

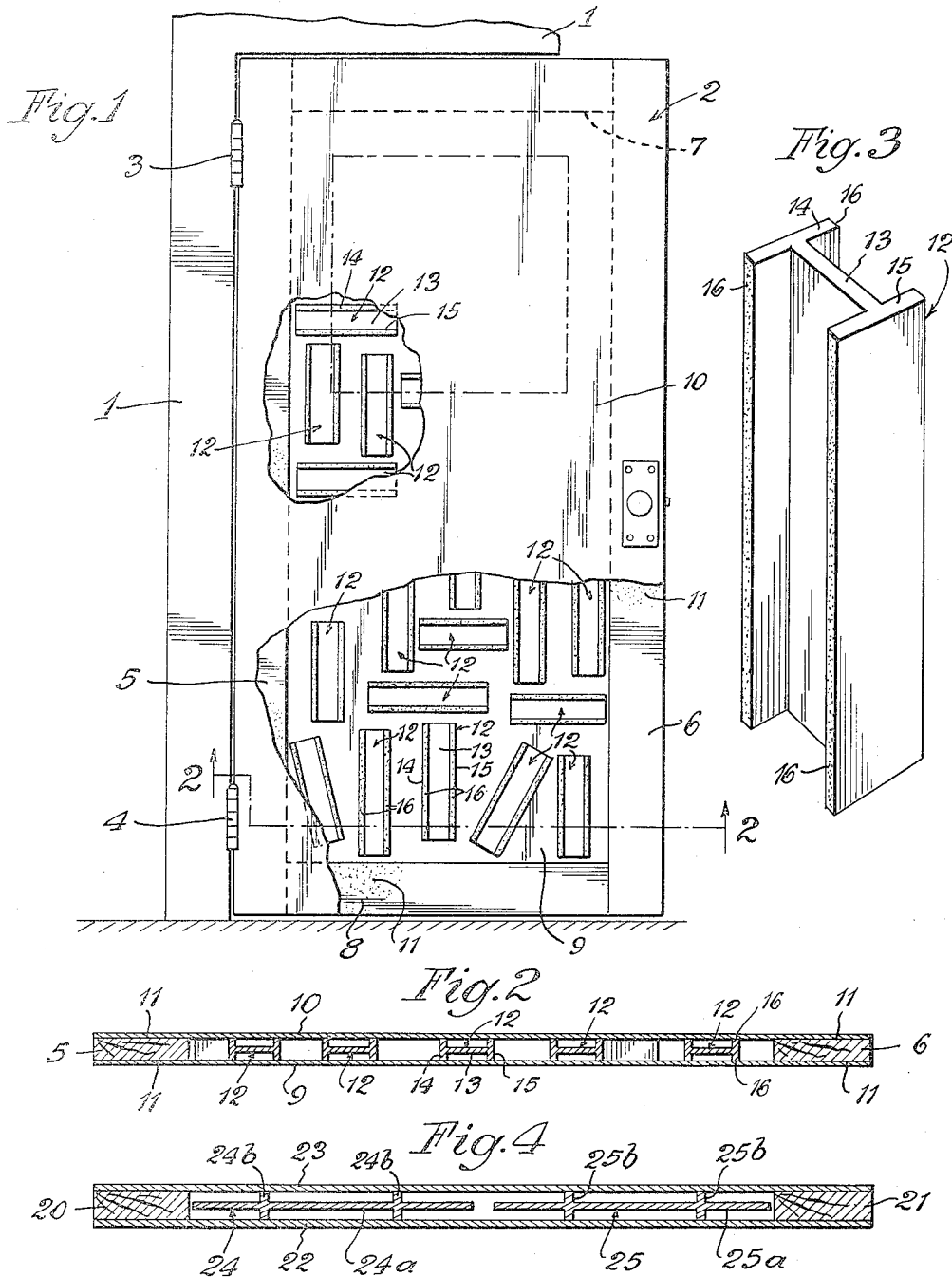
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DOOR

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1 Claim. (Cl. 20—35)

This invention is directed to a hollow door construction and has for one object to provide a hollow door which will have a comparatively light weight, while having sufficient strength during use.

