April 2, 1963 D. MacDONALD 3,083,745

METHOD OF MANUFACTURING PANELLED DOORS

Filed Nov. 7, 1960 2 Sheets-Sheet 1

FIG. 1

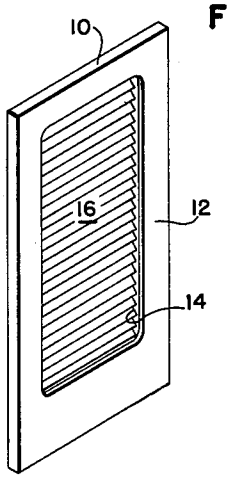


FIG. 7

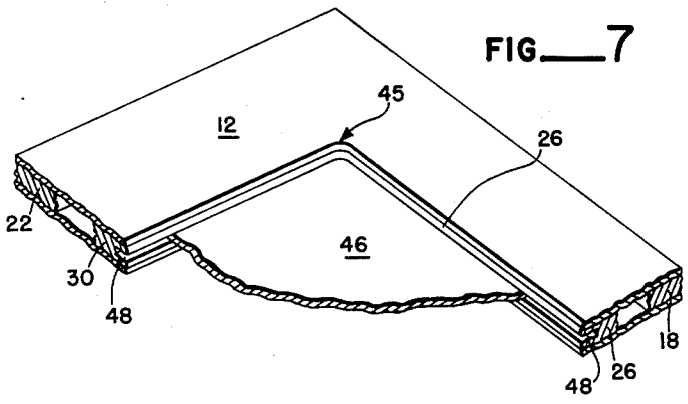
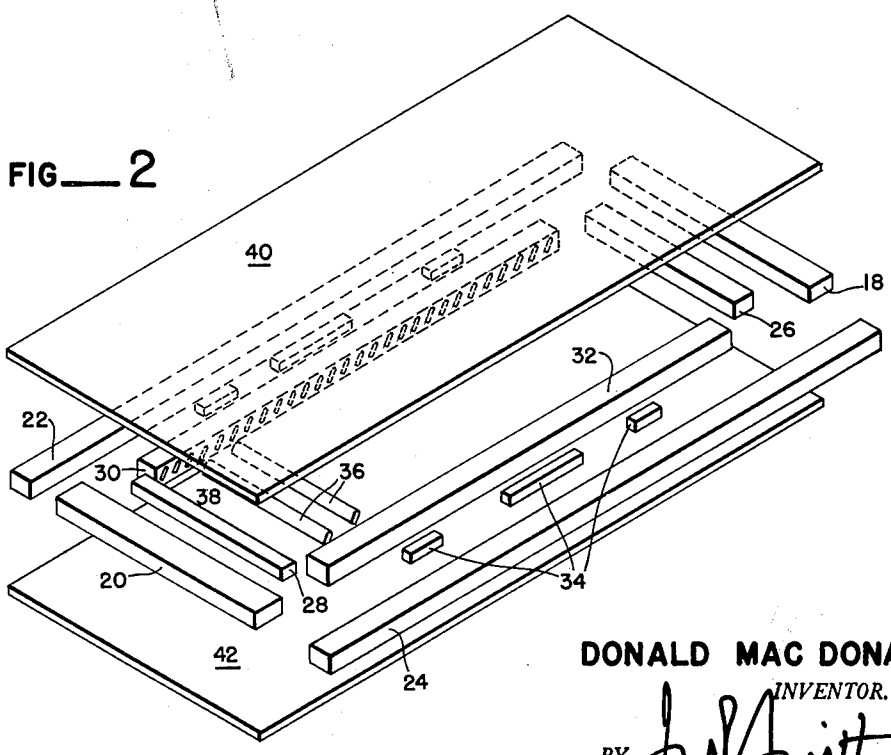


FIG. 2



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April 2, 1963 D. MacDONALD 3,083,745

