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J. K. EICHELBERGER

2,363,405

BUILDING CONSTRUCTION

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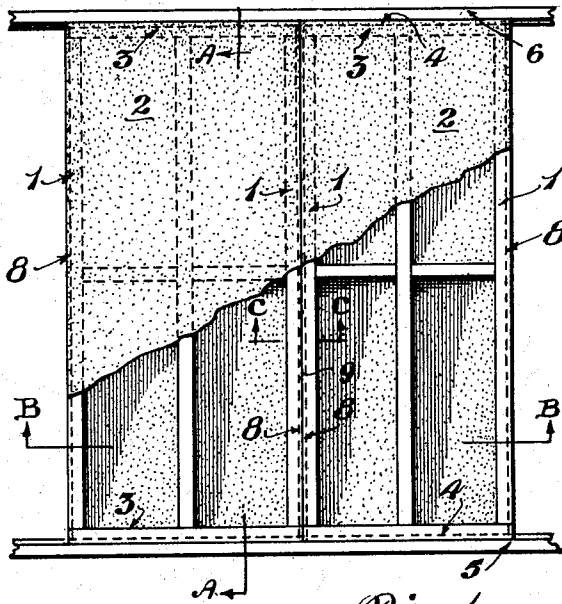


Fig. 1.

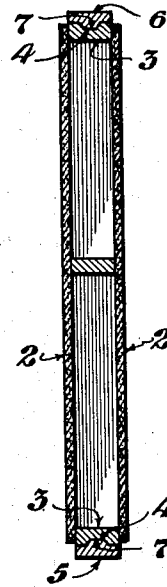


Fig. 2.

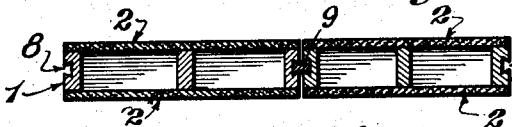


Fig. 3.

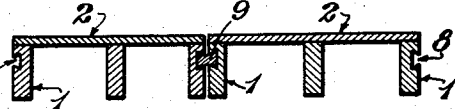


Fig. 4.

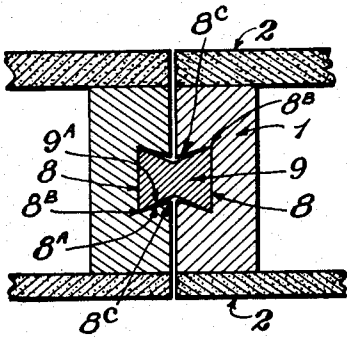


Fig. 5.

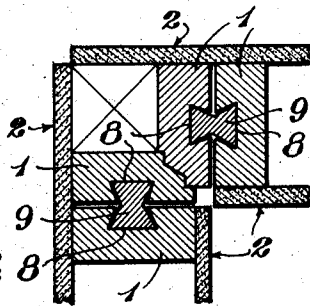


Fig. 6.

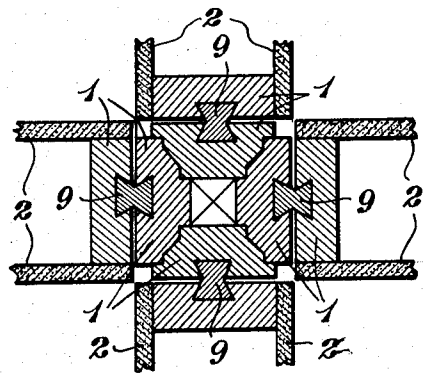


Fig. 7.

