Nov. 28, 1944. A. HANCOCK 2,363,862

BUILDING STRUCTURE

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FIG.2.

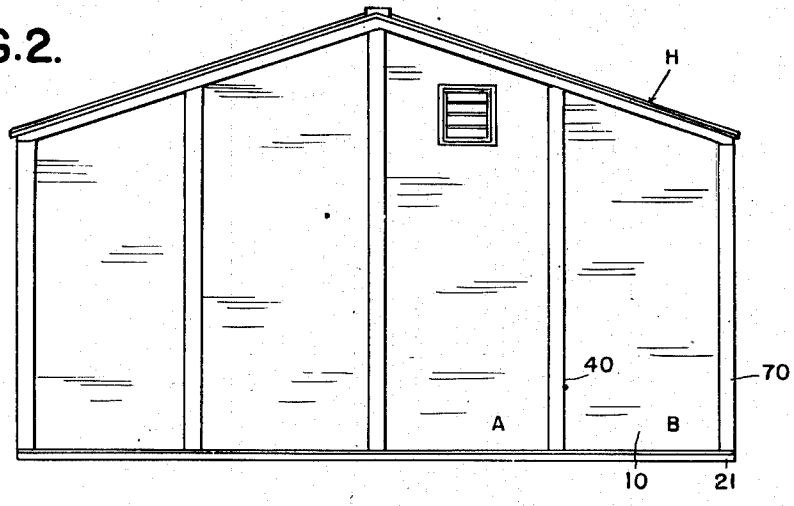


FIG.1.

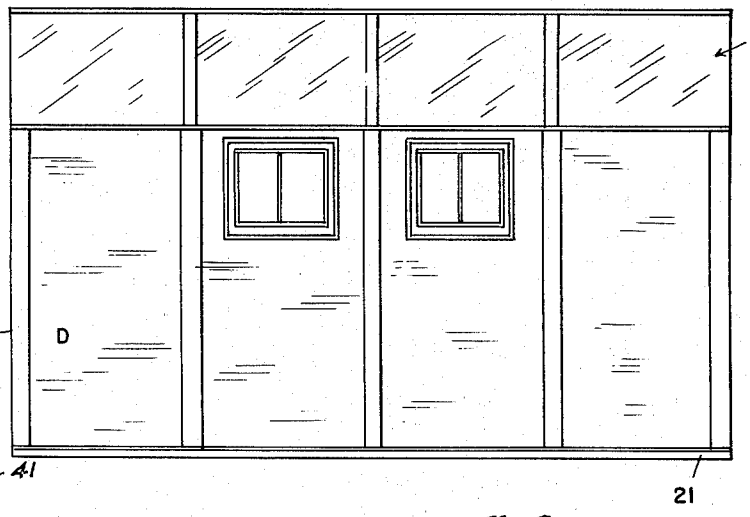


FIG.6.

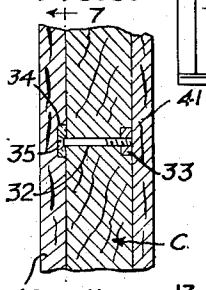
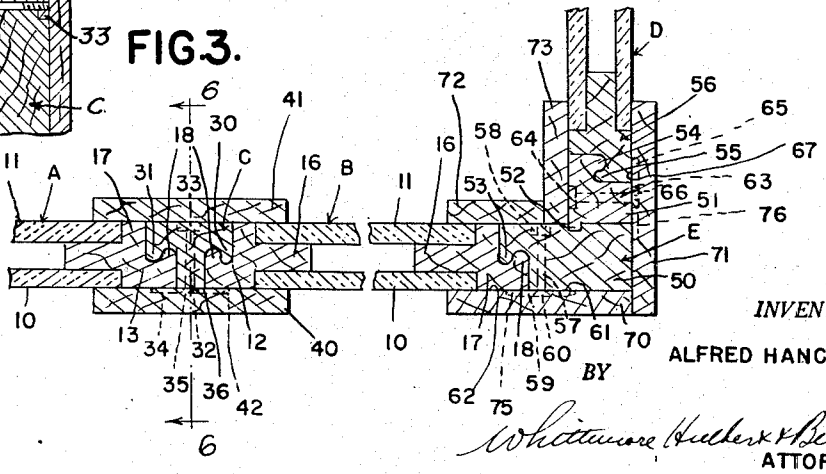


FIG.3.



