May 22, 1956 A. M. TOFANI, JR 2,746,097

SOUNDPROOF BUILDING CONSTRUCTION

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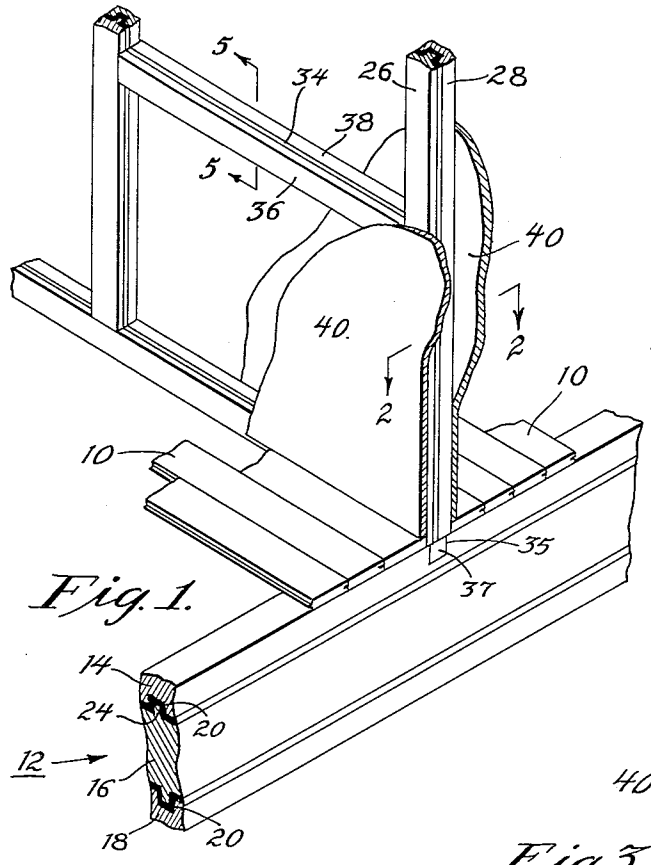


Fig. 1.

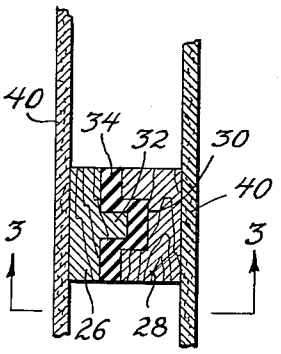


Fig. 2.

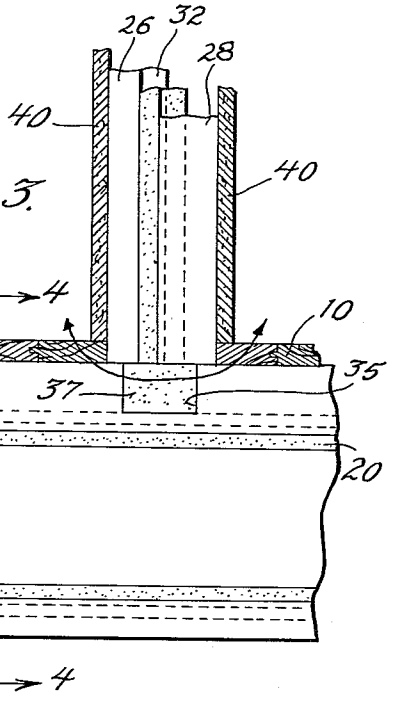


Fig. 3.

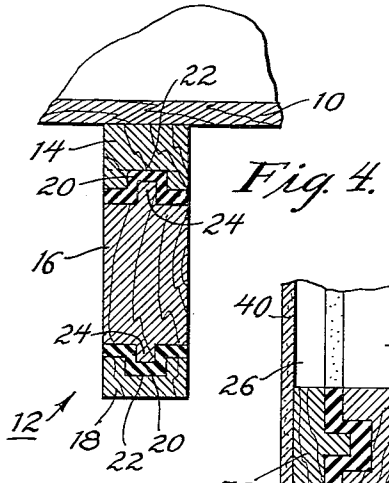


Fig. 4.

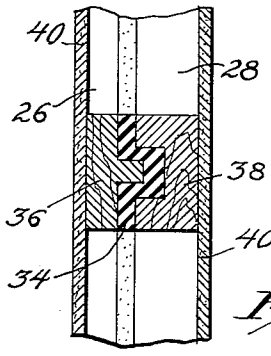


Fig. 5.

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SOUNDPROOF BUILDING CONSTRUCTION

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2 Claims. (Cl. 20—2)

One object of the invention is to produce an improved sound proof construction and an improved method of sound-proofing the same.

Another object is to produce an improved construction which is easy and inexpensive to put up.

A still further object is to produce an improved sound-proof construction which can be used in the erection of a new building as well as in the remodeling of the old buildings.

