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Husler

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[54] PARTITION WALL CONSTRUCTION

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[51] **Int. Cl.** **E04b 2/74**

[58] **Field of Search** ..... 52/403, 393, 238, 122, 241, 52/394–402, 242, 745, 481, 741, 300, 301; 248/354 R, 356, 357; 211/86

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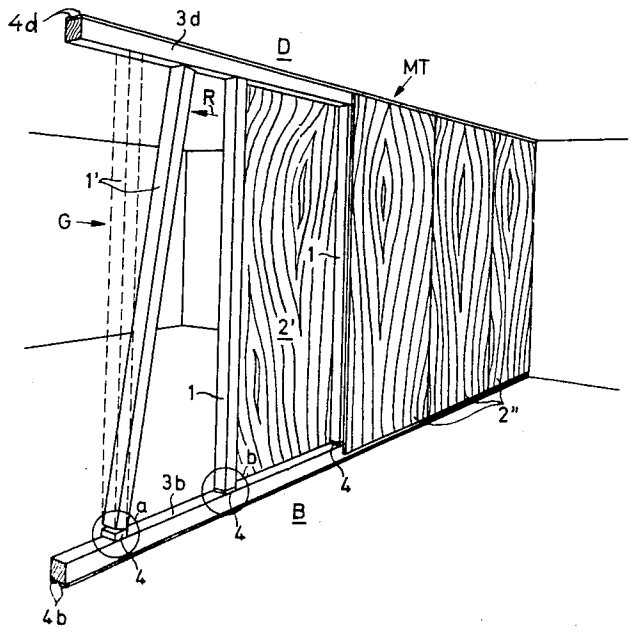
[57] **ABSTRACT**

To provide for ready removability and re-use of partition walls, and nail-less installation, a body of elastic material, such as a neoprene material or the like is interposed between an upright and the floor and ceiling, or floor and ceiling stringers or plates, the upright being slightly longer than its clearance distance. The neoprene block is placed in the position which the upright is to occupy, the upright is placed aligned, in inclined position and hammered in place, to hold its place by frictional engagement and the resilient, compressive force of the elastic body. Thereafter, wallboard can be applied to the uprights which, typically are spruce or fir, such as two by fours or the like.

