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Jackson

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[54] **REMOVABLE MULTI-PANELED WALL CONSTRUCTION**

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[73] Assignee: **Unilith Enterprises, Inc.,** Seattle, Wash.

[22] Filed: **Sept. 30, 1971**

[21] Appl. No.: **185,071**

[52] **U.S. Cl.** **52/127,** 52/241, 52/595, 52/749

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

[58] **Field of Search** ..... 52/238, 593, 594, 52/595, 262, 264, 127, 241; 287/189.36 D

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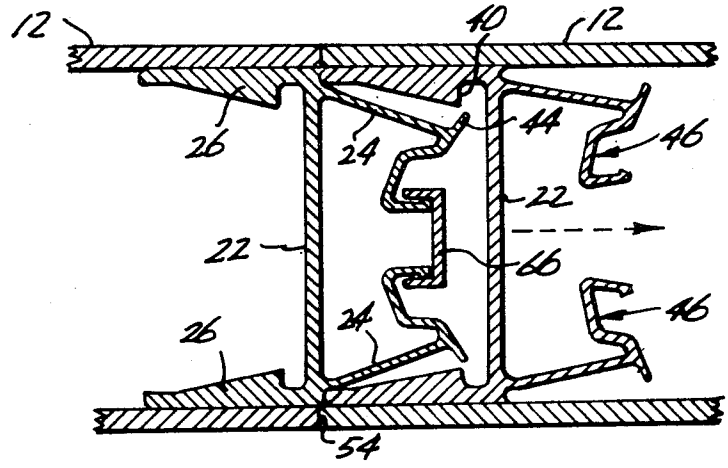
Primary Examiner—John E. Murtagh

Attorney—Christen & Sanborn

[57] **ABSTRACT**

A double-walled building panel is disclosed which is adapted to be marginally interconnected with one or more other such panels to form a rigid but readily removable wall construction. The panel comprises a pair of flat parallel wall members which are registered opposite one another with a clearance therebetween; and a framing structure of elongated framing members which are interposed in the clearance between the wall members, along the opposite edge portions of the panel. The framing members have similarly shaped bodies in transverse cross-sectional planes thereof, and each of the bodies has spaced, parallel, longitudinally extending, exteriorly oriented surfaces on opposite sides thereof, corresponding edges of which surfaces are disposed in a common longitudinal cross-sectional plane of the body. Each body also has complementary longitudinally extending tongue and groove means thereon, which are oppositely oriented with respect to the aforesaid longitudinal cross-sectional plane and interposed in the space extending between the surfaces. The groove means include a pair of grooves which are oppositely disposed to one another in the body, and transversely oriented to the surfaces. The tongue means include a pair of flexible prongs which project relatively outwardly from the body, and which are spaced apart from one another transversely of the surfaces. When two panels are interconnected with one another, the framing members along the opposite interconnecting edge portions thereof, are similarly oriented to one another in the same, and the prongs of one are interengaged with the grooves of the other, there being means on the bodies of the framing members operative to cause the prongs to flex relatively toward one another, as the tongue means of the one framing member are inserted and withdrawn with respect to the groove means of the other framing member.

15 Claims, 13 Drawing Figures



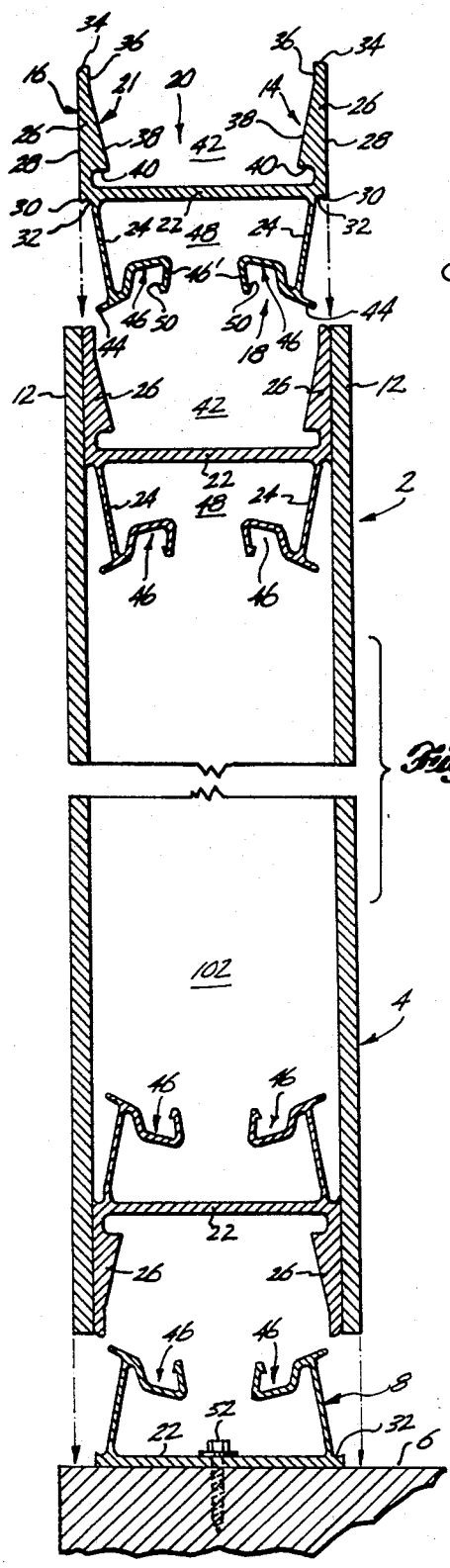


Fig. 1.