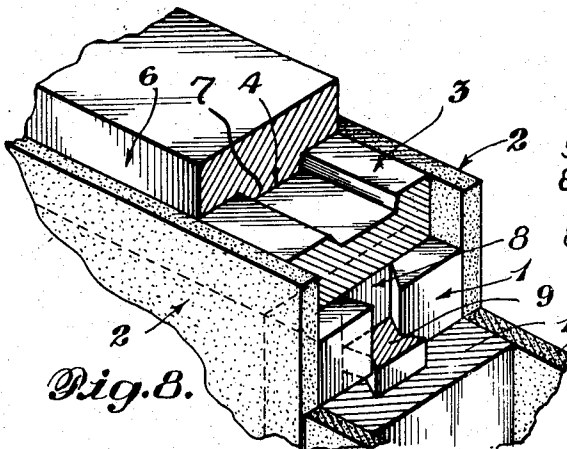


Fig. 8.

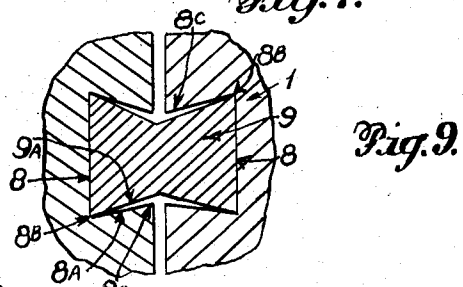


Fig. 9.

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# UNITED STATES PATENT OFFICE

2,363,405

## BUILDING CONSTRUCTION

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Application September 9, 1943, Serial No. 501,682

2 Claims. (Cl. 20—4)

This invention relates to the construction of buildings of all types employing panels as structural units and more particularly to buildings of the prefabricated type.

An object of the invention is to provide means for connecting contiguous panels in their required positions firmly and rigidly without the use of nails, screws or like fastenings, and without the use of adhesives or binding agents.

Another object of the invention is to prepare at the mill prefabricating building units in the form of panels with a minimum of time and labor and which panels are of a character to be easily, quickly, securely and rigidly erected on location.

A further object is to provide wall panels, finished on both sides at the mill, of simple, strong and rugged construction susceptible of quick and easy assembly at the place of erection.

The foregoing and other objects and advantages of the invention will become readily apparent in view of the following description taken in conjunction with the drawing, wherein:

Figure 1 is an elevation of a wall section of two panels locked together in accordance with the present invention;

Fig. 2, a section on the line A—A of Fig. 1;

Fig. 3, a section on the line B—B of Fig. 1;

Fig. 4, an end view of two panels connected in accordance with the present invention and adapted particularly for use in connection with floor, ceiling, and roof construction;

Fig. 5, an enlarged section on the line C—C of Fig. 1 illustrating the joint between two contiguous panels;

Fig. 6, horizontal section of a corner structure utilizing the invention;

Fig. 7, a similar view showing the joint between four panels;

Fig. 8, an isometric view of the upper corner or panel showing provision for the insertion of a locking key;

Fig. 9 is an enlarged sectional view showing more clearly the points of contact common in all the applications of the invention.

The invention will be hereinafter more particularly described with reference to the drawing on which like reference characters indicate similar parts.

The panels, which may be used with slight modification for walls, floors, ceilings, or roof structures, are composed of end studs 1, with intermediate studs and braces in accordance with the requirements and with composition or other covering material 2.

The top or bottom members 3 have key grooves 4 and additional bracing plates 5 and 6 at the bottom and top respectively. These plates have tongues 7 attached to fit in the groove 4, each of said plates being anchored in place. The tongue 7 fits in the groove 4 and holds the several panels in strict alignment.

The studs 1 have a recessed butterfly cut or channel 8 on the outer edge of the panel. This cut or undercut channel 8 has inwardly sloping sides forming locking means in conjunction with a locking key 9 rigidly connecting the two contiguous panels. The locking key 9, is preferably of hardwood construction and extends the full length of the stud 1 and is forcibly inserted from the top end of the panel, aligning and securing together the contiguous outer edges of the panels. The locking key 9 is of a configuration corresponding to a pair of mating channels 8, that is, it has opposite sides formed each with a shallow trough or V and when the key is applied and driven into the butterfly cut on the outer edge of the panel the inclined sides 9A of the locking key contact the undercut sides 8—A of the butterfly cut. The pressure on the locking key is greatest at 8—B of the butterfly cut due to the slight difference in angularity thereby relieving or reducing the tension of the locking key at 8—C of such cut.