4 Claims, 7 Drawing Figures



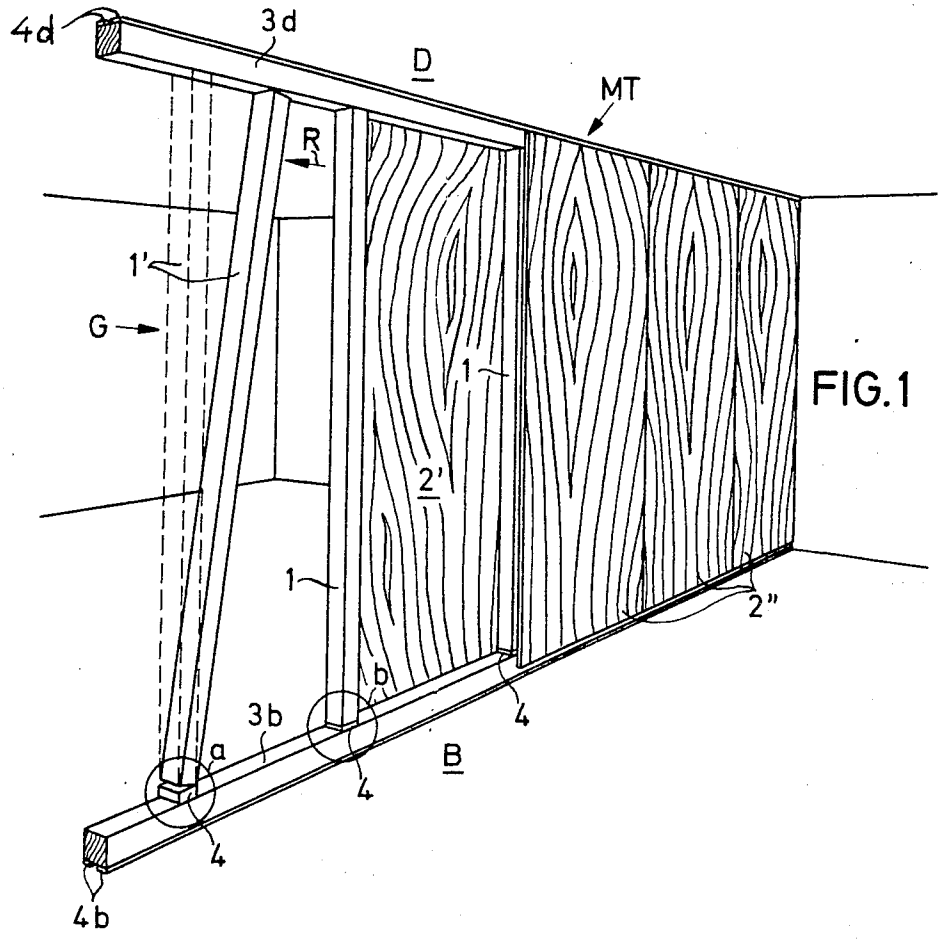


FIG.1

FIG.1a

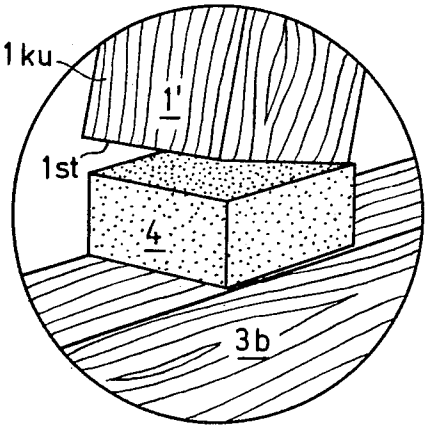
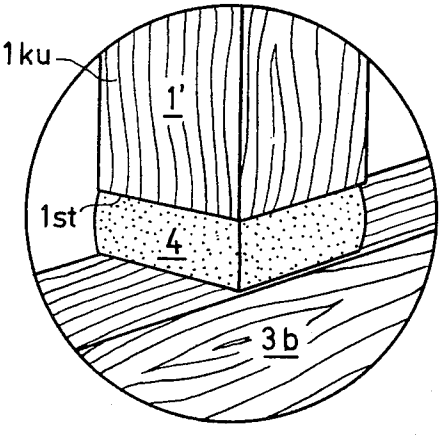


