

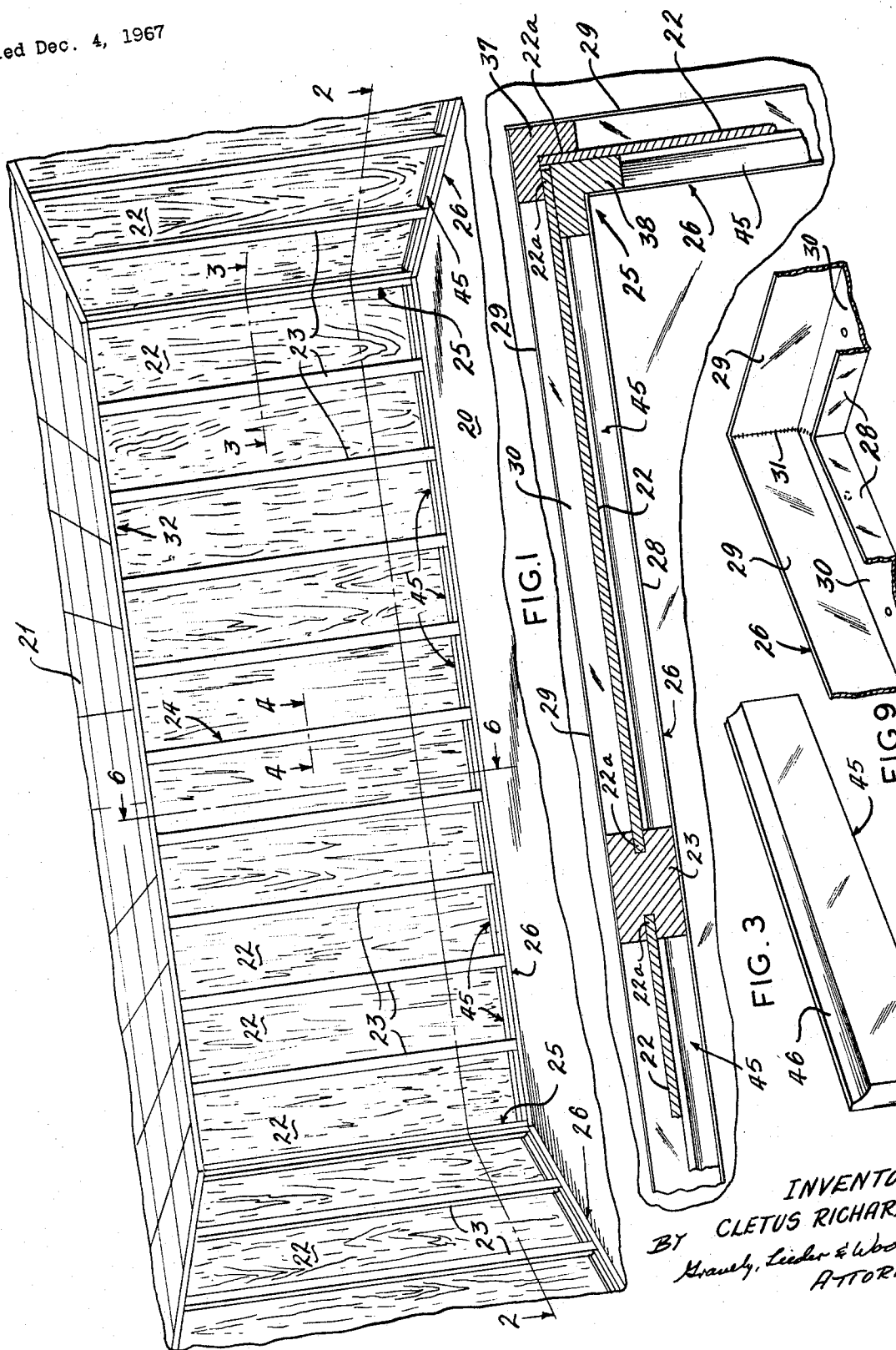
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C. RICHARDSON
PANEL WALL SYSTEM

