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3,619,965

WALL PANEL

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2 Sheets-Sheet 1

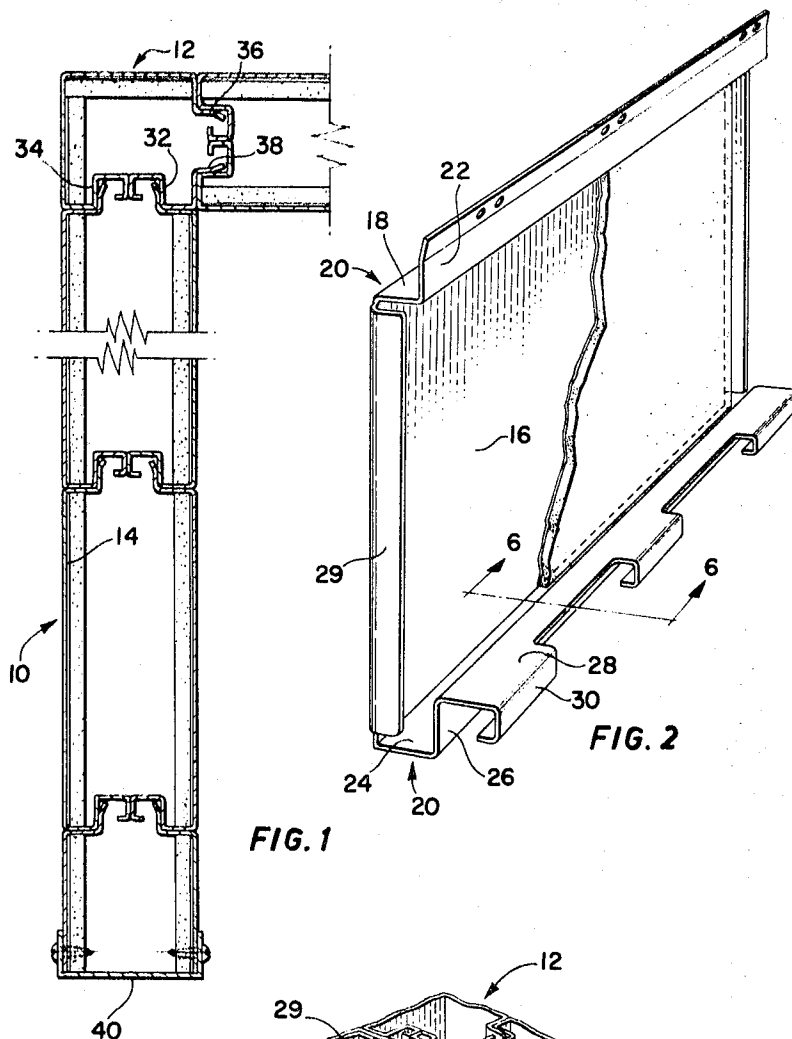


FIG. 1

FIG. 2

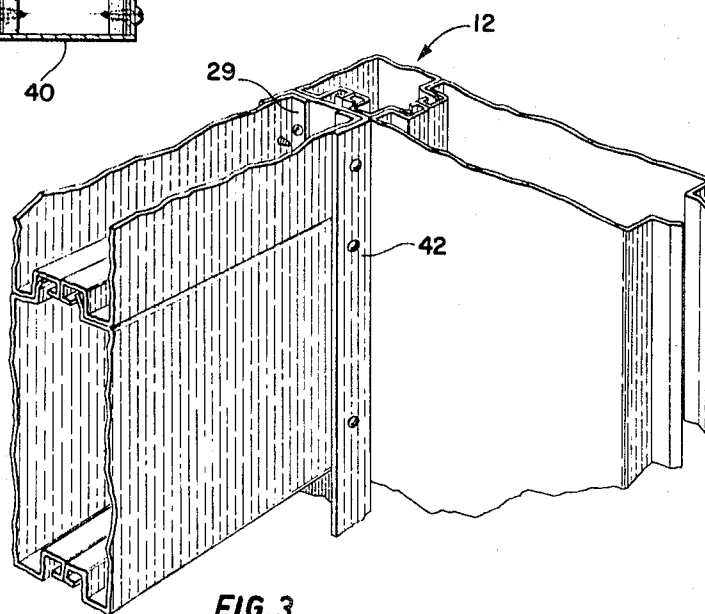


FIG. 3

