

[54] **DECORATIVE LOUDSPEAKERS**

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[58] Field of Search.....181/31 R, 31 A, 31 B;
179/115.5 R

[56] **References Cited**

UNITED STATES PATENTS

1,773,910 8/1930 Lane181/31 B

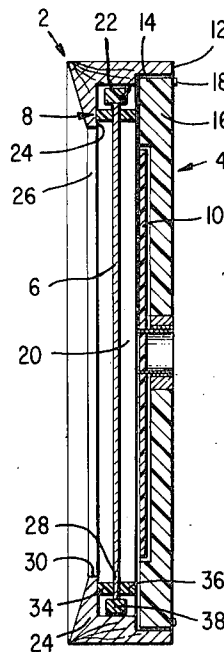
3,164,221 1/1965 Rich.....181/31 B
3,236,958 2/1966 Cohen.....179/115.5 R

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[57] **ABSTRACT**

A loud-speaker assembly is provided with a frame, a loud-speaker is secured to the frame at the rear of the opening defined by the frame, a decorative member embodying stiff material and adapted to function as a sound propagating element extends across the opening in the frame in front of the loud-speaker and yieldable material is located between the frame and the marginal portion of the decorative member to permit vibration of the decorative member in response to operation of the loud-speaker.

12 Claims, 3 Drawing Figures



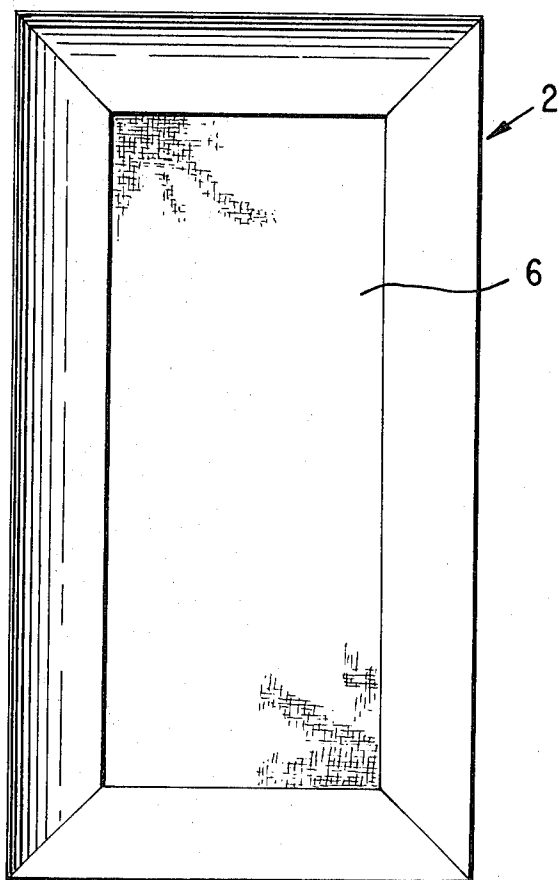


Fig. 1

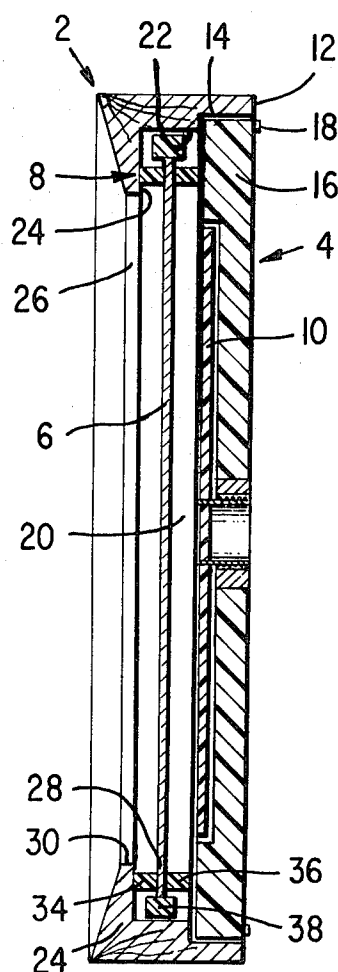


Fig. 2

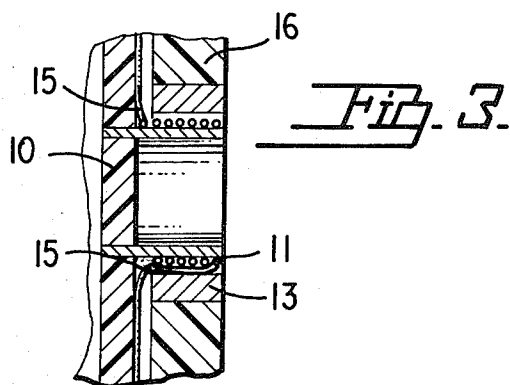


Fig. 3

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DECORATIVE LOUDSPEAKERS

FIELD OF INVENTION

It has been common practice heretofore to conceal a loud-speaker behind a screen, cloth, loose fabric, or other perforate member which is transparent to sound so that the music or sounds produced by a loud-speaker can be readily heard therethrough without baffling, attenuation, or distortion. Typical of such constructions are those shown and described in U. S. Pat. Nos. 1,773,910 and 3,236,958.

While such constructions have certain advantages they are not adapted for use with decorative members which are stiff, hard or acoustically dense. Thus, canvas paintings, pictures applied to, or supported by stiff sheet material or protected by glass, mirrors, and the like, have not heretofore been utilized for concealing or protecting loud-speakers.

In accordance with the present invention these limitations and restrictions in the use of loud-speakers are overcome and novel assemblies produced wherein a frame is provided which extends about an opening. A loud-speaker which preferably has a substantially flat diaphragm is secured to the frame adjacent one face of the frame and extends across the opening therein while a substantially flat decorative member extends across the opening in the frame adjacent the opposite face thereof. The decorative member is yieldably mounted with respect to the frame so as to be capable of vibration in response to the diaphragm of the loud-speaker whereby the decorative member itself will function as a sound propagating element.

