May 31, 1938. R. L. DAVISON 2,119,318

REINFORCED FRANGIBLE MATERIAL BUILDING UNIT

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Fig. 1.

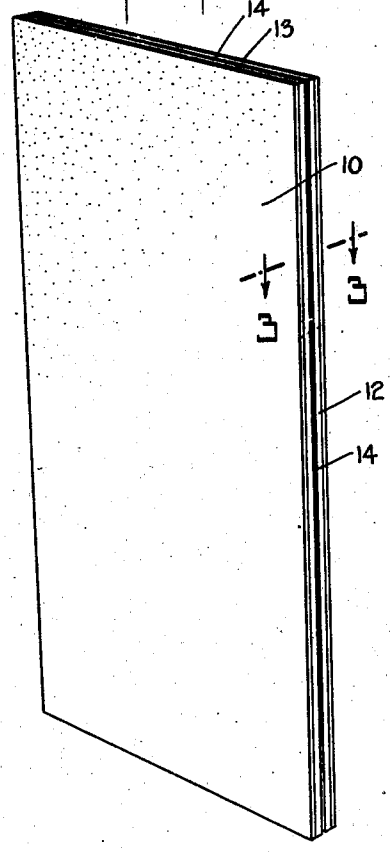


Fig. 2.

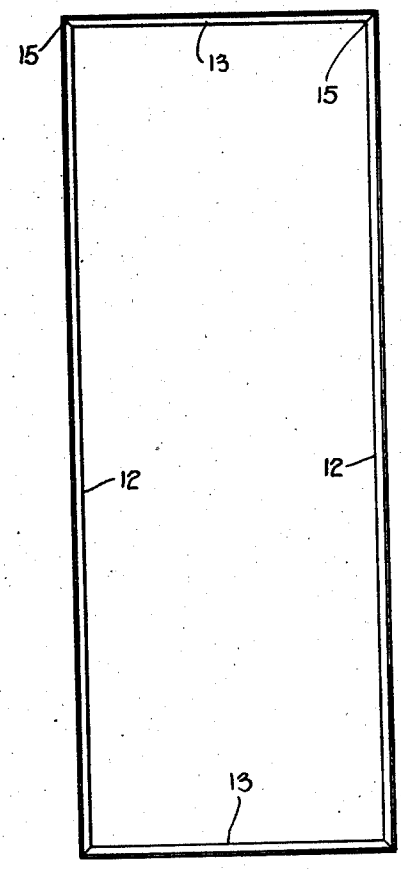
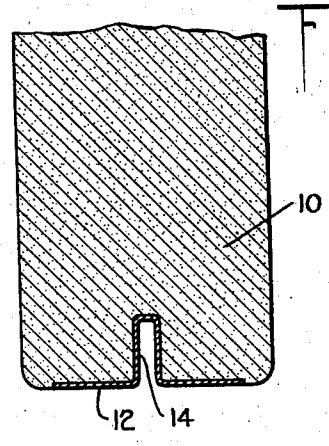


Fig. 3.



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Fig. 4.

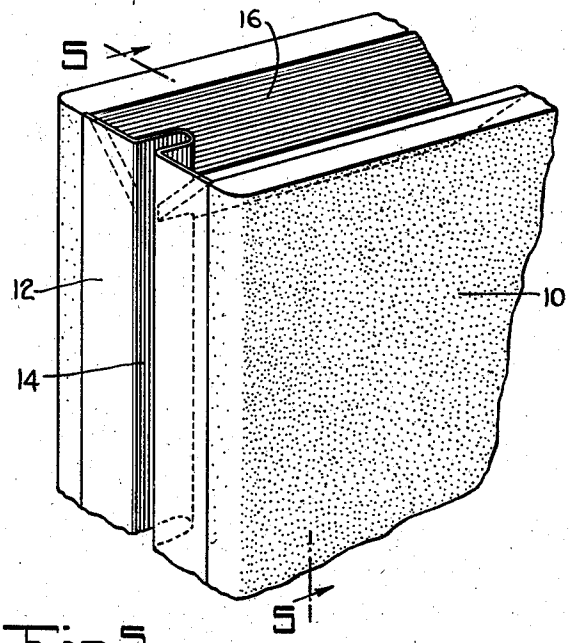


Fig. 5.