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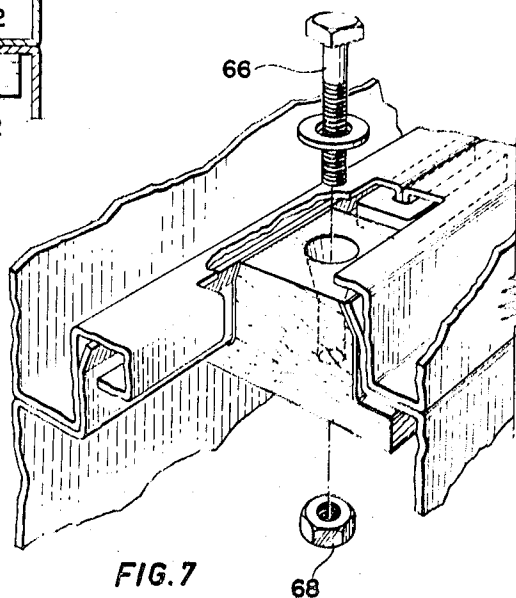
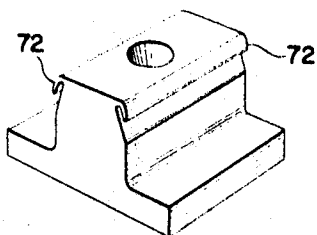
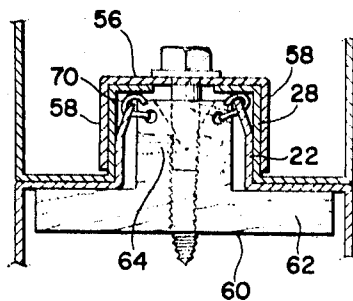
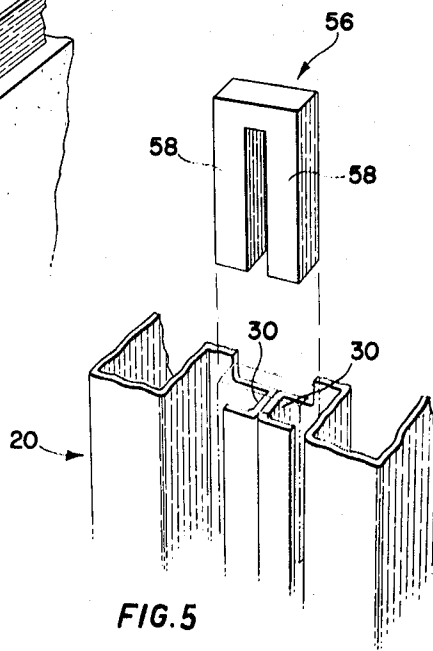
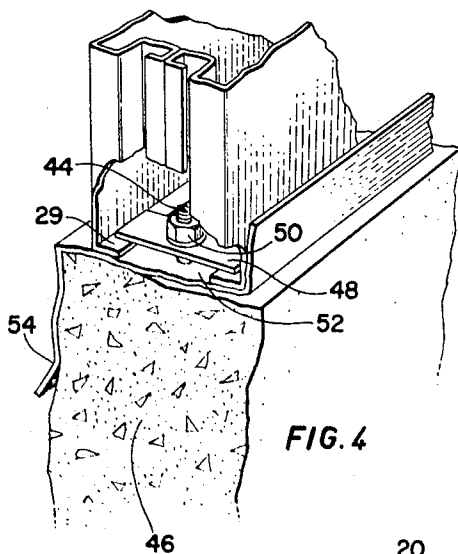
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2 Sheets-Sheet 2



