Jan. 11, 1966 R. S. GREGOIRE 3,228,162

BUILDING PANEL ASSEMBLY

Filed Sept. 17, 1962

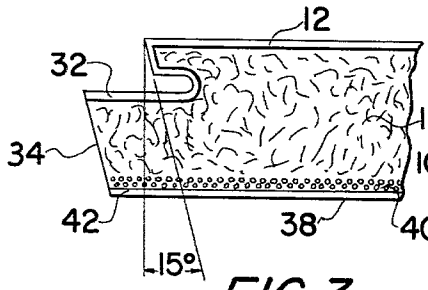


FIG. 3.

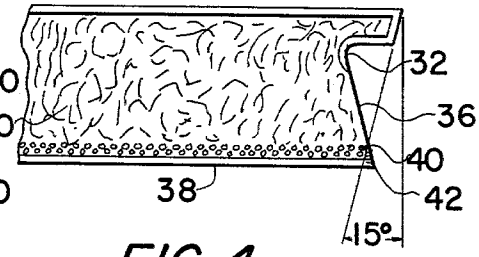


FIG. 4.

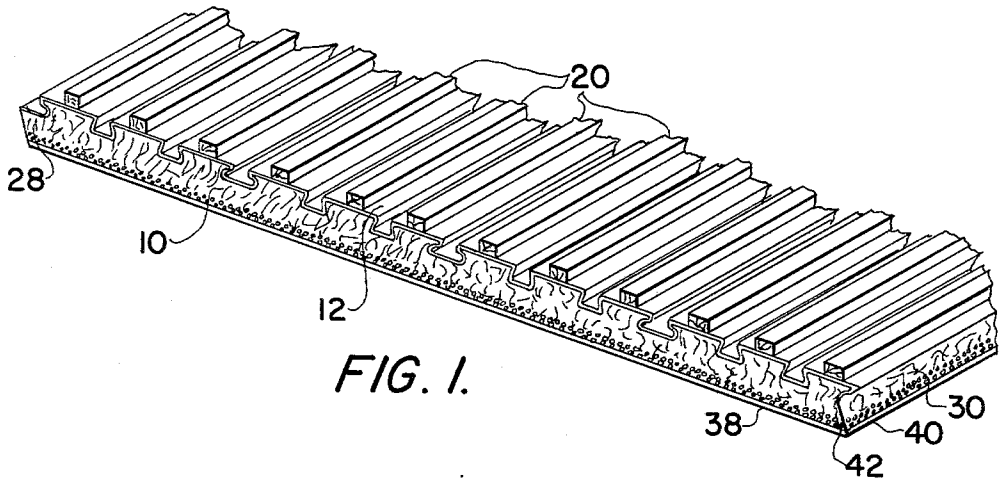


FIG. 1.

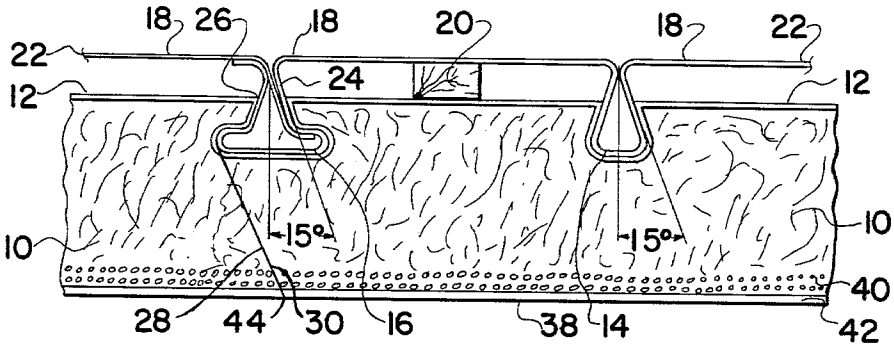


FIG. 2.

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BUILDING PANEL ASSEMBLY

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4 Claims. (Cl. 52—309)

This invention relates to lightweight prefabricated panel assemblies for self-supported building and container walls, floors or roofing, having self locking and sealing joints for installation on the site without the use of accessories or tools, to build an insulated wall, finished both on the inside and the outside, with hollow vent passages throughout.

The object of the present invention is to make finished wall panel assemblies of the insulated type provided with self sealing interlocking edges for joining adjacent wall panel assemblies together to form the finished wall on the site, without the use of any joining accessories such as pins, nails, bolts, screws, etc. or tools, such as hammers, wrenches, screwdrivers, crowbars, etc.

A further object is to provide hollow spaces throughout the length of these panels for ventilation, heating, cooling, and for the installation of electric cables, and water and plumbing conduits, etc., or for additional insulation, if desired.

Other and more specific objects will become apparent in the following description of a preferred form of this novel panel assembly, having reference to the accompanying drawing, wherein:

FIG. 1 is a perspective end view of the inner wall slab of the panel assembly,

FIG. 2 is an enlarged end view of portions of adjacent panel assemblies joined together, and

FIGS. 3 and 4 are detail end views of the opposite side edges of the inner wall slab of an assembly.

The present invention is an improvement or modification of the panel assemblies disclosed in my copending application Serial No. 194,339 filed May 14, 1962, for Panel and Joint.

In the present disclosure, the insulation slab **10** has a reinforced lining **12** on its internal surface to provide a firmer engagement of the shallow wide-bottomed grooves in the slab with the wide bottoms of the triangularly formed grooves **14** and **16** formed at the back of a plurality of the outside sheet multi-panel strips, and the spacer strips **20** provide a firmer support against the inside of each panel **18** and may be fixed to the slab between the triangularly formed grooves of the panel strips.

