

June 4, 1946.

W. C. SMITH

2,401,589

PORTABLE BUILDING STRUCTURE

Original Filed April 19, 1943 3 Sheets-Sheet 1

FIG. 1.

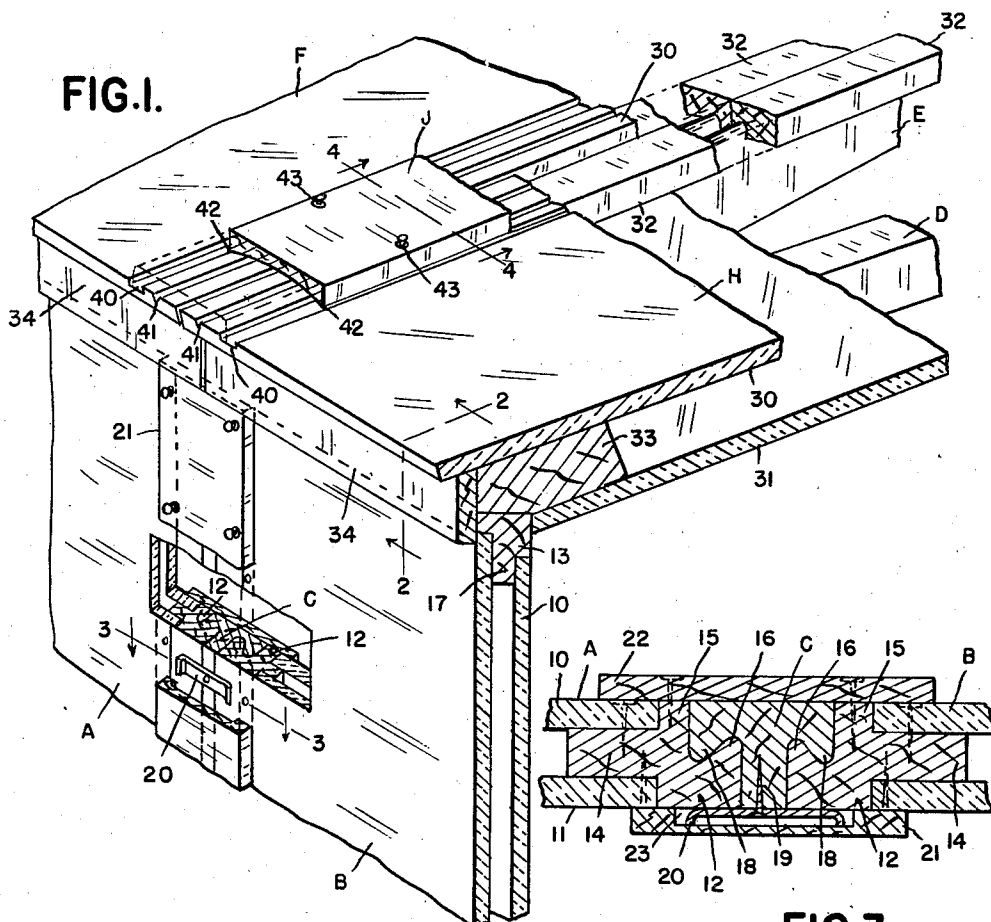


FIG. 2.

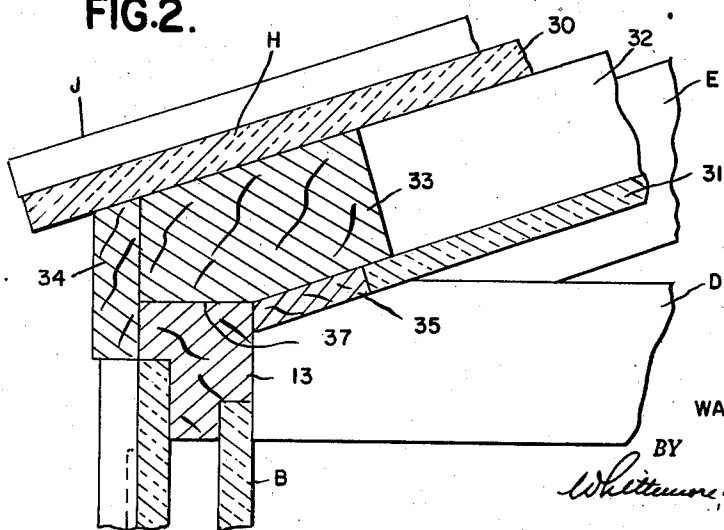


FIG. 3.