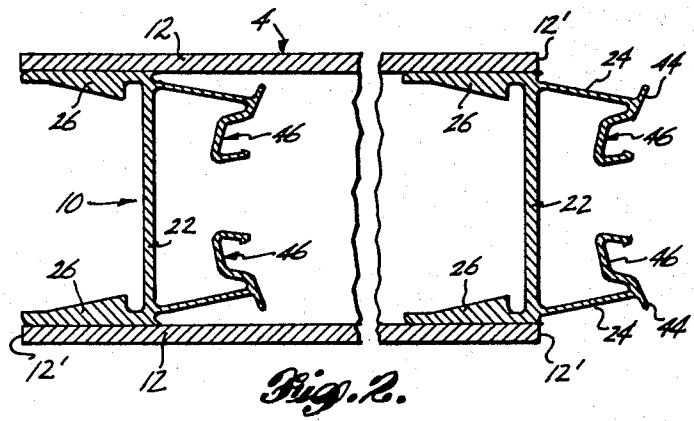


Fig. 2.

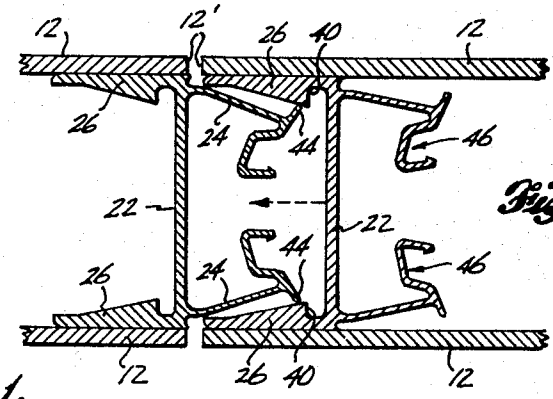


Fig. 3.

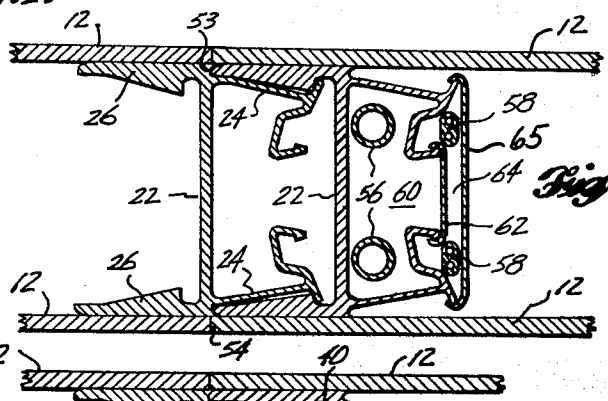


Fig. 4.

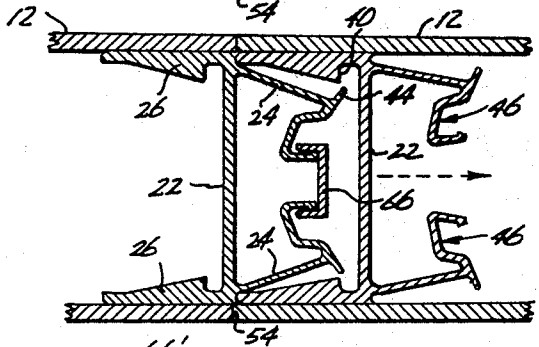


Fig. 5.

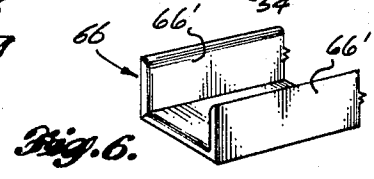
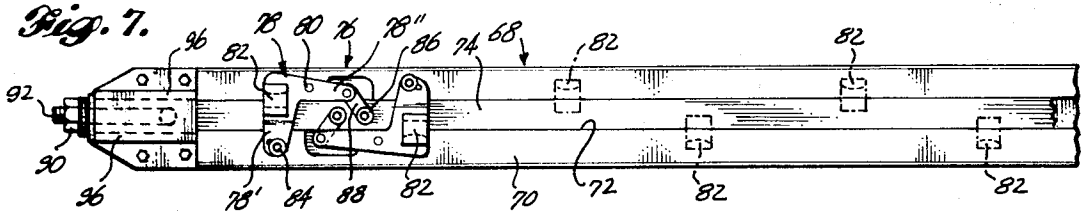


Fig. 6.

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Fig. 7.



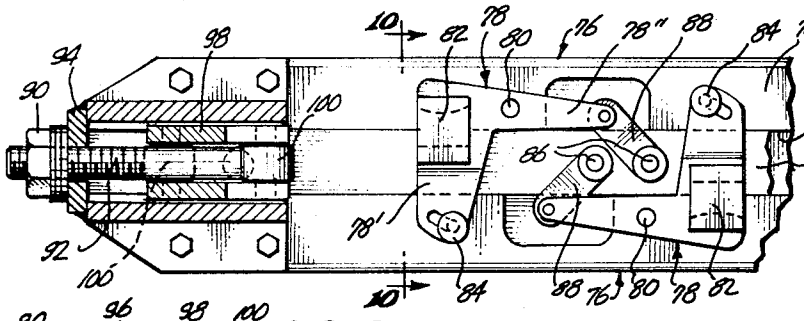


Fig. 8.

