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3,324,615

RESILIENTLY MOUNTED ACOUSTICAL WALL PARTITION

Filed Nov. 25, 1964

2 Sheets-Sheet 1

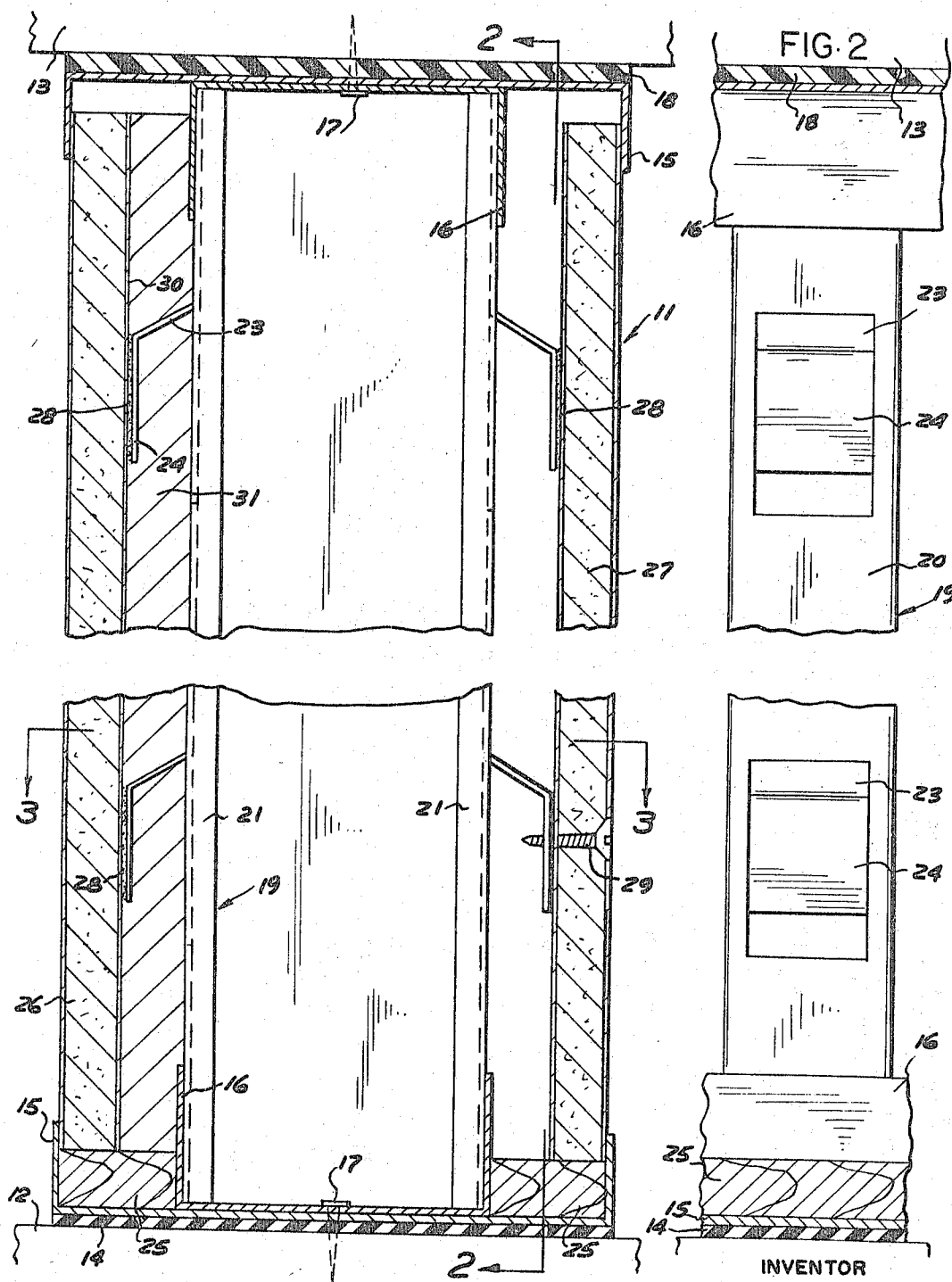


FIG. 1

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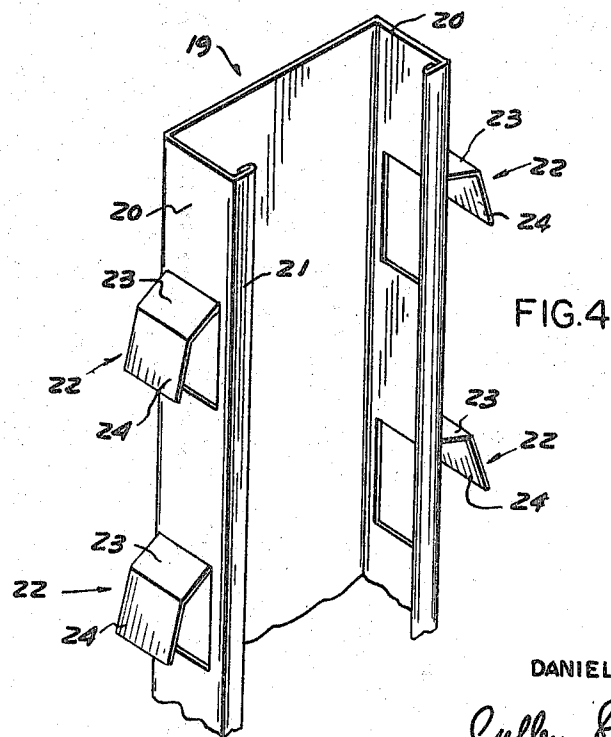
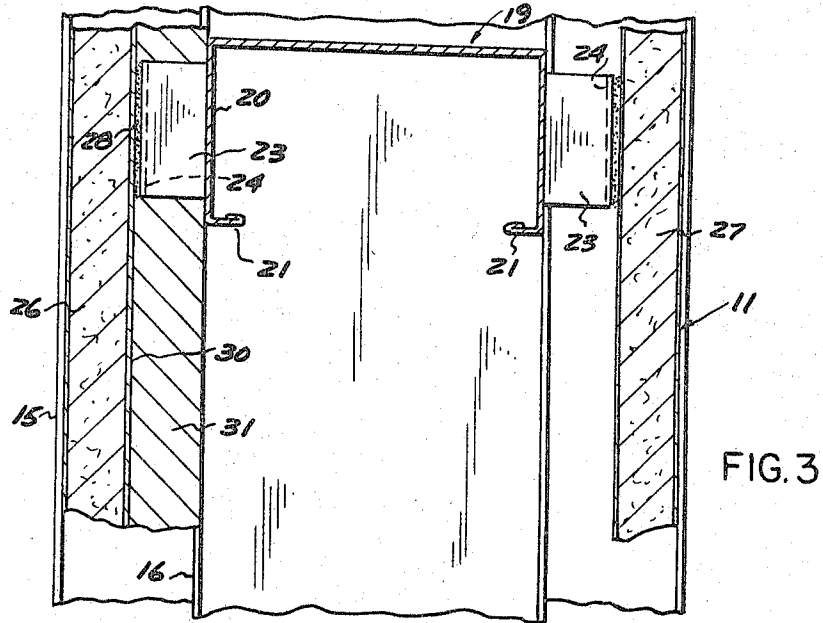
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RESILIENTLY MOUNTED ACOUSTICAL  
WALL PARTITION

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The present invention relates to a high sound attenuation partition and more particularly to acoustical wall partitions for buildings.

There has long existed the problem of undesirable transmission through wall partitions of noise in buildings, apartments, hotels, and motels.

It is an object of the present invention to provide a high sound attenuation partition in the form of an acoustical wall partition to very greatly minimize sound transmission.

It is an object to provide an acoustical wall partition which includes a resilient mounting of the wallboards to minimize sound transmission.

It is another object to provide a novel form of channel or joist construction which incorporates a channel element of U-shape in cross-section and including opposed side flanges and wherein upon and throughout the length of said side flanges there are formed a series of longitudinally spaced resilient wallboard engaging and supporting tabs.

These and other objects will be seen from the following specification and claims and in conjunction with the appended drawings in which:

FIG. 1 is a fragmentary, vertical section of the present acoustical wall partition.