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Original Filed April 19, 1943 3 Sheets-Sheet 2

FIG.4.

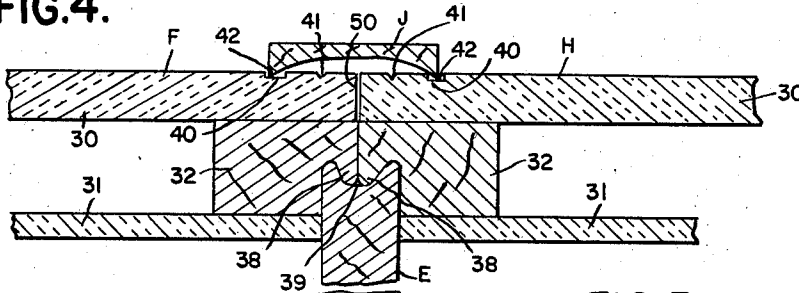


FIG.5.

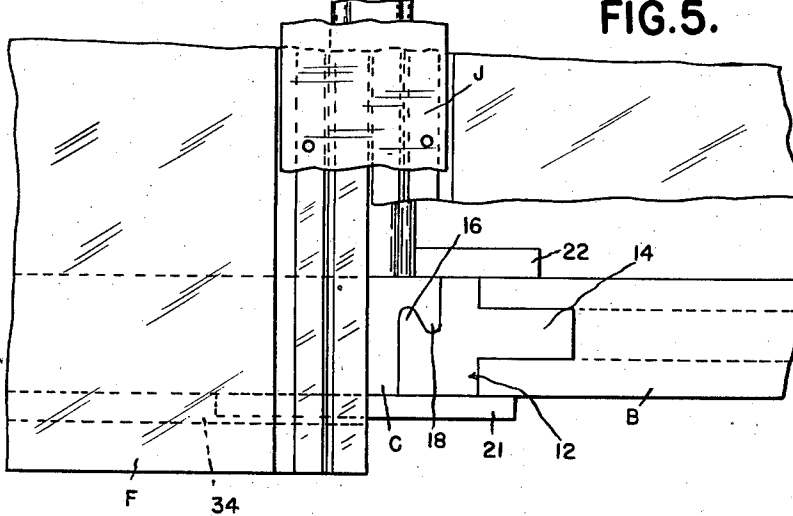


FIG.6.

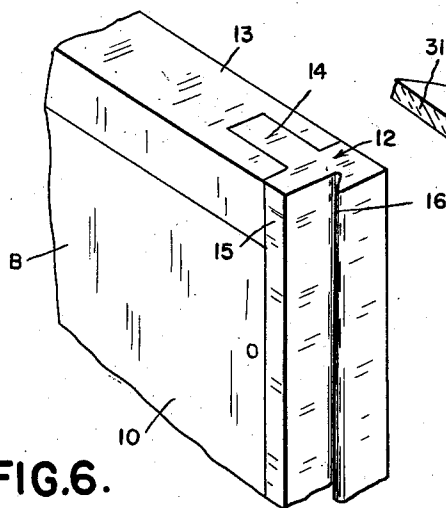
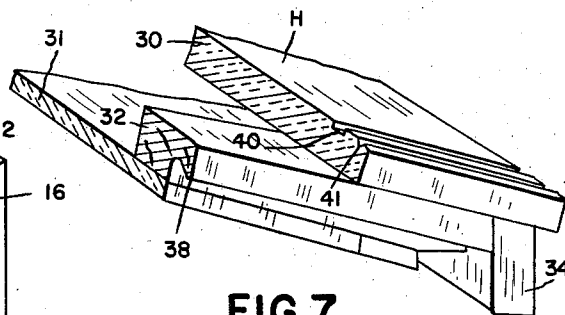


FIG.7.