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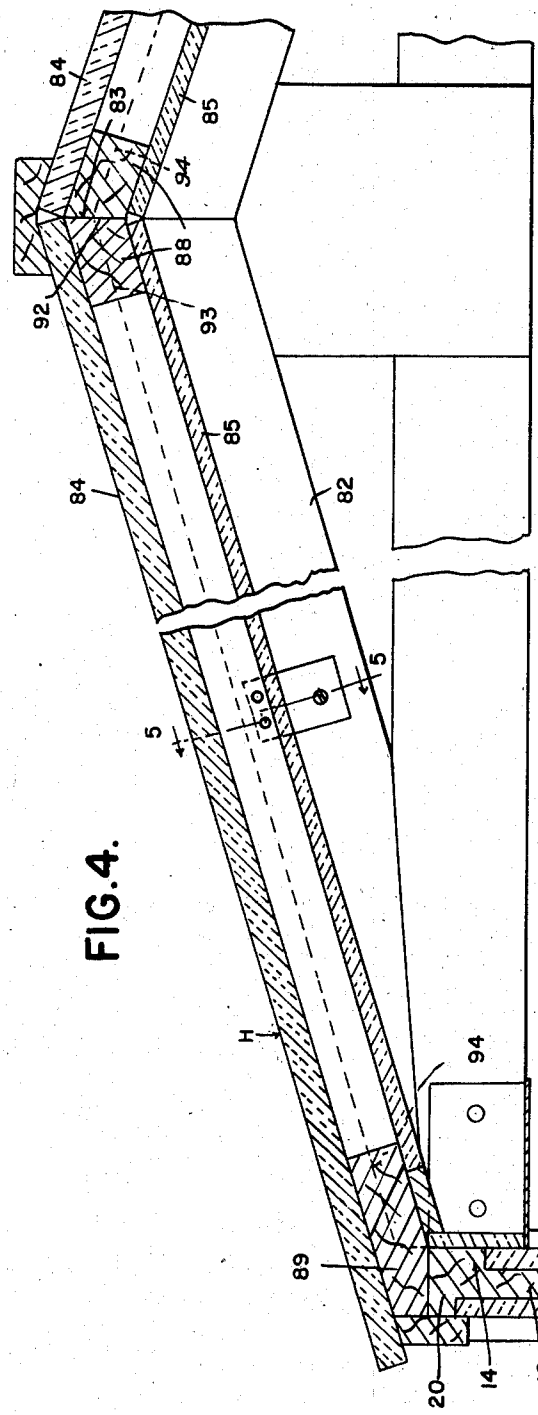


FIG. 4.

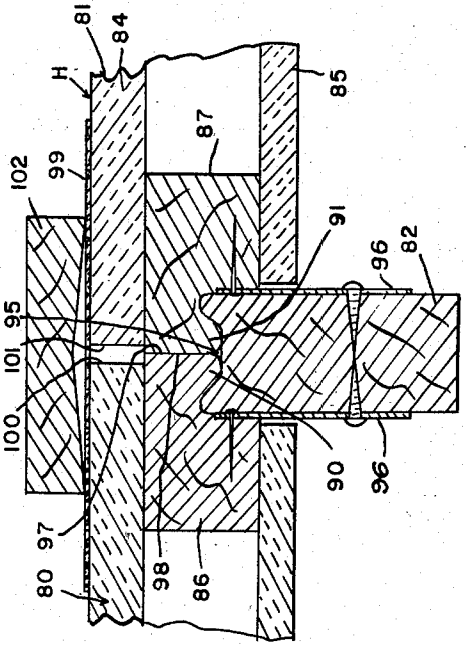


FIG. 5.