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3,619,965

WALL PANEL

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3 Claims

ABSTRACT OF THE DISCLOSURE

The wall panel consists of a number of panel sections connected in pairs. Each section has a flat central portion, an L-shaped portion at one side of the central portion and a somewhat C-shaped side portion at the other side. The wall panel is constructed by placing the sections in pairs so that their side portions contact one another and disposing one pair beside another. The sections may be disposed either vertically or horizontally. Provision is made for nesting one pair to an adjacent pair in order to maintain the wall panel in an assembled state.

This invention relates to building construction and is particularly directed to prefabricated wall panels.

It is known to construct walls of a number of elongated horizontal panel sections. Such sections are generally U-shaped and have interlocking means for connecting vertically adjacent like sections. In addition, such sections may be imperforate so that a number of like sections may be filled with earth or other fill to form a rigid wall.

Such panel sections have a number of disadvantages. The sections deform under a relatively light load and before use and cannot be stored in high stacks. In addition, the sections are relatively bulky and occupy considerable space in storage. Moreover, where such sections are used as exterior walls, condensation from the exterior surface is readily passed to the interior surface.

It is accordingly an object to provide a panel section which is compact and does not readily deform when in a stack.

It is another object to provide a panel section which substantially inhibits passage of condensation from an exterior surface to an interior surface thereof.

It is another object to provide a panel section which is light in weight for ease of handling and which is readily formed from sheet material whereby the cost thereof is relatively low and at the same time the strength of the section is relatively high.

It is another object to provide a building construction which includes walls formed of hollow sheet metal members and has provision for the mounting of wooden joists and like wooden members.

These and other objects may be accomplished by providing a panel section for use in combination with other like sections to form a wall, the panel section including a planar member; and lateral portions at opposite sides of the planar member, one lateral portion being generally L-shaped and composed of a pair of limbs, one limb extending from the planar member in a direction generally normal thereto to the other limb, the other lateral portion having a first arm extending from the planar member in a direction generally normal thereto to a second arm, the second arm extending to a third arm, being

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spaced from the planar member and being generally parallel to the planar member and normal to the third arm.

A fuller understanding of the invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawings in which:

FIG. 1 is a plan view of a number of nested panel sections each section disposed vertically to form a wall;

FIG. 2 is a perspective view of a panel section showing a layer of insulation board, broken away, affixed to the panel;

FIG. 3 is a partial perspective view of a corner wall;

FIG. 4 is a partial perspective view of the wall and a footing;

FIG. 5 is a further partial perspective view showing the manner in which two panel sections may be joined;

FIG. 6 is a section showing the panel section illustrated in FIG. 2 on line 6—6 together with a second like panel section, and means by which the panel sections may be joined;

FIG. 7 is a cut away perspective view showing the means by which panel sections are nested and joined; and

FIG. 8 is a perspective view of a second embodiment of the spacer illustrated in FIGS. 6 and 7.

Like reference characters refer to like parts throughout the description of the drawings.

With reference to FIG. 1, a building wall is composed of a plurality of nested elongated hollow bodies indicated generally 10 and a corner element indicated generally 12. Each body 10 is composed of a pair of panel sections 14 which together define the outer walls of the body.

As illustrated in FIG. 2, each section 14 is made up of a planar member 16 and lateral portions generally designated 20 at opposite sides of member 16.

The upper lateral portion 20 is generally L-shaped and is made up of limbs 18 and 22. As seen, limb 18 extends from the end of member 16 in a direction perpendicular thereto and terminates at limb 22. Limb 22 and member 16 are disposed on opposite sides of limb 18. Preferably, the free edge of limb 22 is turned in slightly and is perforated along the edge as shown for a purpose to be explained below.

