

Aug. 9, 1960

H. S. JONES
BUILDING STRUCTURE

2,948,362

Filed July 19, 1957

3 Sheets-Sheet 1

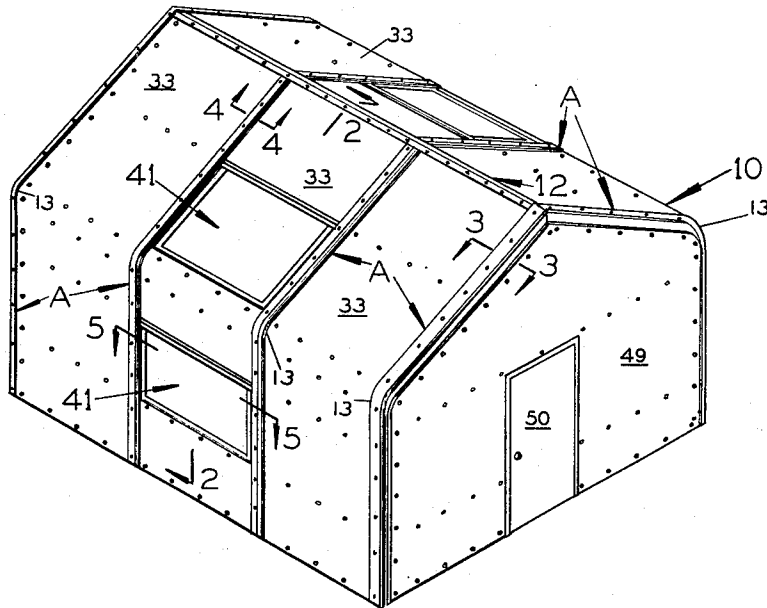


FIG. 1

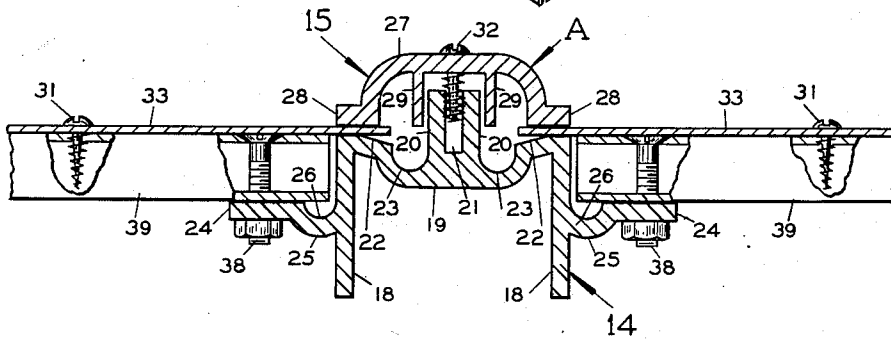


FIG. 4

