United States Patent

[11] 3,601,942

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[54] **BUILDING WALL CONSTRUCTION**
13 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **52/300,** 52/283, 52/293, 52/316, 52/588, 52/593
[51] **Int. Cl.** **E04b 2/18,** E04c 2/08
[50] **Field of Search** 52/293, 300, 585, 542, 593, 483, 585, 579, 235, 588, 305, 311, 630, 283, 316

[56] **References Cited**

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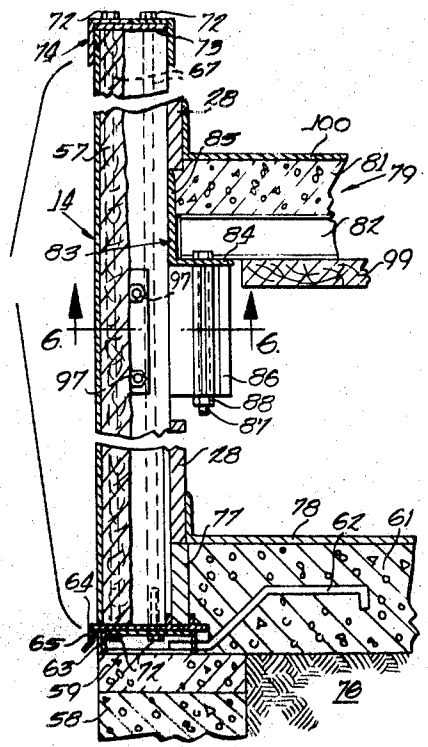
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Primary Examiner—John E. Murtagh
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ABSTRACT: A building wall construction for one story or multiple story buildings where large wall units are delivered to the building site with their exterior surfaces completely finished, and the units are ready to be assembled together with bolted or similar connections only and are connected together to form a structure capable of accepting loads along its entire length. The wall system utilizes large metal L-shaped extrusions, plurally adjacent, having an exterior with a permanent finish applied. One leg of the extrusion provides the exterior wall surface terminating in an inset tongue and the other leg extends inwardly from the exterior wall and provides a socket or recess to receive the tongue of an adjacent wall unit. The other leg also is provided with vertical passages receiving elongated rods or bolts to tie the wall units to head and sill members.

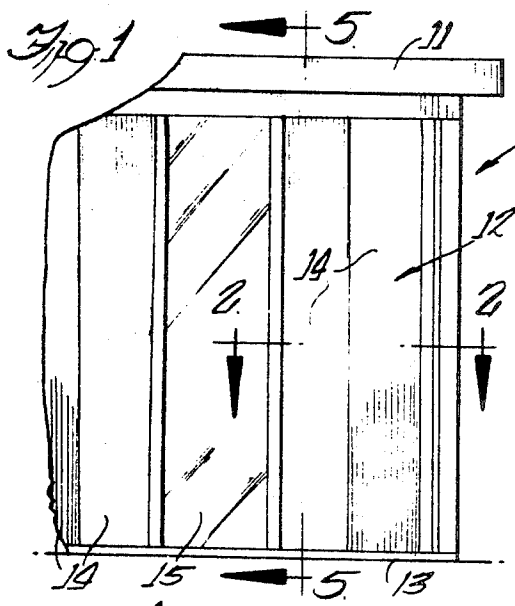


PATENTED AUG 31 1971

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Fig. 1



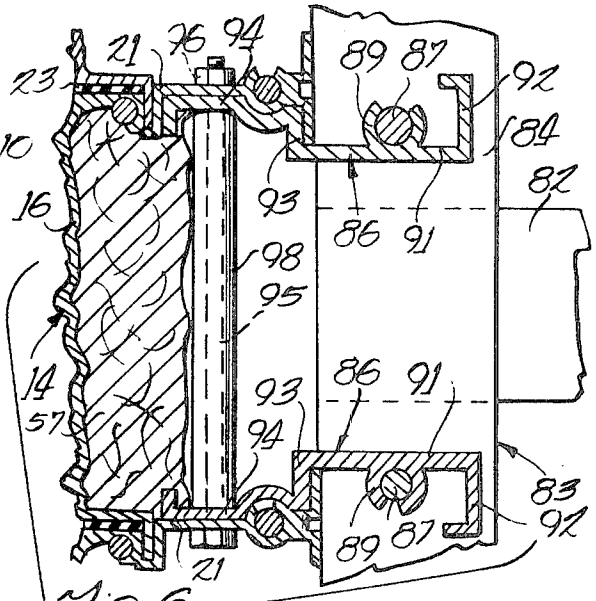


Fig. 6.

