24** for the propagation of sound from the speaker C, and a central passageway **25** for the propagation of high pitched sounds through the opening of body **7**. The conical shape of this body amplifies the sound somewhat and in this way balances the audio output of the loud speaker. The annular shape of audio duct **24** spreads sounds from the speaker or reproducer C throughout a room in which the device **2** is installed, and the ring **3**, spider **6** and grill **10** combine to form an ornamental closure for the opening of the plaster ring.

I claim:

1. A ceiling sound directive register, for use on ceilings having a plaster ring surrounding an opening in the ceiling consisting of an adapter ring having an upper face secured to said plaster ring lining a circular opening in the ceiling of a room, a bracket ring of formed sheet metal having a central hole, an upper horizontal annular flat area with an upwardly turned rim flange forming an annular recess adapted to contain and cover said adapter ring, a lower concentric annular flat area joined to the upper annular flat area forming the bottom closure, a hollow conic frustum center piece having an upper opening and a larger lower opening, and an outwardly and downwardly sliding side surface centrally disposed within the hole in said bracket ring having its outer side surface disposed in spaced relation to the edges of the hole in said bracket ring and having its larger lower edge disposed in a plane below the face of said lower annular flat area of said bracket ring, a plurality of radial legs supporting said conic center piece centrally within the hole in said bracket ring, a perforated metal grill covering the lower opening of said conic center piece and resiliently attached thereto, resilient means, including spring clips, attaching said bracket ring to said adapter ring, and means on the upper face of said adapter ring for supporting a cone type audio reproducer with its sound propagating elements directed downwardly over said conic center piece.

2. In combination with a plaster ring set in a circular opening in the ceiling of a room, a grill and sound directive device for an audio loud speaker consisting of an adapter ring having an upper and a lower face attached to the plaster ring, and adapted to support a cone type audio loud speaker on its upper face, and having holes to provide means for attaching an ornamental closing ring on its bottom face, an ornamental closing ring having an under face and a central opening positioned below the outer portion of the ceiling opening, a conic frustum positioned below the central portion of the ceiling opening, a spider consisting of a plurality of radial legs holding said conic frustum centrally in the central opening of said ornamental closing ring with the larger end of the conic frustum directed downward and with the sides of the conic body spaced from the inner edge of the said

opening in said closing ring to provide an annular sound directive passageway, and a removably attached perforate grill covering the lower opening of said conic body; said legs having upwardly directed portions at their outer ends attached by downwardly extending screws to the under face of said closing ring; said screws supporting upwardly extending spring clips extending upwardly through said holes in said adapter ring and removably holding said closing ring and conic frustum to said adapter ring.

3. A ceiling mount for an audio speaker and closure for the circular opening of a plaster ring consisting of an adapter ring having a circular center opening, a plurality of annularly arranged attaching holes, and an outer ring portion adapted to be attached to the plaster ring, and an upper face adapted to mount a conic type audio speaker, an ornamental bracket ring covering the plaster ring and having an under face and a central circular opening, a hollow frusto-conic body centrally disposed within the opening of said bracket ring with its outer side face spaced from the edges of said opening in said ornamental bracket ring to provide an annular sound directive passageway, a plurality of radially directed legs, constituting a supporting spider for said conic body, extending from spaced positions on the side of said conic body to the under face of said bracket ring, screws attaching the outer ends of said legs to said bracket ring, having upwardly extending spring clips engaging in said attaching holes in said adapter ring, and an ornamental perforate covering removably attached to the lower edge of said conic body.

4. A ceiling mount for an audio speaker and closure for the circular opening of a plaster ring consisting of an adapter ring having a circular center opening, a plurality of annularly arranged attaching holes, and an outer ring portion adapted to be attached to the plaster ring, and an upper face adapted to mount a conic type audio speaker, an ornamental bracket ring covering the plaster ring and having an under face and a central circular opening, a hollow frusto-conic body centrally disposed within the opening of said bracket ring with its outer side face spaced from the edges of said opening in said ornamental bracket ring to provide an annular sound directive passageway, a plurality of radially directed legs, constituting a supporting spider for said conic body, extending from spaced positions on the side of said conic body to the under face of said bracket ring, screws attaching the outer ends of said legs to said bracket ring, having upwardly extending spring clips engaging in said attaching holes in said adapter ring, and an ornamental perforate covering removably attached to the lower edge of said conic body; said conic body being coaxially disposed relative to the axis of the sound reproducing mechanism of said loud speaker to provide a centrally located downwardly directed conical sound conducting passageway.

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