

[54] CLIP FOR NON PROGRESSIVE WALL CONSTRUCTION  
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Related U.S. Application Data

[60] Division of Ser. No. 166,422, July 27, 1971, Pat. No. 3,732,660, which is a continuation of Ser. No. 877,248, Nov. 17, 1969, abandoned.

[52] U.S. Cl. .... 52/753 W, 52/712, 52/760  
[51] Int. Cl. .... F16b 2/20  
[58] Field of Search ..... 52/753 W, 760, 712, 715, 52/489, 509, 511, 714, 753 E, 753 J

[57] ABSTRACT

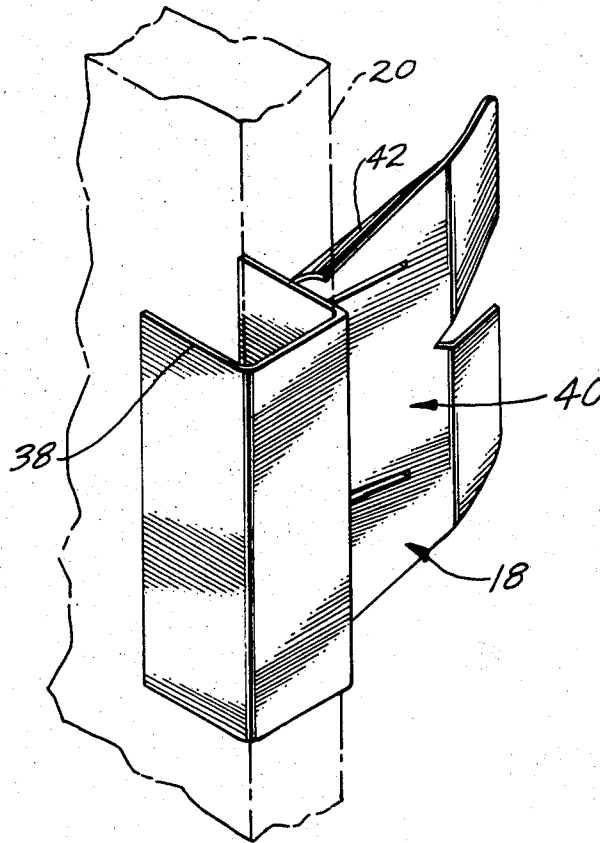
There is provided a non-progressive wall construction system inherently capable of being formed into a structure for supporting conventional rigid wallboards which attach to the support structure in any random fashion using interlocking clips.