Fig. 2

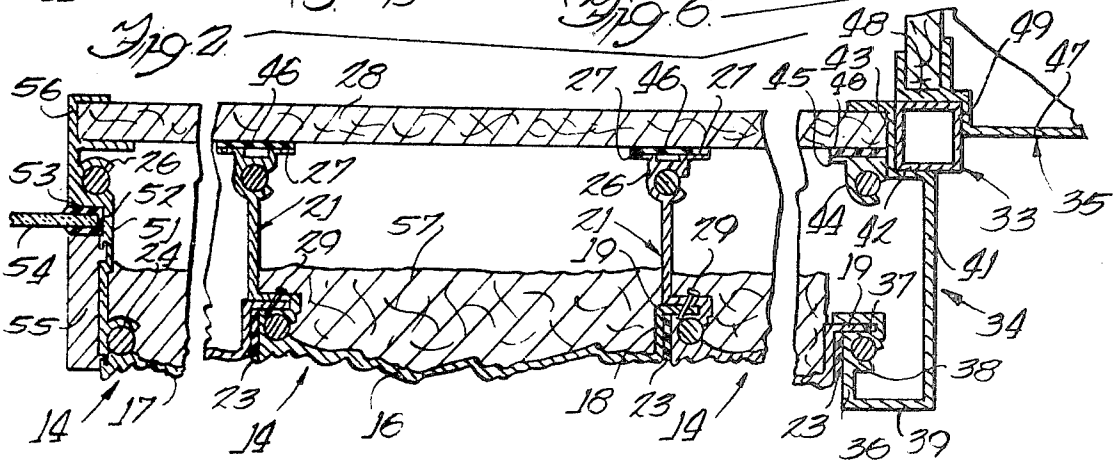
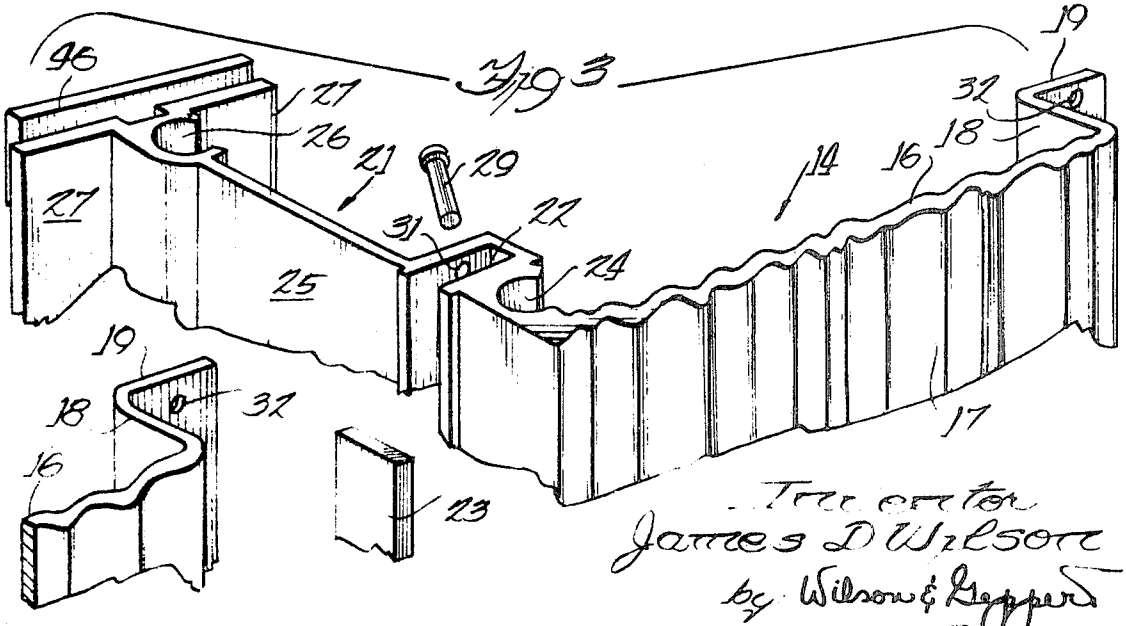