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PORTABLE BUILDING STRUCTURE

Original Filed April 19, 1943

3 Sheets-Sheet 3

FIG.8.

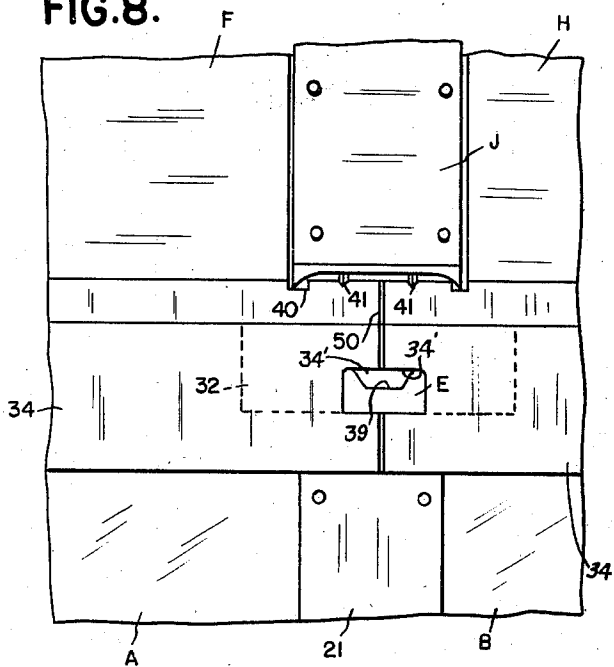
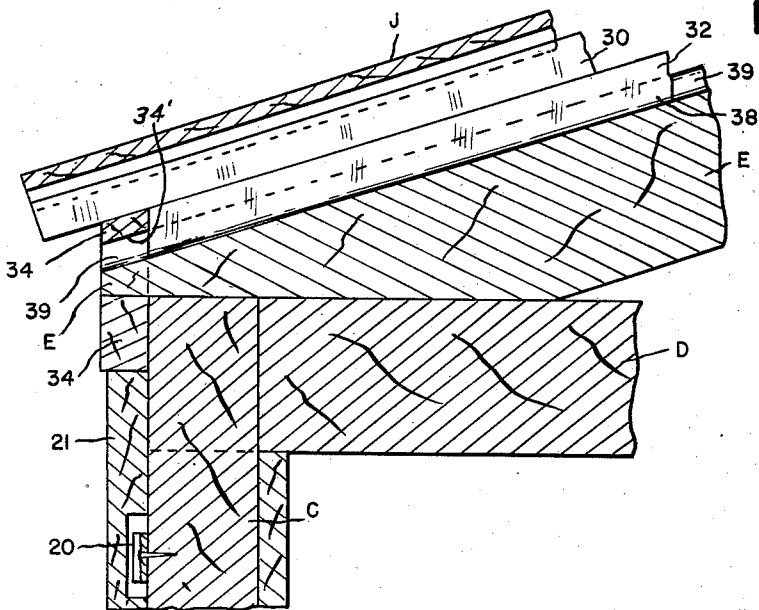


FIG. 9.



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2,401,589

PORTABLE BUILDING STRUCTURE

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Original application April 19, 1943, Serial No.
483,636. Divided and this application January
31, 1944, Serial No. 520,491

5 Claims. (Cl. 20—2)

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This invention relates generally to portable building structure of the type that may be transported or shipped by the manufacturer in unassembled or knockdown condition and may be readily and quickly assembled by unskilled labor wherever they are to be erected or used, and constitutes a division of my application filed April 19, 1943, bearing Serial No. 483,636.