3,423,894

Sheet 1 of 3

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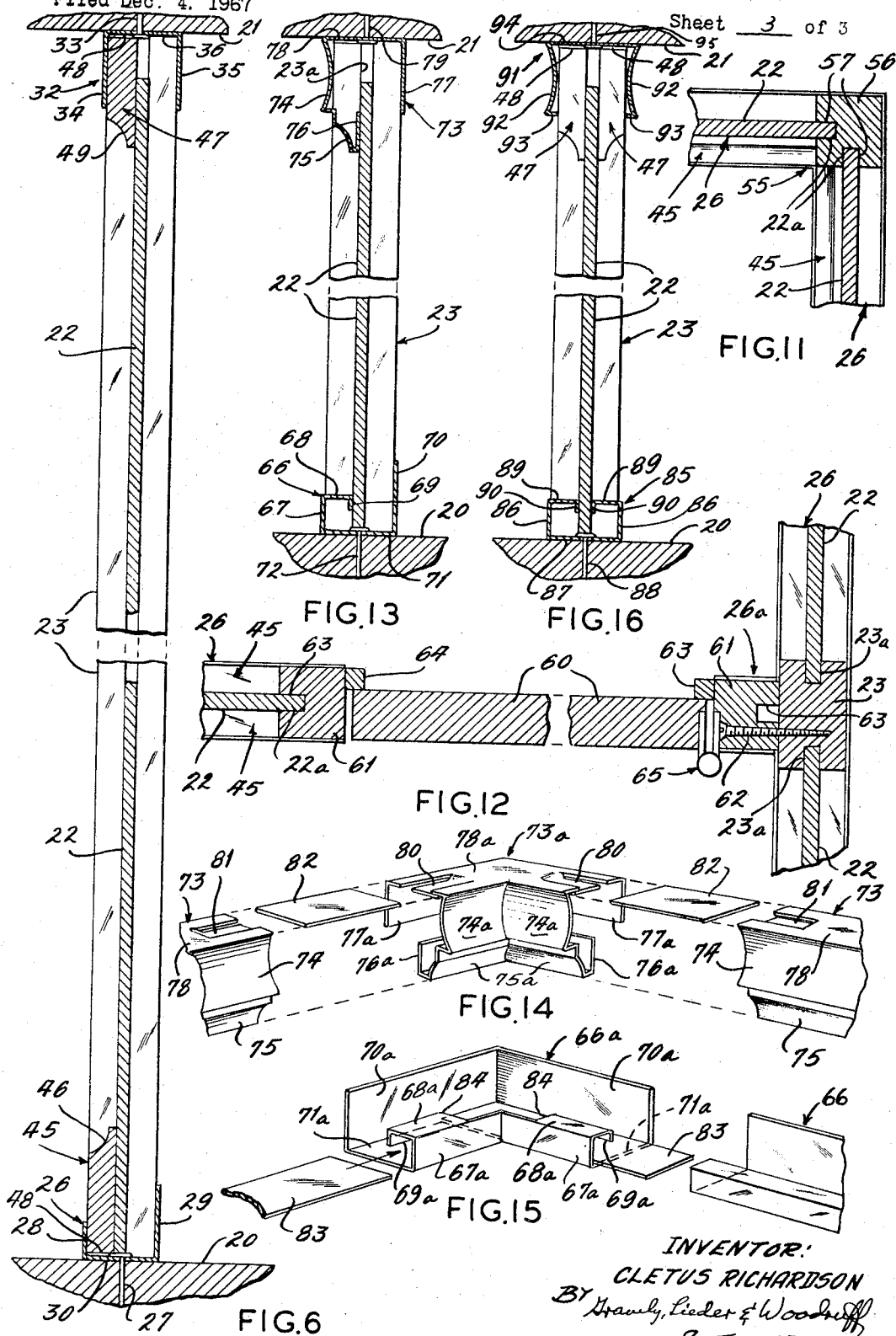
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Sheet 3 of 3



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3,423,894

PANEL WALL SYSTEM

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ABSTRACT OF THE DISCLOSURE

A panel system in which supporting members at the floor and ceiling location provide the anchorage for slide or lift in panels and panel stiffening members, and also wherein a few simple form pieces adapt the system to a wide variety of installations.

