United States Patent

Rankin

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[45] **July 25, 1972**

[54] LOUDSPEAKER ENCLOSURE

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[52] **U.S. Cl.** ..... **181/31 A,** 181/31 B

[51] **Int. Cl.** **G10k 13/00,** H04r 1/28

[58] **Field of Search** ..... 181/31 A, 31.1

[56] **References Cited**

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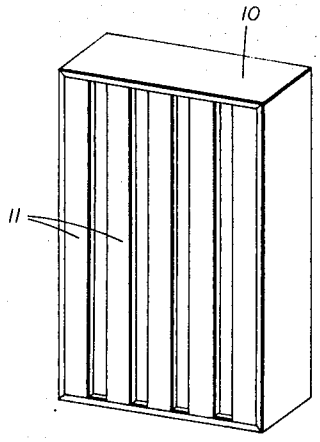
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Primary Examiner—Stephen J. Tomsky

[57] **ABSTRACT**

A closed back loudspeaker enclosure with the grille cloth replaced by wooden slats. The space between the slats is arranged to prevent air compression and allow free passage of sound from the loudspeaker. The loudspeaker is mounted on a front panel and both the loudspeaker and front panel are concealed by the slats.

1 Claim, 6 Drawing Figures



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2 Sheets-Sheet 1

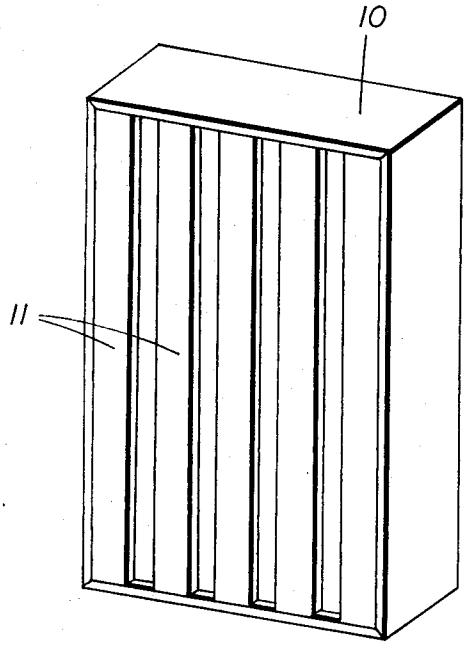


FIG. 1

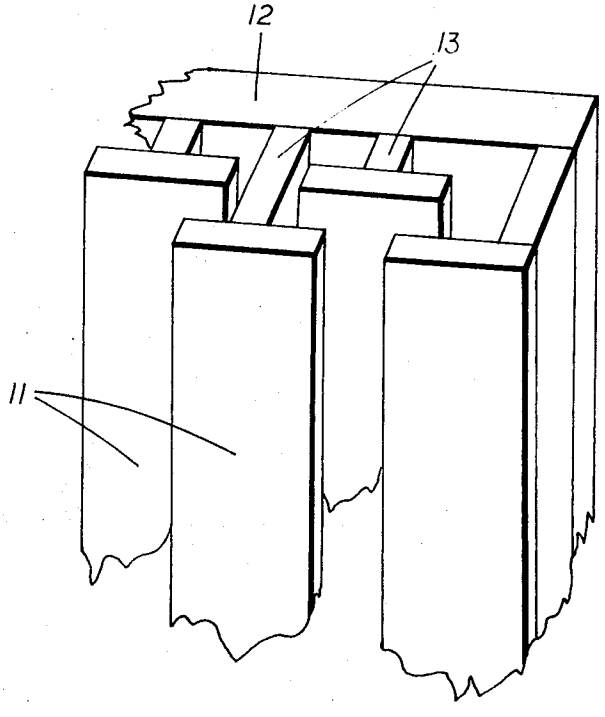


FIG. 2

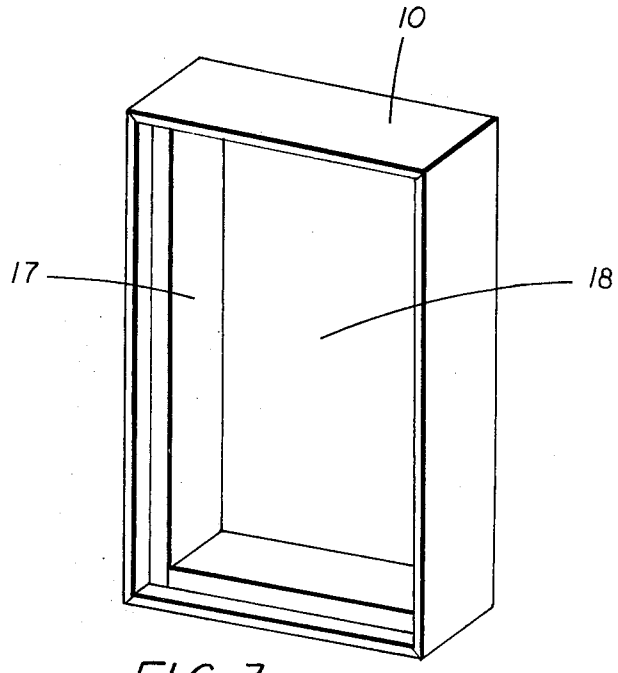


FIG. 3

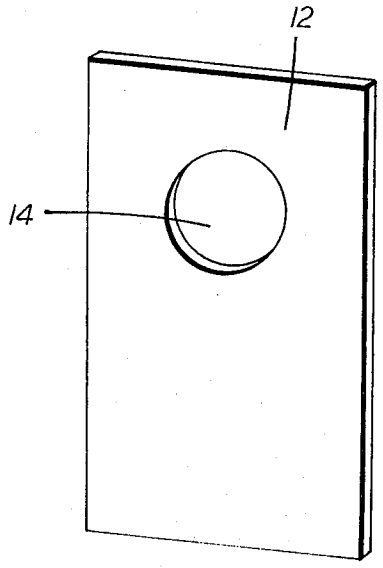


FIG. 4

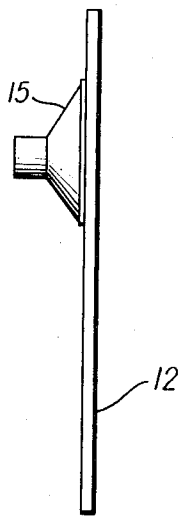


FIG. 5

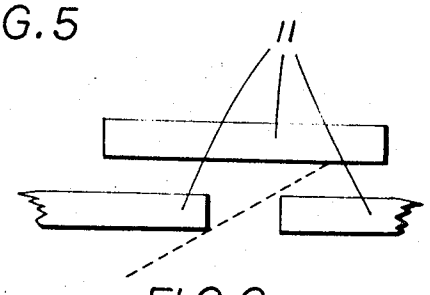


FIG. 6

LOUDSPEAKER ENCLOSURE

This invention relates to a loudspeaker enclosure and more particularly is concerned with enclosures used for the reproduction of high fidelity music.

Enclosures for loudspeakers generally use a grille cloth which will conceal the loudspeaker but allow the sound to pass through. Such grille cloths often prove unsatisfactory because they are easily soiled or they do not conform with the decorative effect of other room furnishings. In some instances the loudspeakers are concealed by a system of carved louvers made from stained soft wood; the hard woods would be preferable for their beauty of finish but problems of warpage and cost prohibit their use. The weave of the grille cloth and the shape of the louvers must be carefully chosen to prevent loss of the higher audio frequencies.

It is an object of this invention to provide a loudspeaker enclosure which conceals the loudspeaker without the use of grille cloth or carved louvers.

In the drawings:

FIG. 1 is a perspective view of a loudspeaker enclosure constructed in accordance with the invention.

FIG. 2 is a fragmentary perspective view of slats used to conceal the loudspeaker.

FIG. 3 is a perspective view of the inside of the enclosure, with the front panel removed.

FIG. 4 is a perspective view of the front panel.

FIG. 5 is a side view of the loudspeaker mounted on the front panel.

FIG. 6 is a diagram showing the concealing action of the slats.

In accordance with the invention, a low frequency loudspeaker is mounted on the front panel of the enclosure and it is concealed by the wooden slats spaced away from the front panel.