Fig. 3



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PATENTED AUG 31 1971

3,601,942

SHEET 2 OF 2

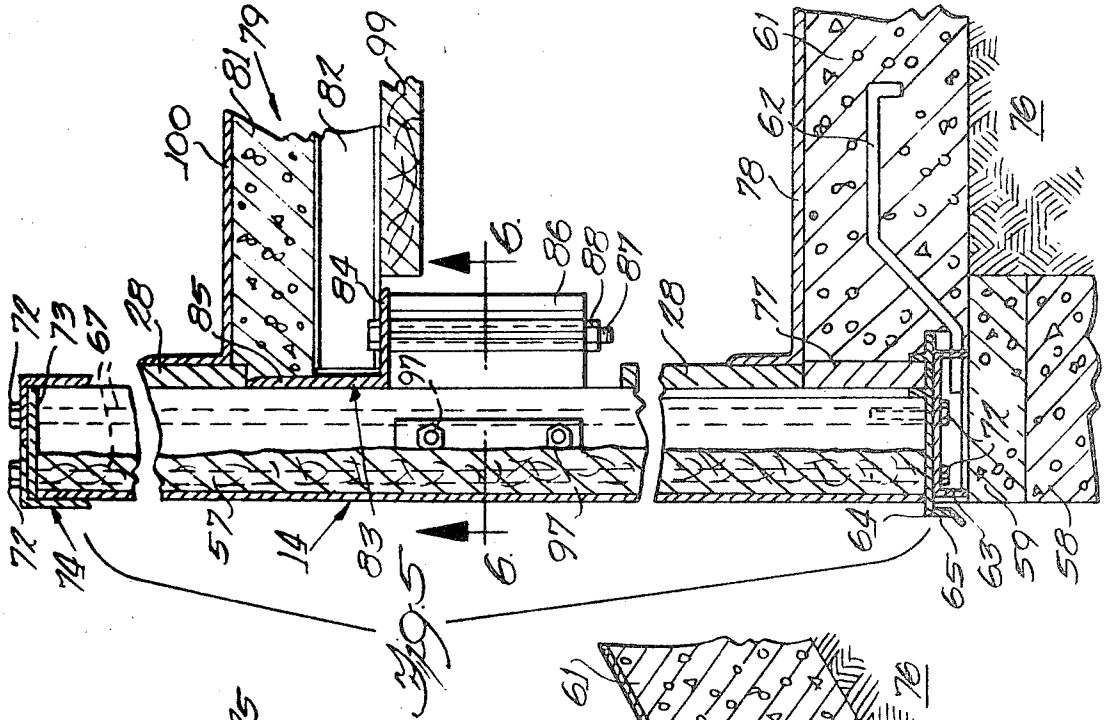


Fig. 5

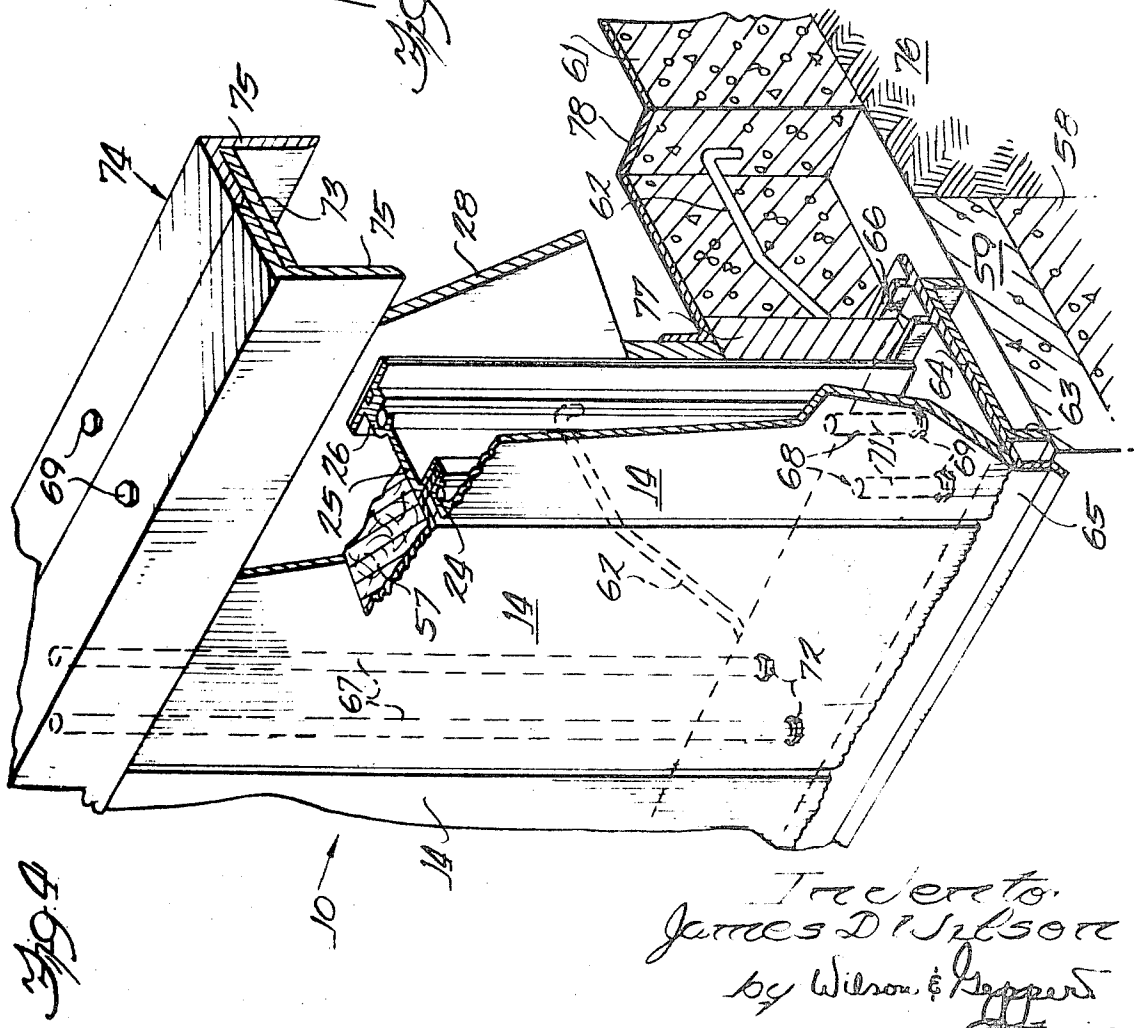


Fig. 4

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BUILDING WALL CONSTRUCTION

The present invention relates to a novel building wall construction and more particularly to a building formed of large wall units which can be fabricated in the shop and transported to the construction site for immediate assembly.

