

[54] **DEMOUNTABLE PARTITION ASSEMBLIES AND THE STUDS THEREFOR**

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[58] Field of Search.....52/238, 481, 479, 52/496, 241, 242, 243, 509, 511, 497, 495

[56] **References Cited**

**UNITED STATES PATENTS**

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**FOREIGN PATENTS OR APPLICATIONS**

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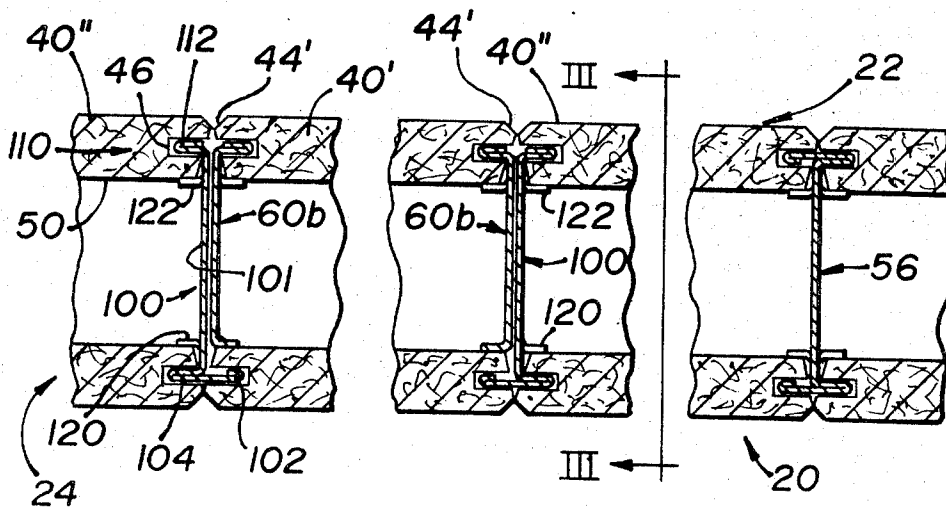
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[57] **ABSTRACT**

An improved stud and demountable partition assembly or wall constructed therewith, the stud being characterized by a single partition member interengaging means projecting from one edge, and double partition member interengaging means from the other edge, whereby the wall is constructed progressively up to that stud, leaving the partition member adjacent to the single partition member free of any connection to the improved stud and thereby completely accessible independently from the remaining wall portions.

**6 Claims, 5 Drawing Figures**



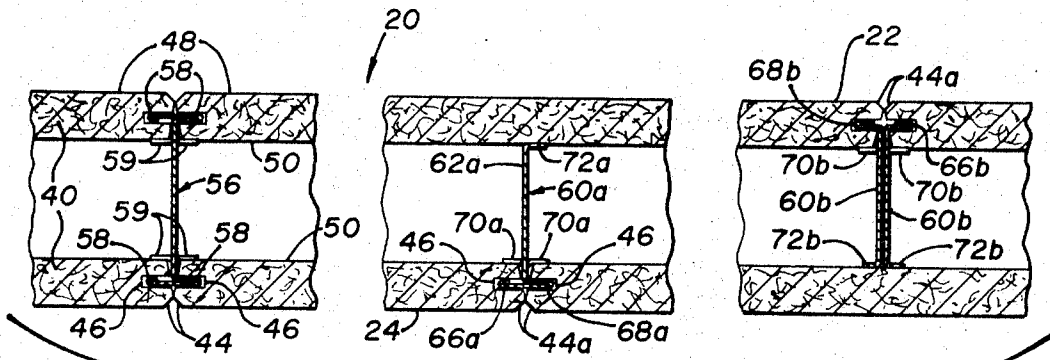
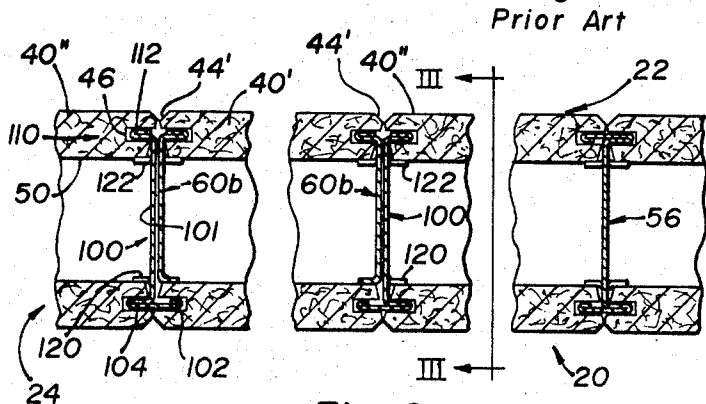