FIG.1b



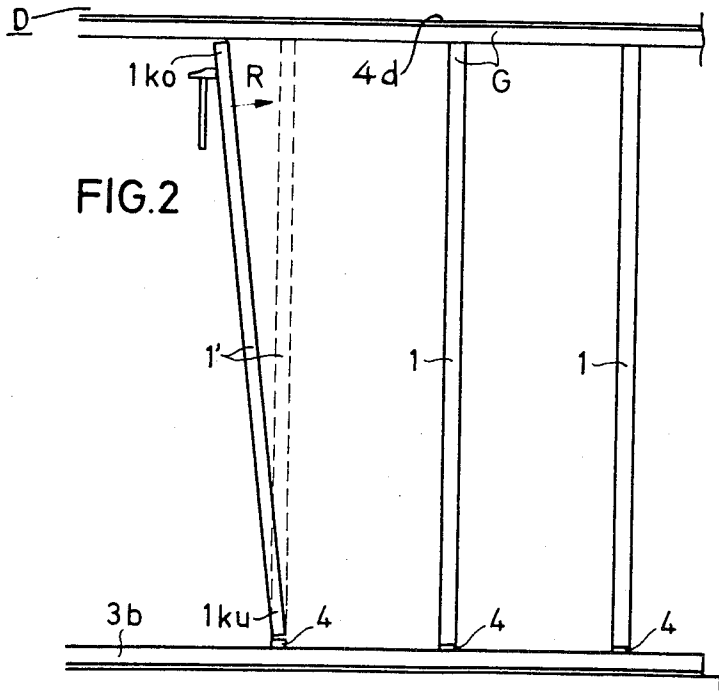


FIG.2

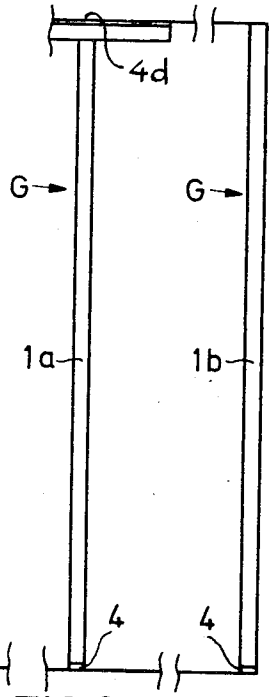
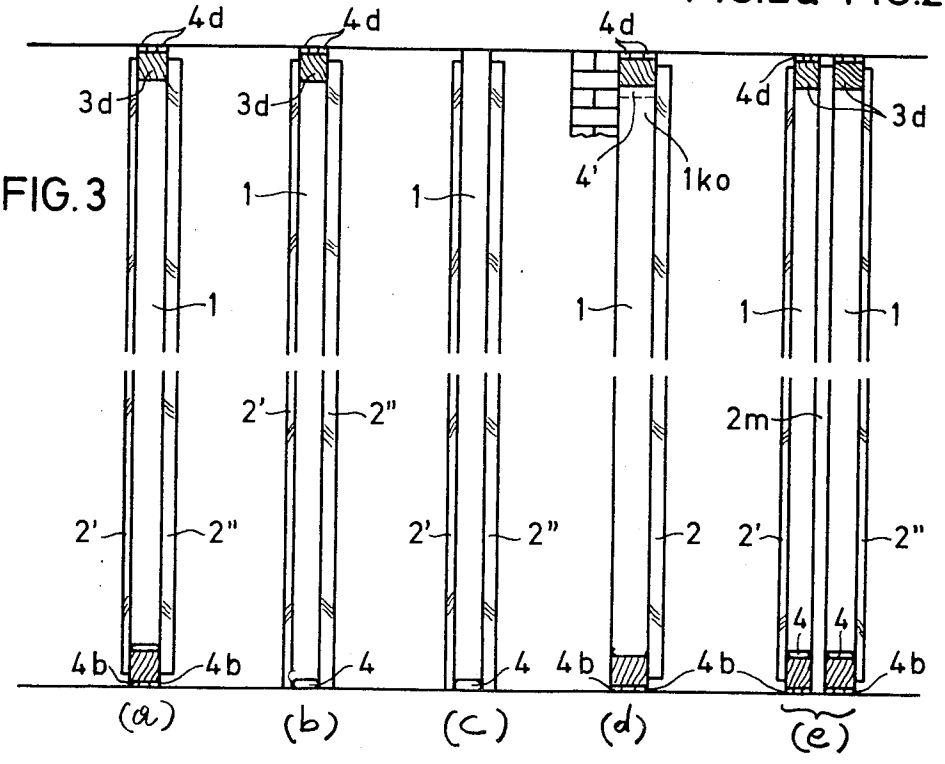


FIG.2a FIG.2b

FIG.3



PARTITION WALL CONSTRUCTION

The present invention relates to mobile walls, and more particularly to the construction of partition walls, and the method of their erection. Partition walls are usually made of wall panels secured to uprights, such as wood two by fours or two by threes. If it is desired to move such walls, they leave substantial damage at the ceilings and floors, and at adjacent walls, caused usually by the attachment of the floor and ceiling plates, or stringers, or of the uprights themselves. Such attachments are, typically, nails, or screws or, if connected to cement or brick walls, anchors and the like.

It has been proposed to combine metal and wood when constructing mobile partition walls; usually such walls require special metallic track or post units, of more or less complicated profiles. Hollow metallic posts of, for example, round or square cross section can be interconnected with specially shaped floor and ceiling tracks. Attachment is, for example, by means of screws or springs. Wedge shaped elements may be used to provide for exact fitting, or specially shaped leaf springs can be interposed between the elements to provide for an exact fit of the wall structure to an existing building or room. Such support structures for use of mobile walls, which may combine both wood and metal, however still leave damage if it is desired to move the walls. Such damage is particularly noticable at the floor. Such mobile walls are quite complicated, require expensive and special materials and their installation usually can be done only by specially trained skilled craftsmen. Entirely apart from the high labor costs, installation of such walls where specially trained installers are not normally located greatly increases the costs of such movable walls. Such movable walls are therefore utilized almost exclusively only in industrial or office buildings where a large number has to be used, or in large population centers. For ordinary home use they have been found much too expensive. It would, however, be highly desirable to provide readily movable partition walls for home use, to easily accomodate changes in family composition, for example by increasing the number of rooms as the family grows, without damaging existing walls or ceilings within the home. Wide-span ceiling construction, which is becoming increasingly popular, enables the placement of non-load bearing partition walls as desired.

It is an object of the present invention to provide a partition wall construction which utilizes readily available materials, which can be erected by untrained or only semi-skilled personnel or which lends itself to a "do-it-yourself" construction, which is light weight, and which can readily be moved without leaving damage to existing floors or ceilings, and which employs re-usable materials and elements.

Subject matter of the present invention:

Briefly, a body of elastic material, for example a block of neoprene rubber, is interposed between the floor or ceiling or between a floor or ceiling plate or stringer, and an upright. The cross-sectional shape of the body of material is similar to that of the upright-typically a two by four. The upright itself is cut slightly longer than its clearance between floor or ceiling (or the plates or stringers, if used) and hammered into place after having been positioned on the block of elastic material. By compression of the block of material, the upright will frictionally hold in place. The wall is then completed by applying wall panels to the outer sides of the upright. Such panels may be prefabricated and secured by removable elements, such as screws. Thus, the entire wall is held in position by friction and the resilient force of the neoprene block.

