Aug. 27, 1929. G. H. ELLIS 1,725,787

BUILDING CONSTRUCTION

Original Filed Aug. 19, 1925

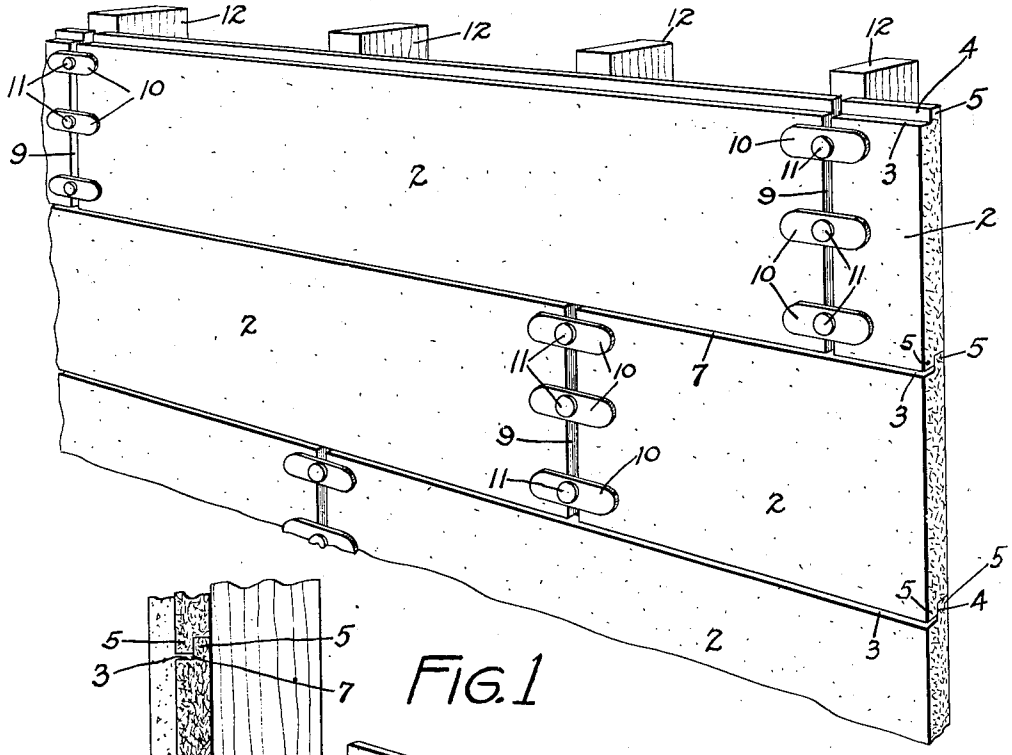


FIG. 1

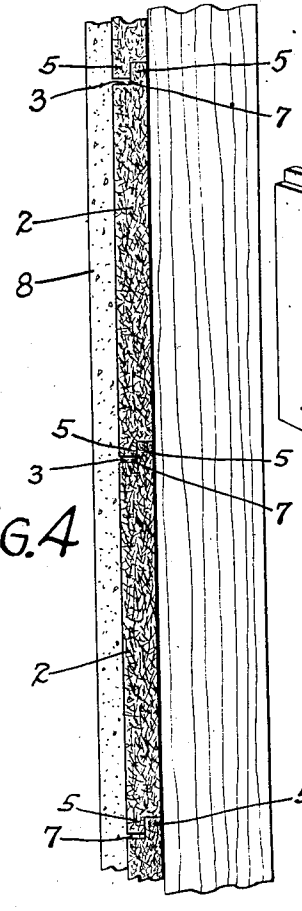


FIG. 4

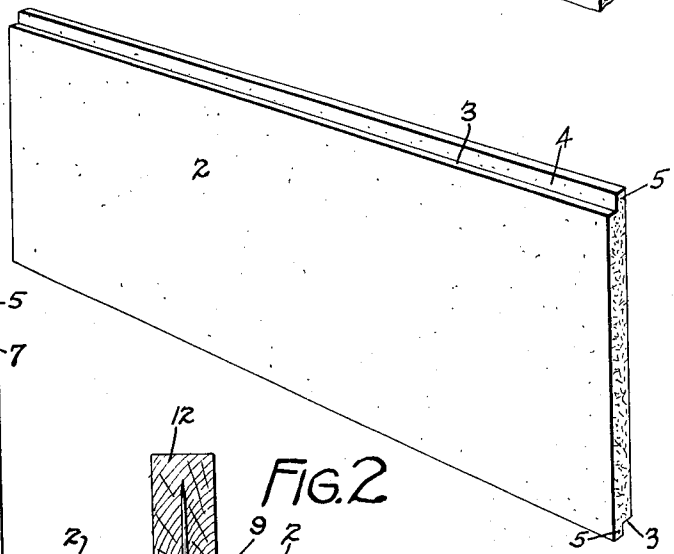


FIG. 2

FIG. 3

Inventor
GEORGE H. ELLIS
By Paul Paul & Moore
ATTORNEYS

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UNITED STATES PATENT OFFICE.

GEORGE H. ELLIS, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE INSULITE COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA.

BUILDING CONSTRUCTION.

Application filed August 19, 1925, Serial No. 51,171. Renewed January 30, 1928.

This invention relates to improvements in building construction and particularly to composition boards and walls constructed therefrom, said composition boards being applied either outside or inside of the studding or floor stringers, and receiving coatings of plaster, cement or stucco.

One object of the invention is to provide wall boards adapted to be used in the construction of either outer or inner walls, which will not warp or buckle when wet plaster cement or stucco is applied thereto, and in which cracking at the joints will not take place.

Another object of the invention is to provide a wall board adapted to be used in a manner to permit longitudinal expansion of the boards, without causing the same to bulge or warp.

In order to thoroughly understand the invention some explanation of the action of synthetic fibre or composition material in the presence of moisture, is necessary. It must be noted that in fibre composition boards more water is absorbed than by ordinary lumber. Moreover, under ordinary conditions of use there is unequal expansion of of those portions of the material respectively which receive and do not receive the plaster. Moreover, in the synthetic material the degree of expansion and contraction is greater. Because of this, some means must be provided for compensating for this expansion and contraction so that the plaster is not broken and so that the units do not buckle. This invention, relating as it does to improvements in building units constructed from synthetic material, provides means compensatory for this unusual expansion and contraction both at the front and at the rear portions of the material, when secured as in a building, first by providing for greater thickness or depth of plaster at the joint, on and adjacent the plaster-receiving side to strengthen the plaster at this point, and second to provide for expansion of the board to prevent buckling.