Lateral portion 20 is composed of arms 24, 26 and 28. Arm 24 extends perpendicularly from one side of member 16 to arm 26 which latter arm extends perpendicularly and parallel to member 16. As shown, arm 26 is opposite to member 16. Arm 28 extends from arm 26 in a direction parallel to arm 24. Preferably a fourth arm 30 is formed at the end of arm 28. Arm 30 is parallel to arm 26 and is opposed to the face of arm 26 opposite the face opposed to member 16. A plurality of generally rectangular portions are removed from arms 28 and 30 along the length thereof for a purpose to be explained below.

Preferably panel section 14 is formed of sheet metal stamped or bent into the required form. Preferably the ends of each section are bent inward as at 29 to retain insulation therebetween and to provide a convenient means by which walls formed from such sections may be joined to other like walls.

As seen in FIG. 1, sections 14 are arranged in pairs so that arms 28 of each pair lie substantially in the same plane and arms 26 are opposed to one another. At the opposite side of member 16, limbs 18 lie substantially in

the same plane and limbs 22 are opposed and substantially parallel to one another. Pairs of panel sections 14 are nested so that opposed limbs 22 of one pair are disposed between opposed arms 26 of an adjacent pair.

Corner element 12 is made up of two elements which combine to form a hollow body. Arms 32 and 34 are disposed along one face of the element and limbs 36 and 38 are disposed along an adjacent face. As shown arms 32 and 34 are equivalent to arms 26 of sections 14 and contact opposed limbs 22 of adjacent sections 14. Similarly limbs 36 and 38 contact and are positioned between arms 26 of an adjacent pair of sections 14.

FIG. 1 also illustrates the manner in which a door or window may be formed in walls formed of hollow bodies 10. As shown, the pair of sections 14 at the end of the wall are cut along the length thereof and the free ends are positioned between the opposed limbs of channel 40, the channel forming the frame of the window or door. Channel 40 may be held in position by self tapping screws as illustrated.

Sections 14 may be disposed both vertically and horizontally to form the building wall. FIG. 3 illustrates the manner in which a wall composed of horizontally disposed sections 14 may be joined to a wall composed of vertically disposed sections. As illustrated, use is made of a channel shaped member 42 which connects corner element 12 to the turned in ends 29 of horizontally disposed sections. Member 42 may be secured to corner element 42 by passing bolts through apertures formed along the web of member 42 which coincide with apertures formed along the length of the contacting face of corner element 12. Apertures are also formed along the lengths of the opposed limbs of member 42 and bolts are passed through the apertures and into coinciding apertures in sections 14. It will be understood that member 42 may be secured anywhere along the length of a wall formed from sections 14 and therefore both interior and exterior walls may be formed from sections 14 and such walls may be joined to like walls where desired.

In FIG. 4, the manner in which a wall composed of panel sections 14 is secured to a footing is illustrated. A bolt 44 is embedded in a footing 46 which footing is embedded in the ground. A plate 48 is tightened into engagement with ends 29 by means of a nut 50. Preferably flashing 52 is disposed between the upper surface of footing 46 and ends 29 so that elongated limb 54 projects downwardly and in contact with the exterior surface of footing 46.

With reference to FIG. 5, means by which lateral portions 20 of adjacent sections 14 may be joined is illustrated. A U-shaped clip generally designated 56 having spaced apart limbs 58 is positioned so that the opposed faces of limbs 58 contact arms 30. As rectangular shaped portions are removed from arms 30 along the lengths of sections 14 clips 56 may be positioned where desired along the lengths of the wall.

Preferably panel sections 14 forming a part of each pair are joined by means of a plurality of channels and spacers disposed along the length of the wall. With reference to FIG. 6, channel 56 is composed of a web and a pair of spaced apart legs 58 and spacer 60 is generally T-shaped having an elongated member 62 and a central column 64 extending at right angles from the centre of member 62. As shown, adjacent pairs of sections 14 are secured by positioning channels 56 so that opposed arms 28 of each pair are between and in contact with the opposed surfaces of legs 58 and arms 30 contact the web of channel 56. Spacer 60 is positioned so that central column 64 is between opposed limbs 22 nested between arms 28.