Fig. 1



Prior Art

Fig. 2

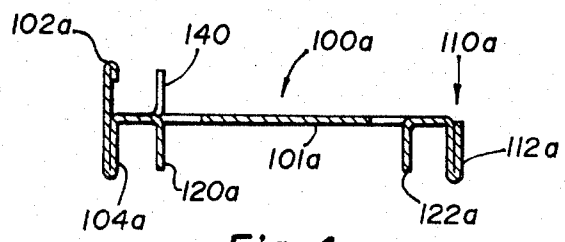


Fig. 4

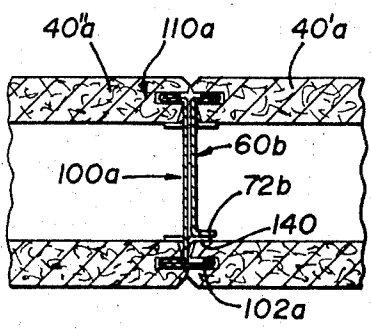


Fig. 5

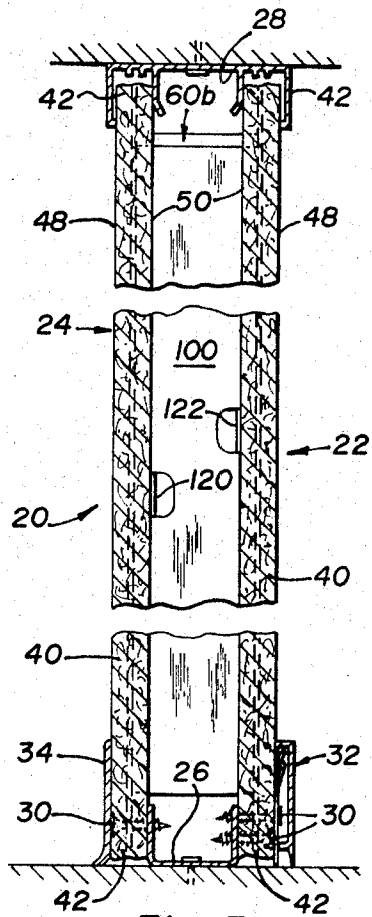


Fig. 3

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## DEMOUNTABLE PARTITION ASSEMBLIES AND THE STUDS THEREFOR

### BACKGROUND OF THE INVENTION portions.

Demountable partition assemblies have become of primary importance in large building projects, wherein hollow walls of less than permanent construction are required which are easily assembled and later disassembled. Disassembly is necessary if wall locations are to be altered, such as in the redesign of office layouts. Such assembly and disassembly generally requires, for practicality, a minimum of relatively uncomplicated components. The hollow wall thus ideally constructed is generally characterized by partition members, primarily made from gypsum wallboard or panels, which are positioned adjacent to each other in two parallel spaced-apart opposing rows defining the sides of the wall. The spaced-apart opposing relationship of the sides is accomplished by studs of metal or wood to form the interior of the wall or divider wherein plumbing and electrical conducts are positioned.

There is disclosed in U.S. Pat. No. 3,027,605 a demountable partition system having the above features, wherein in addition the studs are "floating;" that is, not permanently attached to the floor or ceiling. Conveniently, such studs are shorter in length than the floor-to-ceiling height. The tongue and groove interengagement of the studs with kerfs provided in the partition members further permits mounting of the partition members without the use of fasteners. The support of the partition members by the studs against horizontally directed forces normal to the partition is limited to the engagement of those members with the studs at the kerfs, and with the floor and ceiling runners. The particular floating stud therein disclosed is H-shaped, requiring both sides of the wall to be assembled simultaneously and progressively from a central point such as a wall intersection. Disassembly also proceeds from such a central point, as each partition member is interengaged at the two vertical edges thereof with the studs, and each stud is also similarly interengaged with the next adjacent and opposite partition member.

