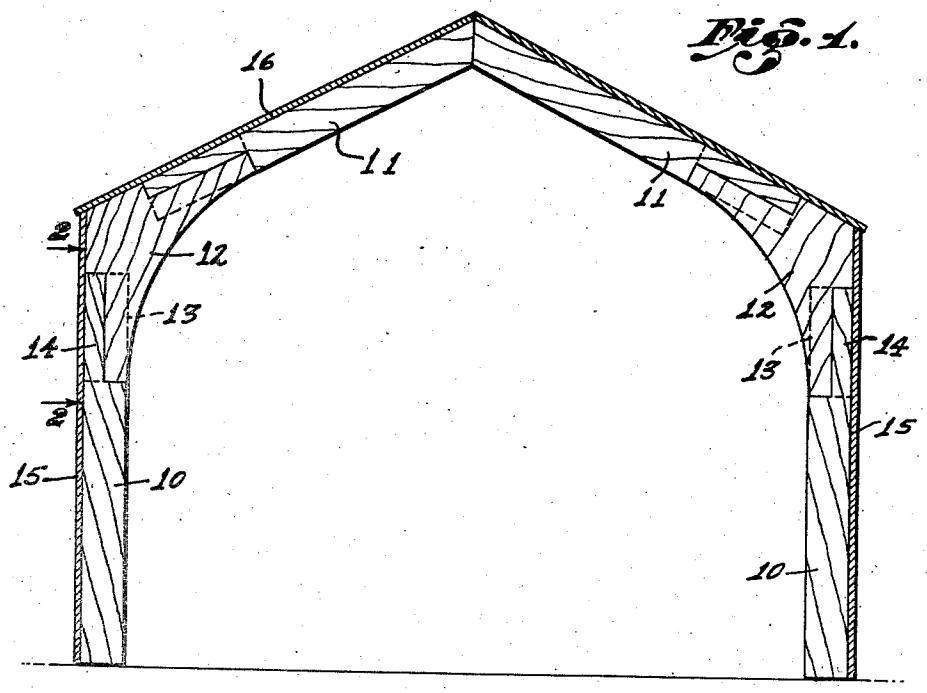
Oct. 15, 1946. A. V. PEDERSEN 2,409,383

FRAME STRUCTURE

Filed Aug. 29, 1944

Fig. 1.



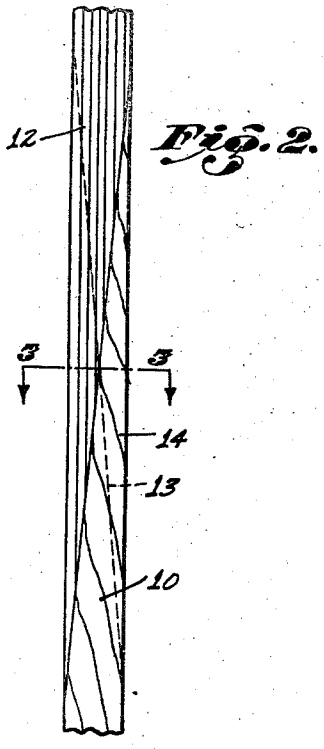


Fig. 2.

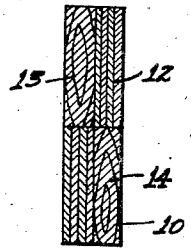


Fig. 3.

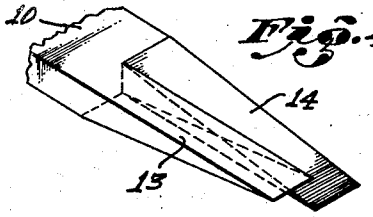


Fig. 4.

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FRAME STRUCTURE

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4 Claims. (Cl. 20—92)

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This invention relates to a frame structure for small buildings, and particularly to a joint between wooden elements thereof designed to be easily and economically constructed, and which will adequately withstand bending moments to which the joint may be subjected.

In accordance with the present invention, it is contemplated to construct small buildings from a plurality of standardized frames consisting of studs and rafters connected at the eaves by gusset members which are preferably formed of plywood. Such frames when constructed may be readily assembled together in the construction or erection of small buildings and outer sheeting and roofing applied thereover. A relatively simple and economical joint must be provided between the studs and rafters and the connecting gusset member. Such a joint must have the characteristics of being capable of being easily constructed and assembled together, and be capable of withstanding all reasonable bending moments that may be applied thereover. The present invention provides for such a joint.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawing for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation of the improved frame illustrating the parts thereof as having been connected to each other by the joint embodying the present invention;

Fig. 2 is a partial view in side elevation taken substantially upon the line 2—2 upon Fig. 1;

Fig. 3 is a sectional view taken substantially upon the line 3—3 upon Fig. 2; and

Fig. 4 is a partial perspective view illustrating the formation of one of the double scarfs forming a part of the improved joint.