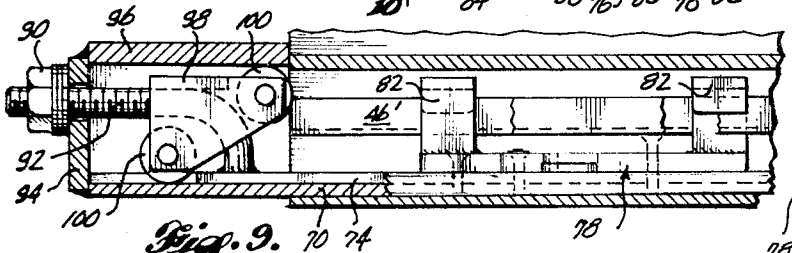


Fig. 9.

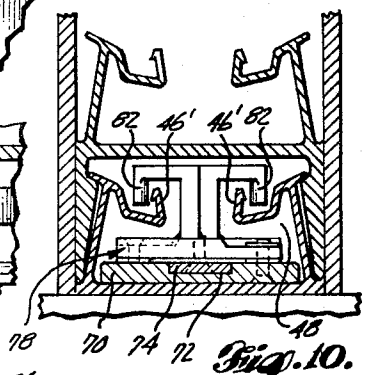


Fig. 10.

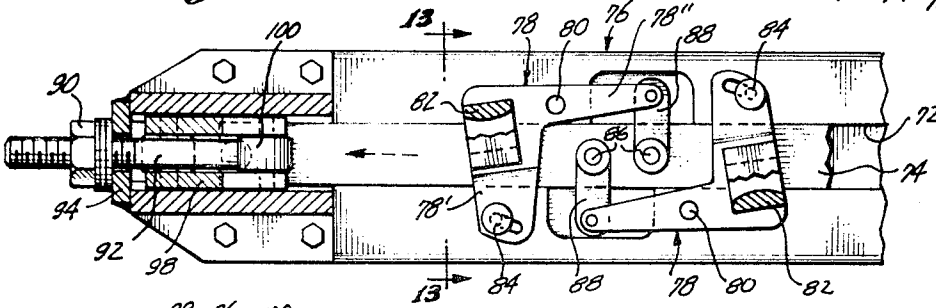


Fig. 11.

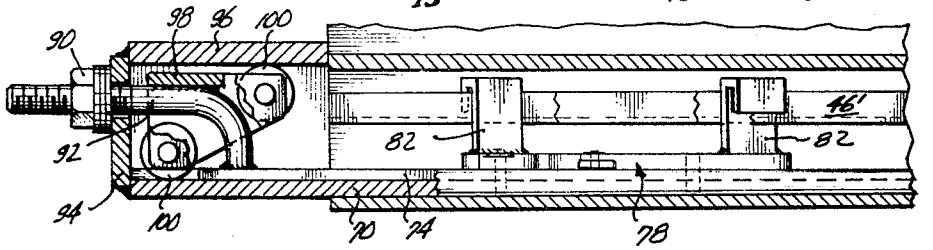


Fig. 12.

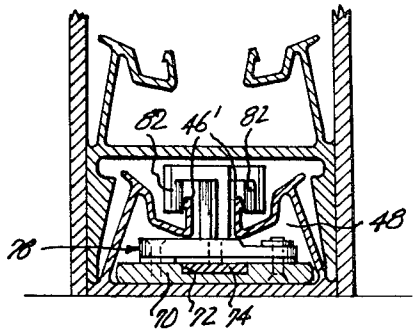


Fig. 13.

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REMOVABLE MULTI-PANELED WALL CONSTRUCTION

FIELD OF THE INVENTION

This invention relates to removable walls and/or buildings, and in particular, to removable wall and/or building constructions comprising a plurality of marginally interconnected, double-walled panels.

BACKGROUND OF THE INVENTION INCLUDING CERTAIN OBJECTS THEREOF

Farmers and the like who employ migrant labor, and organizations such as the military which have to shift their personnel a great deal, are constantly seeking lower cost temporary housing which can be quickly erected at, and/or removed from a site for the same. One object of the present invention is to provide a wall and/or building construction which can be easily assembled and disassembled and quickly and easily transported from one site to another. Another object, is to provide a readily removable wall and/or building construction of this nature which is assembled from a plurality of double-walled panels that are similarly structured and adapted to be marginally interconnected with one another by means of interlocking stiles and crossrails incorporated in the framing structure of the panels. Still another object is to provide a wall and/or building construction of this nature wherein the panels are constructed from pairs of wall members and a universal framing material which can also be employed as a means for anchoring the panels to an adjacent surface extending crosswise thereof, such as to a floor which is to underlie a wall construction erected thereon. A further object is to provide a wall and/or building construction of this nature wherein the framing material may also be used construction fill out and stiffen the constructoin otherwise, such as by forming an interconnecting coping along the top of a wall. Other objects include the provision of a wall and/or building construction of this nature wherein the framing structure of the panels may incorporate plumbing and wiring which is installed in the panels and stubbed out of the same at the time they are fabricated, and which moreover, is separated from any insulation incorporated in the same, as well as from one another, within independent raceways defined by the framing structure. Still other objects include the provision of a wall and/or building construction of this nature wherein the panels may be demounted from the construction by passing an elongated clamping tool down the length of the stiles and/or crossrails of the same, and operating the tool against a bias that is otherwise employed in achieving a union between the panels. Still further objects will become apparent from the description of the invention which follows hereafter.