FIG. 2 is a fragmentary section taken in the direction of arrows 2-2 of FIG. 1.

FIG. 3 is a fragmentary section taken in the direction of the arrows 3-3 of FIG. 1.

FIG. 4 is a fragmentary perspective view of the present channel construction.

It will be understood that the above drawings illustrated merely a preferred embodiment of the invention, and that other embodiments are contemplated within the scope of the claims hereinafter set forth.

Referring to the drawings, the present acoustical wall partition 11, FIG. 1, is interposed between the floor and ceiling 12, 13 of a building, fragmentarily shown.

Opposed elongated floor and ceiling caps 15 extend along and are secured at 17 to the floor and ceiling respectively, there being a compressible rubber strip 14 interposed between the bottom cap 15 and floor 12. This rubber strip for illustration is of a durometer 55-60.

Interposed between top cap 15 and ceiling 13 is an elongated compressible strip of a foam plastic material 18, such as polyethylene, anchored at 17. Each of the floor and ceiling caps 15 include a pair of upright flanges which are spaced outwardly of the flanges of tracks 16 and parallel thereto.

Opposed elongated floor and ceiling tracks 16 are arranged upon and extend along and are respectively secured as at 17 to the floor and ceiling respectively. Each track includes a pair of spaced flanges of a height greater than the flanges of caps 15, FIG. 1.

*Channel construction*

A series of parallel spaced upright channels 19 are interposed between the floor and ceiling with the respective top and bottom edges of each channel interposed and nested within said tracks so that the side flanges 20 of each channel bear against and are snugly nested and retained between pairs of the ceiling and floor track flanges 16. The forward edges of the side flanges 20 are turned

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over and reinforced as at 21 to define an open metallic channel, FIG. 4.

A series of longitudinally spaced resilient wallboard supporting and backing tabs 22 are struck out from each of the side flanges 20 of channel 19 as shown in FIG. 4. Each tab includes a first plate 23 joined to and extending at an acute angle from flange 20, and terminating in a yieldable second plate 24 which extends from the first plate at an obtuse angle and diverges in non-parallel relation from flange 20.

The tab plates 24 are adapted for securing registry with wallboards 26 and 27, FIG. 1. Before assembly of the wallboards which are normally in the form of paper covered gypsum known as conventional wallboard, elongated wood blocks 25 are positioned within the lower cap 15 and bear against the flanges of track 16.

The respective wallboards 26 and 27 are inserted within caps 15 for the floor and ceiling and are suitably secured to the flexible and yielding plates 24 which form a part of tabs 22, FIGS. 2 and 4.

In the initial construction of tabs 22, plates 24 are included outwardly from flanges 20. However, upon application of the wallboard 26 and 27 thereto, plates 24 are turned into parallel relation with channel flanges 20, FIG. 1.

Various means may be employed for securing the wallboards to tabs 22. For example, a suitable cement such as epoxy resin cement 28 is applied to the outer surfaces of each of the tab plates 24 to which the wallboards are applied and thus adhesively secured in position. An alternate construction is also shown in FIG. 1 wherein fasteners such as sheet metal screws 29 project through wallboard 27 and through a corresponding tab plate 24.

Thus, in the construction shown in FIG. 1, the respective gypsum boards or wallboards are positioned in opposed parallel spaced relation within caps 15 for the floor and ceiling and at their upper and lower edges retained thereby. Upon their interior surfaces the wallboards bear against a series of vertically spaced tab plates 24 and are adhesively secured thereto as at 28. For illustration, the present tabs are spaced along the length of the flange 20 at approximately 8 inch center distances though this could be varied as desired for providing suitable resilient and yielding and supporting surfaces for wallboards 26 and 27.

In the illustrative embodiment of the invention the wallboards 26 and 27 are of different thickness for improved sound attenuation characteristics. For illustration, wallboard 26 is 1/2-inch thick whereas wallboard 27 is 5/8-inch thick. Such difference in thickness provides an improved acoustical partition.

The tabs 22 are resilient in character and thus provide a resilient and yieldable mounting and backing for the wallboards and provide a partition having high sound attenuation characteristics.

