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SOFFIT AND TIE PLATE CONSTRUCTION FOR PREFABRICATED BUILDINGS

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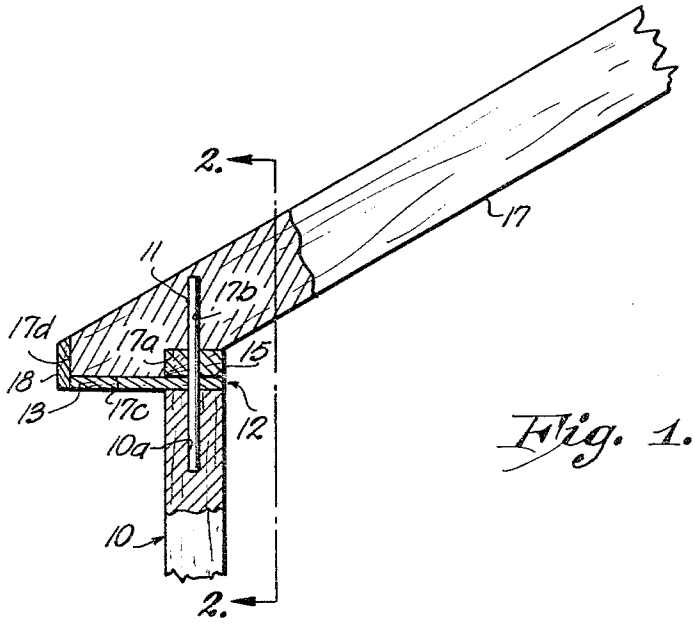


Fig. 1.

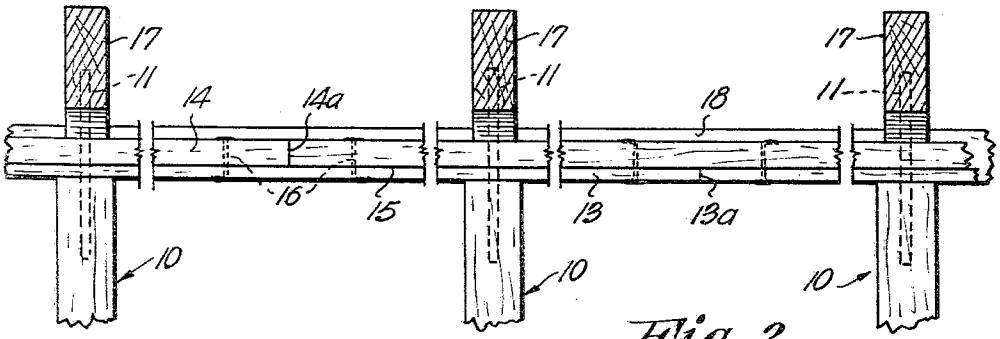
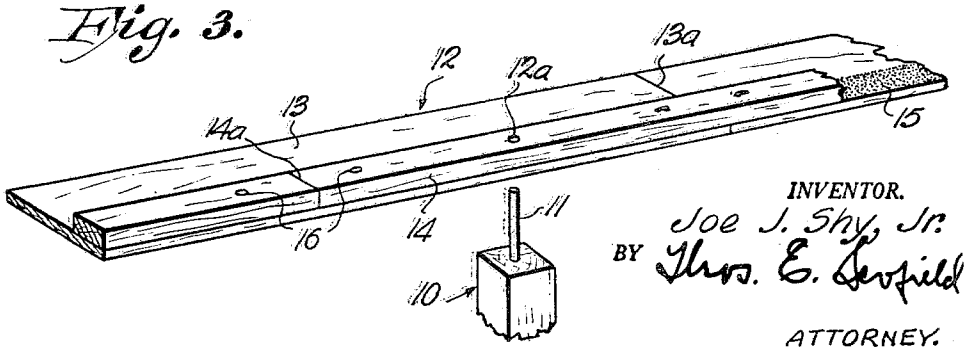


Fig. 2.

Fig. 3.



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SOFFIT AND TIE PLATE CONSTRUCTION FOR PREFABRICATED BUILDINGS

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This invention deals generally with prefabricated buildings and refers more particularly to the provision in such buildings of an improved stud tie and soffit arrangement.

One of the principal objects of the invention is to provide a simple and effective means for structurally tying together the upper ends of the studs in a building framework, which means does not require the manipulation of bolts, special fasteners or the like. The invention is particularly advantageous when applied to wooden prefabricated buildings, which are likely to be erected by relatively unskilled purchasers at sites which may be remote from sources of expert professional help.

A further and equally important object of the invention is to provide a construction of the character described which permits the inclusion in the structure at the time of joining the studs of a continuous, tightly sealed soffit which facilitates rapid assembly of the wall sheathing and rafters with the studs.

Still another object of the invention is to provide a building frame construction in which the soffit serves as a structural member which increases markedly the ability of the framework to resist side loads, such as wind loads, while still serving its function as a weather seal between the eave and the interior of the building.

A further object of the invention is to provide a readily assembled frame construction of the character described which can be constructed of low cost materials and with little difficulty, which lends itself to rapid assembly with the studs and rafters at the building site and which requires little carpentry skill to put into effect.

Other and further objects of the invention together with the features of novelty appurtenant thereto will appear in the course of the following description. In the accompanying drawing which forms a part of the specification and it is to be read in conjunction therewith and in which like reference numerals indicate like parts in the various views;

FIG. 1 is a fragmentary side elevational view of the upper portion of a wall-to-roof connection embodying the present invention, parts being shown in section;

FIG. 2 is a fragmentary section looking toward the inside edges of a pair of spaced studs, being taken along the line 2—2 of FIG. 1 in the direction of the arrows; and

FIG. 3 is a fragmentary perspective view from above the combined soffit and top plate, showing the latter in exploded relation with a typical stud.