The continuous and increasing rate of onsite construction labor is seriously affecting the construction industry as productivity is not increasing at close to the same rate. One possible solution to this problem of reducing overall construction costs is a considerable increase in the use of shop-fabricated building components. The present invention makes use of the lower labor cost of shop fabrication in supplying large building components for field assembly utilizing devices for the wall structure of the building.

A detracting factor found in previous shop-fabricated component metal elements is a strongly mechanistic, identically repetitive surface appearance resulting from the necessary use of high rate production rolling equipment in the forming of the material. The resultant industrial appearance of the surface militates against the acceptance and use of such materials in nonindustrial buildings, such as schools and homes.

The present invention provides a building wall panel having a surface that is nonmechanistic and of a natural, nonrepetitive character that is in keeping with the textures resulting from the use of masonry materials, and is, as a result, readily acceptable in nonindustrial buildings. By means of a deliberately designed surface, convoluted in a deliberately natural random manner, an appearance is provided that, while within the desirable texture idiom of masonry-type materials, is itself a unique expression of the nature of extruded metals.

The convolutions themselves contribute mechanically to the load capacity of the wall by providing significant additional stiffness to the wall panels. The result is that the very considerable economic advantages of long building components being produced in a highly automated industrialized manner, as compared to conventional onsite hand assembly of small components, can be utilized to produce a very efficient bearing wall that is uniquely acceptable within the esthetic demands of humanistic building design.

Among the objects of the present invention is the provision of a building wall construction which may be used for a single story or multiple story type building. The building is constructed of shop-fabricated large wall units that are transported to the construction site for substantially immediate assembly.

Another object of the present invention is the provision of a building wall construction utilizing a load-bearing wall system formed of a series of large metal L-shaped extrusions of a suitable width and a height of approximately the height of the building, which extrusions are completely finished on the exterior surface forming one leg of the L-shaped extrusion. This leg terminates at its free end in an inset slightly enlarged edge or tongue which is received in a complementary recess formed in the other leg of an adjoining L-shaped extrusion. The other leg of the extrusion extends inwardly to terminate at the inner building wall and provides a recess or socket spaced inwardly from the exterior wall surface to receive the end or tongue of the adjoining wall unit. The inwardly extending leg of the extrusion forms with the adjoining extrusion a load-bearing T-shaped column with the inwardly extending leg providing the necessary bracing to the extrusion at the joining of the two adjacent elements.

A further object of the present invention is the provision of a building wall construction having a solid load-bearing wall into which fenestration can be easily inserted.

The present invention also comprehends the provision of a load-bearing wall system where the insulation to the degree required is accommodated within the wall and the interior finish surface can be either shop applied or field applied.

The present invention further comprehends the provision of a load-bearing wall system where wall segments can be utilized as raceways for electrical wiring, as pipe chases for plumbing runs, and as ducts for air movement in heating and cooling.

Another object of the present invention is the provision of a building wall structure that is readily designed to be demountable for transfer to another site and subsequent reerection as needs change.

Another object of the resent invention is the provision of a building wall construction having a load-bearing wall which will support at its upper edge any suitable type of roof construction; the roof structure preferably being shop assembled into prefabricated sections that can be immediately assembled at the construction site.

A further object of the present invention is the provision of a building wall construction having a bimetallic thermal movement restraint to inhibit the effects of thermal expansion or contraction of the metal extrusions forming the building. The building elements are preferably formed of aluminum and a metal with a lower coefficient of expansion is included to be fastened at its ends to the aluminum elements to restrain the aluminum expansion.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly, and such further object, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawings:

FIG. 1 is a partial front elevational view of a building utilizing the construction elements of the present invention.

FIG. 2 is an enlarged horizontal cross-sectional view of the wall construction of the building taken on the line 2—2 of FIG. 1.

FIG. 3 is an exploded perspective view of a plate member of the wall construction showing the method of assembly.

FIG. 4 is a perspective view of a building partially broken away to show the construction thereof.

FIG. 5 is a partial vertical cross-sectional view of one form of building construction.

FIG. 6 is a horizontal cross-sectional view taken on the line 6—6 of FIG. 5.

Referring more particularly to the disclosure in the drawings wherein is shown an illustrative embodiment of the present invention FIG. 1 discloses a building 10 having a roof 11 and walls 12 secured to a base or floor 13 and formed of a series of extruded panels or plate members 14 joined together to form the wall and having windows 15 mounted therein. As seen in FIGS. 2 and 3, each plate member 14, preferably formed of extruded aluminum, is of a generally L-shape with the longer leg 16 forming the exterior wall surface and which can be prefinished of any suitable or desired exterior configuration as at 17 prior to shipment to the construction site.