The means provided for increasing the depth of the plaster consists in forming adjacent portions of the abutting boards in a manner to provide a depression or groove at the joint. The means for taking care of expansion includes an area reduction of the abutting surfaces of contiguous units, with the area of at least one of the abutting surfaces such that slight compensatory fracture can occur without permitting leakage at the joint, and also includes the overlapping portions of contiguous units, to allow a linear movement of both units, all units, without such separation as will permit insulation leakage.

The invention consists generally in the constructions and combinations hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification:

Figure 1 is a perspective view of a portion of a wall constructed of my newly invented wall boards;

Figure 2 is a perspective of a section of one of the boards;

Figure 3 is a detailed section illustrating one of the expansive joint constructions; and

Figure 4 is a vertical section through a portion of a wall embodying my invention.

In the drawing 2 represents a composition board, usually formed of wood or vegetable fibre with a suitable binder, and of any desired length, width and thickness. These boards are largely used for wall and ceiling coverings. They are usually nailed directly to the studding or to the under-side of the floor stringers, and, where used for the inner wall of a building or room, the plaster is applied directly thereto. This plaster must be put on in a wet or moist condition and invariably causes the composition boards to expand. As these boards are usually applied to the walls, the edges and ends of the separate boards are brought close together and when the boards expand they bulge, tearing away from the nails and destroying the surface of the wall. A similar result occurs when the boards are used for an outer wall and cement or stucco is applied thereto. To obviate this difficulty, I provide each board at its edges with a shoulder or rabbet,

having a wall 3 at right angles to the surface of the board and a wall 4 parallel to such surface. This arrangement produces a tongue 5, the outer wall of which is preferably flush with one surface of the board while the wall 4 of the tongue is generally located at about the center of the thickness of the board. I make the wall 4 and the tongue 5 at one edge of the board longer; that is, extending a greater distance from the edge of the board than does the corresponding tongue at the other edge, and other side, of the board as clearly indicated in Figure 1.