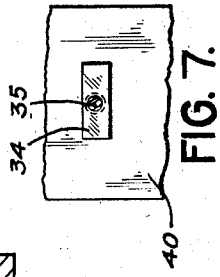


FIG. 7.

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BUILDING STRUCTURE

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Application September 28, 1942, Serial No. 459,961

6 Claims. (Cl. 20—4)

This invention relates generally to building structures and refers more particularly to the joints or connections between adjacent panel sections of such structures.

One of the essential objects of the invention is to provide a building structure that may be transported or shipped in knockdown condition and may be readily and quickly assembled by unskilled labor wherever it is to be erected or used.

Another object is to provide a building structure having panel sections that may be fastened or connected together to exact dimensions and held under compression in such assembled relation so that the joints between the sections are tight and self-sealing.

Another object is to provide a building structure wherein the minimum of fastening elements are employed for maintaining the parts in assembled relation.

Another object is to provide a building structure that is simple in construction and economical to manufacture.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a side elevation of a building structure embodying my invention;

Figure 2 is an end elevation of the structure illustrated in Figure 1;

Figure 3 is a fragmentary horizontal sectional view through adjacent upright walls of the structure;

Figure 4 is a fragmentary vertical sectional view through the roof and a portion of one of the upright walls;

Figure 5 is a vertical sectional view taken substantially on the line 5—5 of Figure 4;

Figure 6 is a sectional view taken substantially on line 6—6 of Figure 3;

Figure 7 is a sectional view taken on the line 7—7 of Figure 6.

Referring now to the drawings, A and B, respectively, are adjacent upright side panel sections, C is an upright post or frame member intermediate said panel sections, D is an upright side panel section disposed at substantially right angles to the side panel sections A and B, and E is an upright corner post or frame member intermediate the panel sections B and D of a building structure embodying my invention.

As shown, the upright panel sections A, B and D, respectively, have spaced substantially parallel sheets 10 and 11, respectively, of insulating material, upright edge members 12 and 13, and horizontal edge members 14 and 15, respectively. The sheets 10 and 11 may be any suitable size and thickness to provide a sturdy weather-tight siding, while the edge members 12 to 15, inclusive, may be formed of any suitable material and are rigidly secured to said sheets.

Preferably portions 16 of the upright edge members 12 and 13 extend between and constitute spacers for the sheets 10 and 11, while other portions 17 extend transversely across the upright edges of the sheets and are provided throughout their upright outer edges with laterally projecting hook-shaped attaching portions or tongues 18. Likewise, a portion 19 of the horizontal edge member 14 extends between and constitutes a spacer for the sheets 10 and 11, while another portion 20 extends transversely across the upper edges of said sheets 10 and 11 and forms a supporting seat for the roof H of the structure. The horizontal member 15 at the lower edges of the sheets 10 and 11 rests upon a suitable ground engaging base member 21 and has a depending projection 22 engaging a suitable socket or recess 23 in said base member 21. A portion 24 of the horizontal member 15 extends between and constitutes a spacer for the sheets 10 and 11.

The upright post C is between the edge members 12 and 13, respectively, of the adjacent panel sections A and B and is provided throughout opposite upright sides thereof with laterally projecting hook-shaped portions or tongues 30 and 31, respectively, with which the hook-shaped portions 18 of the edge members 12 and 13 of the adjacent panel sections have an interlocking or dovetail connection. Bolts 32 extend inwardly through the post C at vertically spaced points thereof and are engaged at their inner ends by suitable nuts 33, while latch members in the form of elongated plates 34 are mounted upon the bolts 32 between the heads 35 thereof and the outer face of the post C and overlap the outer surfaces of the edge members 12 and 13 of the adjacent panel sections to maintain the parts in assembled relation. Preferably the plates 34 are substantially equal in width to the outer surface 36 of the post C and are adapted to be turned on the bolts 32 so that such plates may register with the surface 36 and thus be out of the way during

assembly of the side sections A and B with the post C. However, when the hook-shaped portions 18 of the edge members 12 and 13 of the panel sections have been interlocked with the hook-shaped portions 30 and 31 of the post, the plates 34 may then be turned on the bolts 32 from the upright inoperative position just mentioned to a substantially horizontal position as illustrated in Figure 3 to overlap the outer surfaces of the edge members 12 and 13 of said side sections and thereby hold the parts in interlocked relation.