As the construction industry is experiencing a continuous and increasing rate of increase of onsite construction labor without a corresponding increase in productivity the present wall construction using prefinished ready to assemble plate members will aid in reducing overall construction costs. The size of the assembled panels is determined by the maximum size of such panels that can be shipped by available means to the job site. A single panel 14 may have a width of 1 foot, but several panels will be assembled together for delivery as a unit to the job site. Generally speaking, this size will be in the order of 8 by 20 feet panel unites intended for use in a two story building, and 9 by 40 for panel units intended for use in a one story building. These sizers are illustrative only and are not meant to be limiting.

The panel leg 16 terminates at its free end in an offset portion 18 and an enlarged edge portion or tongue 19 parallel to the leg 16. The other leg 21 of the panel 14 includes an inwardly extending irregular leg having an inwardly offset recess 22 adapted to receive the tongue 19 of an adjoining panel 14 as seen in FIG. 2. A resilient sealing strip 23 is positioned between the offset portion 18 adjacent the tongue 19 of one panel and the leg 21 of the other panel adjacent the exterior leg 16. Between the recess 22 and the leg 16, the leg 21 forms a generally C-shaped channel 24 and the web 25 from the recess 22 terminates in an inner channel 26 and a pair of flanges 27, 27 to position the interior wall panel or surface 28.

As seen in FIG. 2 the adjoining panels 14, 14 having the inwardly extending leg 21 and the exterior legs 16, 16 form a generally Tnshaped column with the inward leg 21 providing the necessary bracing to the panels at the joining of the panels. The adjacent panels constitute a continuous series of columns with the adjacent panels interleaved in a plane parallel to the plane of the wall. Shear loads are transferred in a continuous positive manner across the minor axis of the column system, i.e. perpendicular to the plane of the wall. Shear loads in the plane parallel to the plane of the wall are transferred across mating panels by means of shearpins 29 (FIGS. 2 and 3) extending through an opening 31 into the recess 22 and through an opening 32 in the tongue 19 therein. Positive, but discontinuous shear transfer is thus accomplished across the effective major axis of the column system. Longitudinal shear transfer is also accomplished by the shear transfer pins 29 which are vertically spaced along the length of the panels.

Now considering FIG. 2, the panels 14 form the walls of a building for any desired length. A square tubular column 33 is located at the corner of the building and cooperates with a pair of corner members 34, 35; the member 34 being of generally rectangular shape and having an inward web 36 defining an inwardly offset recess 37 receiving the tongue 19 of the adjacent panel 14 and a generally C-shaped channel 38. The member has a web 39 generally parallel to the legs 16 of the panels 14 and a web 41 perpendicular thereto and providing a recess 42 adapted to receive a corner of the column 33. The web 41 terminates in a U-shaped channel 43 adapted to receive an edge of an interior wall panel 28 with the one leg of the channel providing a generally C-shaped channel 44 opposite the channel 38 with a flange 45. The wall panel 28 is secured by a suitable adhesive onto strips 46 of an adhesive backed cellular neoprene or similar material which adheres to the flanges 27, 27 of the legs 21 and the flange 45.

The corner member 35 is also generally rectangular having a web 47 with a U-shaped channel 48 to receive the edge of another panel 28 of a second wall. The web 47 has a recess 49 for an opposite corner of the column 33, and a web (not shown) perpendicular to the web 47 which terminates in an inwardly offset tongue, identical to the tongue 19, received in a recess 22 of the first panel 14 of the second wall (not shown).

To provide for windows or other fenestration, another panel 14 is utilized with the instanding leg 51 having the channels 24 and 26, a recess 52 receiving a glass gasket of neoprene or other suitable material having a channel shape to receive the edge of a glass panel 54, forming a window 15; a snap-in member 55 engaging the leg 51 to retain the glass panel 54 and gasket 53 in operative position. At the opposite edge of the glass panel 54 (not shown) a similar panel 14 has an instanding leg similarly adapted to define the opposite edge of the opening for the window 15. The leg 51 terminates in a U-shaped channel 56 to receive an edge of the interior wall panel 28.

As shown, any required amount and type of insulation 57 is located within the panels 14, 14 and the interior wall panels 28 may be formed of plasterboard, chalkboard, or other suitable material may be used. A fire-resistant wall panel 28 formed of plasterboard gypsum board or other cementitious material, will enhance the fire-resistant properties of the wall structure. The interior wall panels 28 may be applied to the panels 14 in the shop or in the field as desired.

With reference to FIGS. 4 and 5, the wall structure shown in FIGS. 2 and 3 may be used in several types of building structures. FIGS. 4 and 5 disclose the general construction of the building 10 shown in FIG. 1 having a concrete foundation post 58 with a precast sill course 59 thereon. A concrete floor 61 has bent reinforcing rods or bars 62 secured, as by welding to an inverted U-shaped channel 63 running the length of the wall on the sill course 59. An extruded sill 64, preferably of aluminum rests on the channel 63 and has an exterior downwardly extending lip 65 and a pair of spaced flanges 66, 66 adjacent the inner edge of the sill. The wall panels 14, 14 rest on the sill 64 and elongated rods 67 and/or bolts 68 extend through openings in the channels 63 and the sill 64 into the C-shaped channels 24, 26 in the panels 14 and the channels 38, 44 in the members 34.