SUMMARY OF THE INVENTION

These objects and advantages are realized by a wall and/or building construction of my invention which employs a plurality of double-walled building panels that are serially interconnected with one another along a horizontal to form the wall. The panels comprise pairs of flat parallel upright wall members which are registered opposite one another with a clearance therebetween; and pairs of upright elongated framing members which are interposed in the clearances between the wall members along the opposite interconnecting edge

portions of the panels. The framing members having similarly shaped bodies in transverse cross-sectional planes thereof, each of which bodies has spaced parallel longitudinally extending exteriorily oriented surfaces on opposite sides thereof, corresponding edges of which surfaces are disposed in a common longitudinal cross-sectional plane of the body. Each body also has complementary longitudinally extending tongue and groove means thereon which are oppositely oriented with respect to the aforesaid longitudinal cross-sectional plane, and interposed in the space extending between the surfaces. The groove means include a pair of grooves which are oppositely disposed to one another in the body, and transversely oriented to the surfaces. The tongue means include a pair of flexible prongs which project relatively outwardly from the body, and which are spaced apart from one another transversely of the surfaces. In the interconnection between each pair of panels, the framing members along the opposite interconnecting edge portions thereof, are similarly oriented to one another, and the prongs of one are interengaged with the grooves of the other, there being means on the bodies of the framing members which are operative to cause the prongs to flex relatively toward one another, as the tongue means of the one framing member are inserted and withdrawn with respect to the groove means of the other framing member.

Ordinarily the panels have quadrilateral configurations, and further comprise second pairs of elongated framing members which are interposed in the clearances between the wall members along the upper and lower edge portions of the panels, and which are characterized with the same similarly shaped body in cross-sectional planes thereof. The second pairs of framing members are oppositely oriented to one another, however, with the groove means thereof exposed to the outsides of the panels and aligned in the horizontal direction with one another, along the top and bottom of the wall. The panels are interlocked with one another along the entire length of the wall, by stiffeners which are interengaged with the second pairs of framing members, and which extend from one panel to the next across the interconnections therebetween.

Preferably, the panels are interlocked with one another at the top of the wall, by an extra long framing member, the prongs of which are interengaged with the grooves of the groove means in the framing members along the tops of the panels.

Similarly, the panels are preferably interlocked with one another along the bottom of the wall, by another extra long framing member, the prongs of which are interengaged with the grooves of the groove means in the framing members along the bottoms of the panels. The latter extra long framing member is ordinarily truncated so that the groove means thereon is removed, and the body of the same is secured to a surface below the wall to anchor the wall thereto.

In the preferred embodiments of the invention, the prong flexing means include a pair of relatively laterally outwardly projecting ears on the prongs of the one member, and a pair of relatively laterally opposing surfaces in the groove means of the other member, which engage the ears to cause the prongs to flex. The ear engaging surfaces terminate at the pair of grooves, so that the ears engage therein; and preferably the pair of prongs and the pair of ear engaging surfaces, each in-

cline relatively away from and relatively toward the aforesaid longitudinal cross-sectional plane, respectively, so that the prongs wedgelock in the groove means when the ears engage in the grooves thereof.

For example, in certain of these embodiments, the body of each framing member has a dished, longitudinally extending saddle on one side of the longitudinal cross-sectional plane thereof, the dish of which in turn has the grooves on opposite sides thereof adjacent the surfaces. In addition, the saddle has longitudinally extending sidewalls raised thereon, the outsides of which have the aforesaid exteriorly oriented surfaces of the body thereon, and the insides of which have the ear engaging surfaces thereon, between the grooves and the raised end edges of the walls. The prongs are inset from the adjacent edges of the exteriorly oriented surfaces of the walls by a pair of shoulders which are oppositely oriented to the end edges of the walls; and in each interconnection between panels, the shoulders of the one framing member are abutted against the raised end edges of the walls of the other framing member, while the ears of the prongs of the one member are engaged in the grooves of the other.

More specifically, the body of each framing member has a channel-like part cross-sectional configuration on this one side of the longitudinal cross-sectional plane thereof, the sidewalls of which have flat, parallel outside surfaces thereon, and longitudinally extending interior surfaces thereon that are inwardly tapered toward the crossweb of the same, and undercut by the grooves as they approach the web. The prongs are similarly inclined toward one another as they project away from the body on the other side of the plane, and have outturned ears on the ends thereof, which first cause the prongs to flex in relation to one another as described, and then engage in the grooves under the bias of the prongs.