Attempts have been made to provide for a demountable partition assembly one or both sides of which can be assembled or disassembled non-progressively. Such an improvement would permit selective access to a portion of a wall, such as for installation or repair of wiring or plumbing therein, or for the alteration, repair or replacement of that particular partition member, without tearing down the entire sides starting from an intersection. Furthermore, it would be desirable to also permit the independent erection of each side defining the hollow wall. Such independent erection would prevent delay of erection caused by plumbing and wiring requirements. It is further desirable in those constructions wherein an individual room or space is to be furnished later apart from the immediate decoration scheme, as is often the case with tenant walls. Thus, a portion of the building may be unoccupied temporarily, not requiring or permitting completion of the unoccupied side of the wall at the time the first side is assembled.

One attempt at providing such selective or non-progressively partition assembly features studs which are metal U-shaped channels the side flanges of which are provided with slots facing outwardly on both sides of

the channel. The studs extend from the floor to the ceiling in a non-floating manner. The panels are individually provided with metal teeth or hooks laminated thereto which must be bent at the time of installation so as to project out from the board towards the side flanges of the studs. Each panel then can be assembled and disassembled from two studs by lifting the hooks of the panel into the appropriate slots on the studs. The studs each support both sides formed by these panels, as well as adjacent pairs in each side.

The disadvantages of such a system are numerous. One is that it requires relatively complicated components, such as adjustment shims and the integral hooks laminated to the panels, which components are ready for installation only after special preparation, i.e., the bending of the hooks away from the surface of the panels. Another is that fire-rating requires the lamination of yet another panel to each hung panel. A further disadvantage is that the studs themselves are not readily removable along with the panels to provide complete access to the interior of the wall.

Other disadvantages stem from the use of each stud to support both a pair of adjacent panels and the opposite pair of panels forming the other side of the wall. Because of this structure, sound attenuation is not improved over conventional structures, and more importantly, each panel must be made with exact tolerances to avoid unattractive gaps forming at the joints. These gaps can be covered, if at all, only by battens which themselves are decoratively unappealing. Further, to support two adjacent panels on each side, the studs must have considerable lateral extent in the channel walls. This lateral extent weakens the channel causing permanent inward deflection in some cases during installation, which in turn causes "lipping" of the panels. To avoid this, extra shoring clips are necessary for the studs.

Still another problem created by the attempted solution described above is that security is lacking by the very nature of the accessibility of the panels on both sides of the wall. That is, if both sides of the wall are constructed by such a partition assembly, a person can move from room to room merely by dismounting the panels on both sides of the hollow wall. This problem can be overcome by providing for a separate construction of one side of the hollow wall, but to provide entirely different components such as different types of panels for such a wall normally results in yet a further complicated assembly and the added cost of extra tooling. Thus, it would be advantageous to have components which would permit non-progressively or selective assembly and disassembly of a partition construction on one side of the wall, such as for access purposes, and only progressive construction on the other side of the wall to insure security, at the same time using as many as possible of the same components for both sides of the wall.

A recent innovation is disclosed in U.S. patent application Ser. No. 77,997, filed on Oct. 5, 1970. The structure therein disclosed features floating studs which interengage each with only one row of partition members making up the wall, so that each row can be assembled and disassembled independently of the other. Within either row, the studs may engage either only one, or two adjacent partition members, the

former comprising a non-progressive row construction while the latter comprises a progressive row construction. For a row to be non-progressively constructed with some of the members therein accessible independently from the other members of that row, the C-shaped studs which are used therefore require that all of the members of that row be independently accessible, whether they need to be or not.

