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ACOUSTICAL CONTROL DEVICE

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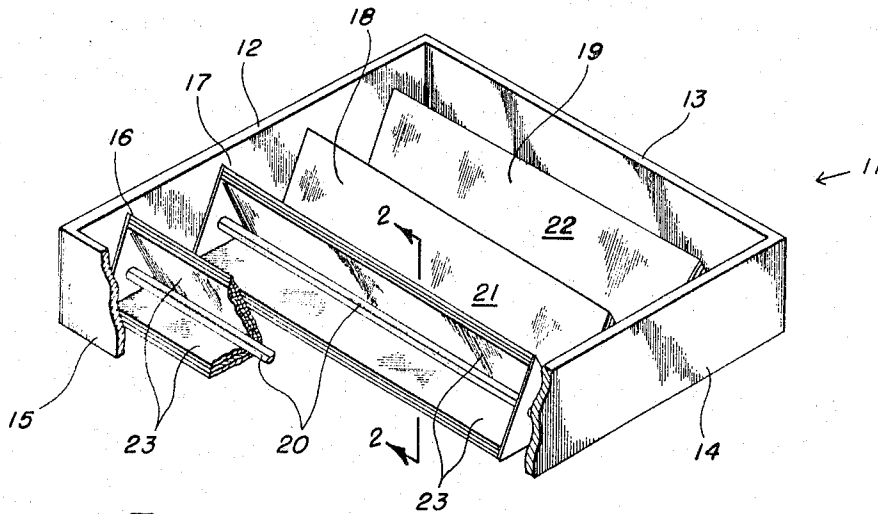


FIG. 1

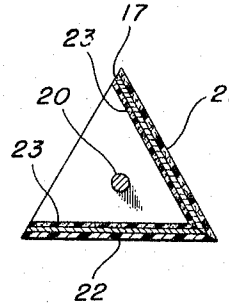


FIG. 2

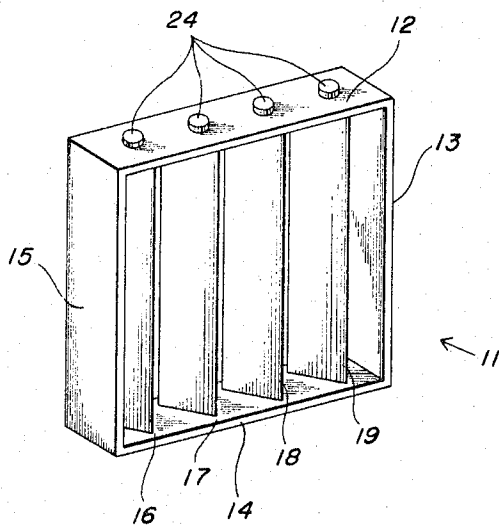


FIG. 3

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ACOUSTICAL CONTROL DEVICE
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ABSTRACT OF THE DISCLOSURE

An acoustical control device comprising a plurality of triangular cylinders rotatably mounted in a parallel adjacent relationship where each triangular cylinder has one side with a sound reflecting surface such as fiberboard, a second side having a surface for medium sound absorptions such as acoustical tile, and a third surface having a high sound absorption such as fiberglass insulation, each of said sections being individually rotatable for the exposure of any combination of these three surfaces as dictated by the acoustical parameters of its environment and the sound source exposed thereto.

Background of the invention

The present invention relates to an acoustical control device and more particularly to an acoustical control device for optimizing the acoustics of a given environment and sound source.

The prior art acoustical control devices have at best resulted in extremely cumbersome and expensive attempts to vary the acoustics in a given environment. Some of these implementations have resulted in extremely complex systems gearing various cylinders to expose different surfaces by exercising some acoustical control over a particular environment. The main disadvantages of the prior art devices have been in their extreme complexity, resulting in high cost, and in their lack of flexibility and portability, which necessarily limits their use considerably.