According to another feature of the invention, moreover, the prongs also have relatively laterally inwardly projecting ears thereon, and the prong flexing means include a clamping tool that is disposed between the prongs and clampingly engaged with the latter ears of the same, to cause the prongs to flex relatively toward one another when the one framing member is disengaged from the other during the operation of demounting the panels from the wall construction. For example, the latter ears of the prongs may have a generally U-shaped configuration opening in the same direction as the recess between the prongs, and the clamping tool may include clamp means having a reversedly U-shaped configuration, and means whereby the clamp means may be engaged with the relatively inner legs of the U-shaped ears by movement in relation to the prongs, either transversely or longitudinally thereof. Preferably, the tool either takes the form of an elongated, channel-shaped clamp which is adapted to be inverted to, straddled between and forcibly engaged with the ears of the prongs, when driven longitudinally thereof; or, alternatively, the form of a pair of U-shaped tongs which are inverted to and carried on an elongated, longitudinally grooved bar, the groove of which has a slide therein that is connected with the tongs to cause them to clampingly engage the ears, transversely thereof, when the slide is driven longitudinally of the bar.

BRIEF DESCRIPTION OF THE DRAWINGS

These features will be better understood by reference to the accompanying drawings, which illustrate one of the preferred embodiments, as well as the two aforementioned demounting tools for use with the same.

In the drawings, FIG. 1 is an exploded cross-sectional view of the wall construction;

FIG. 2 is a horizontal cross-sectional view of one panel therein;

FIG. 3 is a horizontal cross-sectional assembly view of one vertical joint in the wall construction;

FIG. 4 is a similar assembled view which also illustrates the manner in which plumbing and wiring may be incorporated into the framing structure of the panels at the joint;

FIG. 5 is another view of the joint illustrating the demounting of the panels using one of the above tools for this purpose;

FIG. 6 is a part perspective view of the tool;

FIG. 7 is a part plan view of the other tool;

FIG. 8 is a part horizontal cross-sectional view of the latter tool in use during the demounting of the panels from the underlying floor of the wall;

FIG. 9 is a part vertical cross-sectional view of the tool in use during this operation;

FIG. 10 is a transverse cross-sectional view of the tool in use, along the line 10—10 of FIG. 8;

FIG. 11 is another part horizontal cross-sectional view similar to that of FIG. 8, but during a later stage of the operation;

FIG. 12 is a view similar to that of FIG. 9, but during this later stage of the operation; and

FIG. 13 is a transverse cross-sectional view along the line 13—13 of FIG. 11, during this later stage.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, it will be seen that the wall construction 2 comprises a plurality of double-walled, rectangularly shaped 4 × 8 foot panels 4 which are longitudinally upstanding on a floor 6 therebelow, and serially interlocked with one another in the horizontal direction of the wall 2, as well as anchored to the floor 6. The anchoring means comprises an elongated sill strip 8 which is secured to the floor at the base of the wall, and interengaged with the panels through the medium of a framing structure 10 which is embodied between the wall members 12 in each of the panels. The same framing structure is employed in interlocking the panels with one another, as shall be explained, and after the panels are placed, anchored and interlocked with one another, a common rib or stiffener 14 is applied to the top of the wall, and interengaged with the panels, to complete the construction, as shall also be explained.

The wall members 12 of each panel are flat and sheet-like in construction, and are secured to opposite sides of the framing structure 10 in spaced parallel registry with one another. The illustrated wall members consist of 4 × 8 sheets of stiff finish plywood, but it will be apparent that they may be of any size and may be constructed from a variety of materials, such as metal, plaster, and wood pulp or fiber drywall materials. The framing structure 10 is sized to assume a marginal position in the clearance between the sheets, and is comprised of an universal framing material 16 which, for

purposes of fabricating the panels, is cut into two distinct lengths that are arranged in pairs in a quadrilateral configuration and interconnected with one another at their ends. The framing material **16** has a generally H-shaped cross-sectional configuration which provides back-to-back double-pronged tongue and groove means **18** and **20**, respectively, on opposite sides thereof. The tongue and groove means are complementary so as to mate with one another when two lengths of the material are brought together and interengaged with one another in a male-female, tongue and groove union. This follows from the fact that the elongated body **21** of the material has a channel-like part cross-sectional configuration with respect to one side of the cross web **22** thereof, and a pair of spaced double-eared prongs **24** running lengthwise of the web on the other side thereof. The raised sidewalls **26** of the channel portion **21** have flat, parallel, longitudinally extending exterior surfaces **28** thereon which coterminate with the corner edges **30** of the web, and the prongs **24** are inset from these edges so that shoulders **32** are left to the outside of the prongs, adjacent the surfaces **28**. The shoulders **32** are substantially equal in width, but oppositely disposed to the raised end edges **34** of the walls **26** at the mouth of the channel portion **21**; and the mouth in turn is defined by a pair of flat parallel longitudinally extending inside surfaces **36** of the walls, which, however, soon merge with another pair of longitudinally extending surfaces **38** that are more deeply recessed in the portion and inwardly tapered toward the web **22**. As they approach the web, however, the surfaces **38** are undercut by a pair of straight, parallel, longitudinally extending grooves **40** which oppose one another across the recess of the channel portion, adjacent the web.

When two lengths of the material are mated with one another as described, the grooved recess **42** in the female length serves as a dished saddle for the prongs **24** of the male length. The prongs are inwardly tapered in the direction away from the web, but at substantially the same cant as the tapered surfaces **38** of the channel portion **21**. In addition, the relatively outturned ears **44** of the prongs are spaced from the shoulders **32** at substantially the same distance as the grooves **40** are spaced from the end edges **34** of the walls **26** of the saddle **42**, the ears **44** however, assuming more of an orthogonal cant to the prongs **24** than the grooves **40** have to the surfaces **38** adjacent thereto. The relatively inturned ears **46** of the prongs have a bent, slightly outwardly canted, reentrant U-shaped cross-sectional configuration that opens in the same direction as the recess **48** between the prongs, there being a narrow nib **50** running the length of each ear along the generally upstanding inner leg **46'** thereof.

