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[56]	References Cited		
	UNITED STATES PATENTS		
2,506,608	5/1950	McLoad	340/10
2,829,728	4/1958	Brown	181/31 B
3,073,916	1/1963	Williams et al.	179/115.5
3,317,000	5/1967	Heidrich	181/31 B

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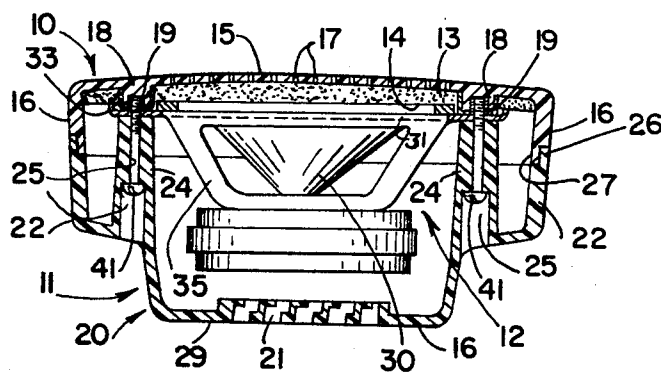
[54] SPEAKER ASSEMBLY
10 Claims, 3 Drawing Figs.

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325/352, 312/7

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ABSTRACT: A loudspeaker assembly including a loudspeaker supported within a housing wherein the mounting rim of the loudspeaker is sandwiched between mounting posts in the front and rear housing members which align and hold the speaker housing together. The loudspeaker rim has a lip which engages certain mounting posts preventing movement of the loudspeaker.



SPEAKER ASSEMBLY

BACKGROUND OF THE INVENTION

In prior art devices, loudspeakers have been mounted to a front member of a housing by attaching nuts to threaded studs connected to the front member and passing through two or more holes in the rim of the loudspeaker. The rear member of the housing, which covers the loudspeaker is then secured to the housing front member by means of threaded fasteners and nuts which pass through the front and rear members. Assembly of the loudspeaker is therefore, a two step procedure. If a loudspeaker is damaged, the threaded fasteners holding the housing members together must be removed, and then the nuts securing the loudspeaker to the front member must be removed to allow the loudspeaker to be replaced.

Securing the loudspeaker to the front member by nuts and threaded studs may cause the loudspeaker rim to bend and become distorted. Such deformation of the rim can contribute to inferior sound reproduction by the loudspeaker.

If the loudspeaker assembly should be used in a mobile environment, it will be subjected to severe shock and vibrational conditions. Nuts and threaded fasteners used to hold a loudspeaker to a housing front member may loosen under these conditions causing the loudspeaker to rattle in the housing.

SUMMARY OF THE INVENTION

An object of this invention is to provide an improved loudspeaker assembly requiring a minimum number of fasteners to secure the housing members and loudspeaker.

Another object of this invention is to provide a loudspeaker assembly which is simple to assemble and disassemble.

A further object of this invention is to provide a loudspeaker assembly which minimizes susceptibility of the loudspeaker to damage due to assembly procedures, shock and vibration.

In practicing this invention a loudspeaker assembly is provided which includes a housing having front and rear members. The front and rear housing members have mounting posts located therein. Screws passing through the rear member mounting posts threadably attach to the front member mounting posts to secure and align the front and rear housing members. The loudspeaker is sandwiched between and supported by the front and rear mounting posts when the front and rear housing members are secured to and aligned with one another.

A lip of the loudspeaker rim engages the front member mounting posts aligning the loudspeaker in the housing and preventing loudspeaker movement when the assembly is subjected to shock and vibration.

THE DRAWINGS

FIG. 1 is a cutaway view of the loudspeaker assembly of this invention;

FIG. 2 is an exploded perspective view of the loudspeaker assembly of this invention;

FIG. 3 shows a perspective view of the loudspeaker assembly of this invention in assembled relation.

DETAILED DESCRIPTION

In the drawings there is shown a loudspeaker assembly comprising a housing front member 10, housing rear member 11, a loudspeaker 12, an isolation gasket 13, and a speaker gasket 14.

Front member 10 has a front panel 15 with a number of small holes 17 therein which allow the sounds reproduced by loudspeaker 12 to pass through undiminished. Side wall 16 projects rearwardly from front panel 15 toward housing rear member 11. Four front member mounting posts 18, located on the inner surface of front panel 15, project inwardly perpendicular to front panel 15 toward rear member 11. Threaded

bushings 19 are seated in the rearward ends 28 of front member mounting posts 18, extending axially into the mounting posts. A lip 27 on the rearward edge of sidewalls 16 extends rearwardly towards rear member 11.

Rear member 11 includes a rear panel 20 having air slots 21 cut in first wall 29 for allowing air to reach the rear side of loudspeaker 12. Sidewalls 22 extend forwardly from rear panel 20 towards front member 10. Rear member mounting posts 24, located on the inner surface of rear panel 20, project inwardly perpendicular to first wall 29 toward front member 10. A hole 25 extends axially through mounting posts 24 and rear panel 20. A lip 26 on the forward edge of sidewalls 22 extends forwardly towards front member 10.