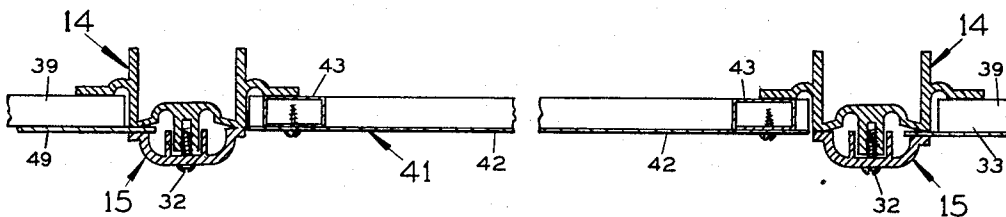


FIG. 5

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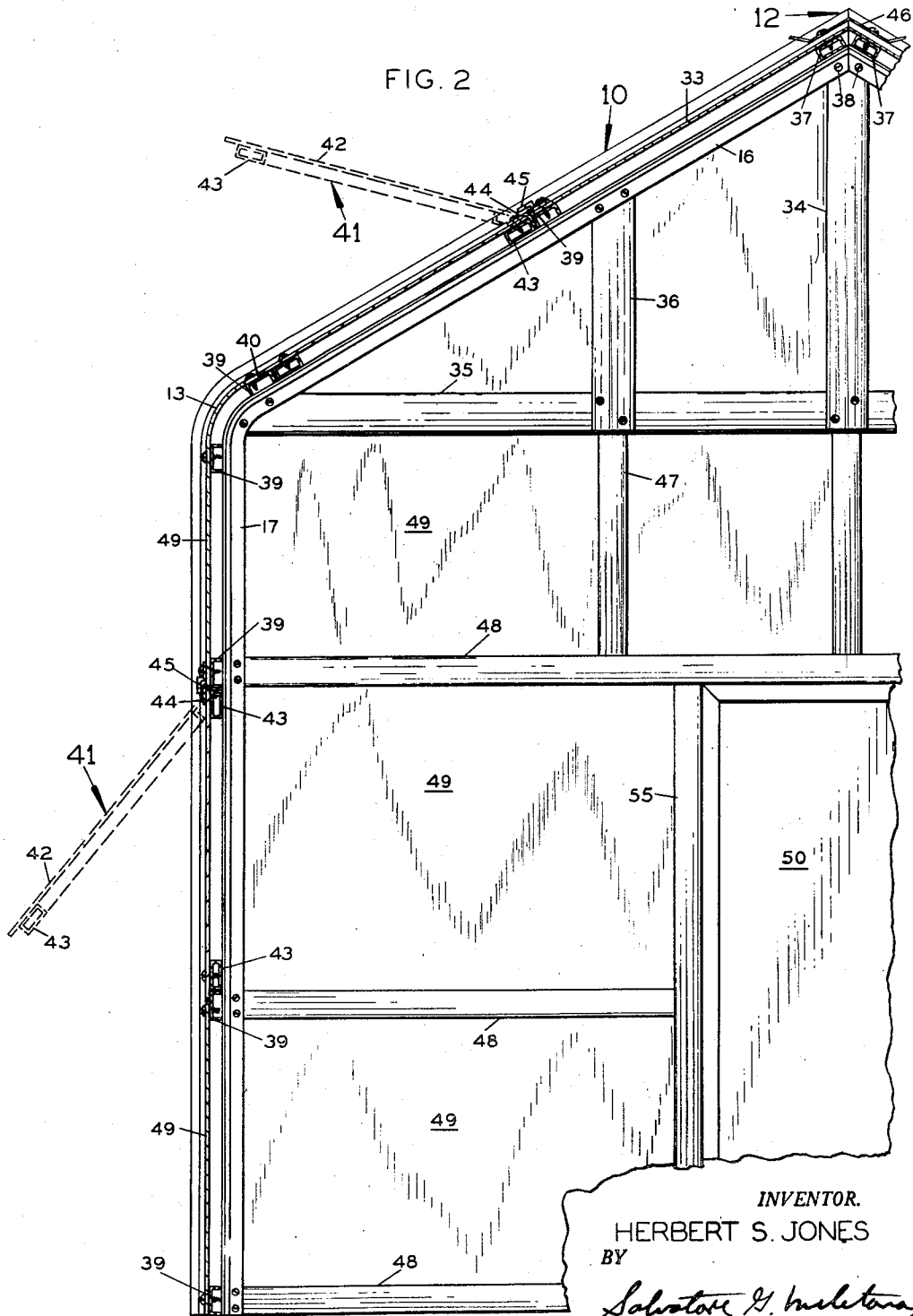
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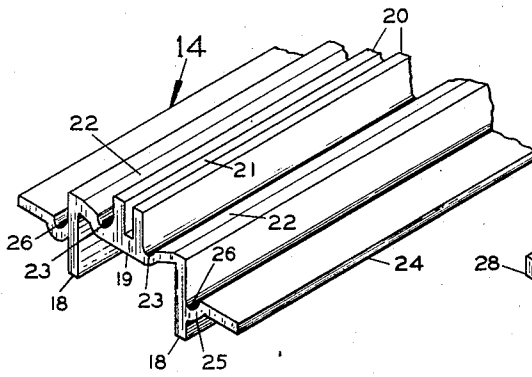