The lengths of framing material **16** are typically made up as an aluminum extrusion; and in fabricating the framing structures for the panels, the longer lengths or stiles of the same, are disposed in similar orientation, whereas the shorter lengths or crossrails, are disposed in opposite orientation. Moreover, the end portions of the prongs **24** of the crossrails, at the opposing longitudinal ends thereof, are cutaway or otherwise removed to the plane of the shoulders **32**, to enable the stiles to be end abutted with the webs **22** of the crossrails, and welded thereto at these points.

The panels themselves are individually assembled by interposing the framing structure **10** between the wall members **12** of the panel, around the margins of the same, and bonding or otherwise securing the wall members to the exterior surfaces **28** of the framing structure. In the case of the crossrails, the adjacent edges **12'** of the wall members are bonded to the surfaces substantially flush with the end edges **34** of the sidewalls **26** of the saddles; whereas in the case of the stiles, the adjacent edges of the wall members on the male side of the panel, are bonded to the surfaces **28**, substantially flush with the corner edges **30** of the web, and the edges of the wall members on the female side of the panel, are bonded to the surfaces **28** substantially flush with the end edges **34** of the saddle.

The wall construction **2** is erected in turn from a plurality of the panels, and at least two additional lengths of the framing material, one of which is modified to serve as the sill strip **8**, and the other of which is used as the stiffener **14**. The sill strip **8** is cut to length, and is suitably modified by removing the sidewalls **26** from the body **21** of the same, so that the unpronged side of the web **22** provides a surface with which the strip can be laid flat on the floor **6**, and secured to the same, as by fastening it to the floor with the screws **52** or nails driven through the web **22** and into the floor. In this condition, the prongs **24** of the strip are upstanding on the floor, and the panels can be readily anchored to the strip by forcing the lower crossrail of each panel downwardly onto the prongs, until the prongs interengage in the saddle **42** thereof, and the end edges **34** of the saddle abut the shoulders **32** of the strip. Interengagement occurs as the outturned ears **44** of the prongs first slide inwardly along the tapered surfaces **38** of the saddle, and so, cause the prongs to flex inwardly toward one another; and then, snap outwardly under the bias of the prongs, into the grooves **40** at the bottom of the saddle. Similarly, the pronged male stile of each panel can be interengaged with the recessed or saddled female stile of the next adjacent panel in the wall construction, by inserting the prongs **24** of the same into the saddle **42** of the opposing stile, and snap-locking the prongs into position in the same manner as described for the sill strip.

After the panels are all in position on the strip, the stiffener **14** is engaged in the same fashion with respect to the saddles **42** of the upper crossrails of the construction.

Preferably, the end edges **34** and the shoulders **32** of the framing material are mitered at angles of about 30° to the exterior surfaces **28** of the same; and in the panels, are projected slightly with respect to the edges **12'** of the wall members **12**, to form a lap joint **53** inside of and opposite each of the seams **54** between the adjacent wall members of adjacent panels on each side of the wall construction. See FIGS. **4** and **5**.

The framing material **10** also has other features which lend themselves to the pre-incorporation of plumbing **56** and wiring **58** in the panels and the wall construction, and which also facilitate the process of erecting the wall construction. For one, the gap between the inner legs **46'** of the inturned ears of the prongs, is of sufficient size to facilitate the task of fastening the sill strip **8** to the floor, inasmuch as a power or hand-driven hammer or screwdriver can be easily passed therethrough for the operation. Alternatively, this gap may be capped over in the manner of FIG. **4**, to form a closed raceway **60** for plumbing **56** which is preinstalled in the panels and stubbed out from the

ends of the raceway to be incorporated in the building plumbing later on. Preferably, the cap **62** is snaplocked on the ears, using the nibs **50** to interengage with the flanging of the same. The wiring **58** can be housed in similar fashion, or it can be attached to the webs **22** of the saddles of the female stiles; or in the case of horizontally extending wiring, to the web of the saddle of the stiffener **14.** In any case, the wiring is housed in a conduit which is separate from the raceway **60** for the plumbing, either by installing the wiring and plumbing on opposite sides of the web **22**; or by installing them on the same side in the manner of FIG. **4** where the wiring is incorporated within the U-shaped configurations of the inturned ears **46,** and a cap **65** similar to cap **62,** but wider, is engaged over the outturned ears **44** of the prongs, to fully enclose a raceway **64** for the wiring.

The framing material **10** also has features which lend themselves to the task of rapidly demounting the panels and the wall construction. For example, the U-shaped channel-like demounting tool **66** of FIG. **6,** can be passed along the length of each male stile, or each sill, of stiffener, while engaged on the ears **46** of the same as seen in FIG. **5,** and employed to spring the prongs apart for purposes of disengaging the male member from its corresponding female member, preferably by engaging the tool at one end of the male member, and driving it along the length of the same until the prongs are sprung apart.

Again, the nibs **50** of the ears assist in the engagement of the tool; and preferably also, the flanges **66'** of the tool are end mitered to enable the tool to be rapidly depressed onto the ears.