METHOD OF MANUFACTURING PANELLED DOORS

Filed Nov. 7, 1960 2 Sheets-Sheet 2

FIG. 3

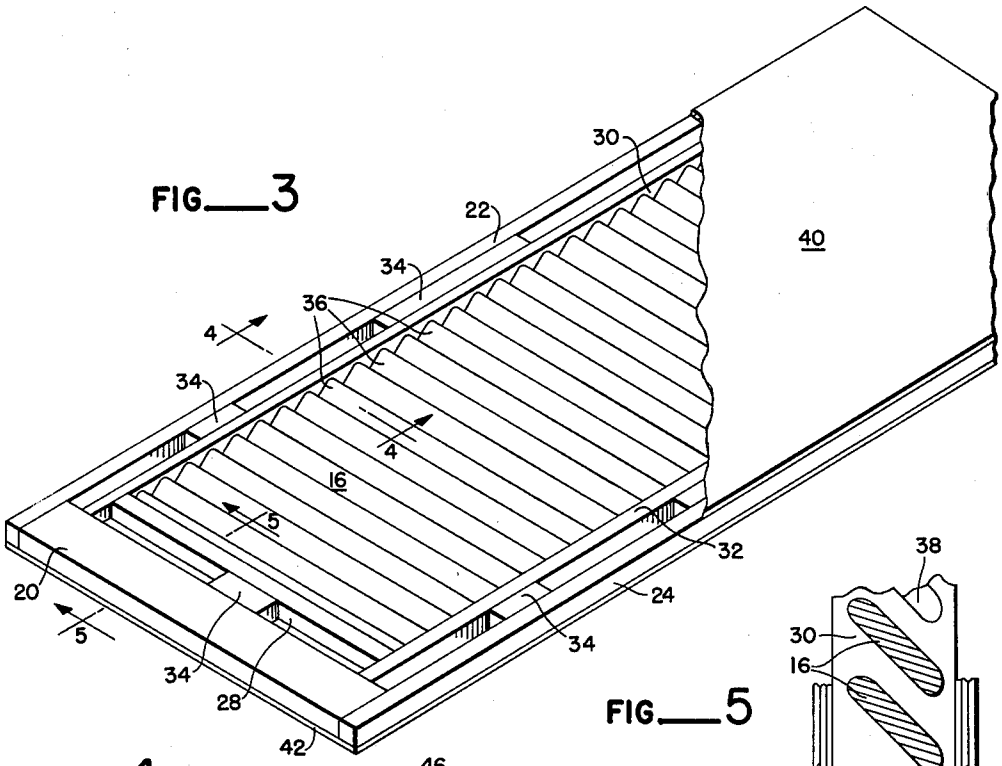


FIG. 4

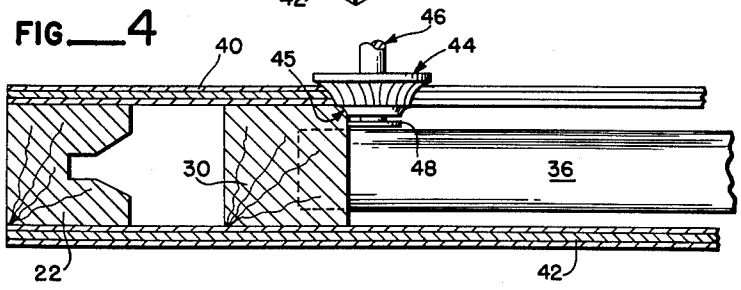


FIG. 5

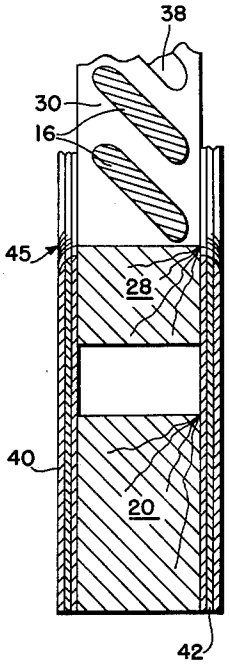
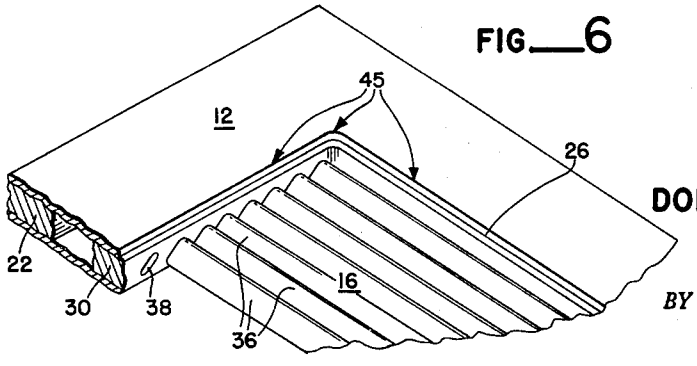


FIG. 6



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METHOD OF MANUFACTURING PANELLED DOORS

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1 Claim. (Cl. 144—316)

This invention relates to a method of manufacturing panelled doors and the product thereof and, more particularly, is concerned with the production of flush-face doors having decorative or functional panels inset therein.

Among the important objects of this invention have been the provision of a door manufacturing method which is adapted to high speed, low-cost production; which utilizes materials in a highly economical manner; and which requires relatively unskilled labor yet produces a panelled door product heretofore requiring highly skilled artisans and numerous carefully manufactured components.

Those and other objects will become more apparent during the course of the following specification taken with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a door according to this invention;

FIGURE 2 is an exploded perspective view of the components of a door;

FIGURE 3 is an enlarged perspective view of an assembled door, portions being broken away and omitted for convenience of illustration;

FIGURE 4 is a fragmentary sectional view taken on line 4—4 of FIGURE 3;

FIGURE 5 is a fragmentary sectional view taken on line 5—5 of FIGURE 3;

FIGURE 6 is a fragmentary perspective view of an upper corner of a louvered door; and

FIGURE 7 is a fragmentary perspective view of an upper corner of a plain panelled door.

The door of FIGURE 1 comprises a core frame **10** having facing **12** provided with an opening **14** around the margin of the inset panel **16**. The unseen face of the door may be identical with that shown in FIGURE 1 or it may vary as by being left plain or decorated differently. For example, by the omission of an opening, corresponding to opening **14**, the other facing would be that of what is known as a flush-face door.