In the wall unit, a combination of both bolts and tie rods are utilized. The bolts 68 are of the self-tapping type having an enlarged head 69 received in the space of the channel 63 and a threaded shank 71 which forms threads in the channels 24, 26 or 38, 44 to secure the wall panels 14 to the sill. The tie rods 67 have threaded ends extending through the sill plate 64 and the channel 63 and through the upper members 73, 75, and nuts 72 engage the threaded ends to secure the structure together.

As shown in FIGS. 4 and 5, the upper edges of the panels 14 have an elongated flat member 73 extending along the length of the wall and topped by an inverted U-shaped cover 74 formed of a pair of extruded aluminum angle members 75, 75 to retain the wall together and to distribute vertical loads on the wall. Upper bolts 68 or the upper threaded ends of tie rods 67 extend through the angle members 75, 75 and the flat member 73 into the C-shaped channels; the enlarged heads 69 of bolts 68 or the nuts 72 being located above members 75, 75. The flat member 73 is preferably formed of steel for a purpose to be later described. Incident vertical loads are distributed over several wall panels 14 at and adjacent to the point of load application by means of the continuous horizontal plate 73 and the continuous horizontal angle members 75, 75 which encompass the upper ends of the wall panels 14 including the leg 16 and the instanding leg 21, as clearly seen in FIG. 5.

The load carrying capacity of the wall panel 14 is considerably increased over that of a simple unbraced plane due to the random convolutions 17 forming the exterior appearance of the panel. The convolutions extend across the width of the panel and extend vertically with an identical cross section the length of the extrusion. The convolution 17 is subject to wide variation as the esthetic and architectural purposes require. The purpose of the convolutions are primarily twofold: (1) an architectural purpose in providing a naturalistic random vertical texture designed to provide a nonmechanical appearance and an attractive esthetically desirable exterior surface for the building and (2) the convolutions serve to provide substantial stiffening and bracing to the plate element or leg 16 forming the exterior plane of the wall.

The concrete floor 61 of conventional formation rests at its edges on the sill course 59 and the inner edge of the sill 64. The central portion of the floor rests on dirt fill 76. A permanent insulation block 77 is located at the edge of the floor 61 and rests in the channel formed by the spaced flanges 66, 66 of the sill 64. The interior wall panels 28 are supported on the insulation block 77 and extend upward to a point short of the first floor ceiling or a roof structure for a one story building. A conventional flooring 78 of wood, tile, etc. can be laid on the concrete floor surface 61.

As shown in FIGS. 5 and 6, the wall panels 14, 14 are capable of supporting a ceiling-floor assembly 79 for a two story building. The second story floor base 81 may be of any suitable material such as concrete formed in slabs and supported by parallel floor joists 82 extending between the opposite wall panels 14, 14 of the building. The joists 82 rest on the horizontal flange 84 of an angle member 83 having a vertical flange 85 engaging the flanges 27 27 of the legs 21. The angle member 83 is supported by a series of spaced joist supporting arms 86 and bolted thereto by elongated bolts 87 and nuts 88 with the bolt extending through a general C-shaped channel 89 (FIG. 6) formed in the arm 86.

The supporting arm 86, as more clearly seen in FIG. 6, has a straight web portion 91 containing the C-shaped channel 89 and terminating in a perpendicular flange 92. An offset irregularly shaped web portion 94 joined to the web portion 91 by the offset 93 is conformably received on the surface of the instanding leg 21 of a panel 14. The bearings 86 are located on each side of the floor joist 82 and secured to adjacent legs 21, 21 by elongated bolts 95 and cooperating nuts 96 extending

through openings 97 in the legs 21 and the web portion 94. A tubular spacer sleeve 98 encompasses the bolt 95 and extends between the adjacent surfaces of the legs 21, 21.

A ceiling 99 may be suspended from or otherwise secured to the floor joists 82 as is conventionally known. Also, a conventional floor 100 formed of wood, tile or other suitable material may be employed on top of the floor base 81. Also, any suitable roof construction may be utilized with the wall construction, the roofing being supported on the horizontal angle members 75, 75.

In construction, the foundation and sill are first properly located and then the wall panel units are erected in opposite pairs and bolted to the sill and channel. After several wall units are erected, the erection of roofing units or segments is started. Cranes are utilized to handle the units in erection. By means of this system, onsite construction labor is reduced nearly 90 percent.

Expansion is always a serious problem in metals, and is particularly serious in aluminum due to the relatively high rate of thermal expansion inherent in the metal. As the extruded wall panels 14 as well as many of the beams are preferably formed of aluminum, the particular configuration of the panels is important in reducing the serious problems of thermal expansion in the building structure. Horizontal expansion of the wall panels is accommodated by elastic deflection of the instanding legs 21 occurring at the joining of two adjacent panels. These two panels, extending in a parallel manner, from the exterior surface 17 inward to the point of connection of the two adjacent extrusions, deflect laterally as the plate or leg 16 constituting the exterior wall plane moves thermally. By this means, thermal movement is not accumulated, but is accommodated within the separate extruded elements.