In FIGS. **7–13,** the other tool **68** has a flat elongated bar-like base **70** which is slidable in the recess **48** of the male member, and equipped with an elongated groove **72** in the upper face thereof, that is in turn equipped with a slide bar **74** having a series of spaced, paired bell-crank clamping linkages **76** connected therewith. The bell crank **78** of each linkage, is rotatable about a fixed pivot **80,** upstanding on the base to the respective side of the bar; and has an inverted U-shaped clamping tong **82** raised on one arm portion **78'** thereof, which is adapted to "lip over" the inner leg **46'** on the same side of the male member. The arm portion **78'** is pin-and-slot connected to the opposite side of the base, at **84,** and pivotally interconnected to the bar **74** at **86,** through the crank's other arm portion **78''**, and a link **88** between the latter portion and the pivotal connection at **86.** Thus, sliding movement of the bar **74** causes the cranks **78** of each pair of linkages **76** to swing the tongs **82** thereof, into and out of clamping engagement with the legs **46'** of the prongs of the male member, thereby springing the prongs together or releasing them for return movement to their normal positions, whichever is the case.

The sliding movement of the bar **74** is generated at one end of the base by means of a nut **90** which is threaded onto an L-shaped stud bolt **92** that is erected on the bar to pass through an upright end wall **94** on that end of the base. The bolt is housed within a vaulted cover **96** that extends inwardly from the wall **94,** over the adjacent end portion of the base; and is guided in its motion by an inverted, yoke-like carriage **98** which is welded thereon, and equipped with upper and lower wheels **100** that track within the cover **96** and maintain the bolt, and the adjoining end of the bar, on a normal to the wall **94.**

If desired, insulation (not shown) may be incorporated in the hollows **102** of the panels.

What is claimed is:

1. A double-walled building panel comprising a pair of flat parallel wall members which are registered opposite one another with a clearance therebetween; and a framing structure therebetween including an elongated framing member which is interposed in the clearance between the wall members, lengthwise along one edge portion of the panel, the body of said framing member having spaced, parallel, longitudinally extending, exteriorly oriented surfaces on opposite sides thereof, corresponding edges of which surfaces are disposed in a common longitudinal cross-sectional plane of the body, and also having complementary longitudinally extending tongue and groove means thereon, which are oppositely oriented with respect to the aforesaid longitudinal cross-sectional plane, and interposed in the space extending between the surfaces, the groove means including a pair of grooves which are oppositely disposed to one another in the body, and traversely oriented to the surfaces, and the tongue means including pair of flexible prongs which project relatively outwardly from body, and which are spaced apart from one another transversely of the surfaces , there being a pair of relatively laterally opposing surfaces in the groove means which terminate at the pair of grooves, and said prongs having relatively laterally outwardly projecting ears and relatively laterally inwardly projecting ears thereon.

2. The double-walled building panel according to claim **1,** wherein the pair of tongs and the pair of laterally opposing surfaces, each incline relatively toward one another, in directions relatively away from and relatively toward the aforesaid longitudinal cross-sectional plane, respectively.

3. The double-walled building panel according to claim **1,** wherein the inwardly projecting ears of the prongs have a generally U-shaped configuration opening in the same direction as the space between the prongs.

4. A wall construction comprising a plurality of double-walled building panels which are serially interconnected with one another along a horizontal to form the wall, said panels comprising pairs of flat parallel upright wall members whcih are registered opposite one another with a clearance therebetween, and pairs of upright elongated framing members which are interposed in the clearance between the wall members along the interconnecting edge portions of the panels, the framing members having similarly shaped bodies in transverse cross-sectional planes thereof, each of which bodies has spaced, parallel, longitudinally extending, exteriorly oriented surfaces on opposite sides thereof, corresponding edges of which surfaces are disposed in a common longitudinal cross-sectional plane of the body, and each body also haing complementary longitudinally extending tongue and groove means thereon, which are oppositely oriented with respect to the aforesaid longitudinal cross-sectional plane, and interposed in the space extending between the surfaces, the groove means including a pair of grooves which are oppositely disposed to one another in the body, and transversely oriented to the surfaces, and the tongue means including a pair of flexible prongs which project relatively outwardly from the body, and which are spaced apart from one another transversely of the surfaces, the fram-

ing members in the interconnection between each pair of panels, being similarly oriented to one another, and the prongs of one framing member being interengaged with the grooves of the other, and there being means on the bodies of the framing members which are operative to cause the prongs to flex relatively toward one another, as the tongue means of the one framing member are inserted and withdrawn with respect to the groove means of the other framing member , and the prong flexing means including a pair of relatively laterally outwardly projecting ears on the prongs of the one member, and a pair of relatively laterally opposing surfaces in the groove means of the other member, which engage the ears to cause the prongs to flex.

5. The wall construction according to claim **4**, wherein the panels have quadrilateral configurations, and further comprise second pairs of elongated framing members which are interposed in the clearances between the wall members along the upper and lower edge portions of the panels, and which are characterized with the same similarly shaped body in cross-sectional planes thereof, the second pairs of framing members being oppositely oriented to one another, however, with the groove means thereof exposed to the outsides of the panels and aligned in the horizontal direction with one another, along the top and bottom of the wall, and the panels being interlocked with one another along the entire length of the wall, by stiffeners which are interengaged with the second pairs of framing members, and which extend from one panel to the next across the interconnections therebetween, the stiffener along the bottom of the wall taking the form of an extra long framing member, the prongs of which are interengaged with the grooves of the groove means in the framing members along the bottoms of the panels, and the body of which is truncated so that the groove means thereon is removed, and is secured to a surface below the wall to anchor the wall thereto.

