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B. C. NELSON ET AL

1,964,131

BUILDING CONSTRUCTION

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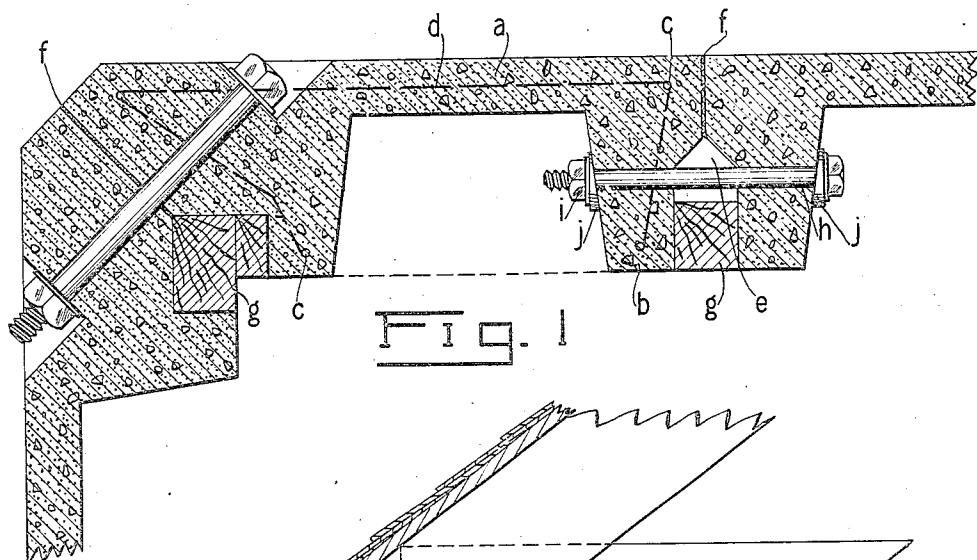


Fig. 1

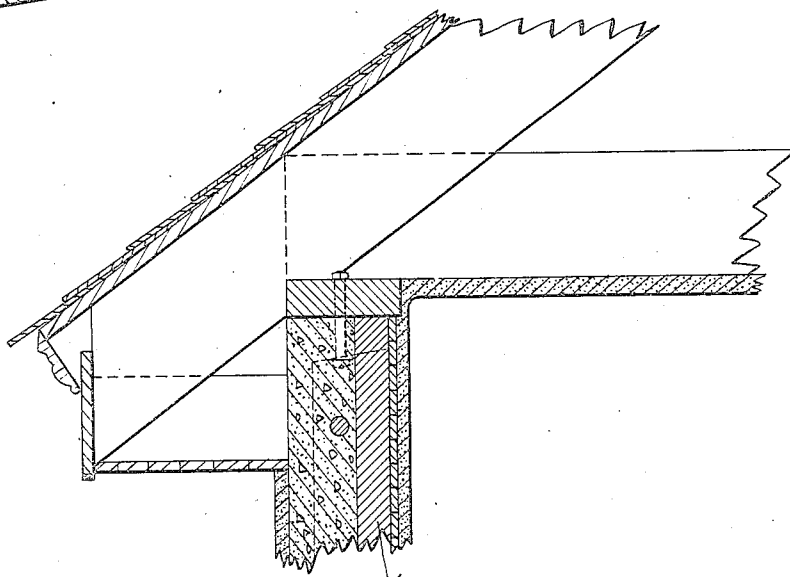
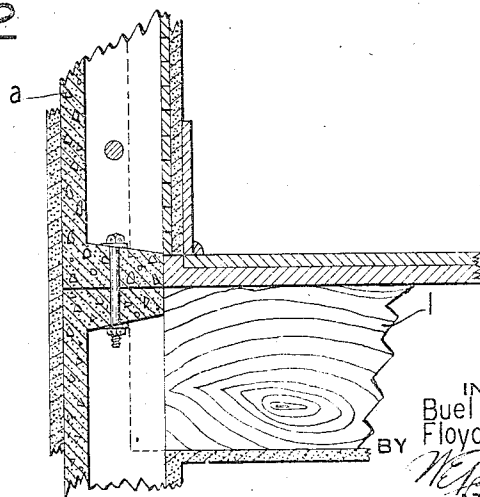


Fig. 2



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BUILDING CONSTRUCTION

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10 Claims. (Cl. 72—40)

Our invention relates to the building of structures, the walls of which are composed, to a large degree, of a series of stacked pre-cast units of selected uniform size. Such units are of substantial size and the joints between such units are adapted to be quickly and easily made and the structure to be sturdy and to be tightly sealed.

A more specific object of our invention is to provide a structure in which the wall units are provided with marginal lateral flanges facing the interior of the structure and extending vertically in alinement with the similar flanges of the units in the adjacent stacked courses. The vertical flanges thus serve as the weight-supporting elements primarily and the faces of the units serve merely as sealing elements between said vertical flanges and between the several lateral courses.

A further specific object of our invention is to provide nailing strips between the several courses to which the interior finish can be secured, said nailing strips being made of resilient material and thus serve the further function of constituting sealing devices.

Further details of construction and incidental objects are hereinafter described with reference to the accompanying drawing, in which:

Fig. 1 is a horizontal section thru a corner of a wall structure embodying our invention shown more or less in diagrammatic form; and

Fig. 2 is a somewhat diagrammatic vertical section thru a wall structure embodying our invention.