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4 Claims, 7 Drawing Figures





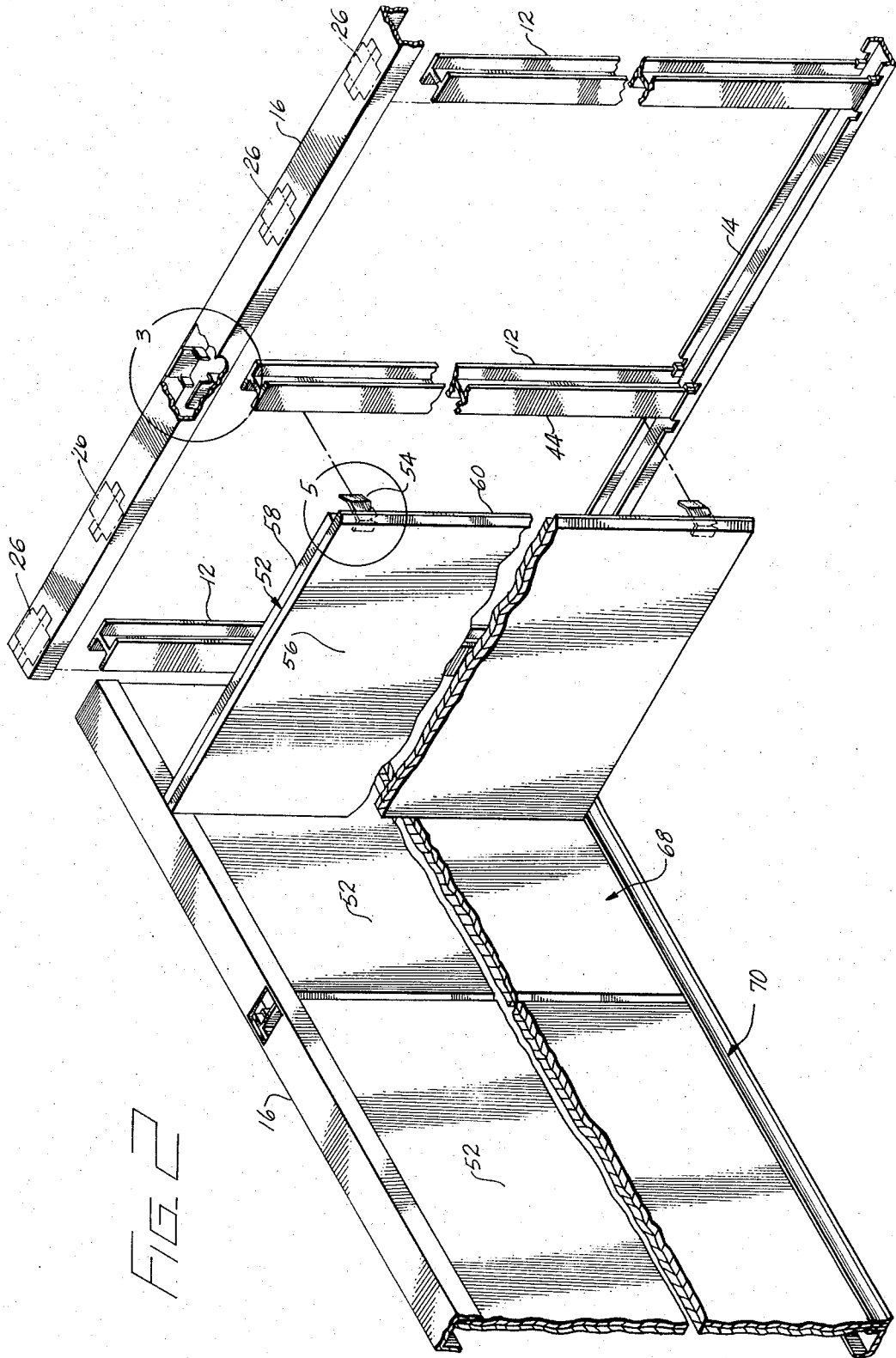


FIG. 3

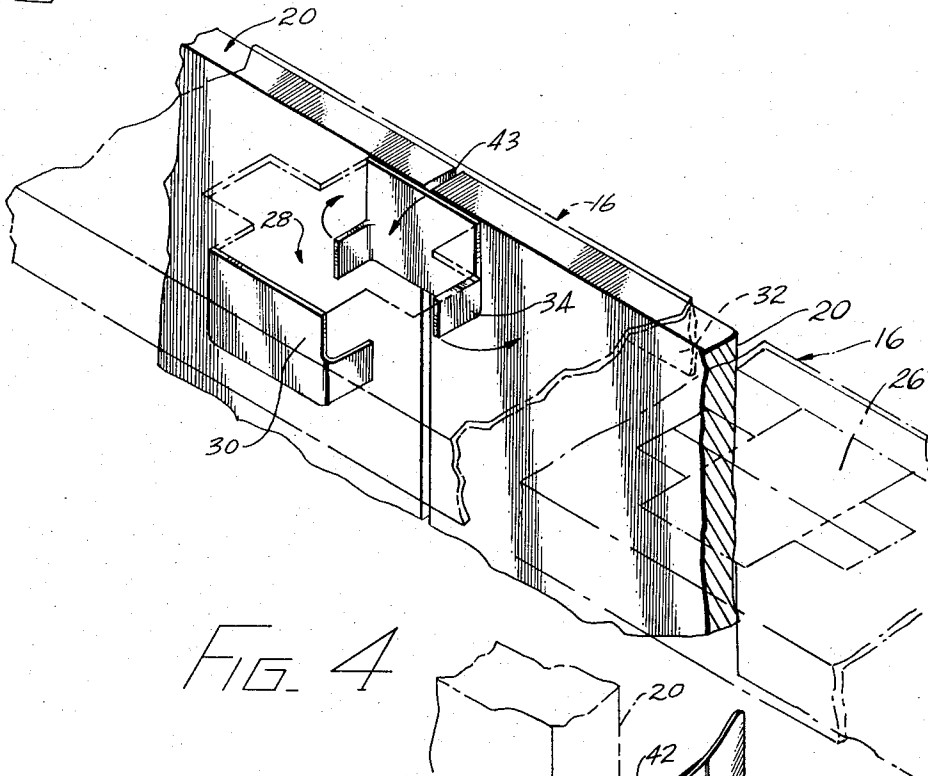


FIG. 4