Furthermore, resistance to buckling by either the loading at the upper edge of the wall or thermal expansion is achieved by the oppositely extending flanges 27, 27 at the inner edge of the instanding leg 21. Also, the interleaving of the tongue of one panel in the recess of the next adjacent panel provides resistance to buckling for the first leg, providing the exterior panel surface, in a direction perpendicular to the plane of the first leg. The resulting structural column formed by the interleaved panels provides a geometry to impart a significant moment of inertia about the minor axis of the column.

To further reduce the effects of thermal expansion of the aluminum structural units, over the range of ambient temperatures normally encountered, to acceptable limits, this invention involves the inclusion of a metal with a lower coefficient of expansion, such as steel, fastened at its ends to the aluminum elements; so that under ambient temperatures the aluminum expansion is restrained by the lesser expansion of the steel. The steel generally in the form of an elongated rod having threaded ends, is accommodated within an aluminum extrusion by means of a hollow or partially closed hollow space, of the proper dimension or diameter, extending longitudinally within the aluminum extrusion. Threaded fastening is provided at the ends so that aluminum expansion is restrained by the steel, but aluminum contraction is unrestrained. If contraction is also to be restrained, sufficient tension is placed on the steel rod to deform the aluminum longitudinally to the length established for the lower end of the ambient range.

As shown, the steel rods 67 extending through the channels 24, 26 in the wall panels 14, 14 may be utilized to restrain the expansion of the aluminum in a vertical direction. The extruding of the hollow channel or conduit means in a wall panel 14 and the subsequent placing of a steel rod therein does not subtract from the geometrical section properties of the extruded element, but rather adds to the effective properties with a resulting final assembly that is stronger and will resist a greater load.

In addition, the longitudinally extending inverted channel 63 and the elongated flat member 73 within the cover 74 are also formed of steel for the purpose of restraining thermal expansion along the length of the building wall. The elongated rods 67 and the bolts 68 which are received in the channels 24, 26 also extend through both the channel 63 and the elongated member 73 so as to secure the wall panels 14, 14 to the channel 63 and the member 73 for the purpose of restraint of thermal expansion of the aluminum panels in a direction parallel to the plane of the interleaved first legs 16, 16.

Although a wall panel for a building construction of a particular configuration has been shown and described, it is not my desire or intent to unnecessarily limit the scope or the utility of the improved features by virtue of this illustrative embodiment.

Having thus disclosed my invention, I claim:

1. A building wall structure for a load-bearing wall, comprising a plurality of vertically disposed elongated wall panels joined together to form a wall structure, each panel having a generally L-shape in horizontal cross section with a first leg forming the exterior surface of the wall and an instanding leg generally perpendicular to the first let, said first leg terminating at its edge opposite the instanding leg in an inwardly offset tongue, said instanding leg having a recess inwardly offset to receive the tongue of an adjoining panel, vertically extending channels formed in said instanding leg, a cover member for the upper edges of the panels including at least one elongated angle member, and bolts extending through said cover member and threadingly engaging the channels in the wall panels.

2. A building wall structure for a load-bearing wall, comprising a plurality of vertically disposed elongated wall panels joined together to form a wall structure each panel having a generally L-shape in horizontal cross section with a first leg forming the exterior surface of the wall and an instanding leg generally perpendicular to the first leg, said first leg terminating at its edge opposite the instanding leg in an inwardly offset tongue, said instanding leg having a recess inwardly offset to receive the tongue of an adjoining panel, and a support for a floor-ceiling intermediate the ends of the panels; said support including an angle member extending horizontally along the edges of the instanding legs of the wall panels to support joists for the floor-ceiling a pair of joist support arms secured to said angle member and to the instanding legs of adjacent wall panels, said support arms each having a web portion with a vertically disposed channel therein, a bolt extending through said angle member and the channel to secure the angle member to the support arm, the opposite end of the web generally conforming to the profile of the instanding leg of a wall panel, an elongated bolt extending through a pair of support arms and the instanding panel legs to secure the support arms to the wall panels, and a spacing sleeve encompassing the last mentioned bolt and extending between the legs of the wall panels.

3. A building wall structure for a load-bearing wall, comprising a plurality of vertical disposed wall panels joined together by interleaved edges thereof, each panel having a first leg forming the exterior surface of the wall and at least one instanding leg, at least one vertically extending channel formed in said instanding leg, a head member for the upper edges of said panels, and a sill member supporting the lower edges of said panels, an elongated rod located within and continuously supported laterally by each channel and extending through said head member and said sill member, and fastening means engaging each end of each rod above said head member and below said sill member.

4. A building wall structure as set forth in claim 3, in which said load-bearing wall is intermittently supported, whereby both horizontal and vertical shear are transmitted through said rods, said wall panels, and said head and sill members to the intermittent supports for the wall, wherein the assembled wall functions as a beam and truss between the intermittent supports.