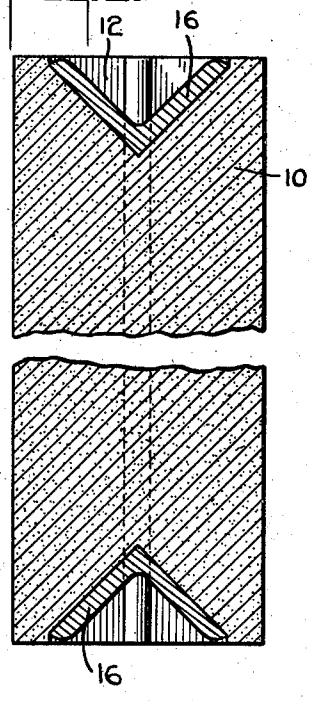


Fig. 6.

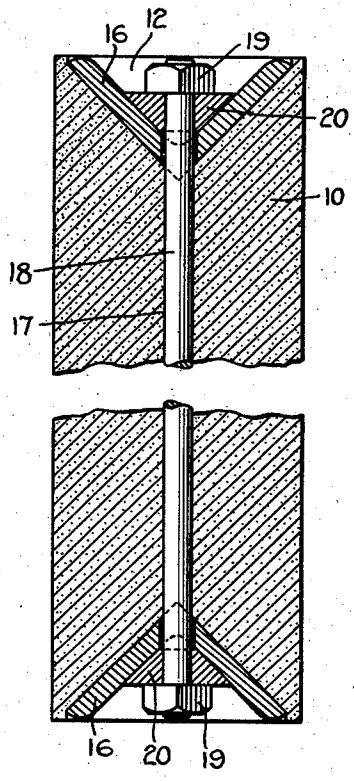
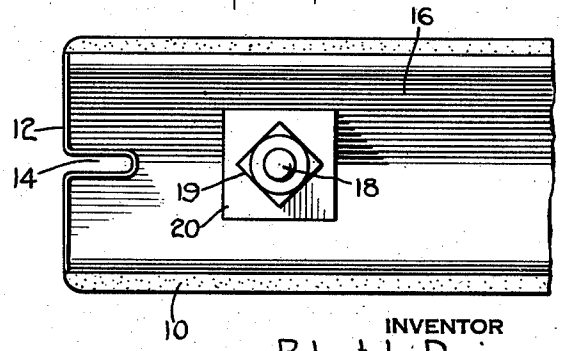


Fig. 7.



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UNITED STATES PATENT OFFICE

2,119,318

REINFORCED FRANGIBLE MATERIAL BUILDING UNIT

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Application May 7, 1935, Serial No. 20,129

3 Claims. (Cl. 72—68)

My present invention relates to prefabricated building units, and more particularly to an improved peripherally reinforced frangible material building slab.

In certain forms of building units, particularly building slabs or panels sufficiently small to admit of ready handling and assembling into a wall, it is advantageous to make the same of relatively light frangible material, because of the desirable qualities as respects surface finish, or capability of surface finish, as well as high sound and heat insulating qualities generally possessed by such type of material. Such slabs or panels, however, are normally insufficiently strong to have formed as an integral part thereof a peripheral groove extending around their edge faces for keying in with other wall structure in a building construction.

In my present invention I have devised an improved building slab construction, in which the peripheral edge faces of the unit are reinforced by a relatively rigid framework, preferably of strip-metal, in which is formed the necessary groove for the reception of a key or tongue. Also, preferably, the frame reinforce for the peripheral edge faces lies flush with such faces, and is spaced apart inwardly from the edges thereof. Such reinforce enables the slab after manufacture to be handled by ordinary workmen, without serious danger of injury to the peripheral edge faces, and provides for easily and positively tying the slab with other structure in a building construction. Thus, the objection heretofore raised against the use of a frangible material as a building slab is effectively overcome.