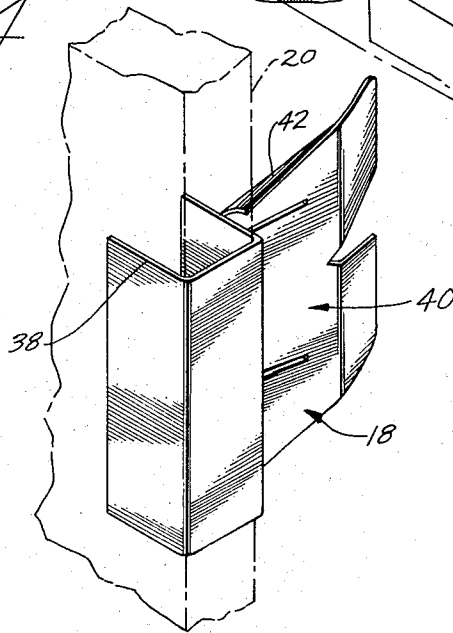


FIG. 5

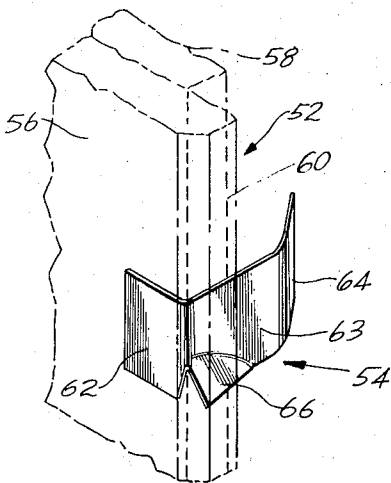


FIG. 6

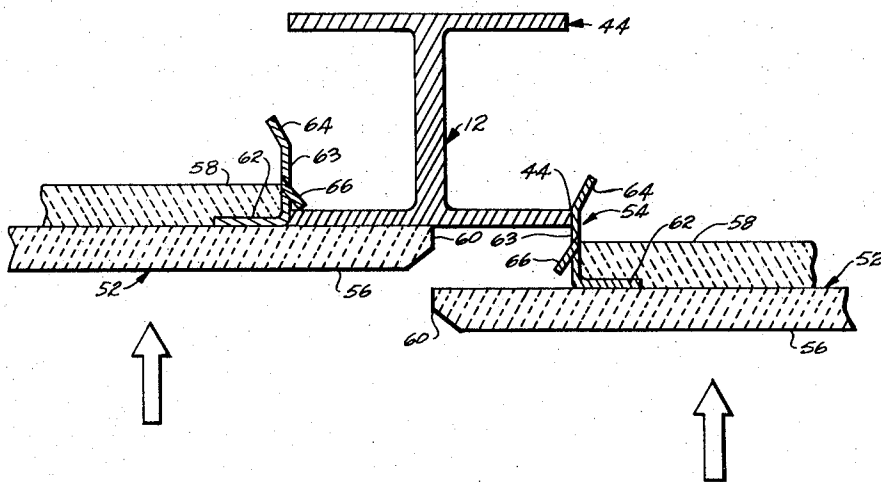
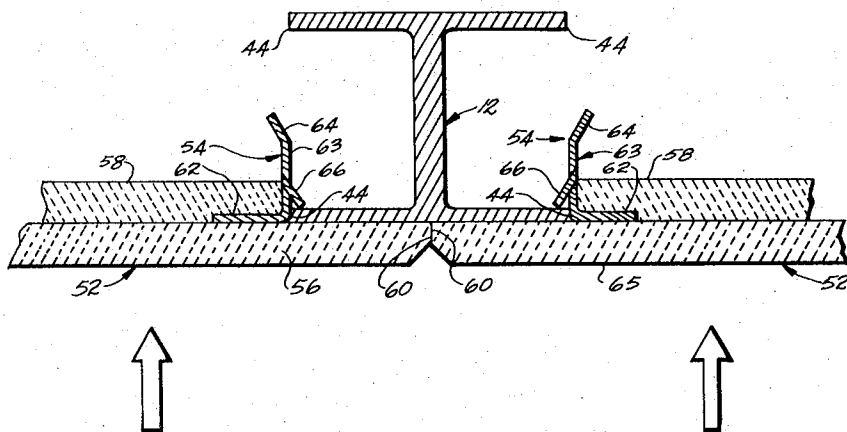