If desired, suitable strips 40 and 41, respectively, may be employed upon the outer and inner sides of the post C to cover the connection or joint between said post and the adjacent panel sections A and B. Preferably such strips 40 and 41 are secured by nails or other suitable fastening elements to the edge members 12 and 13 of the panel sections and are sufficiently wide to overlap adjacent upright edges of the insulating sheets 10 and 11 of said panel sections. The outer strip 40 has elongated recesses 42 for the plates 34 and such recesses extend transversely of the strip 40 so as to hold the plates 34 from accidentally turning on the bolts 32 after being arranged in overlapping relation to the panel sections A and B. If desired the inner strips 41 may be nailed and glued to the post C so as to form a rigid part thereof. Also the outer strips 40 may be fastened to the post C by means of screws or other suitable securing elements which preferably engage the post at points between the vertically spaced plates 34.

The corner post E has two sections 50 and 51, respectively, interlocked at 52 and rigidly secured together. The section 50 is provided throughout its outer upright edge with a hook-shaped portion 53 with which the hook-shaped portion 18 of the edge member 13 of the panel section B has an interlocking or dovetail connection, while the section 51 of the post is provided throughout its outer upright edge with a hook-shaped portion 54 with which the hook-shaped portion 55 of the edge member 56 of the panel section D has an interlocking or dovetail connection. Bolts 57 extend inwardly through the section 50 of the post E at vertically spaced points thereof and are engaged at their inner ends by suitable nuts 58, while latch members in the form of elongated plates 59 are mounted on the bolts 57 between the heads 60 thereof and the outer face 61 of the section 50 of the post and overlap the outer surfaces 61 and 62, respectively, of the section 50 of the post and overlap the outer surfaces 61 and 62, respectively, of the section 50 of the post and the edge member 13 of the side panel section B to maintain the parts in assembled relation. Such plates 59 may be turned on the bolts 57 so as to be out of the way during assembly of the hook-shaped portion 18 of the side panel section B with the post E. Likewise, bolts 63 extend inwardly through the section 51 of the post E at vertically spaced points thereof and are engaged at their inner ends by suitable nuts 64, while latch members in the form of elongated plates 65 are mounted on the bolts 63 between the heads 66 thereof and the outer face 67 of the section 51 of the post and the edge member 56 of the side panel section D to maintain the parts in assembled relation. Such plates 65 may be turned on the bolts 63 so as to be out of the way during assembly of the hook-shaped portion 55 of the side panel section D with the post E.

For concealing the joints between the post E and adjacent panel sections B and D, I have provided two cooperating strips 70 and 71 upon the outer sides of the post E and have provided two cooperating strips 72 and 73, respectively, upon the inner side thereof. Preferably the strips 70 and 72 overlap the side panel section B, while the strips 71 and 73 overlap the side panel section D. The strips 70 and 71 have elongated recesses 75 and 76 therein that receive the plates 59 and 65, respectively, and prevent them from accidentally turning on the bolts 57 and 63, respectively, after being adjusted to the horizontal position for retaining the parts in assembled relation. If desired the inner strips 72 and 73, respectively, may be nailed and glued to the post E so as to form a rigid part thereof. The strips 70 and 71 may be secured to each other by any suitable means and then fastened to the post E by screws or other suitable securing elements.

80 and 81, respectively, are adjacent transversely extending inclined panel sections of the roof H, and 82 are inclined supporting truss or frame members therefor.

As shown, the panel sections 80 and 81 extend in edge to edge relation from the ridge 83 of the roof to the upright side panel sections A and B and have spaced substantially parallel sheets 84 and 85, respectively, of insulating material, longitudinally extending edge members 86 and 87, and transversely extending edge members 88 and 89, respectively.