### SUMMARY OF THE INVENTION

This application concerns an improved stud and demountable partition assembly or wall utilizing this stud, wherein only one member of a row need be made independently accessible, the remaining members being progressively assembled and disassembled. More specifically, there is provided a stud which is improved so as to have means for interengaging at least one stud with only one member of a row, this means being spaced apart a prescribed distance from conventional means on the stud for interengaging two adjacent members in the other row. To insure the one-member interengagement, this distance exceeds the distance between the backs of the partition members defining the opposing rows. The result is that the partition member which is erected adjacent to the one partition member is not connected in any way to the one stud, thereby making that partition member independently accessible.

Accordingly, it is an object of the invention to provide an improved demountable partition assembly and stud therefor, which permits a single member of a double-row wall to be independently accessible without requiring the entire row to be so constructed.

It is a related object of the invention to provide such an improved assembly wherein all members but the desired individually accessible partition member are assembled, and capable of disassembly, only progressively.

Other objects and advantages will become apparent upon reference to the following drawings and detailed discussion.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary plan view in section of a demountable wall constructed in accordance with the teachings of prior art;

FIG. 2 is a fragmentary plan view in section of a demountable wall constructed in accordance with the invention;

FIG. 3 is a fragmentary elevational view in section of the wall in FIG. 2, taken generally along line III—III;

FIG. 4 is a sectional view of a modified form of the stud shown in FIGS. 2 and 3; and

FIG. 5 is a fragmentary plan view in section similar to FIG. 2, but illustrating the stud embodiment shown in FIG. 4.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The meaning of certain terms as used throughout the application will now be set forth. "Partition member" refers to a one-piece part of one side or row of a hollow wall or divider which separates a space such as a room from the interior of the wall or divider formed when the

member is assembled with other like members. Thus, a partition member can be a single wall panel having the necessary structure for interengagement with the studs, or it can be two panels adhered or laminated together in a conventional fashion, such as is taught in the aforesaid U.S. Pat. No. 3,027,605. "Interengagement" and the corresponding verb forms refer to a connecting relationship between two parts, both of those parts being especially made for the relationship. "Opposing rows" or "sides" of such partition members refers to the two rows of such members spaced apart back-to-back which form the completed hollow wall. An "opposite member" is that partition member in the opposite row from the row being discussed which is immediately opposite the partition member in question. The "back surface" of such a partition member is the surface facing away from the exposed, generally decorated, front surface. "Vertical" and "horizontal" edges of a partition member refers to edges having such orientation when assembled, and which are constructed for that purpose.

Thus, referring to FIGS. 1-3, the components and the assembly of the invention can be utilized to construct a hollow wall or partition comprising two spaced apart, back-to-back parallel sides or rows 22 and 24 of partition members 40. These partition members, when assembled, abut against or are confined within, in a conventional manner, floor and ceiling runners 26 and 28, respectively (FIG. 3). For example, screws 30 can be utilized to fix the bottom horizontal edges 42 of the partition members in place, a base and attachment clip 32 or a single "top set" base 34 being used to cover the screws. The spacing of the two rows 22 and 24 is accomplished by studs as hereinafter described.

The individual partition members 40 can be conventional gypsum wallboard panels of any convenient width or height, having horizontal edges 42 and vertical edges 44. The latter edges 44 are conventionally formed with groove-like kerfs 46 extending approximately centrally thereinto, generally parallel to the plane of the member 40 as defined by its surfaces 48 and 50. The front surfaces 48 of a member 40 may be decorated in any fashion, such as with a vinyl covering. The back surface 50 is generally left undecorated and is of slightly lesser lateral extent or width than the front surface 48, so as to taper the edges 44 inwardly from front to back (FIG. 1). Because of the nature of the interengagement of the members 40 with the studs at the kerfs 46, the partition members preferably are formed from monolithic hard-edged fiber-glass-reinforced gypsum wallboard. However, as noted above, laminated panels can also comprise the members 40.

### PRIOR CONSTRUCTIONS

Turning now to FIG. 1 in particular, this figure illustrates the prior art use of studs 56, 60a and 60b. Stud 56 is used, as disclosed in the aforesaid U.S. Pat. No. 3,027,605, to provide for a progressive erection of both rows 22 and 24, the end flanges 58 being interengaged with the kerfs 46 of the partition members. Back support tabs 59 are used to reinforce the back surface 50 of the members 40.