Slab **10** may extend in width to receive the wide bottoms of the grooves at the back of any number of sheet multi-panel strips **22** assembled together in one panel assembly. In the illustration in FIG. 1 it is wide enough to receive an assembly of four outside multi-panel strips **22**, the opposite side edges **24** and **26** of the outermost strips **22** in adjacent panel assemblies being used for interlocking engagement between the panel assemblies when joining them together at the building site. The corresponding edges **28** and **30** of the insulation slabs **10** in each panel assembly have complementary angular cuts or bevels **34** and **36** from the outer edge of the base of the wide-bottomed groove **32**, which is divided at this point, between the two adjacent slabs, to their external wall surfaces **38**, these complementary bevels and the adjoining groove and wide bottom portions on the opposite side edges at the joint between two panel assemblies serving as guide surfaces when the two assemblies are joined, to bring the adjacent wall surfaces **38** and the panel surfaces **18** of the panel assemblies into alignment.

The slabs **10** have a reenforced plastic impregnation coating **40** on their interior wall surface which may serve as a finish coating or as a surface to which the inside finish sheet **42** such as plywood or wallpaper or any other finishing material is applied to provide a more finished inside wall, with closely matching edges at the joints **44**.

This construction is very light, yet has strength and rigidity sufficient to support superstructure such as roofs and ceilings, without the aid of special posts or braces or other framework. The slab **10** has wide bottomed grooves **32** for slidably locking over the correspondingly shaped wide bottoms of the wide-bottomed triangularly formed grooves **16** at the joints between the multi-panel strips in a panel assembly and intermediate wide-bottomed grooves for slidably locking over the bottoms of the other wide-bottomed triangularly formed grooves **14**, and is provided with supporting spacer strips **20** for slidably engaging the back of each panel of the sheet multi-panel strips as the slab is slidably assembled at the back of the plurality of joined multi-panel strips, so as to provide crosswise rigidity to each panel in the panel assembly, the triangular formed grooves formed in each multi-panel strip adding to lengthwise rigidity of the panel assembly.

The impregnation coating **40** may be of the type described in my copending application Serial No. 224,170, filed September 17, 1962, and now abandoned for Impregnated Rivet Lug Reenforcement Between Reenforced Surfaces of Fiber Matting. The reenforcing lining **12** may be similarly formed.

Many obvious modifications in the form and details of these panel assemblies may be made, such as incorporating door and window structures therein where desired, without departing from the spirit and scope of the invention, as defined in the appended claims.

What is claimed is:

1. A wall panel assembly comprising

a plurality of identical outside sheet multi-panel strips, each strip having a plurality of panels closely spaced in side-by-side relation at the outer surface of the strip and wide-bottomed substantially triangularly formed grooves extending at the back of the strip from said closely spaced sides of each pair of adjacent panels and from the outer side of the panel at one side edge of said strip, said groove at the side edge of said strip having a bottom wall and inner and outer sidewalls, the top of said inner wall being connected at said side edge of said strip, the terminal portion of said outer side wall being spaced from the top of said inner sidewall forming an open apex in the plane of said strip, said sidewalls diverging downwardly from said open apex of said groove to a pair of lobes extending laterally from the opposite ends of said wide bottom wall, each lobe having a return portion extending substantially parallel to said wide bottom wall and meeting and engaging the lower end of its respective side wall, the opposite side edge of said strip being formed to provide a tongue having a base end at the panel edge and an outer end, said tongue extending angularly from said strip and having a reversely turned outer lip at said outer end, and adapted to interlock with the triangularly formed groove of an adjacently joined strip by passing said tongue fully into the open apex of said groove along the inner side wall thereof with its lip pressed against the underside of said return portion of the inner lobe and its base end pressed against said terminal portion of the outer sidewall,

adjacent strips in said panel assembly being joined together by said interlocking side edges, the outer side edges of the strips at the opposite ends of said panel assembly providing interlocking side edges for joining panel assemblies together at a building site,

an insulator slab mounted on the back of said plurality of multi-panel strips, in spaced relation to said panels,

said slab having shallow wide-bottomed grooves formed in its inner surface locked over the wide bottom of each of the triangularly formed grooves,

the opposite side edges of said slab having complementary parts of a shallow wide-bottomed groove to lock over the opposite lobes of the wide bottom wall of the triangularly formed strip groove at one end of the panel assembly,

one side edge of said slab at said one end of the panel assembly having one part of said shallow wide-bottomed groove extending around the inner lobe from the inner side wall and along the wide bottom wall of said triangularly formed groove to a point near the outer lobe and having a beveled surface extending from said point to its outer surface and forming an obtuse angle therewith, the opposite side edge of the slab having the other complementary part of the shallow wide-bottomed groove formed therein and adapted to extend from the outer side wall of the triangular strip groove, around the outer lobe, to a point corresponding with the first mentioned point at the bottom of the triangular groove at the edge of an adjacently joined panel assembly, and having a beveled surface extending from said corresponding point at the bottom of the groove to the outer surface of the slab and forming a supplementary acute angle therewith, whereby the adjacent slab edges are guided into surface alignment,

said slab having supporting spacer strips fixed thereto between said shallow wide-bottomed grooves, said spacer strips engaging the mid portions of the back of each panel of the multi-panel strips,

said slab providing crosswise rigidity to the panel assembly and

said grooves in the multi-panel strips adding to the lengthwise rigidity thereof.

2. A panel assembly as defined in claim **1**, said slab being a light plastic insulation board having a reenforcing lining on its internal surface facing the back of said plurality of panel strips including the shallow wide-bottomed grooves.

3. A panel assembly as defined in claim **1**, said slab being a light foam plastic insulation board having a reenforced impregnated surface coating on its outer wall surface adaptable for further finishing by application of any desirable finishing material.

4. A panel assembly as defined in claim **3**, said outer wall surface having a thin plywood sheet applied thereto.

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