Loudspeaker 12 includes a conical frame 35 and a rim 31 for supporting the edge thereof. Rim 31 also provides support for the edge of diaphragm 30. Rim 31 extends parallel to front panel 15 of front member 10. A lip 33 perpendicular to rim 31 extends forwardly from rim 31 toward front member 10. Apertures 34 are located in the four corners of rim 31.

In assembling the unit loudspeaker gasket 14 is mounted on rim 31 of loudspeaker 12. Loudspeaker 12 and gasket 14 are mounted on front member mounting posts 18. Notches 40 in the corners of gasket 14 provide access to apertures 34 in rim 31 and properly position loudspeaker 12 on front member mounting posts 18. Lip 33 of loudspeaker rim 31 encircles all four front member mounting posts 18, bearing against the sidewalls of mounting posts 18, thereby preventing loudspeaker 12 from shifting position. Isolation gasket 13 is seated on the inner surface of front panel 15 providing an isolation median between front panel 15 and loudspeaker 12 which prevents rattling of the speaker. Rear member 11 is seated on front member 10 such that lips 26 in sidewalls 22 engage lips 27 in sidewalls 16. Lips 26 and 27 act to properly align sidewalls 16 and 22 and provide a dust seal between front member 10 and rear member 11. With sidewalls 16 and 22 aligned, mounting posts 18 and 24 have their axis aligned. Screws 41 are inserted through holes 25 in rear panel 20, rear member mounting posts 24, and apertures 34 in loudspeaker 12, and threaded into bushings 19 in front member mounting posts 18. As screws 41 are tightened, mounting posts 18 and 24 bear against the rim 31 of loudspeaker 12, sandwiching loudspeaker 12 between mounting posts 18 and 24. This sandwich effect aligns and holds loudspeaker 12 between front member 10 and rear member 11. Screws 41 and front and rear mounting posts 18 and 24 serve to hold front and rear housing members 10 and 11 together in proper alignment in addition to aligning and holding loudspeaker 12.

By sandwiching loudspeaker rim 31 between mounting posts 18 and 24, loudspeaker 12 is suspended in the housing cavity, eliminating the possibility of rattling produced by contact between loudspeaker 12 and front or rear members 10 and 11. The equal pressure applied by mounting posts 18 and 24 to both sides of rim 31 prevent distortion of rim 31 thereby preventing an inferior sound reproduction by loudspeaker 12.

As can be seen, a loudspeaker assembly has been provided which requires a minimum of fasteners to secure the housing members and loudspeaker thereby simplifying assembly and disassembly. Mounting of the loudspeaker between front and rear mounting posts provides equal pressure on the front and rear surfaces of the speaker rim thereby preventing distortion of the speaker rim which could contribute to inferior sound reproduction.

We claim:

1. A loudspeaker assembly including in combination, housing including a front member having front mounting posts thereon and a rear member having rear mounting posts thereon, a loudspeaker having a supporting rim, said loudspeaker being positioned within said housing with said rim thereof sandwiched between said front and rear mounting posts, and means for holding said front and rear housing members in assembled relation with said loudspeaker supported by engagement between said mounting posts and said supporting rim.

2. The loudspeaker assembly of claim 1 wherein said means for holding said front and rear members in assembled relation includes, a plurality of screw means, each having a shaft portion with threads thereon and a head portion, said head portion engaging said rear member, said shaft portion extending 5 through said rear member mounting posts, and said loudspeaker supporting rim and threadably engaging said front member mounting posts.

3. The loudspeaker assembly of claim 1 further including gasket means mounted on said loudspeaker for positioning said loudspeaker on said front mounting posts. 10

4. The loudspeaker assembly of claim 1 further including gasket means mounted on said front member for isolating said front member and loudspeaker.

5. The loudspeaker assembly of claim 1 herein said front member includes, a front panel having outer and inner surfaces, and sidewalls perpendicular to said front panel, said front member mounting posts being secured to said inner surface and extending perpendicular to said front panel, said 15 sidewalls having first alignment means located thereon, for aligning said front and rear housing members.

6. The loudspeaker assembly of claim 5 wherein said first alignment means is a lip shaped protrusion extending from the edge of said sidewalls perpendicular to said front wall. 20

7. The loudspeaker assembly of claim 5 wherein said rear member includes, a rear panel having a first wall, and sidewalls perpendicular to said first wall, said rear member mounting posts secured to said rear panel and extending perpendicular to said first wall and said sidewalls having second alignment means located thereon, said second alignment means engaging said first alignment means for aligning said front and rear housing members.

8. The loudspeaker assembly of claim 7 wherein said second alignment means is a lip shaped protrusion extending from the edge of said rear member sidewalls perpendicular to said first wall.

9. The loudspeaker assembly of claim 3 wherein said front panel mounting posts include, a threaded bushing, said threaded bushing engaging said screw means for securing and aligning said front and rear mounting posts. 15

10. The loudspeaker assembly of claim 5 wherein said loudspeaker supporting rim has apertures therein and a lip extending perpendicular to said rim, said rim being sandwiched between and supported by said front and rear mounting posts, and said lip engaging the sides of said front member mounting posts for preventing movement of said loudspeaker towards said sidewalls. 20

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