FIG. 7

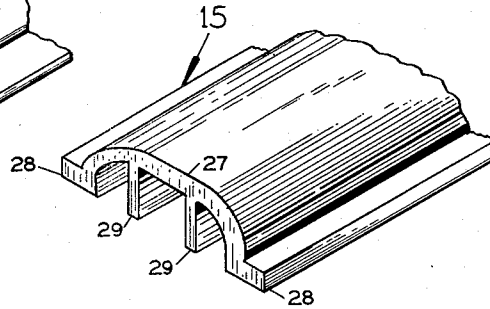


FIG. 8

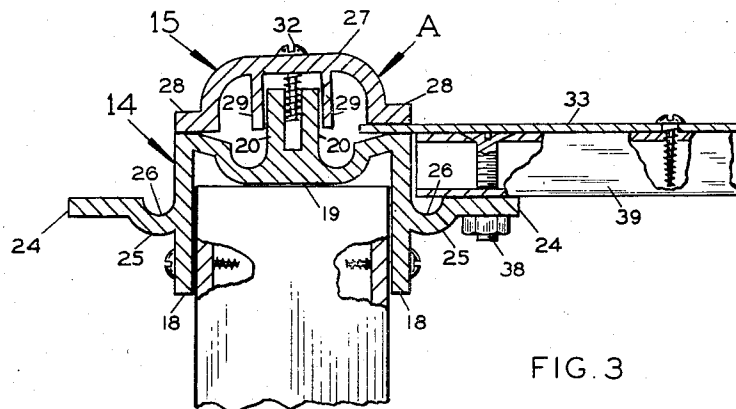


FIG. 3

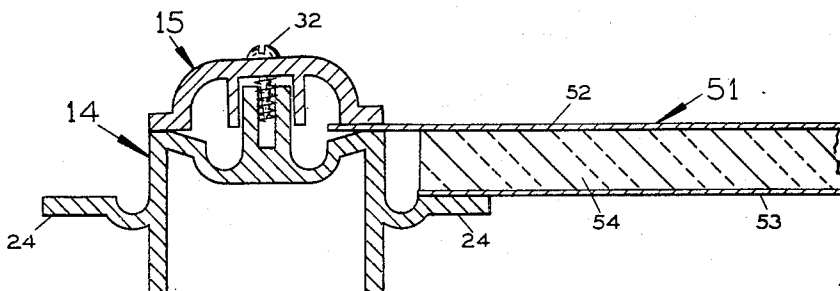


FIG. 6

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BUILDING STRUCTURE

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3 Claims. (Cl. 189—2)

This invention relates generally to building structures and is more particularly directed to panel-type prefabricated structures.

A principal object of the present invention is to provide a prefabricated structure of the panel type which requires a modicum of different parts and which can be expeditiously and easily erected by non-skilled labor.

Another object of the present invention is to provide structural parts for producing a large variety of buildings and structures such as homes, barns, green houses, awnings, canopies, utility buildings, etc.

A further object of the present invention is to provide a prefabricated structure consisting of a plurality of pairs of structural members positioned in spaced parallel relation with each other, the end portions of the structural members of each pair in abutting relation with each other and having panel members extending between the structural members with their edges held securely by the structural members.

A further object of the present invention is to provide a prefabricated building having its main structural members consist of a pair of extrusions, which receive and secure the edges of panels that form the covering or skin of the building.

A further object of the present invention is to provide a prefabricated building adapted to utilize either single thickness panelling plywood, Fiberglas, etc. or build-up panelling having insulation positioned between skins of plywood, Fiberglas, etc.

A still further object of the present invention is to provide a panel-type structure wherein the panels are fastened to main structural members along their edge portions without the necessity of holes being bored therealong which holes would permit the penetration or leakage of rain, etc. therethrough.

A still further object of the present invention is the provision of main structural members having arcuate recesses along their lengths for the purpose of channeling all rain, moisture and the like therealong and prevent the leakage of rain into the building.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a perspective view of a building structure embodying my invention.

Figure 2 is a fragmentary cross sectional view taken along the line 2—2 of Figure 1.

Figure 3 is a detailed cross sectional view taken along the line 3—3 of Figure 1.

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Figure 4 is a similar view taken along the line 4—4 of Figure 1.

Figure 5 is a similar view taken along the line 5—5 of Figure 1.

Figure 6 is a similar view showing the manner of securing an insulated panel structure thereon.

Figure 7 is a fragmentary perspective view of a base portion of my structural member.

Figure 8 is a similar view of a cap portion of my structural member.

Referring to the drawings wherein like numerals are used to designate similar parts throughout the several views, the numeral 10 designates a typical building that may be readily fabricated consisting of opposed main structural member A spaced at equal intervals along the length of building, each of these structural members A extending downwardly from the ridge indicated by the numeral 12 of the building 10. The main structural members A are curved or bent as at 13 to form what would correspond to the eaves of a building, the upper portion of the members A functioning as rafters 16 while the lower portion as studding 17.

Each of the main structural members A consists of a base member 14 and a cap member 15, both of which are preferably constructed as extrusions of aluminum metal, though they may be manufactured of any desired material and in any acceptable manner.