In accordance with a feature of the invention, the floor and ceiling stringers have one or more strips of neoprene rubber applied thereto to increase the frictional holding thereof. No nails or other elements penetrating from the wall into the ceiling or floor are used at all. The space between the wall panels formed by the width of the uprights can be used for utility lines, such as electric cables, pipes and the like, or, if desired, wholly or partially filled with insulation material typically sound absorbing material such as rock wool, foamed panels, rolls, or the like.

The uprights are erected by placing the block of rubber in a predetermined position, aligning the upright, but tilted with respect to its vertical position and then hammering the upright into place. To move the wall, it is only necessary to remove the wall panels and hammer the upright in the direction inclined with respect to the wall, and remove the upright. There will be no nail holes left. The uprights themselves, completely undamaged and without nail holes, can be re-used.

The invention will be described by way of example with reference to the accompanying drawings wherein:

FIG. 1 is a perspective view of a mobile wall, in progressive stages of erection;

FIG. 1*a* is a detail view, to a greatly enlarged scale of the placement of an upright;

FIG. 1*b* is a perspective detail view of an upright in position;

FIG. 2 is a front view of the mobile wall, with the wall boards removed;

FIG. 2*a* is a front view of an upright without a base plate;

FIG. 2*b* is a front view of an upright without a ceiling and without a base plate, and

FIG. 3 illustrates five sections, *a*, *b*, *c*, *d*, *e*, each showing a front view of different forms of placement of uprights in combination with different side walls.

The mobile walls MT is designed to separate a space within a building into two rooms. Spaced uprights **1** have wall panels **2'**, **2''** secured thereto, for example by means of screws, holding clips or the like. The uprights are placed between a base plate **3***b* and a ceiling plate **3***d*. An elastic body **4**, typically a block of neoprene rubber is interposed between the upright **1** and base plate **3***b*. The ceiling and base plate **4***d*, **4***b*, at their outer edges, have two strips of neoprene rubber **4***b* and **4***d*, respectively, applied thereto, located between ceiling D and floor B.

The cross section of resilient block **4** corresponds to the cross section of the uprights **1**. The blocks **4** are applied to the lower end faces of uprights **1**, without any special securing element, such as screws, nails and the like. The length of the upright **1**, plus the length of the blocks **4**, before being placed in the wall, is slightly longer than the clearance distance in which the upright is to be placed, that is, the clearance distance between floor and ceiling or, if used, the clearance distance between floor plate **3***b* and ceiling plate **3***d*. The

framework G is forced to have the upright position, indicated in dashed lines FIG. 1, to compress the neoprene blocks 4 for permanent elastic holding of the entire wall between ceiling D and floor B. Force is applied in direction of arrow R, as seen in FIG. 1, to place the upright 1' from the full line into the dashed line position. The actual connection is best seen in FIGS. 1*a*, and 1*b*. The upright 1' is forced, aligned with the wall, by force being applied in the direction of arrow R until the entire end face 1*st* of the lower end 1*ku* of upright 1' contacts neoprene body 4. The neoprene body is, thereby, compressed, (see FIG. 1*b*) and will bulge slightly. Since all uprights have similar neoprene blocks 4, and are made to have the same additional length with respect to the clearance space, the same compressive force will be applied by all the uprights, and the frame construction will be securely held.

The neoprene strips 4*b* and 4*d* applied to the floor and ceiling plates, respectively, are provided only to increase friction and to inhibit sliding, for example sideways sliding of the framework, particularly during erection. Additionally, and particularly when two spaced strips are used, the sound transmission between adjacent walls is decreased. The strips are not strictly necessary. Strips of other material, for example putty, can be used.

FIG. 2 illustrates how simple the erection is. First, an upright 1' is placed, in side alignment, on a previously located block 4. Then the upright is hammered into place, as indicated by arrow R, the elastic body 4 being simultaneously compressed to hold the upright securely in position. Locating the upright 1' in the full line position of FIG. 2 can be done by hand, and easily; lengthwise alignment likewise is simple, since the upright can be placed with an edge at the lower end against an edge of neoprene block 4 which, due to its composition, will remain in fixed place. The still inclined upright 1 can be pressed into temporary position, alignment checked, and then hammered into place. If desired, the front edge of the upright can be slightly bevelled, to facilitate hammering in of the upright.