5. A building wall structure for a load-bearing wall, comprising a vertically disposed elongated wall panel having a first leg forming the exterior surface of the wall and an instanding second leg generally perpendicular to the first leg, said panel having a recess inwardly offset from one edge of said first leg,

said first leg terminating at its edge opposite said one edge in an inwardly offset tongue received in the recess of the next adjacent panel, said panel being formed from extruded aluminum and having a vertically extending random naturalistic texture imparted to the surfaces thereof resulting from the extrusion of the panel in an indeterminate length and, in horizontal section, the first leg is convoluted inwardly and outwardly from a vertical plane of the wall to increase the rigidity of the wall panel.

6. A building wall structure as set forth in claim **5**, in which the horizontal section of said first leg is wholly identical throughout the vertical dimension of the leg, said random naturalistic texture being deliberately shaped to provide a nonrepetitive, nonmechanical and consequently esthetically pleasing exterior visible surface.

7. A building wall structure as set forth in claim **5**, in which said instanding leg includes at least one vertically extending channel formed therein, and an elongated and conformably received within said channel and extending beyond the upper and lower edges of the panel.

8. A building wall structure for a load-bearing wall, comprising a vertically disposed elongated wall panel having a first leg forming the exterior surface of the wall and an instanding second leg generally perpendicular to the first leg, said panel having a recess inwardly offset from one edge of said first leg, said first leg terminating at its edge opposite said one edge in an inwardly offset tongue received in the recess of the next adjacent panel, said tongue and recess having a plurality of vertically spaced aligned openings therein, and a shear transfer pin inserted in each set of aligned openings, so that continuous shear transfer is obtained across the minor axis of the resulting column due to the interleaving of the tongue and recess parallel to the minor axis, and intermittent shear transfer is obtained both longitudinally and across the major axis due to the shearpins, said first leg having a vertically extending random naturalistic texture imparted to the surfaces thereof and, in horizontal section, is convoluted inwardly and outwardly from a vertical plane of the wall to increase the rigidity of the wall panel.

9. A building wall structure for a load-bearing wall, comprising a vertically disposed elongated wall panel having a first leg forming the exterior surface of the wall and an instanding second leg generally perpendicular to the first leg, said panel having a recess inwardly offset from one edge of said first leg, said first leg terminating at its edge opposite side one edge in an inwardly offset tongue received in the recess of the next adjacent panel, said instanding leg including a vertically extending channel adjacent said first leg, a web portion extending from the recess and terminating in a second vertically extending channel, and a pair of elongated rods conformably received within said channels and extending beyond the opposite edges of the panel said first leg having a vertically extending random naturalistic texture imparted to the surfaces thereof and, in horizontal section, is convoluted inwardly and outwardly from a vertical plane of the wall to increase the rigidity of the wall panel.

10. A building wall structure as set forth in claim **9**, in which said channels are generally C-shaped in horizontal cross section.

11. A building wall structure as set forth in claim **9**, including an intermittently supporting foundation for the wall structure, an elongated sill supported by the foundation, a plurality of wall panels joined together resting on said sill, and a cover member for the upper edges of the panels including at least one elongated angle member, said elongated rods extending through said sill and said cover member, and fastening means cooperating with said rods retaining the cover member, sill and panels together.

12. A building wall structure as set forth in claim **11**, in which said sill and cover member act as tension and compression chords, respectively, and positive shear transfer is provided through said elongated rods to said sill and cover member.

13. A building wall structure for a load-bearing wall, comprising a vertically disposed elongated wall panel having a first leg forming the exterior surface of the wall and an instanding second leg generally perpendicular to the first leg, said panel having a recess inwardly offset from one edge of said first leg, said first leg terminating at its edge opposite said one edge in an inwardly offset tongue received in the recess of the next adjacent panel, an instanding leg of a wall panel terminating in a channel receiving an edge of an interior wall surface, a shoulder intermediate the ends of the leg, a sealing strip engaging said shoulder, a window having an edge engaging the sealing strip, and a snap-in member engaging the instanding leg and the sealing strip to retain the window in operative position, said first leg having a vertically extending random naturalistic texture imparted to the surfaces thereof and, in horizontal section, is convoluted inwardly and outwardly from a vertical plane of the wall to increase the rigidity of the wall panel.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,601,942 Dated August 31, 1971

Inventor(s) James D. Wilson

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

Column 2, line 5, "resent" should read -- present --;
line 58, after "feet" and before "panel" insert --for--;
"unites" should read -- units --;
line 60, "sizers" should read -- sizes--.
Column 3, line 3, "Tnshaped" should read -- T-shaped --.
Column 4, line 71, "bearings" should be deleted; after "the" insert -- supporting arms --.
Column 6, line 17 (Claim 1) "let" should read -- leg --;
line 38 (Claim 2) insert a comma between "ceiling" and "a".
Column 7, line 18 (Claim 7) delete second "and" and insert -- rod --;
line 45 (Claim 9) "side" should read -- said --.

Signed and sealed this 7th day of March 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334