Preferably the upper sheet 84 is longer than the lower sheet 85 so as to project downwardly over and laterally beyond the upright side panel sections A and B, while the lower sheet 85 terminates upon the inner side of the upright panel sections A and B, however such parts may have any suitable dimensions desired to provide a sturdy weather-tight roof construction.

The edge members 86 to 89, respectively, may be formed of any suitable material and are rigidly secured to the sheets 84 and 85. The longitudinally extending edge members 86 and 87 are intermediate the sheets 84 and 85 at opposite longitudinal edges thereof and are provided throughout their outer longitudinal edges with hook-shaped attaching portions 90 and 91. Likewise, the transversely extending edge members 88 and 89 are intermediate the sheets 84 and 85 at the upper and lower edges thereof. The edge members 88 at the upper edges of the panel sections are provided throughout their length with a flat outer face 92 for abutting relation with the ridge 83 of the roof with the corresponding flat outer face 92 of the transversely extending edge member 88 on the other side of said ridge. The edge members 89 at the lower edges of the panel sections rest upon and are secured to the supporting seat aforesaid provided by the portions 20 of the upper horizontal edge members 14 of the upright panel sections A and B.

The truss members 82 incline upwardly from the upright side panel sections A and B of the structure and have abutting upper ends at the ridge 83 of the roof. Such truss members 82 are received within suitable recesses 93 and 94, respectively, in and are secured to the upper and lower transversely extending edge members 88 and 89 of the roof sections at spaced points thereof. Preferably each truss member 82 is

located intermediate the lower sheets 85 of adjacent roof panel sections 80 and 81 and is provided throughout its length in its upper edge with an upwardly opening drainage channel or groove 95 with which the hook-shaped attaching portions 90 and 91 of adjacent panel sections 80 and 81 of the roof have interlocking or dovetail connection.

Sheet metal plates 96 fastened to the longitudinal edge members 86 and 87 beneath the hook-shaped portions 90 and 91 are secured to opposite sides of the truss members 82 to maintain the parts in assembled relation.

By referring to Figure 5 it will be noted that the outer faces 97 and 98, respectively, of the longitudinal edge members 86 and 87 of adjacent roof sections abut and that the outer sheets 84 of said sections substantially meet. Suitable strips 99 of tar paper or other weatherproofing material overlap the longitudinal edges 100 and 101, respectively, of the outer sheets 84 of adjacent roof sections and are held in place by cover strips 102 that in turn are secured to the adjacent roof sections 80 and 81 to provide a weathertight joint.

Thus, from the foregoing it will be apparent that the upright panel sections A, B and D, roof panel sections 80 and 81, and other units or subassemblies of my structure may be made to proper specifications at one place and then shipped in knockdown condition to another place where they can be easily and quickly set up and assembled by unskilled labor. By using the dovetail connections between the panel sections and post it is possible to hold the perimeter of the structure to exact dimensions without the use of a separate fixed frame and without the need of any extra horizontal members within or upon the outer sides of the panel sections. Due to the dovetail connections provided between the posts and upright panel sections, and the connections between the truss members 82 and the roof panel sections 80 and 81, the respective panel sections will be held under compression, hence the joints are tight and self-sealing. In this connection it will be noted that the interlocked or dovetailed connections between adjacent upright sections A, B and D, respectively, and the posts C and E effectively prevent the weather elements from entering the structure through such connections. Also the interlocked or dovetailed connections between adjacent sections 80 and 81 and the supporting truss members 82 of the roof structure preclude water and moisture entering the structure through these connections. In fact the channels 95 in the upper edges of the truss members 82 would catch and serve as drainage troughs for any water or moisture seeping in between the sections of the roof.

The present construction is primarily intended for the erection of relatively small and inexpensive buildings, dwellings and the like, such as those now being used by the Government for housing soldiers, workmen, and the like. However it is apparent that many of the features of my construction may be employed inside large buildings such as factories during the erection of temporary or permanent partitions for rooms, offices, or the like. Moreover, buildings of various sizes embodying the features of my construction may be erected inasmuch as the over-all number of upright side sections such as A, B and D, and inclined roof sections such as 80 and 81 may be varied according to the size of the buildings desired.