Description of the invention

According to the invention, a plurality of cylindrical sections having an equilateral triangular cross-section are rotatably mounted side by side so that when any one of the three surfaces of each of the sections are parallel, one surface of each section will be juxtaposed to a surface of the adjacent section forming an acoustical wall. One surface of each section is constructed of a sound-reflecting material such as fiberboard, a second surface is constructed of a medium sound absorption material such as acoustical tile, and a third surface can be a fill-in of the cylindrical sections of a high absorption of sound material such as fiberglass insulation. Each of the sections are rotatably mounted to a frame and are provided with a suitable extension or knob on the individual sections for individual control of each section. The entire unit can be constructed of a light wood or aluminum for easy portability and, as will be seen, since each section is individually controllable, any desired combination of surfaces can be exposed to result in any desired overall acoustical property over an extremely wide range.

An object of the present invention is the provision of an improved acoustical control device which can variably control the acoustics of an environment over a wide range.

Another object of the invention is the provision of an improved acoustical control device which is easily transportable.

A further object of the invention is the provision of an improved acoustical control device which is inexpensive and simple to manufacture and extremely convenient to set up and adjust.

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Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawing in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIG. 1 is a perspective view partially sectioned of the embodiment of FIG. 1;

FIG. 2 is a view and cross-section taken along lines 2-2 of FIG. 1; and

FIG. 3 is a perspective view of the preferred embodiment of the present invention.

Operation

Referring to FIGS. 1 and 2, the acoustical control device is shown generally at 11 having a frame comprising structural members 12, 13, 14 and 15. A plurality of triangular sections 16, 17, 18 and 19 are mounted on rods 21 which are rotatably coupled between structural members 12 and 14.

Each triangular section has one surface of a sound reflecting material such as fiberboard 21 indicated as the surface of triangular section 18, and a medium sound absorbing surface such as acoustical tile indicated at 22 on triangular section 19. Triangular sections 16 and 17 are shown rotated to an open back position having two surfaces coated with a fiberglass insulation 23 which form a relatively high sound absorption surface. Alternatively, another structural member could complete the triangle on each triangular section and that surface coated with a high sound absorption material such as fiberglass insulation.

Referring to FIG. 3, acoustical control unit 11 is again shown in perspective from a different angle revealing control knobs 24 terminating each rod 21 on the outside of structural member 12.

As can be seen, each of the triangular sections 16, 17, 18 and 19 can be individually rotated to a desired position exposing one or two of the different surfaces of the section for the desired sound absorption or reflecting quality, depending, of course, upon the acoustical considerations of its environment.

It has been found that one acoustical control unit can be utilized to optimize the amplitude of sound from a French horn, the bell of which normally faces to the rear of an orchestra, that is, a direct reflecting surface would produce too much sound and a high absorption surface, such as heavy backdrop curtains, tends to absorb too much of the sound, therefore resulting in a definite need for a reflecting surface somewhere in between. It has been found empirically that when all of the triangular sections are turned with the high absorption surface 23 facing the sound source, the sound source is highly subdued. Utilizing surface 23, for example, the French horn in a symphony orchestra and other ensembles could easily override the other instruments. Thus, a selection of appropriate surfaces would be made according to the degree of balance desired under a particular performance condition.

It is contemplated that one or more of these units can be conveniently placed in proximity to a sound source for optimizing the acoustical considerations with any variety of sound sources. Obviously, the acoustical considerations would differ from a woodwind quintet to a full symphony orchestra, or possibly a solo piano accompanist recital, as well as with the size of the auditorium. These units have also been found to be extremely effective in optimizing the acoustics of certain recording rooms.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the

invention, and that it is intended to cover all changes and modifications of the example of the invention herein chosen, for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. An acoustical control device comprising:
a plurality of triangular cylinders having first and second sides forming a V in cross-section;
said cylinders being rotatably mounted in a single row;
each of said first sides having an outside surface having a first acoustical property;
each of said second sides having an outside surface having a second acoustical property; and

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each of said first and second sides having an inside surface having a third acoustical property.

2. The acoustical control device of claim 1 wherein:
each of said cylinders is individually rotatable.

References Cited

UNITED STATES PATENTS

1,825,465	9/1931	MacDonald	181—30
3,007,539	11/1961	Brewer et al.	181—33
3,049,190	8/1962	Coffman	181—33

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