FIG. 7



## CLIP FOR NON PROGRESSIVE WALL CONSTRUCTION

This is a division of my application Ser. No. 166,422 filed July 27, 1971 now U.S. Pat. No. 3,732,660 which is, in turn, a continuation of my application Ser. No. 877,248 filed Nov. 17, 1969, now abandoned.

### BACKGROUND OF THE INVENTION

The present invention relates to wall construction systems which can be temporarily or permanently installed and which can be assembled without the use of screws, bolts, nails or like means of assembly.

Modular wall units which can be assembled and disassembled have become a part of modern building construction, particularly in the construction of office facilities. Most modular wall units are customized in that component parts may only be used in the system and have little or no utility outside of the total system. In addition, most systems offered are fairly complex and time consuming to assemble.

A system has been offered which will accept a wide variety of rigid wall covering materials such as plasterboard, wood paneling and the like. Each panel of the system, however, must be progressively installed. As a consequence, any electrical or plumbing work to be provided in a wall must be completely installed before the next panel is added to the system. Unless careful planning is resorted to, considerable waste of time occurs during the construction of a wall.

### SUMMARY OF THE INVENTION

According to the present invention, there is provided a non-progressive wall assembly, in which the supporting structure for an applied rigid wallboard may be readily assembled without the use of conventional fastening means and to which a rigid wallboard may be easily aligned and secured by means of clips.

This is conveniently accomplished by employing as the basic structural members, vertically disposed struts and horizontally disposed upper and lower U-shaped members adapted to receive, interlock, and space the vertically disposed struts in parallel relationship. Any rigid wallboard may be randomly applied to an assembled support structure using clips which interlock with the rigid wallboard and at least the vertically disposed struts. The system is self aligning and conventional fastening means are not required for assembly of the support structure nor attachment of the rigid wall coverings.

In a preferred system, the upper horizontally disposed U-shaped member is also adapted to receive the wallboard to inherently provide a ceiling trim.

By employing clips adapted to slide over and engage the vertically disposed struts, conventional wallboards such as gypsum board, fiberboard, wood paneling and the like may be randomly secured to an assembled support structure. The system is, therefore, adaptive to any work schedule and is easily disassembled for remodeling or modification.

### DRAWINGS

FIG. 1 is an exploded view of a non-progressive wall construction system which offers quick disassembly.

FIG. 2 is an exploded view and illustration of a non-progressive wall assembly system to which laminated panels may be attached in butting relationship.

FIG. 3 is a detailed illustration of an assembly for an upper horizontally disposed U-shaped member which is inherently capable of receiving and securing a vertically disposed strut as well as receiving a rigid wallboard.

FIG. 4 is a detailed illustration of a clip which may be used in the wall assembly of FIG. 1.

FIG. 5 is a detailed illustration of a clip which may be used in the wall assembly of FIG. 2.