One of the essential objects of the invention is to provide a structure wherein a post is between and interlocked with adjacent upright wall sections, and adjacent roof sections are carried upon a rafter rigid with the post and straddling the wall sections and post, whereby a reinforced assembly is obtained.

Another object is to provide an assembly wherein depending projections or enlargements upon the undersides of the roof sections cooperate with facing strips or boards to provide inverted channels for receiving or straddling the upper edges of the upright wall sections and intermediate posts.

Another object is to provide an assembly having means concealing and protecting from the weather elements the joints between the roof sections and wall sections.

Another object is to provide an assembly wherein a rafter is fixed to a post between and interlocked with upright wall sections, and roof sections are supported by and interlocked with the wall sections and rafter.

Another object is to provide an assembly wherein grooved supporting rafters for the roof sections extend outwardly through the upright wall members or facing thereof so that the grooves in the rafters may serve as drainage channels and carry to the outside of the structure any moisture or water seeping downwardly between the roof sections.

Another object is to provide a structure that is simple in construction, economical to manufacture, easy to erect and efficient in use.

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 fragmentary perspective view of a building structure embodying my invention, with parts broken away and in section;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 1;

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Figure 5 is a fragmentary top plan view of the structure illustrated in Figure 1, with parts broken away;

Figure 6 is a fragmentary perspective view of one of the upright wall sections;

Figure 7 is a perspective view of one of the roof sections, with parts broken away and in section;

Figure 8 is a fragmentary front elevational view of a slight modification;

Figure 9 is a vertical longitudinal sectional view through the structure illustrated in Figure 8.

Referring now to the drawings, A and B respectively are adjacent upright side panel sections, C is an upright post or frame member between the upright sections A and B, D is a horizontal ceiling joist, E is a roof rafter, F and H respectively are adjacent roof sections of a building structure embodying my invention.

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

Preferably, portions 14 of the upright edge members 12 extend between and constitute spacers for the sheets 10 and 11, while other portions 15 extend transversely across the upright edges of the sheets and are provided throughout their upright outer edges with hook-shaped attaching portions 16. Likewise, a portion 17 of the horizontal edge members 13 extends between and constitutes a spacer for the sheets 10 and 11.

The upright post C is between the edge members 12 of the adjacent panel sections A and B and is provided throughout opposite upright edges thereof with hook-shaped portions 18 with which the hook-shaped portions 16 of the edge members 12 of the adjacent panel sections have an interlocking or dovetail connection. Screws 19 are carried by the post C at vertically spaced points thereof and are engaged at their outer ends by suitable latch members in the form of elongated plates 20 which are adapted to overlap the outer surfaces of the edge members 12 of the panel sections A and B to maintain the parts in assembled relation, as illustrated in Figures 1 and 3, respectively.

Preferably the plates 20 are substantially equal in width to the outer surface of the post C and

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are adapted to be turned on the screws 19 so that such plates may register with the outer surface of the post C and thus be out of the way during assembly or disassembly of the side sections A and B with the post. However, when the hook-shaped portions 16 of the edge members 12 of the panel sections have been interlocked with the hook-shaped portions 18 of the post, the plates 20 may then be turned on the screws 19 from the upright inoperative position in registry with the outer surface of said post to a substantially horizontal position as illustrated in Figures 1 and 3 to overlap the outer surfaces of the edge members 12 of the side sections to thereby hold the parts in interlocked relation.

If desired, suitable strips 21 and 22 respectively may be employed upon the outer and inner sides of the post C to cover the connections or joints between said post and the adjacent panel sections A and B. Preferably such strips 21 and 22 are secured by nails or other suitable fastening elements to the edge members 12 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 21 has elongated recesses 23 for the plates 20 and such recesses extend transversely of the strip 21 so as to hold the plates 20 from accidentally turning on the screws 19 after being arranged in overlapping relation to the panel sections A and B. If desired, the inner strips 22 may be nailed or glued to the post C so as to form a rigid part thereof. Also the outer strips 21 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 20.