This invention relates to improvements in panel wall systems and in particular to non-load bearing panelled walls for original installation or as a cover or refacing on an existing wall.

The problems in the field of panel wall systems for buildings are generally summed up as being too complicated except for highly skilled persons and too expensive for the average person interested in having a panelled wall. It is also a known problem that many panel wall systems must have appreciable depth or thickness to develop lateral strength. Other prior panel wall systems are objectional for universal application because they usually have only one finished face surface and when both face finishes are needed a second wall assembly is required. Still other systems rely on extensive use of fastening means which usually renders such wall panel systems entirely unsuited for reuse in any other place.

It is, therefore, an important object of this invention to provide a panel wall system that avoids most of the problems usually associated with them.

It is a general object of this invention to provide an improved panel wall system in which standardization of parts and simplicity of form and assembly of such parts is of paramount interest and importance.

A preferred embodiment of this invention includes installation of lower and upper channel runners secured to a fixed part of a building, and thereafter the fitting together of the panels and stiffeners in the channels without fastening means. It is a feature of the present system that the panels are seated in grooves and slots about the periphery thereof such that a substantially fully interlocked wall will result. Other embodiments and variations will be described in the course of the following specification which refers to the drawings, in which:

FIG. 1 is a perspective view of the panel wall system installed on three sides of a room in a building, residence, basement, or similar structure;

FIG. 2 is a sectional view taken at line 2—2 in FIG. 1;

FIG. 3 is a greatly enlarged sectional view at line 3—3 in FIG. 1;

FIG. 4 is a greatly enlarged sectional view of a modified type of a wall stiffener which may be employed in the wall system of FIG. 1, the view being taken at line 4—4 in FIG. 1;

FIG. 5 is a fragmentary exploded perspective view of the stiffener means shown in FIG. 4;

FIG. 6 is a greatly enlarged vertical sectional view taken at line 6—6 in FIG. 1;

FIG. 7 is a fragmentary view of a one-piece panel stiffener differing from that seen in FIGS. 4 or 5;

FIG. 8 is a greatly enlarged perspective view of a filler molding piece;

FIG. 9 is a fragmentary view of a supporting corner channel for a corner assembly;

FIG. 10 is a greatly enlarged fragmentary sectional view of a typical wall meeting junction.

FIG. 11 is a greatly enlarged view of a modified corner assembly for the panel wall system;

FIG. 12 is a greatly enlarged sectional view of a wall meeting junction including a door mounting treatment;

FIG. 13 is a vertical sectional view of a panel installation to show details of the supporting upper and lower channels;

FIG. 14 is a perspective view of the corner assembly details for the upper channel shown in FIG. 13;

FIG. 15 is a perspective view of the corner assembly details for the lower channel shown in FIG. 13; and

FIG. 16 is a view similar to FIG. 13, but showing a modified arrangement.

Reference will now be directed to FIGS. 1 to 9 inclusive for details of a preferred panel wall system. In FIG. 1 the panel wall system is shown in elevational perspective between a floor surface 20 and ceiling 21 of acoustical tile or the like. The wall is composed of vertically extending panels 22 all of which are essentially cut to a modular width and interlocked with panel stiffeners or studs 23 and 24. The corners include an assembly 25 of pieces to be described in FIG. 3. The stud 24 is of a type to allow finishing the meeting of two panel stretches in a simple manner as is shown in FIGS. 4 and 5, while the studs 23 of FIG. 7 are applied in other places for supporting the panels 22, such as in the assembly of FIG. 1. Modular panels are usually four feet wide and any length from eight feet to twelve feet. When extra stiffness is desired the panels can be reduced in width.

