Feb. 22, 1944. A. V. PRETOT 2,342,490

DOOR OR LIKE UNIT

Filed July 9, 1940

Fig. 1.

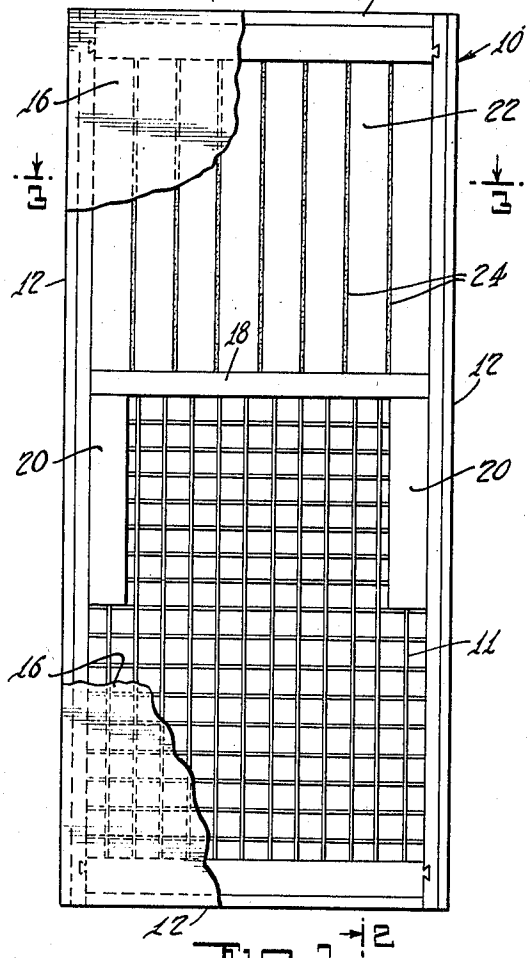


Fig. 2.

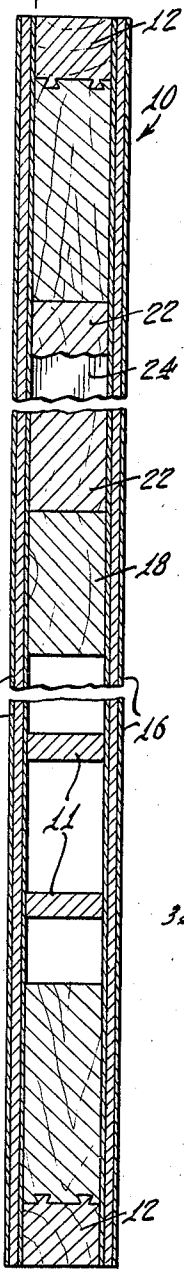


Fig. 5.

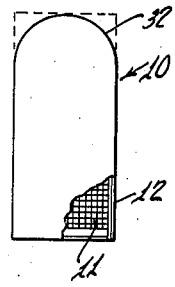


Fig. 6.

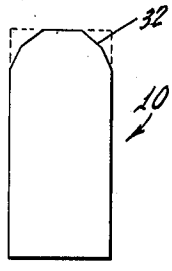


Fig. 7.

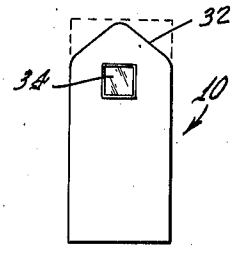


Fig. 3.

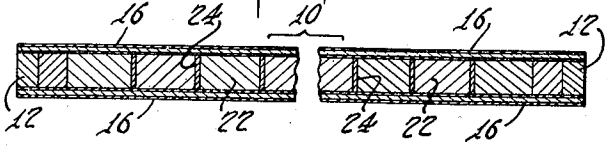
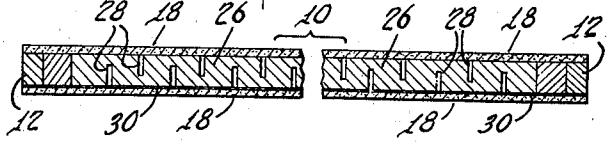


Fig. 4.



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DOOR OR LIKE UNIT

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Application July 9, 1940, Serial No. 344,495

17 Claims. (Cl. 20—35)

The instant invention relates to doors or like structural units, and particularly to improvements in doors or units of the type disclosed in patent to Kellogg No. 2,173,808, issued September 19, 1939.

Units of this type have achieved outstanding commercial success, particularly in the field of flush doors, such units comprising a core formed of a grid of intercrossed strips, preferably of fibre board, the grid supporting facing panels composed of a material such as plywood, asbestos-cement, or the like. This construction eliminates expansion and contraction troubles, is light in weight, and exhibits numerous other advantages over flush doors or units with other types of cores. However, due to the grid core, such doors or units, when made in stock sizes, have not been readily susceptible to modification to accord with the individual designs usually employed in exterior doors, particularly of medium and low-cost houses.