THE DRAWING

FIG. 1 is a front elevation of a typical loud-speaker assembly embodying the present invention;

FIG. 2 is a vertical sectional view through the assembly illustrated in FIG. 1; and

FIG. 3 is an enlarged sectional view illustrating a typical detail of construction.

EMBODIMENTS OF THE PRESENT INVENTION

In that form of the invention chosen for purposes of illustration in the drawing, the assembly comprises a frame 2, a loud-speaker 4, a decorative member 6 and yieldable mounting means 8 by which the decorative member is supported in the frame.

The loud-speaker 4 preferably is relatively thin in cross section and embodies a flat diaphragm 10 having a voice coil 11 carried thereby and surrounded by a permanent magnet 13. Current for actuating the diaphragm is supplied to the voice coil 11 by conductors 15 which may be embedded in the diaphragm 10 or otherwise secured thereto as shown in FIG. 3. Thus a loud-speaker of the type disclosed in U. S. Pat. No. 3,351,719 may be employed. Accordingly, the frame 2 is formed with a recess on its rear face 12 as shown at 14 to receive the base 16 of the loud-speaker. The speaker may then be secured fixedly to the frame 2 and within recess 14 by fastening means 18 so that it will extend across the rear of the opening 20 surrounded by the frame.

The portion of the frame 2 in front of the recess 14 is in the form of a molding presenting an inwardly facing surface 22 from which a ledge 24 extends inwardly

about the opening 20 adjacent the front face of the frame through which the decorative member 6 is displayed. The decorative member employed is of such size and shape that its marginal portions 28 project beyond the inner edges 30 of the ledges 24 so as to overlap said edges. The decorative member is supported on the frame 2 by the yieldable mounting means 8 so as to be held in a position parallel to the diaphragm 10 of the loud-speaker 4. For this purpose an element 34 formed of yieldable material is positioned between the front surface of the marginal portions 28 of the decorative member 6 and the rear surfaces of the ledges 24 of the frame. In a similar way a yieldable element 36 is located between the rear surface of the marginal portions 28 of the decorative member and the front surface of the base 16 of the loudspeaker 4. In addition, a further yieldable element 38 may be located between the outer peripheral edges of the decorative member 6 and the inwardly facing surfaces 22 of the frame 2 surrounding the decorative member.