A structure embodying our invention has the wall portion composed of a series of pre-cast units *a*. These units are more or less of uniform size and structure, save and except for openings for windows or doors and the like, for which special units are provided. Each of such units embodies a lateral vertical flange *b*, which face the interior of the structure. The units are arranged so that the vertical flanges of each vertically successive course is in alinement with those of the units beneath and thus the vertical flanges themselves, being in abutment, serve as the weight-supporting elements or studding for the building. Said units are preferably made of concrete and have embedded therein reinforcing material preferably composed of vertical rods *c* and meshed wire reinforcing *d*. Said meshed wire is arranged substantially centrally along the face of the units and is bent angularly about the vertical rods so that the wire *d* also extends thru the vertical flanges. The outer face of the flanges *b* are recessed or offset to provide vertical apertures *e*, which, because such units are in alinement, ex-

tend substantially the length of a floor of said structure. Externally of said apertures and between the abutting edges of successive lateral units a layer of relatively plastic sealing material *f* is arranged. Said sealing material preferably is in sheet form. A desirable material is heavy roofing paper, as it combines the qualities of a good sealing material with relatively plastic consistency to conform to the slight irregularities of the edges of the units and sufficient thickness to serve as an expansion joint. Between the faces of the flanges and in said apertures *e*, we arrange separators *g*, which preferably extend inwardly a distance less than the depth of the apertures, so as to provide a chamber of substantial cross-sectional area behind each of the separators.

Said separators are preferably made of wood and are arranged flush with the inner surface of the wall formed by the pre-cast units *a* and thus are in position and are constituted to serve as nailing strips for lath or other selected interior finish.

Extending thru the lateral flanges *b* are connecting elements comprising bolts *h*, threaded at one end and each have a nut *i* mounted thereon. Arranged upon such bolts immediately inside of the head and the nut thereof are lead washers *j*, which, being relatively plastic, conform to the irregularities of the concrete flanges *b*. Such lead washers not only tend to hold the bolts tightly in place, but also engage uniformly over the entire area of the face of said washers and thus distribute uniformly the compression exerted by the bolts. Such bolts also extend thru the meshed wire reinforcing and the latter tends to prevent the concrete units from cracking under the binding strain.

The pre-cast units preferably are built up from the foundation in the ordinary manner and at the top of each floor horizontal structural members *l* are mounted in place. Such members *l* are fastened in place by the units *a* in the vertical apertures *e*. Such apertures are preferably formed so as to conveniently receive a finished two inch thick member and the nailing strips or separators *g* are of similar thickness. We do not wish to limit the size of our apertures to such proportions, but the latter are given as a mere example which is frequently encountered in practice.

The members *l*, being cut to proper length, thus serve not only to make rigid the entire structure, but also to line and to square up the walls of the structure, inasmuch as the ends of

such members fit into the apertures at predetermined positions.

We claim:

1. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges facing the interior of the structure, the vertical flanges of the abutting units being offset relatively to provide vertical apertures extending to the interior surface of said structure, a separator of resilient material located in each of said apertures, one face of said separator extending substantially flush with said interior surface, the remainder extending into the latter a distance less than the depth thereof, thereby providing vertically extending chambers arranged between the laterally adjacent units and behind said separators.

2. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units.

3. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures, said units being joined together by bolt-and-nut elements thereby binding said separator between said units and sealing the joint which lies between said units.

4. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures, a continuous length of reinforcing material extending laterally of each of said units and angularly into said marginal flanges, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units.

5. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units and relatively plastic elements arranged at each side of said flanges and serving as engaging devices in conjunction with said tension members.

6. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units and lead washers arranged at each side of said flanges and serving as engaging devices in conjunction with said tension members.

7. In the art of building construction, pre-cast

composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures and extending into the latter a distance less than the depth thereof, thereby providing vertically extending chambers arranged between the laterally adjacent units and behind said separators, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units, the latter extending thru the vertical flanges of said units intermediate said separators and the outer face of said units.

8. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures, a separator of resilient material located in each of said apertures and extending into the latter a distance less than the depth thereof, thereby providing vertically extending chambers arranged between the laterally adjacent units and behind said separators, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units, the latter extending thru the vertical flanges of said units intermediate said separators and the outer face of said units and sheets of relatively plastic sealing material arranged between laterally adjacent units at the other faces of said units.

9. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges facing the interior of the structure, the vertical flanges of the abutting units being offset relatively to provide vertical apertures extending to the interior surface of said structure, a separator of resilient material located in each of said apertures, one face of said separator extending substantially flush with said interior surface, the remainder extending into the latter a distance less than the depth thereof, thereby providing vertically extending chambers arranged between the laterally adjacent units and behind said separators and a course of relatively plastic sealing material arranged between laterally adjacent units at the outer faces of said units.

10. In the art of building construction, pre-cast composition wall units each provided with marginal lateral flanges, the vertical flanges of the abutting units being offset relatively to provide vertical apertures extending to the interior surface of said structure, a separator of resilient material located in each of said apertures, one face of said separator extending substantially flush with said interior surface, the remainder extending into the latter a distance less than the depth thereof, thereby providing vertically extending chambers arranged between the laterally adjacent units and behind said separators, said units being joined together by tension members thereby binding said separator between said units and sealing the joint which lies between said units, the latter extending thru the vertical flanges of said units intermediate said separators and the outer face of said units and a course of relatively plastic sealing material arranged between laterally adjacent units at the other faces of said units.

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