Referring to the accompanying drawing wherein similar reference characters designate similar parts throughout, the frame shown in Fig. 1 is illustrated as being made up of studs 10, rafters 11, and gusset members 12 which connect and serve to hold the studs and rafters in proper angular relationship to each other. The gusset members are preferably formed of plywood which because of the arrangement of the grain in the laminations thereof, is capable of readily withstanding the stresses imposed thereon and which is readily obtainable in the desired width. The rafters and studs are connected to the gusset members 12 by a double scarf-type of joint wherein the rafters and studs have their ends oppo-

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sitely scarfed as indicated in Fig. 4, providing two oppositely beveled tongues 13 and 14. The ends of the gusset members are similarly scarfed so as to be complementary to the two tongues 13 and 14.

In the formation of these scarfs the slopes of the bevels are preferably about 1:10 and should never be steeper than 1:6. Glue is applied to the meeting faces of the scarfs and the rafters and studs are assembled with the gusset members by forcing them longitudinally until the opposed scarfs resist further longitudinal movement and are disposed in interfitting relationship with the gusset members 12. The glue is then permitted to harden and dry thus completing the frame.

When the frames of a small building are assembled together outer sheeting 15 and roofing 16 may be applied thereover.

It will be appreciated that in the above described construction the scarfs on the gusset members are disposed in planes which are at acute angles with the planes of the gusset members and that the plane of each scarf intersects the plane of its respective gusset member along a line which is substantially perpendicular to the length of the member connected to the gusset member by the scarf.

By the improved arrangement it is possible to readily set up woodworking machinery to accurately and easily form the opposed double scarfs on the studs, rafters, and gusset members and by reason of their arrangement, it will be noted that edges on the sides of the scarfs will be in abutting relation with their complementary edges on the scarfs formed on the gusset members. This mutual engagement itself will tend to resist some of the bending moments to which the frame may be subjected. The glue between the opposed faces of the scarfs being in shear when bending moments are applied and due to the gentle slopes of the scarfs there is not only adequate glue present for this purpose, but a strong structural arrangement is provided adequately capable of transmitting stresses across the joint. From tests to which I have subjected frames embodying the present invention I find that even when severe stresses are imposed that the studs and rafters do not slide in the plane between the double scarfs demonstrating that the abutting relationship of the scarf edges together with the glue distributed over the gentle slopes of the scarfs serves to adequately transmit stresses across the joint and tend to produce a sturdy monolithic structure.

Various changes may be made in the details of

the construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A frame for small buildings comprising studs, rafters, and gusset members connecting the studs to the rafters, said studs and rafters having oppositely beveled scarfs in interfitting relationship with complementary scarfs on the gusset members and which are glued thereto, the scarfs on the gusset members being disposed in planes which are at acute angles with the planes of the gusset members and the plane of each scarf intersecting the plane of its respective gusset member along a line which is substantially perpendicular to the length of the studs and rafters respectively.

2. A frame for small buildings comprising stud members, rafter members, and gusset members connecting the stud members to the rafter members, at least some of said members having oppositely beveled scarfs in interfitting relationship with complementary scarfs on others of said members to which they are connected and which are glued thereto, the scarfs on the gusset members being disposed in planes which are at acute angles with the planes of the gusset members and the plane of each scarf intersecting the plane of its respective gusset member along a line which is substantially perpendicular to the length of the member connected to the gusset member by the scarf.

3. A frame for small buildings comprising stud members, rafter members, and gusset members connecting the stud members to the rafter members, at least some of said members having oppositely beveled scarfs in interfitting relationship with complementary scarfs on others of said members to which they are connected and which are glued thereto, the scarfs on the gusset members being disposed in planes which are at acute angles with the planes of the gusset members and the plane of each scarf intersecting the plane of its respective gusset member along a line which is substantially perpendicular to the length of the member connected to the gusset member by the scarf, the slopes of the scarfs being less than 1:6.

4. A frame for small buildings comprising stud members, rafter members, and gusset members connecting the stud members to the rafter members, at least some of said members having oppositely beveled scarfs in interfitting relationship with complementary scarfs on others of said members to which they are connected and which are glued thereto, the scarfs on the gusset members being disposed in planes which are at acute angles with the planes of the gusset members and the plane of each scarf intersecting the plane of its respective gusset member along a line which is substantially perpendicular to the length of the member connected to the gusset member by the scarf, the slopes of the scarfs being approximately 1:10.

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