My reinforce is of special advantage in combination with building slabs and other units formed of molded material, to afford ready removal from the mold substantially free from danger of chipping and/or fracture. The accessibility of the metallic and/or other relatively more rigid elements of my reinforce serves as mechanical means for stripping the composite unit from the mold after the molding stage has ensued.

The principal object of my invention therefore, is an improved reinforced building slab of frangible material.

Another object of my invention is an improved combined reinforcing and groove containing element for building slabs.

Other objects and novel features of the construction and arrangement of parts comprising my improved slab will appear as the description of the invention progresses.

In the accompanying drawings,

Fig. 1 is a perspective view of an improved building slab embodying my invention.

Fig. 2 is an elevation of my improved reinforcing prior to having the building material incorporated therewith.

Fig. 3 is a section on the line 2—2 of Fig. 1.

Fig. 4 is a perspective view of a portion of another embodiment of my invention.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a vertical section on the line 6—6 of Fig. 4 and Fig. 7 is a plan view of Fig. 6.

Referring to the drawings and particularly to Figs. 1, 2 and 3, 10 designates a rectangular building slab of a relatively light frangible material, such for example, as the relatively light weight porous material, having high heat and sound insulating qualities, disclosed in U. S. Letters Patent No. 1,932,971, Hutteman and Czernin, assignors to Frederick O. Anderegg, granted October 31, 1933, entitled Method of making light weight blocks. As appears in the above stated U. S. patent, the production of slabs of the light weight porous material includes the treatment thereof for the removal of water and other aqueous content which is not chemically occluded in the calcium hydrosilicate comprising the light weight slabs.

As usually constructed, such slabs 10 are rectangular in form and of any desired various sizes, and of a thickness, the preferred thickness being about two inches. By reason of the character of the material the edges of the slabs are subject to chipping and fracture. Within the body of the slab 10 and extending about the peripheral edges thereof, and preferably embedded into the body of the material, I place a substantially rectangular framework 11, as shown in Fig. 2 in elevation, and in cross section Fig. 3.

As is noted, such rectangular framework 11 may be composed of the lateral members 12 and 13, each of which has formed therein, as an integral part thereof, a relatively deep groove 14. Such members 12 and 13 are preferably formed of light metal, such as metal of No. 20 gauge in thickness, and in constructing the frame as shown in Fig. 3 the corner portions of the members 12 and 13 are mitred, as indicated by the reference numeral 15. Such corner elements 15 are preferably welded together to form the frame. Because of the shape and position of the groove 14, the resulting frame possesses high rigidity.

It is noted that the exposed faces of the members 12 and 13 coincide with the peripheral edge of the slab 10 and that the overall width of the members 12 and 13 is substantially less than the

thickness of such building slab 10, so that the metal of which the members 12 and 13 are constructed, is not exposed to view in the completed wall or partition.

In associating the framework shown in Fig. 3 with the building slab 10, the rectangular frame is preferably placed in the mold in which the slab 10 is formed to embed the frame in the slab during the casting of the latter.

With material of the nature of the stated calcium hydrosilicate, it is essential that the moisture to be removed from the porous solid calcium hydrosilicate have free paths of flow to the major faces of the slab. Particularly, it is essential to avoid, in the structure of the stated rectangular frame, the formation of pockets or traps formed by non-permeable members between which are contained masses of the stated calcium hydrosilicate or analogous materials.

When utilizing a plurality of building slabs, such as the slab 10, in the building of a wall or partition, the grooves in the adjacent faces of the slabs 10 are brought into registry with each other, and a key or tongue may be fitted in such registering grooves 14 either with or without the use of a filling agent. In such manner a smooth faced wall or partition may be built of the plurality of slabs 10 so that such slabs 10, are securely held in position with respect to each other.