To improve the acoustical character of the partition there is applied to the interior surface of at least one of the wallboards 26 or 27, a layer of a visco-elastic adhesive 30, FIG. 1. A series of vertically aligned strips or mats 31 of glass fibers or other suitable sound absorbing material, for example, rock wool, are supported between the respective vertically spaced tabs 22 and are secured by the adhesive 30 to the interior surface of wallboard 26, for illustration, completing the partition construction.

Having described my invention reference should now be had to the following claims.

I claim:

1. In an acoustical wall partition for use between the floor and ceiling of a building;  
an upright channel interposed between said floor and

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ceiling, said channel including a pair of spaced side flanges;

opposed elongated floor and ceiling tracks upon, extending along, and respectively secured to said floor and ceiling, each track including a pair of upright spaced plates;

a series of longitudinally spaced resilient wallboard supporting and backing tabs struck out from said flanges, each tab including a first plate joined to and extending at an acute angle from a flange, and terminating in a yieldable second plate extending from said first plate at an obtuse angle diverging from said flange and secured in face to face contact with a wallboard;

said channel interposed between said tracks with the respective top and bottom edges of its side flanges bearing against and retained between pairs of said track plates;

and upright parallel spaced wallboards upon opposite sides of said channel bearing against and secured to said tabs.

2. In the acoustical wall partition of claim 1, the securing of said wallboards to said tabs including a cement material.

3. In the acoustical wall partition of claim 1, the securing of said wallboards to said tabs including fasteners extending through said wallboards and tabs.

4. In the acoustical wall partition of claim 1, said wallboards being of different thickness.

5. In the acoustical wall partition of claim 1, and a layer of sound absorbing material adhesively secured to and extending over the inner surface of at least one of said wallboards.

6. In an acoustical wall partition for use between the floor and ceiling of a building;

an upright channel interposed between said floor and ceiling, said channel including a pair of spaced side flanges;

opposed elongated floor and ceiling tracks upon, extending along, and respectively secured to said floor and ceiling;

each track including a pair of upright spaced plates;

said channel interposed between said tracks with the respective top and bottom edges of said flanges bearing against the retained between pairs of said track plates;

a series of longitudinally spaced resilient wallboard supporting and backing tabs struck out from said flanges, each tab including a first plate joined to and extending at an acute angle from a flange, and terminating in a yieldable second plate extending from said first plate at an obtuse angle diverging from said flange and secured in face to face contact with a wallboard;

opposed elongated floor and ceiling caps receiving said tracks extending along and respectively secured to said floor and ceiling;

each cap including a pair of upright spaced plates spaced outwardly of the track plates;

and upright parallel spaced wallboards upon opposite

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sides of said channel positioned within said caps and bearing against and secured to said tabs.

7. In the acoustical wall partition of claim 6, and a strip of resilient compressible material interposed between said caps and said floor and ceiling respectively.

8. In the acoustical wall partition of claim 6, a strip of compressible rubber interposed between a cap and said floor;

and a strip of foam plastic material interposed between a cap and said ceiling.

9. In the acoustical wall partition of claim 6, and a layer of sound absorbing material adhesively secured to and extending over the inner surface of one of said wallboards.

10. In an acoustical wall partition for use between the floor and ceiling of a building;

an upright channel interposed between said floor and ceiling, said channel including a pair of spaced side flanges;

and a series of longitudinally spaced resilient wallboard supporting and backing tabs struck out from said flanges, each tab including a first plate joined to and extending at an acute angle from a flange, a yieldable second plate extending from said first plate at an obtuse angle and diverging outwardly and extending away from said flange and adapted for securing registry to a wallboard;

with said second plates adapted for yieldable tilting in compression into parallel with said flanges upon support engagement with such wallboard;

upright parallel wallboards upon opposite sides of said channel bearing against said second plates;

and fastening means securing the adjacent surfaces of said wallboards and second plates face to face;

said first and second plates cooperating to provide a yieldable mounting for said wallboards;

said first and second tab defining plates and a means fastening said wallboards to said second plates as assembled providing a clear spacing between said wallboards and channels as normally mounted, by which said wallboards are free for yieldable movement inwardly towards said channels from their normal support position on application of sound waves to the inner surfaces of said wallboards.

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