Further down the partition 20, the use of studs 60a and 60b permits as disclosed in the aforesaid patent ap-

plication Ser. No. 77,997, the erection of this portion of rows 22 and 24 completely independent of each other. The subscripts "a" and "b" are used to distinguish the two types from each other. More specifically, studs 60a and 60b are especially constructed to permit either row 22 or 24 to be assembled or disassembled without affecting and without regard to the studs or members forming the other of the two sides 24 or 22. The studs 60a and b interengaged in either row 22 or 24 are spaced without regard to the spacing of the studs interengaged with the other row, and are spaced only with respect to the next adjacent stud in that row as determined by the width of the partition member therebetween. Such a construction is rendered easier by making the studs preferably floating studs. Because the positioning of each stud depends only on the width of the preceding partition member without regard for the width or spacing of opposite partition members, each of the partition members 40 forms an edge 44a-to-edge 44a joint with its adjacent neighbors. The joints of the two sides or rows can be nonopposing, as they are formed independently of each other.

The stud 60a permits only progressive assembly and disassembly of its row. Two tongue-like flanges 66a and 68a extend in opposite directions from a web portion 62a of the stud 60a and generally perpendicular thereto, preferably along the entire edge of the stud. Flanges 66a and 68a are dimensioned in thickness to snugly fit within the groove-like kerfs 46. This tongue-and-groove fit is such that friction retains the studs 60a and 60b in a floating position with the partition members 40, even when the latter are disassembled for repair, alteration, or other purposes.

To reinforce the partition members interengaged with the flanges 66a and 68a, each stud 60a is provided with at least one pair of knock-out back tabs 70a, the tabs in each pair projecting in opposite directions and generally parallel to the flanges 66a and 68a, from the web portion. Alternatively, the tabs can be replaced by full length flanges. The surface of the tabs fits flush against the back surface 50 of the interengaged member 40.

The studs 60b, in addition to having the single-row interengaging feature of studs 60a, permit individual or selective accessibility to the partition members mounted thereby. This is accomplished by forming the stud 60b with a central web portion 62b and a single end flange 68b for interengagement with a kerf 46 of only one partition member 40. Back tabs 70b are formed and used in the same fashion as the tabs 70a in the studs 60a.

Both the studs 60a and 60b are characterized by a single flange 72a and 72b, respectively, along the edge of the web portion which is opposite to the flanges 68a and 68b. The flanges 72a and 72b are especially designed for a non-interengaging contact with the back surfaces 50 of the partition members to horizontally reinforce them without attaching to them.

#### THE INVENTION

Turning now to FIG. 2 in particular, in accordance with one aspect of the invention, the cavity wall 20 is modified so that only a partition member 40' of either row which must be selectively accessible, is so erected. As shown, the particular member 40' is part of row 22.

This is accomplished by means of studs 100 each of which has a web 101 and one vertical edge 110 thereof modified so as to interengage only one partition member, namely the member 40' adjacent at either side thereof to the member 40' in row 22. More particularly, the edge of web 101 opposite edge 110 is provided with two oppositely extending flanges 102 and 104. These extend from the web generally perpendicularly thereto for progressive assembly within the kerfs of member 40 of row 24, in a manner similar to the prior art construction described earlier. In contrast, the edge 110 is characterized by a single flange 112 dimensioned and formed so as to interengage the edge of only member 40' within the kerf 46 thereof. Flange 112 is spaced from flange 104 a distance which exceeds the back-to-back spacing of the partition members 40 and 40', to insure that flanges 104 and 112 will interengage with the kerfs of the members.

To complete the interengagement of the partition members 40 and 40' with the stud 100, back-up support tabs 120 and 122 are bent out of the web. These tabs project parallel to the flanges 104 and 112 respectively, and are spaced from their respective flanges a distance which will accommodate a portion of the back surface 50 of the partition member resting against the tab. Although only one each tab is shown per stud, any number of them may be used. Alternatively, the tabs 120 and 122 can be replaced by a full-length flange, in which case such a flange must be roll-formed or extruded. It even may be possible in some cases to omit the tabs where horizontally-directed forces against the wall are expected to be light.