The principal object of the instant invention is the provision of a unit of the type referred to, which may be handled in stock sizes and altered on the job to meet individual requirements.

Another object of the invention is the provision of a unit or door member including a grid core for the major portion thereof and a solid core for the remaining portion, the solid core, however, being constructed and designed to preserve the stability of the unit against expansion and contraction when the unit is subjected to air of varying relative humidities.

A further object of the invention is the provision of a unit or flush door, employing a grid core in its major portion and a wooden core including expansion joints in a portion of the door which is adapted to be modified as to shape or to receive window openings, and the like.

My invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawing, in which:

Fig. 1 is an elevational view, with parts broken away, of a unit embodying the invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 3, depicting a modification of the invention; and

Figs. 5, 6, and 7 are elevational views depicting manners in which the unit of the instant invention is adapted to be modified in design.

Referring now to the drawing, the invention is shown as embodied in a flush door 10 inasmuch as it finds its greatest utility in such field. However, it will be understood that the invention is equally applicable to other types of doors and to wall panels or units, generally, where similar problems are involved.

The door 10 comprises composite frame members 12, dove-tailed and glued together in accordance with conventional practice. The frame members, suitably of wood, are preferably substantially wider than is necessary for their supporting function in order that the door may be somewhat reduced in dimensions to meet specific requirements without reducing the effectiveness of the frame. Throughout the major portion of the door, particularly in that portion in which windows are not to be placed and the shape of the door is not to be altered to such an extent as to cut into the core, a grid core 14 is employed, comprising a plurality of intercrossed strips preferably of fibrous insulating board. The strips may be notched and locked together at the cross-over positions between the strips of the two series, or the core may be preformed, for example, by punching out areas from a thick sheet of the fibre board material, the remaining portions constituting the grid. Also, the grid may be formed by felting selected fibres into a wet sheet and then pressing the sheet between plates to form a waffle-like configuration on both faces with a thin intermediate web. The strips defining the grid are preferably rather broad, say, of a thickness of ⅜" or more, to provide a broad area of contact with the facing elements 16.

The area embodying the core 14 is preferably bounded at one side by a frame member 18. Blocks 20 are supported from the frame members to receive locks or other hardware. The area which is to receive window openings or to be altered as to shape and which is bounded by frame member 18 and outer frame member 12, is formed, in accordance with the invention, of a substantially solid slab, and consists for the most part of strips 22 of a readily workable material, such as wood. In order to maintain its shape under the influence of expansion and contraction forces, such as humidity changes, the strips 22 are separated by expansion joints 24, preferably comprising strips of fibre board as previously referred to, or other like compressible self-sustaining material. The wooden strips 22 and the expansion joint strips 24 are preferably

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joined together by a suitable adhesive, a sheet of the desired size being made up by laminating the strips prior to assembly with the frame members.

In lieu of the alternating compressible and wooden strips illustrated in Fig. 1, wooden core **26** (see Fig. 4) may be employed. In this case, the expansion joints constitute saw kerfs or grooves **28** extending inwardly from opposite faces of the core and preferably somewhat past the median line thereof. As will be readily understood, when a core of this type is subjected to conditions which tend to cause swelling, the restraining forces applied to the core by the frame members and facing elements **16** will be sufficient to confine such swelling within the core, itself, the saw kerfs or grooves **28** being partially or completely closed by expansion of the portions of the core therebetween, but the outer dimensions of the slab remaining unchanged.

Secured over the core and frame are the facing elements **16**, which are formed of a material which is stable as to shape when subjected to varying humidity conditions. As disclosed in Figs. 1, 2, and 3, it is preferred to employ a composite of a plurality of plies of wood veneer, the grain in one ply being arranged crosswise with respect to the grain in adjacent plies, the plies being secured together by a conventional adhesive. However, as indicated in Fig. 4, incombustible sheets of a hardened, compressed asbestos-cement composition, or the like, are equally suitable for the facing elements. The facing elements are preferably secured directly to the core and frame by an adhesive, or, if enhanced fire-resistance is desired, a flame-resistant barrier, such as an asbestos sheet **30** (see Fig. 4), may be positioned between the facing panel **16** and the core, the barrier being adhesively secured to both.

Through the instant invention, a door is obtained which exhibits the functions and advantages of that disclosed in the Kellogg Patent No. 2,173,808, namely, it is lightweight, immune from warpage and contraction and expansion troubles, and has substantial sound-insulating and heat-insulating properties. In addition, the door as disclosed in Figs. 5, 6, and 7, for example, may readily be altered to accord with any suitable architectural style. As shown at **32** in these figures, the upper portion of the door may be cut to semi-circular or other configuration, and a window opening as indicated at **34** (see Fig. 7) may be provided. Such alterations, however, in no way affect the strength or other properties of the door, inasmuch as all of the alterations fall within the solid slab portion. After the door is assembled, the frame members surrounding the slab core may be cut through to secure the desired configurations without weakening of the structure, due to the adhesive connection of the facing panels to the slab core throughout their contacting areas. Portions of the expansion joints which are exposed, particularly when a core as shown in Fig. 4 is employed, may be sealed off in any suitable manner. Thus, the invention provides a door with the advantages of the construction shown in the Kellogg Patent No. 2,173,808, which, however, exhibits the additional advantage that it may be stocked in standard sizes and altered on the job to the extent necessary to meet particular conditions of use.