The components of such a door may be seen in the exploded arrangement of FIGURE 2. Upper cross rail **18**, lower cross rail **20**, and stiles **22**, **24** when joined, define the periphery of the door frame **10**. Joinder of these rails and stiles is easily and usually accomplished according to well known mortise-and-tenon practices, and by gluing and clamping or otherwise securing in conventional manner.

Spaced inward of the outer frame just described above is, in effect, a second or inner frame of like nature. This frame comprises upper rail **26**, lower rail **28**, and stiles **30**, **32**. When these components are assembled, as may be seen in FIGURE 3, the stiles **30**, **32** extend parallel to stiles **22**, **24** respectively between the inner faces of rails **18**, **20**. Rails **26**, **28** then are located in spaced relation inward of rails **18**, **20** and extend between stiles **30**, **32**. Spacer blocks **34** may be employed where required to enhance rigidity, maintain spacing, and provide wood for lock-sets, hinges and the like. All the stiles and rails are preferably joined by metal fasteners, such as staples or nails, and may be glued if desired. This manner of forming multipart rails and stiles avoids

the use of larger, more expensive solid lumber and reduces weight.

In those cases where the opening framed by rails **26**, **28** and stiles **30**, **32** is to be filled with a decorative or functional panel the inner faces of these members are grooved or recessed. In the instance shown in FIGURES 2 and 3, louver slats **36** are mounted with their ends seated in matching recesses **38**. Normally the louvers are spaced immovably apart but it will be obvious that rockable louvers may likewise be used, in which case the louver ends are mounted pivotally.

The faces of the rails and stiles lie in a common plane and faces of the inset panel **16** lie in a plane inward of that of the door frame.

When the components of the door frame **10** are assembled and joined into a rigid structure it is sandwiched between a pair of doorskins **40**, **42**. Each doorskin is of a length and a width substantially identical to the same dimensions of the door frame. A film of adhesive is interposed between the faces of the rails and stiles and those portions of the doorskins in contact therewith. Ordinarily adhesive application is accomplished by passing the assembled core frame **10** between the rolls of a conventional glue spreader.

The core frame, following application of the adhesive is assembled with the doorskins, registry being obtained at the edges, and pressed firmly to insure appropriate surface contact and then maintained undisturbed to permit adhesive curing. In those cases where heat and pressure is required to cure the adhesive to produce the bond, the assembly is hot pressed. Cold curing adhesives usually only require time and nominal pressure.

As shown in FIGURE 2, the doorskins **40**, **42** are imperforate. Normally thin plywood or veneer panels ranging in thickness between about $\frac{1}{16}$ inch and about $\frac{1}{4}$ inch may be used. When the adhesive bond is suitably cured a hole is bored in a doorskin close to but spaced inward from the inner face of one of the rails **26** or **28**, or of one of the stiles **30** or **32**. Care must be taken that the boring operation not extend deep enough to move or damage the panel **16**. A routing cutter **44** on driven shaft **46** is caused to travel around the periphery of the panelled opening to cut and shape the edge of the doorskin opening **14**. The doorskin material overlying the inset panel **16** may also be simultaneously cut away and removed. To facilitate guiding the cutter **44** a roller **48** is usually provided to bear on the adjacent rail or stile surfaces. Due to the operation of the router the corners and edges of the doorskin opening are arcuate as shown at **45** in FIGURE 6 which provides a neat and smooth appearance.

Either or both doorskins may be provided with openings to expose the underlying panel as may be desired. It will be noted that the stile or rail members, or both, which support the inset panel is set into the door in a concealed fashion so that no substantial portion of its faces is exposed. Note also that these members form structural components of the door frame **10** and are not merely inset battens or pieces serving only to retain the inset panel in place.

In FIG. 7 it is shown to use a flat panel **46** such as a sheet of plywood or the like instead of the louvered panel **16**. In such case the inner rails **26**, **28** and the inner stiles **30**, **32** are grooved as at **48** to receive the edges of the inset flat panel **46**. Otherwise the construction of a door as in FIG. 7 follows the teachings with respect to those doors having louvered panels.

The foregoing exemplifying description sets forth in detail the features of this invention. It will of course occur to those skilled in the door making art that changes and alterations may be made to accommodate varying situations or requirements. All such as fairly fall within

the scope and spirit of this invention as set forth in the subjoined claim is intended to be covered by this patent.

Having thus described my invention, I claim:

The method of manufacturing panelled doors, comprising: assembling a pair of stiles and a pair of rails to form a rectangular core frame having an opening therein, locating a relatively thinner panel element in said frame opening, whereby peripheral edges are provided which surround and upstand relative said panel element, then covering each broad face of said core frame between its side edges and between its end edges with a unitary unbroken facing lamina, interposing and curing an adhesive film between the opposed faces of said core frame and each related facing lamina to unite the frame and facing laminae; piercing at least one facing lamina overlying the panel element; and, guided by the inner faces of the upstanding peripheral edges of said panel element, router-severing a central portion of the facing lamina, to thereby expose the panelling element located under and theretofore concealed by the said facing lamina.

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