FIG. 6 shows one panel in interconnecting relationship with flange of an I-beam and a second panel about to be engaged with said flange and is directed to the construction shown in FIG. 2. The arrows indicate the lines of force applied in making the assembly.

FIG. 7 illustrates abutting relationship of two panels engaged with an I-beam strut in continuation of the operation shown in FIG. 6.

### DESCRIPTION

According to the present invention, there is provided a wall structure system which is readily assembled without the use of conventional fastening means and to which a rigid wallboard may be securely mounted using clips in any desired random manner.

FIG. 1 is an assembly used to provide a wall construction which may be readily disassembled for use in situations where it is contemplated that alterations will occur on a continuing basis. With reference, thereto, the system 10 comprises vertically disposed struts 12 which are, preferably, of I-beam construction, a horizontally disposed upper U-shaped member 16, a horizontally disposed lower U-shaped member 14, clips 18 and rigid wallboard 20.

Horizontally disposed U-shaped member 14 is adapted to be secured to or placed on a horizontal supporting surface such as a joist or a finished floor surface, and it is also adapted to receive struts 12 and is provided with groupings of punched tabs 22 at regular intervals which will when suitably bent, preferably at scores when provided, interlock with inserted struts 12. The spacing between tabs for interlocking with struts 12 may be widely varied. Spacing, for instance, may be controlled by provisions of local building codes, as well as the width of rigid wallboards 20 to be secured to struts 12. Groupings of tabs 22 may also be conveniently provided for securing half panels and the like.

As indicated, horizontally disposed U-shaped member 14 is adapted to receive struts 12, and tabs 22 are adapted to fold inwardly and around flanges 24 of I-beam 12 to interlock it to U-shaped member 14.

Although U-shaped member 14 may also be conveniently used as the upper horizontally disposed U-shaped member it is preferred to use horizontally disposed U-shaped member 16. With additional reference to FIG. 3, member 16 is preferably initially provided with a series of punched and scored patterns 26 which are adapted to be formed into a unit 28 which will accept and interlock with struts 12 when suitably folded. Forming assembly 28 also provides between the outer walls 30 of assembly 28 and the inner walls 32 of U-shaped member 16, a passage which will accept the insertion of rigid wallboard 20 to provide an integral ceiling trim. To engage an I-beam strut 12, tabs 34 are folded around flanges 24 of I-beam 12. The punched pattern 26, or when formed into interlocking units 28, are also provided at regular intervals along the length of U-shaped channel 16 to align with the tabs provided

in side walls of the lower horizontal U-shaped member 14 to provide thereby proper parallel alignment of struts 12 along the length of a wall to be constructed. Although strut 12 is preferably of I-beam construction it may also have an H-beam construction, or any suitably grooved or indexed channel or like structural member adapted to interlock with units 14 and 16.

Strut 12 is also preferably provided with cutouts 36 which permit the running of electrical and plumbing means within the structure and also forms the basis for the addition of other structural supports such as a slotted bar (not shown) which can be used to position a plurality of struts 12 in U-shaped members 14 and 16 as struts 12 are being interlocked into place.

A rigid wallboard 20 may be secured to an assembly of U-shaped member 14, U-shaped member 16 and at least two struts 12, using clips 18.

With additional reference to FIG. 4, clip 18 is provided with a substantially U-shaped channel 38 which engages wallboard 20, tabs 40 which are adapted to slide over the vertical edges 44 of flanges 24 of struts 12 and containing notched, flared surfaces 42 which are disposed to slide over and interlock by a spring action with struts 12.

With reference to FIGS. 1, 3 and 4, a rigid wallboard 20 is secured to studs 12 using clips 18. Channel 38 of clips 18 are inserted in sliding or interlocking relationship on wallboard 20 and the wallboard applied against struts 12. The clips 18 will slide over the edges 44 of the flanges 24 of strut or stud 12 and flared surfaces 42 of tab 40 will engage the inner wall of flanges 24 of stud 12 thus securing wallboard 20 to struts 12.