The structure described has a high insulation value due to the double insulating sheet construction of the panel sections and to the tight joints obtained. Hence, constructions embodying these features may be used very satisfactorily in cold climates.

What I claim as my invention is:

1. In a building structure, a pair of adjacent upright wall sections having opposed upright edges and provided at said edges with substantially parallel upright frame members, opposed faces of said frame members at one side of said wall sections having opposed laterally projecting tongues of substantially L cross section, an upright post between said upright frame members, opposite faces of said post at the other side of said wall sections being provided with laterally projecting tongues of substantially L cross section, the tongues of said post overlapping and being interlocked with the tongues of said frame members, latch means on the post engaging the frame members for preventing the tongues of the post becoming disengaged from the tongues of the frame members, and means concealing the connections between the post and frame members and the latch means just mentioned and having means for holding said latch means against unlatching movement.

2. In a building structure, a pair of upright wall sections having adjacent upright edges and provided at said edges with upright frame members, adjacent faces of said frame members at one side of said wall sections having laterally projecting tongues of substantially L cross section, an upright post between said upright frame members, the faces of said post adjacent the frame members being provided at the other side of said wall sections with laterally projecting tongues of substantially L cross section, the tongues of said post overlapping and being interlocked with the tongues of said frame members, latch means on the post overlapping the frame members for preventing the tongues of the post becoming disengaged from the tongues of the frame members, and means concealing the connections between the post and frame members and the latch means just mentioned and having means for holding said latch means against unlatching movement.

3. In a building structure, a pair of adjacent upright wall sections having opposed upright edges and provided at said edges with substantially parallel upright frame members, an upright post between and interlocked with said upright frame members, pivotally mounted latch elements carried by said post and overlapping said frame members to maintain the interlocked arrangement aforesaid, and cover strips upon opposite sides of said post overlapping adjacent surfaces of said frame members and concealing the connections between the post and wall sections, one of the strips being recessed to receive and hold against unlatching movement the pivotally mounted latch elements aforesaid.

4. In a building structure, a pair of adjacent upright wall sections having opposed upright edges and provided at said edges with substantially parallel upright frame members, an upright post between said upright frame members, opposed faces of said frame members at one side of the wall sections being provided with opposed

laterally projecting tongues of substantially L cross section, opposite faces of said post at the other side of the wall sections being provided with laterally projecting tongues of substantially L cross section, the tongues of the post overlapping and being interlocked with the tongues of the frame members, means preventing the tongues of the post from becoming disengaged from the tongues of the frame members, including pivotally mounted latch elements on the post overlapping the frame members, and cover strips upon opposite sides of said post overlapping said frame members and concealing the connections between the post and wall sections, the cover strip upon one side of said post being recessed to receive and hold against unlatching movement the pivotally mounted latch elements aforesaid.

5. In a building structure, a pair of adjacent upright wall sections having opposed upright edges and provided at said edges with substantially parallel upright frame members, an upright post between said upright frame members, opposed faces of said frame members at one side of the wall sections being provided with opposed laterally projecting tongues of substantially L cross section, opposite faces of said post at the side of the wall sections being provided with laterally projecting tongues of substantially L cross section, the tongues of the post overlapping and being interlocked with the tongues of the frame members, means preventing the tongues of the post from becoming disengaged from the tongues of the frame members, including pivotally mounted latch elements on one side of the post overlapping the adjacent sides of the frame members, and means concealing the connections between the post and frame members and having means holding said latch elements against unlatching movement.

6. In a building structure, a pair of adjacent upright wall sections having opposed upright edges and provided at said edges with substantially parallel upright frame members, an upright post between and interlocked with said upright frame members, pivotally mounted latch elements carried by said post and overlapping said frame members to maintain the interlocked arrangement aforesaid, and a cover strip upon one side of said post overlapping adjacent surfaces of said frame members and concealing the latch elements and the connections on said one side between the post and wall sections, said cover strip being recessed to receive and hold against unlatching movement the pivotally mounted latch elements aforesaid.

ALFRED HANCOCK.