The base member 14 is provided with a pair of substantially parallel and spaced apart leg portions 18 connected together at one end to a web portion 19. On each side of the mid-portion of the web 19 extends a flange member 20 forming a longitudinally disposed slot 21 which extends upwardly or outwardly in the direction of the cap member 15. The web portion 19 tapers downwardly from the leg portions 18 as at 22 to permit water, moisture and the like that has leaked therein as is explained in greater detail hereinafter, to flow therealong into a recess or trough 23 that is positioned at the base of the flanges 20. Intermediate the ends of the leg portions 18 are panel support flanges 24 which extend outwardly thereof at approximately right angles to the leg portions 18. At the juncture of the leg portions 18 and the flanges 24, the latter are arcuate as at 25 to form a trough or recess 26 that acts as a gutter for directing any water that has leaked past the flanges 24 to flow along the recess 26.

The cap member 15 which normally rests on the base member 14 as best shown by Figures 3 and 4 consists of a crown or arcuate cap portion 27 along whose edges flanges 28 extend outwardly terminating at approximately the position of the leg portions 18 of the base member 14 as best shown by Figure 4. Depending flanges 29 extend longitudinally and downwardly of the cap portion 27 and are positioned on either side of the upwardly extending flanges 20 of the base member 14. Upon boring holes in the cap member 15 at the midportion of the cap portion 27 a screw 32 may be threaded therein, the screw threads engage and cut threads into the inner side walls of the flanges 20 to secure the cap member 15 to the base member 14 for the purpose of anchoring panel structures 33 as explained in detail hereinafter.

The structural members A are erected in aligned pairs joined together at their ridge portion 12 by a king post 34 which extends between the leg portions and is secured thereto by screws 30 as best shown by Figure 2. The lower end of the king post 34 is secured to the mid-portion of a tie beam 35 which extends horizontally with its ends secured by screws to the structural members A at the curved portion 13. A plurality of vertically disposed common posts 36 extend between the tie beam 35 and the structural members A at the rafter portion 16 for further strengthening the building 10.

These pairs of opposed structural members A constructed as described above are now erected parallel to each other and at equally spaced intervals.

Purlins 37 are positioned at the ridge 12 of the structural members A extending from one set of members A to the adjoining members A with their ends resting on the flanges 24 and secured thereto by screws or bolts 38. Further purlins 39, are positioned at spaced intervals along the length of the structural members A and secured in the same manner as the purlins 37. (See Figures 3 and 4.) Then a length of panelling 33 is placed on the purlins, the panelling 33 extending from the ridge 12 between the rafters 16 to the bottom of the studying 17. Screws 31 may be used to fasten the panelling 32 to the purlins, though no screws are necessary as is explained hereinafter. After all of the panelling 33 have been placed as aforementioned, the cap members 15 are placed on the base members 14 of the structural member A, engaging the edges of the panelling 33. (See Figure 4.) A plurality of screws 32 are placed into bores formed in the cap member 15 and threaded tightly into the slot 21 of the base member 14 whereby the panels 33 are held securely in position.

Where it is desired to place windows in the building structure, rectangular shaped openings are formed in the wall structure. Windows or closures 41 are constructed of a panel member 42 mounted on a rectangular frame 43 made of the same members which form the purlins 39. The windows 41 are secured at their upper ends to a hinge 44 mounted on the purlin 39 which is positioned adjacent thereto. A drip cap 45 is mounted over each of the hinges 44 to prevent rain from leaking past the hinge 44.

At the ridge of the building 10, the top edges of the panels 33 will abut against each other. To prevent the leakage of rain therethrough a ridge cap 46, constructed as best shown by Figure 2, is secured thereon. The ridge cap 46 has a cross sectional shape somewhat similar to a flattened W and is secured to the top edges of the panels 33 by screw bolts as shown by Figure 2. The end wall structures of the building 10 consist of a plurality of vertical and horizontal cross members 47 and 48 respectively on which panelling 49 is secured by screws. An opening is left in one of the end walls for a convention door frame 55 on which a door 50 is mounted in the usual manner.

In the event it is desired to use other than a single thickness panelling 33 as shown, a prefabricated panel member 51 having improved heat and cold insulating qualities may be substituted. The panel member 51, (see Figure 6) consists of spaced panel surfaces or skins 52 and 53 joined together by insulating material 54 or by cardboard honeycomb construction. The lower panel surface 53 rests on the panel support flange 24 of the base member 14 while the upper panel surface or skin 52 is securedly wedged by the cap member 15 on the base member 14.