In a preferred embodiment of the invention the yieldable elements 34 and 38 are permanently mounted on the inner surface 22 of the frame 2 whereas the yieldable element 36 is mounted on the front or inner surface of the base 16 of the loud speaker. In this way the decorative member 6 can be inserted and removed readily and without modification or mutilation thereof so as to permit substitution of one decorative member for another to meet the needs or desires of any user of the assembly.

The means thus provided for mounting the decorative member render it possible to utilize the decorative member as a sound propagating element responsive to the operation of the diaphragm 10 of the loud speaker 4. The decorative member then is preferably formed of stiff, rigid or acoustically dense or impervious material which is bodily movable as a piston to reproduce an extended range of sound frequencies with little or no distortion thereof. Thus, the decorative member may be formed of or be supported by an underlay of wood, metal, or sheet material, having a canvas painting, photograph, picture, or the like mounted thereon. The decorative member may instead be a mirror or a glass panel overlying and protecting a layer of acoustically transparent material such as fabric, tapestry, or the like.

The frame 2 may, of course, be decorative in style and appearance and may be formed of wood, plastic or any other material as desired for any decor or display of the painting, mirror or decorative member utilized in the assembly. Furthermore, the frame may be oval, circular or of any other shape required, in which case the body of the loud speaker and if desired the diaphragm also, may be correspondingly shaped. Moreover, a loud speaker having a diaphragm of circular shape can be mounted in a base and frame of rectangular or other shape affording the greatest possible design variations and display of the speaker. The recess 14 in the rear of the frame 2 in which the loud speaker is received is positioned outwardly beyond the surface 22 of the molding of the frame which surrounds the outer edges of the decorative member 6. It is, therefore, possible to remove the loud speaker 4 from the rear of the frame 2 when desired to remove or replace the decorative member 6 or the yieldable mounting elements 34, 36 and 38 by which it is held in place.

The construction thus provided lends itself to a great variety of uses and applications wherein it is desired to conceal a loud-speaker without distortion or objectionable attenuation of the music or sounds produced. It should therefore be understood that the particular embodiment of the invention shown in the drawing and described above is intended to be illustrative only and is not intended to limit the scope of the following claims.

We claim:

1. A loud-speaker assembly comprising a frame having ledges extending inwardly at opposite sides of a central opening, said ledges being located adjacent the front face of said frame, a loud-speaker secured to said frame adjacent the rear face thereof and extending across said opening, a decorative member extending across said opening in front of said loud-speaker and having its marginal edges positioned in overlapping relation with respect to said ledges, and yieldable means located between said ledges and loud-speaker for supporting said marginal edges of the decorative member.

2. A loud-speaker assembly as defined in claim 1 wherein said decorative member comprises a layer of stiff material adapted to function as a sound propagat-

ing element.

3. A loud-speaker assembly as defined in claim 1 wherein said ledges extend inwardly about the entire circumference of the opening in said frame.

4. A loud-speaker assembly as defined in claim 1 wherein said loud-speaker has a diaphragm in the form of a substantially flat element, and said decorative member is substantially flat and parallel to said diaphragm.

5. A loud-speaker assembly as defined in claim 4 wherein said loud-speaker has a marginal rim formed of relatively stiff material surrounding said diaphragm and fixedly secured to said frame.

6. A loud-speaker assembly as defined in claim 5 wherein said yieldable material is located between the rim of the loud-speaker and the marginal portion of the decorative member.

7. A loud-speaker assembly as defined in claim 1 wherein yieldable material is located between said frame and the peripheral edge of said decorative member.

8. A loud-speaker assembly as defined in claim 1 wherein said decorative member is a mirror.

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