The result is that when the boards are put in place, at every joint between the boards, a long and a short tongue will come together, thereby leaving a groove 7 between each wall 3, and the opposing wall of the tongue 5, at the edges of the boards forming the surfaces to which the plaster is applied. When a plaster coat 8 (Figure 4) is applied to the surfaces of the boards 2, as indicated in Figure 4, the wet plaster will cause an expansion of the portion of the board with which it is in contact. This will cause the wall 3 and opposing wall of the tongue 5 to move towards each other. As these walls are separated by the groove or recess 7 (see Figures 1 and 4) they may move, thus permitting a considerable expansion of the surface of the board, without any tendency to warp or buckle.

Similarly in nailing or otherwise securing the boards to the studding or stringers of the building frame, I leave a space 9 between the ends of every two boards and I secure the ends of the boards by placing short plates 10 over the joints and securing them in position by nails 11, passing through said plates, and through the recesses 9, and into the studding 12. (See Figure 3.) With this arrangement the ends of the boards are capable of moving towards each other as the boards expand by reason of the application of wet plaster or cement thereto.

By inspection of Figure 4, it will be seen that the area of the abutting surfaces 16 and 17 is comparatively small. This reduction of surface contact permits these portions to be more easily compressed, so that the board will not buckle. It will be noted that even though slight fracture of the slabs at these points may take place, the air tight joint will be maintained due to the overlapped arrangement of the abutting portions.

I am thus enabled to provide a wall surface to which wet plaster or mortar may be applied without causing any bulging or buckling of the composition boards of which the surface of the wall is constructed.

The notch or recess 7 at the joint line not only reduces the thickness of the material in the neighborhood of the joints, but provides for localized linear expansion of the outer portion of the slab, and also provides for an extra thickness of plaster at the joint. Moreover, by decreasing the areas of the abutting surfaces at the inner portion of the units or slabs, compression, and even sometimes slight fracture, can take place before the board will buckle and, therefore, will prevent buckling. The wet plaster in contact with the front of the board expands it to a greater degree than the back portion. It is evident that if the board expands in the wet area it will dry and contract in this area as the plaster dries. Inasmuch as the outer and inner portions of each slab require to expand and contract in different and varying degrees, the present invention also provides a construction whereby this can be accomplished without severe fracture of the material or without any substantial buckling thereof. This present invention, therefore, provides means for taking care of the uneven expansion respectively of the front and back portions of the board.

I do not limit myself to the details of construction nor to any particular dimensions of the composition boards, or of the tongues formed on the edges thereof.

I claim as my invention:

1. As a new article of manufacture, a composition fibre board having opposite edges corner notched to provide two recesses respectively facing in opposite directions at opposite face sides of the board, the depth of one of the recesses in direction transversely of the board being greater than the other.

2. As a new article of manufacture a composition fibre board having opposite edges corner notched in opposite parallel edges to provide lap projections, the lap projection at one longitudinal edge being of greater depth transversely of the board than that of the other longitudinal edge respective projections being formed by corner notching in opposite directions inwardly from opposite face sides of the board.

3. As a new article of manufacture, a composition fibre board having opposite longitudinal edges corner notched to provide two recesses respectively facing in opposite directions at opposite face sides of the board, the depth of one of the recesses in direction transversely of the board being greater than the other.

4. As a new article of manufacture, a composition fibre board having opposite longitudinal edges corner notched in opposite parallel edges to provide lap projections, the lap projection at one longitudinal edge being of greater depth transversely of the board than that of the other longitudinal edge respective projections being formed by corner notching in opposite directions inwardly from opposite face sides of the board.

5. In combination with spaced studding,

boards engaging the studding, with ends of consecutive boards spaced apart, at the studding, plates bridging the joints thus formed, and fastening devices passing through the plates, between the ends and into the studding, to obtain clamping action of the plates whereby the ends of the boards are separated to permit plaster to enter and form a bond with the fastening devices and recesses, the spacing further allowing an expansion and contraction of the board lengthwise without buckling.