In starting the erection of a panel assembly a lower channel 26 (FIGS. 1 and 6) is first secured by nails or other appropriate securing means 27 to the floor 20. The lower channels are formed with an outer low flange 28 and a rear high flange 29 spaced by the web 30. Where the channels 26 meet at a corner, a miter seam 31 (FIG. 9) is formed. Vertically above the lower channels 26 the upper or ceiling channels 32 are secured by means 33 to the ceiling 21. Each upper channel 32 is formed with a front flange 34 and a rear flange 35 spaced by the web 36. The lower and upper channels 26 and 32, respectively, are carefully vertically aligned and brought into longitudinal parallelism such that the vertical distance is substantially uniform along the lengths thereof.

The wall panels 22 are then assembled by starting at the corners, as in FIG. 1. Referring now to FIG. 3 the corner assembly 25 is made by placing an outside vertical angle stud 37 in the lower channel 26 in abutment with the rear flanges 29. The upper end of this outside angle stud 37 is best inserted into the upper channel 32 first. This is made possible by reason of the low flange 28 on the bottom channel 26. A cooperating inside vertical angle stud 38 is next inserted into the channels 26 and 32. These corner studs 37 and 38 are substantially the same in size and shape, and are dimensioned to form slots therebetween to receive the margins 22a of the wall panels 22 in a snug fit. To the left of the corner assembly 25 in FIG. 3 the panel 22 has its opposite marginal edge 22a fitted into one edge slot 23a of a vertical stud 23 of the character seen in FIG. 7. The stud 23 is mounted in the channels 26 and 32 and slid toward the panel edge 22a to make the connection. This assembly procedure is repeated outwardly from two opposite corners (FIG. 2) until a final meeting joint is reached.

The meeting joint of FIG. 2 is established with the installation of stud 24 of FIGS. 4 and 5. Such stud 24 is composed of a rear stud element 24a having a pair of rabbeted steps 39 which leave a central raised flat 40 therebetween. The facing stud element 24b is a flat member which abuts the face of the raised flat 40 and forms

lips over each step 39 such that opposite full length slots are created to receive the edges 22a of two adjacent panels 22. The stud elements are secured together by blind fasteners 41 having toothed edges 42 for biting into the surfaces of receiving recesses 43 and 44 in the rear stud element 24a and the face element 24b respectively. A plurality of fasteners 41 are spaced along the length of the stud 24 to obtain a secure assembly.

On reaching the joint at stud 24 the rear stud element 24a is first placed in position. The two adjacent panels 22 are then inserted by pushing the upper ends upwardly in channel 32 so the lower end will clear the low flange 28 of the lower channel 26. The panels 22 are then lowered into the channel 26, but the upper end (FIG. 6) will remain within the flange 34 of the upper channel 32. The facing stud element 24b is then placed in position and is pushed inwardly so the fasteners 41 enter the recesses 44 (FIG. 4) and retain the element 24b tight against the adjacent panels 22.

The panel wall is finished by inserting filler molding strips 45 (FIG. 8) into the lower channel 26 between studs 23 and 24. Each filler strip 45 may have a decorative molding edge 46 of any suitable configuration. A similar molding filler strip 47 (FIG. 6) is placed in the upper channel 32 between the studs 23 and 24. The upper strips 47 are dimensioned somewhat differently from the lower strips 45 and are secured by applying a suitable mastic or adhesive 48 on the hidden edge opposite the exposed shaped edge 49.

In the foregoing description it is evident that no nails, screws or the like are used or required to assemble the panels 22 and the studs 23 or 24. The exceptions are the securing means 27 and 33 to initially locate and retain the lower and upper channels respectively, and the blind fastening means 41 for the joint forming studs 24. Where, as in FIG. 1, only one surface of the panels 22 and the studs 22 and 24 are exposed to the room side, suitable surface finishing is applied. The surfaces thus exposed may be given a desired wood or painted finish, or it may be covered with a patterned or plane paper of any desired color, or color combination.