As previously stated, although the description has been specifically directed to a door construction, the invention is equally applicable to other units or panels. Having thus described my invention in rather full detail, it will be understood that these details need not be strictly adhered to, but that various changes and modifications will suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What I claim is:

1. A unit comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area a slab including a plurality of expansion means, and facing panels secured at opposite faces of said core.

2. A unit comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area a solid slab including alternating wooden strips and strips of a compressible material, and facing panels secured at opposite faces of said core.

3. A door comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area thereof a solid slab including alternating, relatively wide, wooden strips and relatively narrow strips of a yieldable fibre board, and facing panels secured at opposite faces of said core.

4. A door comprising a frame, a core within the frame, said core in one area thereof including a grid formed of intercrossed strips of a yieldable fire board presenting relatively broad panel supporting faces, and in another area thereof a slab including a plurality of expansion means, and facing panels adhesively secured to opposite faces of said core, said facing panels being formed of a material substantially stable as to shape upon exposure to air of varying relative humidity.

5. A door comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid formed of intercrossed strips of a yieldable fibre board presenting relatively broad panel supporting faces, and in another area thereof a solid slab including alternating wooden strips and strips of a compressible material, and facing panels adhesively secured to opposite faces of said core, said facing panels being formed of a material substantially stable as to shape upon exposure to air of varying relative humidity.

6. A door comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid formed of intercrossed strips of a yieldable fibre board presenting relatively broad panel supporting faces, and in another area thereof a solid slab including alternating, relatively wide, wooden strips and relatively narrow strips of a yieldable fibre board, and facing panels adhesively secured to said core, said facing panels being formed of a material substantially stable as to shape upon exposure to air of varying relative humidity.

7. A door comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area thereof a solid slab including saw kerfs extending inwardly from the opposite faces thereof in alternating arrangement, and facing panels secured at opposite faces of said core.

8. A door comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid formed of intercrossed strips of a yieldable fibre board presenting relatively

broad panel supporting faces, and in another area thereof a wooden slab having scores extending inwardly from opposite faces thereof in alternating arrangement, and facing panels secured to opposite faces of said core, said facing panels being formed of a material substantially stable as to shape upon exposure to air of varying relative humidity.

9. A lightweight building unit comprising a frame, a core disposed within the frame, the core in one area thereof comprising a grid formed of intercrossed strips of a yieldable fibre board, and in another area thereof a slab including a plurality of expansion means, and facing panels secured to opposite faces of said core.

10. A building unit comprising a frame composed of relatively wide members to permit reduction in the width thereof, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area a slab including a plurality of expansion joints, and facing panels secured at opposite faces of said core.

11. A building unit comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid formed of intercrossed strips of a yieldable fibre board, and in another area thereof a slab including a plurality of expansion joints, a layer of a flame-resistant material of the type of asbestos paper disposed over at least one face of the core and adhesively secured thereto, and a facing sheet, formed of a material substantially stable as to shape upon exposure to air of varying relative humidity, adhesively secured to said flame-resistant material.

12. A building unit comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area a slab including a plurality of expansion joints, and facing panels secured at opposite faces of said core, said facing panels including a composite of a plurality of plies of wood.

13. A building unit comprising a frame, a core disposed within said frame, said core in one area thereof comprising a grid including intercrossed strips, and in another area a slab including a plurality of expansion joints, and facing panels secured at opposite faces of said core, at least one of said facing panels including a compressed and hardened composition containing an intimate mixture of asbestos fibres and Portland cement.

14. A door comprising a frame, a core within said frame, said core in one area thereof comprising a solid slab including alternating, relatively wide wooden strips and relatively narrow strips of a yieldable fibre board, and facing panels adhesively secured to said core.

15. A door comprising a frame, a core within said frame, said core in one area thereof being of a yieldable lightweight construction and in another area thereof comprising a solid slab including a plurality of expansion joints, and facing panels secured to opposite sides of said core.

16. A door comprising a frame, a core within said frame, said core in one area thereof being of a yieldable lightweight construction and in another area thereof comprising a solid slab including saw kerfs extending inwardly from the opposite faces thereof in alternating arrangement, and facing panels secured at opposite faces of said core.

17. A door comprising a frame, a core within said frame, said core in one area thereof being of a yieldable lightweight construction and in another area thereof comprising a solid slab including alternating, relatively wide wooden strips and relatively narrow strips of a yieldable fibre board, and facing panels adhesively secured at opposite faces of said core, said facing panels being formed of a material substantially stable as to shape upon exposure to air of varying relative humidity.

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