The full nature of the invention is set forth in the following specification and in the accompanying drawings in which:

Fig. 1 is a fragmentary view partly in vertical section and partly in perspective showing a building construction embodying my invention.

Fig. 2 is an enlarged section on line 2—2 on Fig. 1.

Fig. 3 is a section on line 3—3 on Fig. 2.

Fig. 4 is a section on line 4—4 on Fig. 3.

Fig. 5 is an enlarged section on line 5—5 on Fig. 1.

In the drawing there is shown a floor formed of slats 10 supported by girders 12. In order to reduce the transmission of noise or sound upwardly, or downwardly, through the floor, the girders are formed of an upper beam 14, a central beam 16 and a lower beam 18. The upper and lower sides of beam 16 are separated from upper and lower beams 14 and 16 by sound insulating material such as rubber, felt, or the like 20. Also, beams 14 and 18 are provided with grooves 22 which are adapted to be engaged by tongues 24 formed on the corresponding sides of central beam 16. It will be noted that the insulating material is thus clamped in position between the tongues and grooves referred to.

In order to reduce the lateral transmission of sound, that is from one room to another on the same floor, I construct the studding which supports the partition in the manner shown in Figs. 2 and 3. As shown in these figures, each stud is made of two pieces 26 and 28, one of which has a groove 30 adapted to be engaged by a tongue 32. The tongue 32 and groove 30 extend the entire height of the partition and are separated by sound insulating material 34. In order to reduce sound transmission through floor slats 10 and upper beam 14 of the girder supporting, or resting upon, the studding, the upper beam 14 is gouged out to form a recess 35 which underlies, or overlies, the ends of stud members 26 and 28 and is filled with insulating material 37. This reduces sound transmission along the path delineated by the arrow in Fig. 3.

It has heretofore been proposed to reduce the transmission of sound from one room to an adjoining room in a horizontal direction, or through the partition separating said rooms by fastening the panels of one side of the partition to one set of vertical studs and fastening the panels of the other side of the partition to another set of vertical studs, said sets of studs being wholly separate or unconnected. In order not to double the thickness of

the partition, the studs of one set are interdigitated, or interlaced, with the studs of the other set.

According to the building code, horizontally disposed sills which serve as fire stops must be used so as to divide the space defined by the opposite sides of the partition into separate compartments to slow down the upward progress of fire. Without such fire stops, the space between the opposite sides of a partition will act as a flue. But, if the studs to which the opposite sides of the partition are secured are interdigitated, as above set forth, the horizontal fire stops cannot be used and the interdigitation of the studs divides the space between the opposite sides of the partition into a number of vertical flues which increases the flue or draft effect. Furthermore, when the fire stops are used the opposite walls of the partition can be secured to the stops as well as to the studs, thus making for a sturdier construction. In other words, the horizontal sills serve both as fire stops and as braces for the partitions.

According to the code, a fire stop must be used between the studs so as to interrupt the space between the opposite partition walls which space would otherwise serve as a flue and will hasten the upward spread of fire.

This fire stop also serves as a brace to stiffen the partitions. When, in order to reduce the transmission of sound, the studding is staggered, the fire stops referred to can not be conveniently used and the resulting partitions will constitute a fire hazard and will not be sufficiently stiff.

According to my invention, the combined fire stop and brace is formed of two parts 36 and 38 which are secured, at their opposite ends to studs 26 and 28 respectively. The abutting faces of parts 36 and 38 are preferably provided with a tongue and groove arrangement like that shown in Fig. 2 and are separated by the same type of insulation 34.

It will be seen from Fig. 1 parts 36 of the horizontal sill help support one side of a partition and parts 38 help support the other side of the partition and that the insulation between parts 36 and 38 effectively reduces the transmission of sound or other vibration from one room to another.

The opposite sides of partition 40 are secured to the opposite parts 26 and 28 of the studs and to the opposite parts 36 and 38 of the horizontal sills by any suitable means, not shown.

From the foregoing it will be seen that I have produced a simple, inexpensive and effective sound-proof construction which can be incorporated in its entirety, in new buildings and the part of which shown in Figs. 2 and 3 can be incorporated in the process of remodeling which usually involves new partitions.

What I claim is:

1. In a building construction a girder formed of a lower body portion and an upper body portion, a layer of sound insulation therebetween, there being a notch formed in top of said upper body portion for receiving sound insulating material, a first vertical stud formed of a first vertical strip supported by said upper portion to one side of said notch and a second vertical strip supported by said upper body portion to the other side of said notch, and a vertical strip of sound insulating material located between said strips and registering with the sound insulating in said notch.

2. The structure recited in claim 1 and a horizontal disposed still formed of a third strip secured to said first strip, a fourth strip secured to said second strip and a layer of sound insulating material between said third and fourth strips and registering with the insulating strip between said first and second strips of said vertical stud.

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