Referring now more particularly to the drawings, FIGS. 1–5 show one form of the enclosure constructed in accordance with the invention. The enclosure consists of a veneer plywood outer sleeve **10** with the front portion consisting of a front panel **12** which is concealed by slats **11** mounted away from the front panel **12** by spacers **13**. The front panel **12** has an aperture **14** for the low frequency loudspeaker **15**. The aperture **14** is also concealed by the slats **11** which are mounted parallel to the front of the enclosure, with each front slat overlapping the slat behind it.

The row of slats **11** closest to the front panel **12** is spaced from the front panel **12** by spacers **13**. There is a side space between each slat and there is a space between the front and

rear row of slats where they overlap. The sizes of the slats and spaces may vary but if slats two inches wide are used, they may be spaced sideways one half inch and where they overlap the space may be one quarter inch without the front panel or loudspeaker being visible. This is shown in FIG. **6** where the dotted line represents the line of sight. The space between the front panel **12** and the first row of slats **11** may be in the vicinity of one half inch or greater to allow sound to travel in this space prior to issuing from the space between the two layers of slats **11**.

The operation of the slats may be compared to the passage of light through glass. Ultra violet light will not pass through ordinary glass because the glass molecules are large compared to a fraction of a wavelength of ultra violet light. The fraction may be considered as one quarter wavelength. A quarter wavelength of visible light is large compared to the size of glass molecules and the glass is said to be transparent to visible light.

Because sound has wavelength, frequency and velocity such as light, obstacles may be placed in the sound path and be "-transparent" to the sound.

Assume the velocity of sound to be 1,100 feet per second then at 5,000 Hz a quarter wavelength is : $(1{,}100 \times 12/5{,}000 \times 4 = 0.66$ inches.

If slats in front of a loudspeaker overlap so that the sound is forced to travel a path 0.66 inches in length, frequencies of 5,000 Hz and higher will be attenuated but the slats are "transparent" to all frequencies below 5,000 Hz. The front panel **12** and the back panel **18** are securely mounted to the inner sleeve **17**.

While particular embodiments of the present invention have been shown and described it is apparent that the enclosure is suitable for use with vents or ports.

Other such changes may be made without departing from the invention in its broader aspects. The aim of the appended claims is to cover all such changes and modifications as fall within the true scope of the invention.

What I claim and desire to secure by Letters Patent of the United States is :

1. A loudspeaker enclosure closed on all sides having the loudspeaker mounted on a panel and concealed by two layers of non compressing, spaced wooden slats, with the spaces between the slats of one layer covered by other slats, each slat being spaced from its adjacent slat with all slats spaced from the panel and all slats having the longest dimensions parallel to the front surface of the enclosure.

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