6. The wall construction according to claim **4**, wherein the ear engaging surfaces terminate at the pair of grooves, and the ears are engaged in the grooves.

7. The wall construction according to claim **6**, wherein the pair of prongs and the pair of ear engaging surfaces, each incline relatively toward one another, in directions relatively away from and relatively toward the aforesaid longitudinal cross-sectional plane, respectively.

8. The wall construction according to claim **6**, wherein the prongs also have relatively laterally inwardly projecting ears thereon.

9. The wall construction according to claim **8**, wherein the inwardly projecting ears have a generally U-shaped configuration opening in the same direction as the space between the prongs.

10. The wall construction according to claim **6**, wherein the prong flexing means also include a clamping tool that is disposed between the prongs and clampingly engaged with the ears of the same, to cause the prongs to flex relatively toward one another.

11. A double-walled building panel comprising a pair of flat,parallel wall members which are registered opposite one another with a clearance therebetween, and which have a framing structure therebetween including a pair of elongated framing members that are interposed lengthwise along opposite edge portions of the panel, in the clearance between the wall members, said framing members having matching tongue-and-grooved bodies, each of which has spaced, parallel, longitudinally extending surfaces on opposite sides thereof, which terminate in spaced, parallel longitudinal cross-sectional planes of the body, and have a longitudinally extending web interposed crosswise therebetween, adjacent to one of said planes, there being complementary, oppositely disposed, longitudinally extending tongue and groove means on opposite sides of the web in the space between the surfaces, the groove means of which include a recess that is defined between the surfaces, the web, and the other plane, and has a pair of grooves in the bottom portion thereof which are oppositely disposed to one another across the recess adjacent the web, and the tongue means of which include a pair of relatively laterally outwardly inverted L-shaped flexible prongs that are spaced relatively laterally inwardly from the adjacent terminal edges of the surfaces, to form shoulders at the one plane, and project relatively away from the shoulders and the web in spaced relationship to one another transversely of the surfaces, said framing members being similarly oriented in the panel, and disposed so that the surfaces thereof are face to face with the insides of the wall members, and alternate terminal edge planes of the surfaces are substantially flush with the adjacent edges of the wall members, to enable the panel to be interlocked with two other such panels by arranging the three panels in coplanar serial relationship with one another and interengaging the tongue and groove means of the respective framing members with the adjacent tongue and groove means of the other panels.

12. The double-walled building panel according to claim **11** wherein the prongs have means in the space therebetween which are interengageable with a clamping tool that is operative to cause the prongs to flex relatively toward one another for purposes of unlocking the panels from one another.

13. The double-walled building panel according to claim **12** wherein the tool engageable means includes relatively laterally inwardly projecting ears on the prongs which each have a generally U-shaped configuration opening in the same direction as the space between the prongs.

14. A wall construction comprising a plurality of double-walled building panels which are serially interconnected with one another along a horizontal to form the wall, said panels comprising pairs of flat, parallel wall members which are registered opposite one another with a clearance therebetween, and pairs of elongated framing members which are interposed lengthwise along opposite edge portions of the respective panels in the clearances between the respective wall members thereof, said framing members having matching tongue-and-grooved bodies, each of which has spaced parallel, longitudinally extending surfaces on opposite sides thereof, which terminate in spaced, parallel longitudinal cross-sectional planes of the body, and have a longitudinally extending web interposed crosswise therebetween, adjacent to one of said planes, there being complementary, oppositely disposed, longitudinally extending tongue and groove means on opposite sides of the web in the space between the surfaces, the groove means of which include a recess that is defined between the surfaces, the web, and the other plane, and has a pair of grooves in the bottom portion thereof which are oppositely disposed to one another across the recess adjacent the web, and the tongue means of

which include a pair of relatively laterally outwardly inverted L-shaped flexible prongs that are spaced relatively laterally inwardly from the adjacent terminal edges of the surfaces, to form shoulders at the one plane, and project relatively away from the shoulders and the web in spaced relationship to one another transversely of the surfaces, said framing members being similarly oriented in each panel, and disposed so that the surfaces thereof are face to face with the insides of the wall members of the panel, and alternate terminal edge planes of the surfaces are substantially flush with the adjacent edges of the wall members, and said panels being interlocked with one another by virtue of the tongue and groove means of the respective framing members being interengaged with the adjacent tongue and groove means of the other panels.

15. The wall construction according to claim **14** wherein the prongs have means in the space therebetween which are interengageable with a clamping tool that is operative to cause the prongs to flex relatively toward one another for purposes of unlocking the panels from one another.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,755,978 Dated September 4, 1973

Inventor(s) Clifford C. Jackson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 1, line 18, change "traversely" to --transversely--; line 20, before "pair" insert --a--.

Claim 4, line 5, change "whcih" to --which--; line 16, change "haing" to --having--.

Signed and sealed this 1st day of January 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

RENE D. TEGTMEYER
Acting Commissioner of Patents