Clips 18 are preferably fabricated in a manner which provides a narrow space 43 between adjacent wallboards 20. This narrow space is adapted to receive an escutcheon 46, preferably an aluminum extrusion, having a T projection 48 which slides between adjacent panels 20. The T projection is preferably provided with some friction locking means such as barbs 50. Escutcheon 46 serves to hide the exposed portions of clips 18 and serves as a removable seam cover.

This wall system is readily disassembled in that escutcheon 46 can be easily removed exposing clips 18. Wallboard 20 can be easily removed by bending the exposed portion of channel 38 of clip 18 outwardly. Tabs 22 and 34 may be conveniently bent backwards and outwardly for removal of strut 12 or allowed to remain in place and the whole system disassembled by lifting member 16 from an assembly or members 14 and 16 and struts 12. This system can then be readily transported to another site for reassembly.

As the tabs which were folded to engage struts 12 may be used repeatedly, this system is also particularly useful in military applications where portable wall systems are employed. Substantially U-shaped units 14 and 16, along with struts 12 and clips 18, form the basic assembly system which can be moved from site to site, with or without the rigid wall paneling initially used, and reassembled at a new site with a minimum of inventory and tools. In this respect, all the tabs used to interlock with structural member 12 may be pre-formed so that an assembly may be realized by merely sliding the struts 12 into pre-formed tabs 22 and 34 adapted to accept and interlock with struts 12.

The struts 12, U-shaped member 14 and U-shaped member 16 may be economically fabricated from light weight material of construction. Aluminum or magne-

sium may, for instance, be used. In addition, where overhead structural support is not required there may be used rigid polymeric materials. This is particularly feasible in some military applications where building code regulations are inapplicable or nonexistent.

As the system is adapted to any rigid wallboard or covering, the wallboard employed at one site may be discarded and supplanted by a new rigid wallboard available at the next installation. For lower cost systems where weight is not a factor, steel is a preferred material of construction.

FIGS. 2, 5, 6 and 7 illustrate a system where it is desired to mount wallboards on a more permanent basis, but which is still readily adapted for disassembly and reuse. First, with reference to FIG. 1, there is employed at the basic structural units, consisting of struts 12, lower horizontally disposed U-shaped member 14 and upper horizontally disposed U-shaped member 16, to form the basic structural assembly to which wallboards 52 are to be secured.

Panel 52 is generally a laminate of two rigid wallboards such as gypsum board, or a laminate created of two dissimilar materials such as hardwood paneling and a gypsum board backing. When a laminate of two wallboards are used, the outer rigid wallboard 56 overlaps the inner rigid wallboard 58 by an amount equal to approximately one half the width of the flange 24 of strut 12. This allows wallboards to be installed in butting relationship. Recessed edge 60 of panel 52 is normally disposed adjacent to the vertically disposed edge 44 of strut 12 and serves to aid in proper alignment of both the struts 12 and panels 52.

To allow sequential or random connection of panels 52 to an assembly comprising struts 12, U-shaped member 14 and U-shaped member 16, there may be used clip 54, the details of which are illustrated in FIG. 5.

With reference thereto, clip 54 is an el shaped member comprising a wall 62 for interlocking connection with a groove formed or present at the laminate of the panels 56 and 58 which comprise wallboard 52. At substantially right angles to lip 56 there is provided a planar wall 63, preferably having an angled portion 64, for communicating with and establishing sliding relation over the edge 44 of strut 12. As essentially the juncture of lip 62 and planar surface 63 there is provided a notch and flare 66 which interconnects with flange 24 of I-beam strut 12.

As with the assembly shown in FIG. 1, the assembly of panels 52 and clips 54 illustrated in FIG. 2 are inserted into the structure provided by pressing the panels and clips directly against the edges 44 of two adjacent struts 12.

A finished wall structure is shown as 68 in FIG. 2, to which there has been added a baseboard 70. Although panel 52 has been shown as a laminate of two panels, the back panel may be eliminated by substituting by a molding strip suitably attached to front panel 56 to provide a groove for connection of lip 62 of clip 54 and still provide external butting association of two adjacent panels.