The studs can be fabricated from any suitable material, such as steel, aluminum, and high strength plastics.

Where the accessible member 40' is not an end or corner member, it is necessary to have a second stud 100 mounting in row 22 only, a second one member 40' on the opposite side of member 40'. As is readily apparent from FIG. 2, such a stud is identical to the first described stud 100, and is installed so as to appear as its mirror image.

The partition member 40' is now left free to be accessibly installed in the row 22 independently of the aforedescribed components. Preferably, this is accomplished by utilizing the afore-described stud 60b, as such a stud removably interengages only one edge 44' of that partition member 40'. Stud 60b readily fit closely adjacent to or in contact with the improved studs 100.

The remainder of the rows 22 and 24 shown in FIG. 2 can be progressively constructed by use of the aforedescribed studs 56.

Although the invention has been described in connection with a preferred embodiment, it is not limited thereto. For example, the particular shape of the studs 100 need not be exactly as shown, the only limitation being that the studs and partition members adjacent to the partition member which is to be made accessible, be interengaged in such a way as to permit the accessible member to be mounted entirely independently thereof, the studs still providing progressive interengagement with the partition members in the opposite row.

A specific example of a variation within the scope of the invention is illustrated in FIGS. 4 and 5. Parts

similar to those previously described bear the same reference numerals to which the distinguishing suffix "a" has been added. Thus, stud 100a is similar to stud 100 described above in that web 101a has, at one edge, flanges 102a and 104a, a tab 120a projecting parallel to flange 104a, and at the other edge 110a, a flange 112a for interengagement with a partition member 40'a (FIG. 5), and a support tab 122a. In addition, however, yet another back-up support tab 140 is bent out of the web portion to extend from the side of the web which is opposite to the side from which extends tab 120a. Thus, tab 140 reinforces the partition member interengaged with flanges 102a by accommodating the back surface of that member. If a stud 60b is used to accessibly mount the partition member 40'a (FIG. 5), then the flange 72b thereof can abut against the flange 140.

Accordingly, as there are a number of variations which are possible, it is intended that the invention cover all alternate arrangements, equivalents, and embodiments as may be included within the scope of the following claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a demountable partition assembly including a plurality of demountable partition members and studs removably interengaging the members so as to form two generally straight rows of the members positioned back-to-back and spaced apart a given distance, thereby defining a cavity wall, said studs including a first type positioned between two coplanar, adjacent members in at least one row and having a supporting web portion and means for removably interengaging said two adjacent members in said one row; the improvement comprising means spaced from said first-named means by a distance which exceeds said given distance for removably interengaging the first type of stud with only a first one other of said members in the other row, said one member being spaced away from

and generally opposite to one of the other members interengaged by said two-member interengaging means, and a second of said partition members accessibly mounted adjacent to said other row member by a second type of said studs mounted adjacent, but not connected, to said first type of stud, whereby said second member and said second studs may be demounted without disturbing said adjacent members and said first type of stud.

2. The improved assembly as defined in claim 1, and further including means for removably interengaging a second of the first type of studs with only a third one other of the partition members, said third one member being positioned within the same row as said first one member but separated therefrom by the second partition member, said second member being mounted by two of the second type of studs each having means for removably interengaging one edge portion of only said second member.

3. The improved assembly as defined in claim 1, wherein said one-member interengaging means includes a single flange extending generally perpendicularly from said web portion.

4. The improved stud as defined in claim 3, wherein said one-member interengaging means includes a groove extending vertically along at least a portion of a vertical edge of said one member, said groove being dimensioned to accommodate said flange.

5. The improved stud as defined in claim 1, wherein said one-member interengaging means includes a groove extending vertically along at least a portion of a vertical edge of said one member.

6. The improved assembly as defined in claim 1, and further including a back support on said one stud projecting from at least one side of the web portion and spaced from said two-member interengaging means a distance which will accommodate a portion of the back surface of one of said two members against said support.

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