In FIG. 10 there is shown a portion of an assembly where a room divider panel is connected. The wall panel assembly 50 is erected as described in connection with FIGS. 1, 2 or 3. The room divider wall 51 is then located in alignment with a stud 23, for example, and the lower channel 26 is secured in position on the floor 20. The ceiling channel 32 (not shown) is likewise properly located as before described. An abutment stud 52 having a single vertical slot 53 is placed in the channel 26 and a plurality of screws 54 are inserted in the slot 53 to penetrate the stud 23 and form blind fastening of the stud 52 to the stud 23. Next the panel 22 is brought into position, and filler strips 45 are dropped into position on each side of the panel 22 to secure the lower end of the panel. In this installation both sides of panel 22 are exposed and may be finished as desired. The edge 22a of the panel 22 fully conceals the fastening screws 54 so that a neat and secure abutment is obtained.

Referring to FIG. 11 there is shown a modified corner assembly 55. The lower channels 26 in this assembly are secured in desired position as before described. The mitered corner is occupied with a one-piece vertical stud 56 having two adjacent edges formed with slots 57 to receive the edges 22a of two meeting panels 22. Filler strips 45 are then dropped into position in the channels 26 to secure the lower ends of the panels and provide a finishing molding.

FIG. 12 illustrates a panel assembly to accommodate a door 60. In this assembly a stud 23 in a wall panel of the character before described is selected for supporting a door jamb member 61. The jamb 61 is similar to the stud 52 shown in FIG. 10. The lower end of the jamb 61 is secured in a channel 26a which is an abbreviated

length of the channel of FIG. 6. The jamb 61 is secured by spaced screws 62 to the face of stud 23, and a door stop strip 63 is secured to the margin of the jamb 61 so that the edge of the door 60 is concealed in the usual manner. The opposite margin of the door opening is defined by a second jamb 61 which is positioned in the terminal end of the channel 26. The jamb is placed with its single vertical slot 63 directed to receive the edge 22a of panel 22. Filler strips 45 are assembled to finish the bottom margin of panel 22 on both exposed sides. Finally a door stop 64 is attached to the jamb 61 to receive the outer edge of the door 60. A plurality of door hinges 65 are applied to swing the door from the jamb 61 abutting the stud 23. The jambs 61 are identical so that a minimum number of different parts are required to make up the assembly of this view.

Turning now to FIGS. 13, 14 and 15 a further modification is seen for supporting the wall panels 22 and joining studs 23 (or stud 24 as the case may be). In this view, no filler strips 45 or 47 are required. Instead the lower channel 66 is formed with a lower facing flange 67 having an intumed mold flange 68 with a hidden lip 69 to add stiffness and provide an abutment on the lower end of the panel 22. The channel 66 has a high rear flange 70 spaced from the flange 67 by the bottom web 71. Securing means 72 is applied through the web 71 to hold the channel on the floor 20. The upper or ceiling channel 73 is formed with a finishing molding flange 74 of cove configuration (other shapes may be selected as desired). The cove flange 74 has an integral molded or shaped flange extension 75 and an intumed hidden lip 76 abutting the upper end of the wall panel 22. The integral forming of the flange extension or molding 75 requires that at each location of a stud 23 or 24 a portion must be cut away to allow the assembly of the studs. In a modular system the cut away portions are easily pre-formed so that no extra work is usually necessary at the site of installation. The rear flat flange 77 is spaced from the cove flange 74 by the web 78, and securing means 79 is driven through the web 78 into the ceiling 21.

As can be seen in FIG. 14, the upper channels 73 require a separately constructed corner member 73a having matching cove flanges 74a and flange extensions 75a with hidden lips 76a and flat rear flanges 77a. The web 78a is also modified to provide a depressed finger element 80 in each branch of the corner. The fingers are formed by lancing the material in known manner. In a similar manner the joining ends of the channels 73 are formed with lanced depressed finger elements 81 similar to finger elements 80. Alignment plates 82 are provided to fit over the finger elements 80 and 81 at the junction of channels 73 with the corner member 73a and substantially align the channels with the corner members. The plates 82 are sufficiently wide to snugly fit inside the channels and corner member so that proper matching of the cove flanges 74 and 74a is obtained.