To more fully illustrate the construction shown by FIG. 2 using a clip as shown in FIG. 5, there is provided FIGS. 6 and 7 which show in more detail the manner in which the non-progressive wall construction is created.

5

FIG. 6 shows one panel in interconnecting relationship with the flange and I-beam and a second panel about to be engaged with said flange.

FIG. 7 shows the abutting relationship of two panels when engaged with an I-beam strut.

With reference to FIGS. 6 and 7 all members have been identified with reference to FIGS. 2 and 5 only there has been added force arrows to show that the wall assembly is made by simply pressing the panels against I-beams 12, with the clips automatically functioning to engage the flanges 44 of studs 12.

This is a unique feature of applicant's invention in that each panel can be installed independent of any other panel.

For this reason, applicant's wall construction is characterized as nonprogressive, as compared to prior art constructions in which panels must be applied to a support structure.

The advantages of a non-progressive wall construction are believed clearly evident from the specification and FIGS. 2, 5, 6 and 7.

The wall construction of this invention lends itself to a fabrication of a wall of any desired wallboard material such as, for instance, plasterboard, plywood, hardwood paneling, fiberboard, chipboard, steel paneling, aluminum paneling, both filled and unfilled, plastic paneling and the like.

As is evidenced by the drawings, except for mounting materials which may be required, to attach channel 14 to a floor support structure and channel 16 to a ceiling support structure, no other fastening means other than suitable clips need be provided.

Where the wall structure is assembled, to provide at least one right-angled juncture of two walls, and where a load-bearing function is not required, a wall can be fabricated without any attachment to either a floor or ceiling support structure.

As the panels can be installed to the support structure of this invention independently, in series or at random, it will be evidenced that other associated construction operations, such as installation of electrical conduits and plumbing, can be made at will.

What is claimed is:

1. A clip for use in securing wallboards to parallel I-beams in butting relationship in a random, non-progressive sequence without flexing of the wallboard to perfect locking engagement with a pair of adjacent I-beams when the clips are engaged to opposed sides of the wallboard which comprises a substantially el-

6

shaped member providing a first wall adapted to be inserted between two adjacent connected surfaces at least one of which is a wallboard, and a second wall at substantially right angles to the first wall, said second wall having an angled portion at the end opposed to the intersection of the first wall with the second wall to communicate with and establish sliding relation over the edge of a flange of an I-beam, a portion of said second wall extending outwardly in a direction opposed to the direction of the angled portion to provide an I-beam engaging end at approximately the intersection of said first and second walls, said extending portion of the second wall adapted to slidably engage and interlock with the flange of the I-beam whereby a wallboard provided with said clips engaged to opposed side thereof will be securably locked to a pair of adjacent parallel I-beams provided a force on the wallboard normal to the surfaces of the flanges of the I-beams.

2. A clip for use in securing wallboards to parallel I-beams in butting relationship in a random, non-progressive sequence without flexing of the wallboard to perfect locking engagement with a pair of parallel I-beams when the clips are engaged to opposed sides of the wallboard which comprises a substantially el-shaped member providing a first wall which is part of an integral U shaped member adapted to engage a wallboard, and a second wall at substantially right angles to the first wall, said second wall having an angled portion at the end opposed to the intersection of the first wall with the second wall to communicate with and establish sliding relation over the edge of a flange of an I-beam, a portion of said second wall extending outwardly in a direction opposed to the direction of the angled portion to provide an I-beam engaging end at approximately the intersection of said first and second walls, said extending portion of the second wall adapted to slidably engage and interlock with the flange of the I-beam whereby a wallboard provided with said clips engaged to opposed sides thereof will be securably locked to a pair of adjacent parallel I-beams provided a force on the wallboard normal to the surfaces of the flanges of the I-beams.

3. A clip as claimed in claim 1 in which the extending portion of the second wall is flared outwardly from the second wall.

4. A clip as claimed in claim 2 in which the extending portion of the second wall is flared outwardly from the second wall.

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