Referring now to Figs. 4, 5, 6, and 7, there is shown another embodiment of my invention in which the peripheral groove containing reinforcing such as is shown in Figs. 1, 2, and 3 are arranged on but two of the opposite side edges of the slab. Such two opposite side edges are preferably, though not necessarily, the vertical side edges of the slab while the horizontal ends have the reinforcement formed of a length of angle iron. In such form of my invention, the rectangular framework is formed into a unitary structure by welding or in any other suitable manner, but because of the character of the material employed the corners are not mitred as in Figs. 1, 2 and 3. I prefer to have the vertically arranged groove members 12 extend throughout the entire height of the slab 10. Therefore it is advantageous to provide a groove in the angle iron reinforcing 16 as clearly illustrated in Figs. 4 and 7 to permit the grooved portion of the members 12 to be properly positioned. In such form of my invention preferably the angle iron members 16 are of heavier construction than the vertical groove members 12, and in such form of my invention I find it desirable, under certain conditions, to place the material constituting the slab 10 under considerable compression. To this end, at various locations along the width of the slab 10 are arranged vertical perforations 17 through each of which may pass one or more rods 18, the angle iron reinforce 16 being drilled to allow passage of the ends of such rods 18. The ends of the respective rods 18 are threaded to receive nuts 19 or equivalent, and under such nuts 19 and in the trough formed by the angle iron reinforce 16 are placed angular faced washers 20. By properly tightening the nuts 19, the rods 18 and the material of the slab 10 are placed under any degree of compression desired.

As in the structure of Figs. 1, 2 and 3, embodiments of my invention shown in Figs. 4, 5, 6 and 7 have the exposed faces of the grooved reinforce members 12 disposed flush with the facial edges of the slab 10, while preferably the angle iron horizontal reinforce members 16 are at or slightly below the facial edges, as indicated in Fig. 5.

As appears from the aforesaid embodiments of my invention, the accessibility of the metallic and/or other relatively more rigid elements of my reinforce enable the positioning thereat of mechanical means for stripping the composite building unit from the mold, upon termination of the molding process.

While I have necessarily shown and described preferred embodiments of my invention somewhat in detail, it is to be understood that I may vary the size, shape and detail arrangement of parts constituting my improved construction without departing from the spirit of the invention.

I claim:

1. A prefabricated building unit comprising a slab of frangible material formed from ingredients including water and giving rise to a molded product, and a rigid framework embedded in the edge faces of the slab and extending peripherally around the slab, said framework comprising continuously grooved strip members having groove-defining extensions thereof embedded in the material of the slab, the strip proper being wholly flush with the respective edge faces of the slab and having its longitudinal edges spaced inwardly from the major faces of the slab to provide structural reinforcement for the said frangible slab without pocketing masses of the said material between elements of the said reinforcement, thus permitting free access of the water of the said material to the major surfaces of the slab.

2. A prefabricated building unit comprising a slab of frangible material, a rigid framework embedded in the edge faces of the slab and extending peripherally around the slab, said framework comprising oppositely related continuously grooved strip members having groove-defining extensions thereof embedded in the material of the slab, the strip proper being flush with its respective edge face of the slab and having its longitudinal edges spaced inwardly from the major faces of the slab to provide means whereby the building unit may be keyed at such edge face with other structures in a building construction, said framework comprising, further, oppositely related V-strip members having the vertex of the V embedded in the material of the slab to the limit of extension of its defining leg members, and reinforcing means extending through the body of the slab and secured within the depressed portion of said V-strip members.

3. A prefabricated building unit comprising a slab of frangible material, a rigid framework embedded in the edge faces of the slab and extending peripherally around the slab, said framework comprising oppositely related continuously grooved strip members having groove-defining extensions thereof embedded in the material of the slab, the strip proper being flush with its respective edge face of the slab and having its longitudinal edges spaced inwardly from the major faces of the slab to provide means whereby the building unit may be keyed at such lateral face with other structures in a building construction, said framework comprising, further, oppositely related V-strip members having the vertex of the V embedded in the material of the slab to the limit of extension of its defining leg members, and reinforcing means extending through the body of the slab and secured within the depressed portion of said V-strip members, said reinforcing means being adapted for pre-stressing of the unit.

ROBERT L. DAVISON.