The arrangement of FIG. 2 illustrates a single upright in which an upright 1a is located on a resilient body 4 directly placed on the floor. Floor plate 3*b* and the neoprene strips have been omitted. FIG. 2*b* illustrates an upright placed directly on a block 4 placed on the floor, without a ceiling plate. This is the simplest form of the partition wall construction. It is particularly suitable if the ceiling is of a material against which the upright can readily be forced, such as paneling.

FIG. 3 illustrates, in the section (a) to (e) five different variations of the mobile wall. Variation (a) corresponds to that shown in FIGS. 1 and 2. Variation (b) illustrates a complete wall in cross section, as seen in front in FIG. 2*a;* variation (c) illustrates a complete wall as seen in front in FIG. 2*b*. Variations (d) illustrates a simple mobile wall in which the upright 1 has only one side wall panel 2 applied thereto; the other side is formed by a brick wall, for example the outside of the house. Such a construction can be used as an inside wall against a supporting brick wall, for example to form a decorative inner surface. The uprights 1, in this embodiment, can be substantially smaller and may be in the order of furring strips or two by three's, placed sideways. The construction of the wall itself, that is use of a ceiling or floor plate, respectively, can be in accordance with either FIG. 2, FIG. 2*a* or FIG. 2*b*. The brick wall may, for example, have approximately 12 cm width.

The embodiment of FIG. 3 — section (e) illustrates a multi-layer mobile wall; such walls have excellent sound deadening properties, particularly when filled with foamed material. Adjacent wall structures are used with three wall panels 2', 2'' and a center panel 2*m*. The center panel need not be secured to any one of the wall sections and may, for example, consist of a foamed panel itself. Such a wall, again, can be used as a sound and heat insulating wall against an outer brick section as illustrated in variation (d). Many variations are possible.

In actual construction it is preferred to place the elastic member 4 at the floor level and then hammer the ceiling end of the upright into place. The position of the blocks can be reversed; as illustrated in FIG. 3, variation (d) an elastic block 4' can be placed at the top end 1*ko* of the upright rather than at the bottom. The upright is then hammered in place at the bottom.

The matching end edges of adjacent wall panels 2', 2'' are preferably located at the middle of uprights 1, as indicated in FIG. 1, where wall panels 2'' are not yet completed. The wall panels themselves may have tongue and groove, or similar interconnection. The uprights themselves may consist of spruce or fir or, if intended for repeated erection and removal, of hard wood. For most uses, ordinary construction two by four's are suitable.

The mobile partition wall has a surprising simplicity in construction, and in erection. From experience it has been found that erection costs can be reduced by 50 percent with respect to costs involving nailing and other methods of attachments. Since no special tools, nor special skills are necessary for erection of the walls, they can readily be made by local carpenters and contractors, and are suitable for "do-it-yourself" installation. Lumber used in the construction of the walls can be re-used thus effecting cost savings.

When intended for use in pre-fabricated structures, the interior non-load bearing walls can be shipped unassembled and erected at the site at the same, or even lesser costs than the handling and shipping of completed wall section and panels.

The present invention has been illustrated in connection with partition walls with prefabricated wall panels; various changes and modifications may be made in accordance with the inventive concept and as required for specific installations or uses.

The upright should have an excess length over the clearance dimension of about 1 cm.

I claim:

1. Studded wall construction adapted to be located between a floor structure and a ceiling structure having a plurality of mutually spaced upright studs, each having at least one plane flat end face adapted to bear against the floor, or ceiling structures, respectively, and holding means for holding the studs in predetermined position with respect to, and between the floor (B) and the ceiling (D) structures, wherein the holding means comprise

flat prismatic slightly elastically compressible solid blocks having a transverse cross section substantially corresponding to the cross section of the studs, the solid blocks being applied with a plane end face to abut directly a plane end face of each stud and being located between the stud and at least one of said structures, the overall length of each stud plus the thickness of the solid block abutted thereagainst being greater, before positioning and assembly of the studs and the solid blocks between said floor and ceiling structures, than the clear dimension between the floor (B) and ceiling (D) structures intended to receive the stud-holding means combination,

the studs being resiliently clamped in position between the floor and ceiling structures by frictional engagement with the respective end face of the solid block at one end, and the respective structure at the other end, and the reaction force to elastic compression of said solid block.

2. Construction according to claim 1 wherein said upright studs are wood.

3. Construction according to claim 1 wherein said block comprises a solid block of neoprene.

4. Construction according to claim 1 including wall panels applied to said studs and overlapping said solid block.

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