The joists D and rafters E are carried by the post C and support the roof sections F and H. Preferably each joist D extends substantially horizontally between and is rigidly secured to the post C at opposite sides of the building, while the rafters E incline downwardly from a central ridge member (not shown) to opposite ends of the joists D and are rigidly secured thereto.

The roof sections F and H are supported in inclined position upon and project laterally in opposite directions from the uppermost truss member E and overhang the upright side panel sections A and B.

Preferably each roof section has upper and lower panels 30 and 31 of insulating material, longitudinally extending frame members 32 between and rigid with said panels at opposite side edges thereof, transversely extending frame members 33 between and rigid with the panels at opposite ends thereof, and a facing board 34 rigid with and depending from the upper panel 30 in advance of the lower transversely extending member 33.

To provide a firm joint between the roof sections F and H and upright side panel sections A and B, the lower transversely extending members 33 of the roof sections are provided in spaced relation to the depending facing boards 34 with depending enlargements 35 that are preferably equal in thickness to and form continuations of the lower panels 31 of the roof sections and cooperate with the facing boards 34 to provide inverted channels 37 for receiving the upper edges of the upright side panel sections A and B and intermediate post C.

In the present instance the longitudinally extending frame members 32 of the roof sections A and B are provided throughout their outer

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edges with hook-shaped tongues 38 that are received in and are urged together by opposite side walls of a longitudinally extending groove 39 in the upper edge of the rafter E so that a relatively tight joint is provided between the roof sections.

A batten strip J covers the joint between the roof sections F and H and cooperates with the upper panels 30 of said sections to protect the joint between said sections from the weather elements. Preferably the upper panels 30 of the roof sections are provided upon opposite sides of the joint beneath the batt J with primary and secondary grooves 40 and 41 respectively to catch and drain off water and thereby prevent it from reaching the joint between the sections F and H. Also, the underside of the batten strip J is arched so that it straddles the joint between the roof sections and the secondary grooves 41 in the roof panels 30 and has relatively sharp edges 42 at opposite sides of the arch that are received within and are adapted to bite into the bottoms of the primary grooves 40, preferably midway between the side edges thereof, to provide a tight joint between the parts. Any suitable means such as screws 43, double-headed nails or the like may be used to hold the batten strip J in proper assembled position on the roof panels 30 of the roof sections.

Thus, from the foregoing, it will be apparent that the upright panel sections A and B, roof panel sections F and H, and other units or sub-assemblies of my structure may be made to proper specifications in one place and then shipped in knockdown or unassembled condition to another place where they can be easily and quickly set up and erected by unskilled labor. By using the dovetail connections between the panel sections A and B and post C 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 between the upright panel sections A and B and post C, and the connections between the rafters E and the roof panel sections F and H, the respective panel sections will be held closely together so that the joints are tight and self-sealing. In this connection it will be noted that the interlocked or dovetail connections between adjacent upright sections A and B and the post C effectively prevent the weather elements from entering the structure through such connections. Also, the interlocked or dovetail connections between adjacent roof sections F and H and rafter E insure a tight joint between said roof sections. The batten strip J covers the joint between the roof sections F and H and fits into the primary grooves 40 in the roof panels 30. Hence the batt effectively protects the joint between the roof sections from the weather elements. Any water or moisture on the roof sections F and H would be caught by and would drain off in either the primary or secondary grooves 40 and 41 respectively and therefore would be effectively prevented from reaching the joint between the roof sections.

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 and workmen. However, it is apparent that many of the features of my construction may be employed inside large buildings

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such as factories during the erection of temporary or permanent rooms, offices and 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 and B and inclined roof sections such as F and H may be varied according to the size of the buildings desired.