In Figs. 5, 6 and 7 there is illustrated in detail the joint between adjacent connecting panels in a straight wall, at a corner, and at an intersection of two or more partitions respectively in each of which the connectors 9 are used.

In practice, the studs 1 are given the proper size and the butterfly cuts or channels 8, milled in the prefabrication plant. The parts with intermediate studs and bracing are firmly fastened together and covered both inside and out with wall covering 2. The locking key 9 is accurately sized and shaped to place pressure at 8—B and relieve pressure at 8—C, thereby eliminating the possibility of shearing at the latter point.

The wall, floor, ceiling and/or roof panels are transported to the site and plate 5 is accurately locked and thereby securely fastened to the foundation. The panels are quickly set up by following a diagram and the locking connector or key 9 is applied and driven into position as soon as the panels are placed in alignment.

When the panels are in position the end members 3 provided with grooves 4 receive the tongues 7 of the bottom and top members 5 and 6 respectively, maintaining panels in strict alignment

and the top plate providing a continuous finished surface along the length of the wall and the covering 2 providing finished side wall surfaces. The method of erecting or assembling the panels is the same no matter whether they are used for walls, partitions, ceilings, roofs or the like.

As shown in Figs. 6 and 7, the studs 8 at the corner where they engage are cut away to allow their desired contact, it being necessary, as shown in Fig. 6, only to cut the corners of the pair of said studs while in Fig. 7 it is necessary to cut two corners of each of four studs, the corner studs in Fig. 6 being identical and each of the four inner studs of Fig. 7 likewise being identical.

As shown in Fig. 8 the end studs 1-1 are face to face and the connector or key 9 is cut slightly short of these studs, to facilitate assembly. The top member 3 overlies the studs 1-1, and the side panels 2-2 are flush with this top member. The bracing member 6 lies on and is secured to the top member 3 by the tongue and groove joint 4-7.

It will be readily apparent that the use of the lock and key gives rigidity to the structure and when used in connection with the prefabricated panels quickly speeds up the erection of the structure. When the panels are locked together, they are effectively, securely and rigidly connected and the joint is blocked or sealed at this point by the locking key. Also, when viewed from the exterior the locking key is not discernible as it is concealed within the joint panels, and this will result in a sealed, air and moisture proof joint without the use of any externally applied fastenings in the form of nails, bolts, screws or adhesives.

It will be obvious to those skilled in the art that various changes may be made in my invention without departing therefrom and the invention is therefore limited only as indicated in the appended claims.

What is claimed is:

1. A joint comprising a pair of abutting surfaces having registering recesses of diminishing cross-sections towards their registering edges formed by angularly disposed side walls, and a locking member mounted within the channel formed by said recesses, said member having a pair of oppositely disposed faces disposed towards the side walls of the recesses, each formed by a pair of angularly related surfaces, the projected width of which is substantially equal to the sum of the depths of the recesses and the angularity of which is less than the angle formed by the registration of the recesses whereby the parts are secured together by a binding of the locking member in the recesses at the outer edges of the flat surfaces and against the inner edges of the side walls of the recesses.

2. A prefabricated building construction comprising a pair of panels of generally rectangular configuration arranged in abutting relation, each of the abutting surfaces being provided with registering recesses of diminishing cross-section towards their registering edges formed by angularly disposed side walls and a locking member for uniting the panels, said member having a pair of oppositely disposed faces disposed towards said side walls, each formed by a pair of angularly related flat surfaces, the projected width of which is substantially equal to the sum of the depth of the recesses and the angularity of which is less than the angle formed by the registration of the edges of the recesses whereby the parts are secured together by a binding of the locking member at the outer edges of the flat surfaces and against the inner edges of the side walls of the recesses.

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