In FIG. 15, the lower channel 66 requires a separate corner member 66a having front low flanges 67a and intumed mold flanges 68a with hidden stiffening lips 69a. The member is provided with high rear flanges 70a spaced from the flanges 67a by the flat webs 71a. The corner member 66a is properly aligned with the channel 66 by an alignment strip or plate 83 which fits between the flanges 67a and 70a and slides into the channel 66 between flanges 67 and 70. The form of the corner member 66a of FIG. 15 is adapted to receive a corner assembly 25 shown in FIG. 3 and for this purpose each mold flange 68a is notched at 84.

In FIG. 16 a modified panel assembly is shown. This form of assembly includes a lower channel 85 having a pair of low flanges 86 spaced by a flat web 87 through which a securing means 88 is driven into the floor 20. Each flange 86 is finished by an intumed mold flange 89 and each has a hidden lip 90 to increase the stiffness

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thereof. The upper channel 91 is formed with opposite cove flanges 92 and finishing lips 93. The lips abut the faces of the studs 23 and between studs 23 filler strips 47 are placed, as in FIG. 6. The strips 47 are held in assembly by suitable adhesive material 48 against the flat web 94. Securing means 95 holds the channel 91 on the ceiling 21.

There has been set forth in the above description certain preferred forms of the wall panel assembly which constitutes the present invention. It is now evident that a major portion of the assembly is composed of similar parts so that only a minimum number of specially formed parts is needed. The manner of assembly is unique and simple to the extent that the panels and studs can be easily maneuvered into position and all the room necessary for assembly is concealed by the ceiling channels after the studs and panels are lifted upwardly into the ceiling channels and lowered into the floor channels. It is especially unique that the parts are securely interlocked without fasteners, and it is the aim to include the several embodiments of this invention within the scope of the appended claims.

What is claimed is:

1. A panel wall system including lower and upper channel supports substantially vertically aligned and horizontally substantially parallel, said lower channel opening upwardly and having flanges defining the channel space therebetween, said upper channel opening downwardly and having flanges defining the channel space therebetween, a series of studs spaced along said channel supports and fitted snugly between said flanges, wall panels mounted in said channel supports between said flanges and engaged with said studs, said studs supporting and stiffening said panels, and means to finish off the space between said panels and at least one flange of said lower and upper channel supports, said finish means being on the same side of the panels.

2. The panel wall system of claim 1 wherein said finish means are strips having a mold edge exposed between adjacent studs, said finish means stiffening said wall panels between said studs.

3. The panel wall system of claim 1 wherein said lower channel flanges comprise a low front flange and a high rear flange, and said finishing means between said panel

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and low flange of the lower channel being at least as high as said high rear flange.

4. The panel wall system of claim 1 wherein at least one of said flanges on said floor and ceiling channels is integral with said finish means, and said integral flange and finish means are on the same side of said wall panels.

5. The panel wall system of claim 1 and including a corner assembly for wall panels meeting at an angle to each other, said corner assembly comprising lower and upper corner shaped channels, and stud means in said corner channels providing slots to receive and support edge margins of said adjacent wall panels meeting at the corner.

6. The panel wall system of claim 5 in which said stud means in said corner channels comprises two angle members of substantially the same shape and dimensions.

7. A wall panel system including an upwardly opening floor mounted channel having front and rear flanges, a downwardly opening ceiling mounted channel having front and rear flanges aligned with the corresponding flanges of said floor channel, a series of wall panels positioned between said floor and ceiling channels, stud means interposed between said series of panels, said stud means engaging edge margins of said panels and locking said panels between said front and rear flanges on said floor and ceiling channels, one of said stud means comprising two elements jointly engaging edge margins of two adjacent panels, means locking said two elements in assembled abutment to secure said series of wall panels in assembly, and mold means closing the space between each panel and said front flanges of said floor and ceiling channels.

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