Referring now to the drawings, it will be understood that I have shown only a portion of the building framework. Reference numeral 10 indicates generally vertical studs which are supported in any conventional way on a foundation or base rail of the structure (not shown). The studs form the structural framework for receiving the side walls of the building, also not shown. The studs are spaced laterally from one another along the wall line (see FIG. 2). The studs conventionally are lengths of wood, for example, the usual 2 x 4.

The upper end of each stud 10 has connected therewith an upwardly projecting pin 11, which preferably is cylindrical in cross section. In the preferred embodiment of the invention the pin 11 is a dowel-like element having its lower end received in a corresponding recess 10*a* extending centrally into the upper end of the stud. The pin 11 should be firmly secured to the stud during fabrication, such as by providing a press fit into the recess or by use

of a suitable adhesive or both. It will be understood that alternatively the pin may be made integral with the stud by simply utilizing a length of lumber equal to the combined length of the stud and projecting portion of the pin, and turning the latter on a lathe or other suitable piece of equipment.

Referring now to FIG. 3 in conjunction with the other figures, supported on the upper ends of the studs 10 with its lower surface resting on the stud ends is a continuous member 12 having its long axis running in the direction of the spacing of the studs. The member 12 is composed of a relatively wide and relatively thin soffit 13 having superposed thereon adjacent one edge a thicker and narrow top plate 12. The soffit portion is made up of lengths of flat plank (for example 1 x 12) placed end to end to provide an abutment joint 13*a*. Similarly the top plate is made up also of end-to-end lengths of material, for example 2 x 4's, providing abutment joints 14*a*. It will be noted particularly that the respective joints 13*a* and 14*a* are noncoincident, that is, that they are spaced from one another longitudinally of the member 12 and lie on opposite sides of the stud. For strength purposes, only one joint 13*a* or 14*a* should be present in any given span between a pair of studs.

The elements 13 and 14 are firmly secured together to provide a continuous elongate structure capable of spanning a plurality of studs. In actual practice the over-all length of the member 12 will be equal to the length of the side wall so that the ends of the member 12 are coincident with the endmost studs. The securing means comprises a suitable adhesive 15 and the clenched nails 16 spaced at intervals along the member.

As is believed evident from the drawings, the combined soffit and top plate member 12 is adapted to be lowered in place on the upper ends of the studs. The pins 11 at the tops of the studs are received through the member 12 in apertures 12*a* which are drilled through or otherwise formed in the top plate 12 and underlying soffit 13. The apertures 12*a* are spaced apart distances equal to the spacing of the pins 11. The length of the pins 11 is such that when the member 12 is lowered into position, as above described, that is, with its lower face contacting the upper ends of the studs, the pin projects well above the upper surface of the tope plate 14.

The inclined rafters 17 for the roof are conventionally spaced to register with the upper ends of the studs 10. As will be noted from FIGS. 1 and 2, each rafter is provided with a notch 17 adapted to conform with the top plate 14 and an upwardly extending bore 17*b* in which the upwardly projecting portion of the pin 11 is received. The lower end of the rafter, which extends outwardly past the stud, is cut to provide a surface 17 conforming to and registering with the upper surface of the soffit 13. Preferably the extreme lower end of each rafter is provided with a vertical surface 17*d* which lies in vertical plane at the outer edge of the soffit 13. A flashing 18 which extends lengthwise of the soffit is secured to the soffit and rafter as by nailing.

Once assembled with the stud 10, the combined soffit and top plate member 12 provides not only a relatively wide weather seal extending lengthwise of the wall at the upper ends of the studs, but also means for effectively maintaining the studs in a common vertical plane despite the application of the studs of substantial lateral forces. The relatively wide soffit 13, being tied directly to and with the top plate 14, combines with the latter to produce a rigid tying structure having high beam strength. This is because the moment of inertia in a horizontal direction provided by the wide plate 13 is much greater than in conventional top plate. Moreover, the soffit itself provides a horizontal cover structure or seal extending

from the back edge of the studs forwardly to the outer end of the rafter. By virtue of being combined into an integral structure and through the use of pin and aperture connection, both the soffit and top plate are easily assembled into operating relationship with the studs; and the pins provide a ready and effective connection for tying the rafters to the studs. A completely closed building is achieved by simply adding the usual sheathing (not shown) to the studs and roofing to the rafters, the flashing **18** and soffit **13** cooperating with the latter to form a continuous exterior surface for the building.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. The combination in a building of a plurality of laterally spaced vertical studs having upper ends, each stud including at its upper end a vertically extending pin, a combined soffit and top plate member extending between and overlying the upper ends of said studs, said member including a relatively thin horizontal soffit having a portion extending outwardly beyond the studs and a top plate secured to said soffit, said soffit and top plate provided with spaced apertures registering with and receiving therethrough said pins whereby said member is connected with said stud by said pins, the pins each having a length such that they project above said member, and rafter members extending laterally from the upper ends of said studs, each rafter member having a pin recess slidably fitting over the pin of the adjacent stud with a portion of the rafter member engaging the upper face of the soffit and top plate.

2. The combination as in claim 1 wherein said soffit comprises plank elements arranged in end-to-end abutting relationship and said top plate comprises separate bar-like elements likewise arranged in end-to-end abutting relationship, the bar-like elements being superposed on the plank elements and firmly secured thereto, the joints formed by the abutting elements of said soffit and top plate respectively being spaced longitudinally from one another.

3. The combination as in claim 1 wherein said pin comprises a separate length of material having its lower end received and confined within a corresponding bore in the upper end of the said stud.

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