Another object of the invention is to fabricate a door construction: utilizing face veneers while providing the construction with adequate means for preventing warping or sagging of the construction.

Another object of the invention is to fabricate a hollow door construction in such manner that window lights or similar openings may be cut through the door panel with comparative ease and without materially weakening the construction, while at the same time providing adequate means for mounting the window light or trim therefor in the door.

Other objects will appear from time to time in the course of the specification and claim.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a front elevation with parts broken away of the door construction;

Figure 2 is a section along the line 2—2 of Figure 1; Figure 3 is a detailed view of one of the elements used in the construction shown in Figures 1 and 2;

Figure 4 is a section similar to Figure 2 showing a modification of the present invention.

Like parts are indicated by like characters throughout the specification and drawings.

1 designates a door casing and jamb of the conventional type. Shown generally at 2 is the improved door construction of this invention, being hingedly mounted by means of hinges 3 and 4.

The improved construction is formed by making an outer boundary or framework which, in the present instance, is made up by employing generally spaced, parallel and relatively heavy vertical frame members 5 and 6 and relatively heavy horizontal frame members 7 and 8 extending between and joining the vertical frame members 5 and 6 at the upper and lower ends thereof. These frame members may be from one to two or more or less inches in thickness, in the order of one to five inches in width, and of any desired length. I wish it to be understood that these dimensions are in no way critical and are given merely by way of example. The frame members may be made up of any suitable wood construction, preferably being one that has a minimum tendency to warp or sag. As will be seen in Figure 1, one of the vertical frame members 5 may receive the hinges 3 and 4 for hingedly attaching the door to the door jamb 1.

A continuous sheet of face material of a size corresponding to the area defined by the frame members 5, 6, 7 and 8 is secured to each of the opposed sides of the frame members. Referring to Figure 2, for example, the face members 9 and 10 are adhesively secured or cemented to the opposed faces of the frame members by means of any suitable wood cement 11. These face members may be formed of any suitable wood veneer or other material.

Disposed between the face members 9 and 10 are a plurality of reinforcing elements 12. Each of these elements 12 is evolved by taking relatively inexpensive pieces of wood, which may be a cheap grade of waste wood and cutting recesses in the wood so as to define I-beam sections.

Figure 3 illustrates a typical element. Each of these elements includes a center section 13 and opposed flange portions 14 and 15. As employed in the door construction, the elements 12 may be of random lengths, that is—no particular length of these elements is critical. I prefer to employ elements which are in the order of six to eighteen inches in length. The width of the I-beam may vary depending upon the particular thickness of door desired. The elements 12 may be disposed in the door in a more or less random fashion. That is, some are generally parallel to the vertical frames 5 and 6, some are generally parallel to the horizontal frames 7 and 8, and others are inclined to each of these members. No particular disposition of the elements with relation to one another is critical. They all may, if desired, extend horizontally or vertically. When making up the construction, each of the elements 12 have the edge portions 16 of their flanges adhesively secured to the face members 9 and 10, as will be seen best in Figure 2. It is important that the elements do not abut against one another although they are spaced closely adjacent to one another. When formed in this manner each of the elements permits expansion and contraction of the face members and frame members which may be due to temperature and moisture changes. The elements 12 hold the face members 9 and 10 in accurate parallel relationship while at the same time the elements 12 permit different portions of the face veneer or frame members to expand or contract without setting up dangerous stresses throughout the entire door.

An advantageous feature of the present invention resides in the fact that if a window light or similar opening, such as indicated in dotted lines in Figure 1, is desired to be cut in the door construction, portions of the elements 12 within the door are always in sufficient proximity to the window light to enable a panel of glass or the like, or the trim, to be secured to the elements 12. For example, if the cut is made through the intermediate portion 13 of the I-beam, the trim may be secured to this intermediate portion. If the cut proceeds along a line between adjacent I-beams 12, the trim may be conveniently secured to the flange of the I-beam. If a cut is made along a diagonal through one of the I-beams, the trim may still be secured to the flange or intermediate portion of the I-beam, as the case may be.