As seen in FIG. 7 an aperture is formed in each channel 56 and central column 64 for the admission of a bolt 66. As described above rectangular portions are cut from arms 28 and 30 to permit screw 66 to be passed through the apertures in channel 56 and spacer 60 and retained

therein by means of nut 68. Alternatively, a lag screw may be passed through the aperture in channel 56 and threadably received in the aperture in spacer 60.

Preferably spacers 60 are attached to the free edges of limbs 22 by means of hooks 70 which pass through holes formed in spacer 60 and perforations in limbs 22. Spacers 60 may therefore be secured to the limbs 22 of each pair of sections 14 before pairs of sections are nested. Assembly of the wall is facilitated where spacers 60 are connected before pairs of sections are nested with adjacent like pairs. In the alternative, lips 72 may be formed along the edges of central column 64 which permit attachment of spacers 60 to the free edge of limbs 22. A spacer having such lips is illustrated in FIG. 8.

Use of such spacers and channels is particularly desirable where the wall must bear a substantial load. Spacers 60 serve to reinforce the wall since the free ends of members 62 contact and brace members 16 of each pair. Further internal bracing is also provided by channels 56.

Where desired, each section 14 may be insulated by means of insulating panels which extend along members 16 and may be retained therein by turning the ends of member 16 inward. Typical insulated sections are illustrated in FIGS. 1 and 2.

In the assembly of the wall construction according to the invention, it is merely necessary to bring two sections 14 together as shown in FIG. 7 and secure a spacer 60 so that central column 64 is between limbs 22. A second pair of sections 14 are positioned so that opposing arms 28 contact limbs 22 and spacer 60 is adjacent cut out portions in arms 28 and 30. A channel 56 is then placed so that the aperture formed therein coincides with the aperture formed in central column 64. A bolt 66 is then passed through the apertures in channel 56 and spacer 60 and nut 68 is tightened into engagement with the spacer. A socket wrench is desirable for tightening the screw into engagement with spacer 60. Preferably to guide the screw into the aperture in spacer 60, the entrance of the aperture in central column 64 is dished or funnel shaped.

It will be seen that a number of like sections 14 will stack readily without deformation. In addition, as they are divided into two parts, if walls formed therefrom are used as exterior walls very simple precautions will ensure that condensation forming on the exterior planar member of each pair will not pass to interior member.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. In a building wall, a plurality of panel sections and channels, each said section including: a planar member; and lateral portions at opposite sides of and integral with said planar member, one said lateral portion being generally L-shaped and composed of a pair of limbs, one said limb extending from said planar member in a direction generally normal thereto to the other said limb, the other said lateral portion having a first arm extending from said planar member in a direction generally normal thereto to a second arm, said second arm extending to a third arm, being spaced from said planar member and being generally parallel to said planar member and normal to said third arm, said panel section being disposed in pairs to form an elongated hollow body, said third arms of each said pair being substantially coplanar and the other said limb of each said pair being opposed and substantially parallel to one another, each said channel comprising a web and a pair of opposed legs, at least one channel interconnecting said panel sections forming each said pair and disposed so that a portion of both said second arms of each said pair are between and in contact with the opposed legs of at least one said channel.

2. In a building wall as claimed in claim 1 further including a generally T-shaped spacer having an elon-

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gated member and a central column extending perpendicular to said member at the centre thereof, at least one said spacer being so positioned between said panel sections forming a pair that its elongated member is in contact with both said planar members and its central column is in contact with both said opposed limbs so that both said planar members are parallel.

3. A buliding wall as claimed in claim 2 wherein at least one other said spacer has an aperture formed in said central column, said spacer being so positioned between said panel sections forming a pair that said central column is in contact with both said second arms and said aperture coincides with an aperture formed in said channel, and means passing through both said apertures for securing said channel to said spacer.

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