It will also be noted that the structure has a high insulation value due to the double insulating sheet construction of the panel sections and to the tight joints between the parts. Hence, constructions embodying these features may be used very satisfactorily in either warm or cold climates.

Preferably each inclined rafter E extends outwardly through an opening 34' formed by cut out portions at the adjacent edges of the depending facing boards 34 of adjacent roof sections F and H, as illustrated in Figures 8 and 9, so that the groove 39 in each rafter may receive and carry to the outside of the building any water or moisture that might seep downwardly through the joint 50 between the roof sections F and H. Thus, the rafters not only serve as structural elements for supporting the roof sections but also as supplemental drainage means for water on the roof, in case it should overflow the drainage grooves 40 and 41 and seep downwardly between the sections, as aforesaid.

What I claim as my invention is:

1. In a building structure of the class described, an upright wall, a pair of roof sections arranged edge to edge and inclining upwardly from said wall, each roof section having a depending facing board forming an upright extension of said wall, the facing boards of adjacent roof sections being provided at their adjacent edges with cut out portions forming an opening, and a common supporting rafter for said roof sections on the underside thereof and carried by said upright wall in rear of said depending facing boards, said rafter extending outwardly through the opening aforesaid at the adjacent edges of said depending facing boards and being provided immediately beneath the adjacent edges of said roof sections with drainage means, said drainage means extending through the opening aforesaid whereby water received in said drainage means from said roof sections may be carried outwardly through said depending facing boards to the exterior of the building structure.

2. In a building structure of the class described, an upright wall, a roof section extending over said wall and having a depending facing board forming an upright extension of said wall, said facing board having an opening, and a supporting rafter for said roof section on the underside thereof and carried by said upright wall in rear of said depending facing board, said rafter extending outwardly through the opening in said depending facing board and being provided immediately beneath an edge of said roof section with drainage means, said drainage means extending through the opening in said facing board whereby water received in said drainage means

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from said roof section may be carried outwardly through said depending facing board to the exterior of the building structure.

3. In a building structure of the class described, an upright wall, a pair of roof sections arranged edge to edge and extending over said wall, said roof sections having aligned downwardly opening channel portions straddling the upper edge of said wall, the outer side walls of the channels being provided with an opening, and a common supporting rafter for said roof sections on the underside thereof and carried by said upright wall in rear of the outer side walls of said channels, said rafter extending outwardly through the opening provided in said outer side walls of the channels and being provided immediately beneath the adjacent edges of said roof sections with drainage means, said drainage means extending through the opening aforesaid whereby water received in said drainage means from said roof sections may be carried outwardly through the outer side walls of said channels to the exterior of the building structure.

4. In a building structure of the class described, an upright wall, a roof section extending over said wall, said roof section having a downwardly opening channel portion straddling the upper edge of said wall, the outer side wall of the channel having an opening, and a supporting rafter for said roof section on the underside thereof and carried by said upright wall in rear of the outer side wall of said channel, said rafter extending outwardly through the opening in said outer side wall of the channel and being provided immediately beneath an edge of said roof section with drainage means, said drainage means extending through the opening in the outer side wall of the channel whereby water received in said drainage means from said roof section may be carried outwardly through the outer side wall of said channel to the exterior of the building structure.

5. In a building structure of the class described, an upright wall, a pair of roof sections arranged edge to edge and extending over said wall, said roof sections being provided along their adjacent edges with edge members having depending tongues and having aligned depending facing boards forming upright extensions of said wall, the facing boards of adjacent roof sections being provided at their adjacent edges with cut out portions forming an opening, and a common supporting rafter for said roof sections on the underside thereof and carried by said upright wall in rear of said depending facing boards, said rafter extending outwardly through the opening aforesaid at the adjacent edges of said depending facing boards and having an upwardly opening drainage groove receiving the depending tongues aforesaid, said drainage groove extending through the opening aforesaid whereby water received in said drainage groove from said roof sections may be carried outwardly through said depending facing boards to the exterior of the building structure.

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