In Figure 4 a different embodiment is illustrated. The door is made up of vertical frame members 20 and 21, similar to the vertical frame members 5 and 6 of Figure 1. Continuous sheets of face veneer 22 and 23, similar to the sheets 9 and 10 of Figures 1 and 2 are employed on opposed faces of the door and are adhesively secured to the vertical frame members 20 and 21. In this form of the invention, however, core members or reinforcing members of different construction are employed. As will be seen in Figure 4, 24 illustrates a first reinforcing beam or member and 25 a second reinforcing beam or member. These members have a length such as to extend throughout the length of the door. Each of the members 24 and 25 has an intermediate relatively thin section 24a and 25a respectively, and projecting rib or flange portions 24b and 25b, respectively, that are in abutting contact with the veneer faces 22 and 23 throughout their length and are adhesively secured thereto. A portion of the member 24 extends to a point adjacent the vertical frame member 20 and a portion of the member 25 extends to a point

adjacent the vertical frame member 21. Portions of 24 and 25 preferably extend to a point closely adjacent one another but out of contact with one another.

The members 24 and 25 may be formed by cutting recesses in generally elongated blocks of waste wood to form the configuration indicated in Figure 4. With a door construction formed in this manner, the door is extremely lightweight while possessing adequate strength. The projecting portions 24b and 25b serve as adequate reinforcement for the face veneers 22 and 23. If a window light or similar opening is to be cut in the door, portions of 24 and 25 will always be at the edge of the opening so as to enable the fastening of trim or like material utilized in fabricating the window light thereto.

Assuming for example that the face material of the door has its grain running vertically, under many circumstances it is better to have the filler pieces 12 or 25 extend horizontally as that tends to give a stronger door, smoother with less wavy surface. If the face material had its grain running horizontally, then it might well be desirable to place the filler blocks vertically. In many instances, however, the location of the blocks may be at random depending largely on the size and shape of the scrap material which is used as the filler.

For convenience, I have illustrated this invention as applied to a hollow door. It will be obvious, of course, that the same face material frame with filler blocks might be used for panels or partitions, table tops or for any other purpose where it is desirable to provide a generally flat, hollow, wood member with plane surfaces.

Where I have referred to the grain, of the facing member, it will be understood that I refer to the grain of the outside ply of the facing member in the event that the facing member is of plywood.

I have referred both to I-beam sections and beam sections. In a very real sense the sections of Figure 2 show I-beams and the sections of Figure 4 also show I-beams with projecting webs. The particular arrangement of the webs on the beam sections can depend very well on the particular size and shape of the scrap lumber used for fillers.

The important thing in every case is that the door is lighter than it would be if the filler blocks extend throughout their entire area from one facing to the other.

Whereas I have shown and described an operative device, I wish it to be understood that this showing is to be taken in an illustrative or diagrammatic sense only. There are many modifications of the invention falling within the scope of the invention which will be apparent to those skilled in the art. The scope of the invention should be limited only by the scope of the hereinafter appended claim.

I claim:

A construction for hollow doors and the like comprising two opposed parallel facing members, frame members defining with the facing members a hollow chamber whose thickness is substantially less than its other dimensions, a plurality of filler members contained within the chamber generally out of contact with the frame members, each spacing member being in contact with both facing members, each spacing member comprising an I-beam cross section of greater length than thickness or width, the opposed flanges of the I-beam cross section being permanently secured to the opposed inner faces of the facing members, each I-beam reinforcing member being out of contact with adjacent members, the I-beam reinforcing members being disposed some of them parallel with and some of them inclined to the inner faces of the frame members, the spacing between the reinforcing members being irregular whereby each reinforcing member defines between the inner faces of the opposed facing members positive parallel spaced lines of supporting contact between the opposed frame members.

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