It can be readily noted that there is a minimum of different parts necessary for the fabrication of the building 10. There are the main structural members A bent to form the eaves 13, trusses consisting of the tie-beam 35, king post 34 and common posts 35, panels 33, windows 41, doors 50, end wall panels 49, ridge cap 46 and fastening means such as conventional screws and bolts.

In the erection of the building 10, the upper ends of a pair of base members 14 are placed together and the king post 34 is secured at its top end to the leg portions 18 by screws 30. The lower end of the king post 34 is secured to approximately the mid-portion of the tie-beam 35 whose ends extend between the leg portions 18 of the base member 14 at the eaves 13 where they are secured as shown. Further common posts 36 are similarly secured to the tie-beam 35 and the base member 14. After a number of these pairs of base members 14

are fabricated as described, they are erected in an upright position at equal spaced intervals. Purlins 37, 39 are mounted thereon with their ends resting on the flanges 24 and secured thereto. Now, the panels 33 are positioned thereon extending between the base members 14 and resting on the top edge of the leg portions from the ridge 12 down to the base of the wall studding 17. The ridge cap 46 is then placed over the top edges of the panels 33 and secured thereon by screws as shown. The cap member 15 of the structural member A is now placed in position on the base member 14 with the flanges 28 engaging the edges of the panelling 33. A plurality of screws 32 are threaded through the cap member 15 into the slot 21 forming threads in the side walls of the up-standing flanges 20 to secure the structural members A to the panels 33. If windows 41 are desired, then openings 40 are provided for placing windows therein as explained heretofore.

Any desired kind of building can be readily constructed. For example, a green house of considerably greater length than the building 10 can be constructed with translucent panels provided in lieu of the panels 33; or a home can be built utilizing the insulated panelling 51 and providing a larger number of windows 41 for ventilation purposes. The space within the building 10 can be readily partitioned to form separate rooms as is necessary in a home. It is to be noted that whether a house, barn, or a canopy is constructed no tools are required other than a screw driver, drill and a pair of pliers and no special skill is required of the person engaged in the fabrication of the building.

Having described my invention, what I claim as new is:

1. A wall structure comprising a plurality of main structural members extending in spaced and substantially parallel relation to each other, said main structural members each having a pair of elongated spaced leg portions substantially parallel to each other, a web portion connecting said leg portions, a pair of flanged members mounted on said web portion in spaced and substantially parallel relation, said flanged members extending in a direction opposite to that of said leg portions, an outwardly extending flanged member mounted on each of said leg portions intermediate their ends, said last named flange members lying in a plane substantially parallel to and below said web portion having a recess adjacent said leg portions, a plurality of cross members extending between said main structural members and resting on said flanged members, means securing said cross members to said outwardly extending flanged members, panel means extending between said structural members and mounted on said cross members, means securing said panel means to said cross members, said panel means having edge portions resting on said web portions and cap means mounted over said web portion and engaging said edge portions of said panel means.

2. The structure as recited by claim 1 wherein said cap means comprises an elongated main body portion having downwardly extending edge portions, a flanged member extending horizontally along each of said edge portions and engaging said edge portions of said panel means, and a depending flanged member mounted on said main body portion and positioned adjacent to and outwardly of each of said flanged members of said web portion and threaded means extending through said cap means and engaging said flanged members for securing said panel means to said main structural members.

3. A building structure comprising a plurality of pairs of elongated structural members extending in spaced and substantially parallel relation to each other, each of said structural members having an end portion in abutting relation with an end portion of the other structural member forming a pair, said structural members each having a pair of elongated spaced leg portions substantially parallel to each other, a web portion connecting said leg portions, a pair of flanged members mounted on said web

portion in spaced and substantially parallel relation, said flanged members extending in a direction opposite to that of said leg portions, an outwardly extending flanged member mounted on each of said leg portions intermediate their ends, said last named flange members having a recess adjacent said leg portions, a plurality of cross members extending between said main structural members and resting on said outwardly extending flanged members, means securing said cross members to said outwardly extending flanged members, panel means extending between said structural members and mounted on said cross members, means securing said panel members to said cross members, said panel means having edge portions resting on said web portions, cap means mounted over said web portion and engaging said edge portions of said panel means and a ridge cap mounted transversely on said structural members at said end portions.

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