6. A support, a plurality of slabs of composition fibre arranged on the support, and having marginal portions reduced in thickness and overlapped to form an expansion joint, a portion of the slabs being cut away to provide a depression extending toward and across and lengthwise of the joint, so that when plaster is applied it will be thicker in the region of the joint, crosswise of and throughout its longitudinal extent.

7. In combination with a support slabs of fibre material secured to the support with each slab marginally overlapping the adjacent slab, the overlapping portions of said slabs being reduced in thickness to reduce the area of end-abutment and weaken said slabs in the overlapping region, said slabs being formed to provide a depression lying in opposition to the overlapping area, so that when plaster is applied it will be thicker in the region of the joint.

8. A support, a plurality of slabs composed of composition fibre arranged on the support and having longitudinal marginal portions overlapped and end-abutted, the overlapping portions being reduced in thickness to reduce the area of end-abutment and weaken them, and the slabs being cut to provide a depression in the overlapped region for the reception of plaster to increase the thickness of a plaster coat applied to the surface of the slab in the region of the joint.

9. In combination with a support slabs of fibre material secured to the support with each slab marginally overlapping the adjacent slab, the overlapping portion of said slabs being reduced in thickness to reduce the area of end-abutment and weaken said slabs in the overlapping region, said slabs being formed to provide a depression lying in opposition to and extending lengthwise of the overlapping area, so that when plaster is applied it will be thicker in the region of the joint.

10. A support, a plurality of slabs composed of composition fibre arranged on the support and having longitudinal marginal portions overlapped and end-abutted, the overlapping portions being reduced in thickness to reduce the area of end-abutment and weaken them, and the slabs being cut to provide a depression lying across and extending lengthwise in the overlapped region, for the reception of plaster to increase the thickness of a plaster coat applied to the surface of the slab in the region of the joint.

11. A plaster base comprising a series of panels adapted to be arranged adjacent to each other in the same plane and having plaster holding outer surfaces for holding a sheet of plaster applied to the base, each of said panels being provided at opposite edges with reverse flanges adapted to overlap and complement similar flanges of adjoining panels, said complementing flanges being of different widths whereby channels will remain for the forming of keys in the sheet of plaster applied to the base.

12. In a wall, a plurality of adjoining rectangular moisture absorbable plaster boards having plaster holding outer surfaces, a coat of plaster adhering to the faces, overlapping flanges extending from the edges of said boards, the opposite flanges of each board being of different widths, so as to form plaster key forming recesses.

13. In a structure of the character described, a wall, plaster covering the wall, said wall having a plaster holding outer surface and horizontal and vertical channels in its outer face, whereby keys of said plaster will be formed in said channels, said wall comprising tiers of panels placed end to end in staggered relations, with respect to the panels above and below, and the adjoining edges of all of said panels being provided with overlapping flanges, one each of which flanges is wider than that which it overlaps.

14. A plaster base comprising a series of panels adapted to be arranged adjacent to each other in the same plane and having plaster holding outer surfaces for holding a sheet of plaster applied to the base, each of said panels being provided at two opposite edges with reversely arranged reduced edge portions adapted to complement similar edge portions of other panels adjoining said edges, said complementing edge portions being of different widths whereby channels will remain for the forming of reenforcing ridges in the sheet of plaster applied to the base.

15. A plaster base, for a wall, comprising a plurality of panels arranged in tiers, with the panels of each tier in staggered relations with respect to the panels of the adjacent tiers, said plaster base having a plaster holding outer surface and having horizontal and vertical channels in its outer face whereby reinforcing ribs will be formed in the plaster applied to the base, the adjoining horizontal edges of the panels being provided with overlapping reduced edge portions, one each of which edge portions is narrower than that which it overlaps.

16. A plaster base member having a plas-

ter holding outer surface and having opposite edges with reversely arranged reduced edge portions adapted to complement similar edge portions of other panels adjoining said edges, said complementing edge portions, having cross sections the area of one greater than the other, whereby the complementing edge portions when in juxtaposition form channels for the reception of plaster to thereby form reinforcing ridges in a sheet of plaster applied to the base.

In witness whereof I have hereunto set my hand this 13th day of August, 1925.

GEORGE H. ELLIS.