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WOOD PANEL

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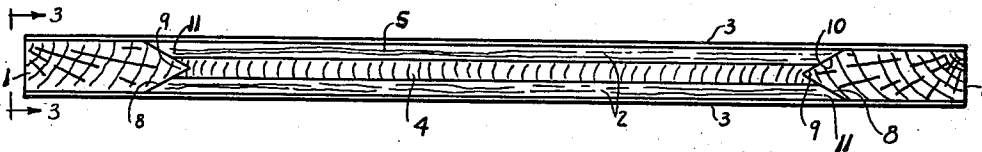


FIG. 1.

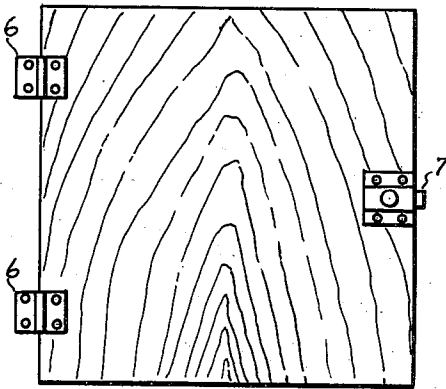


FIG. 2.

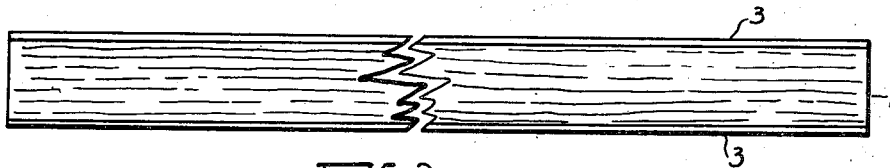


FIG. 3.

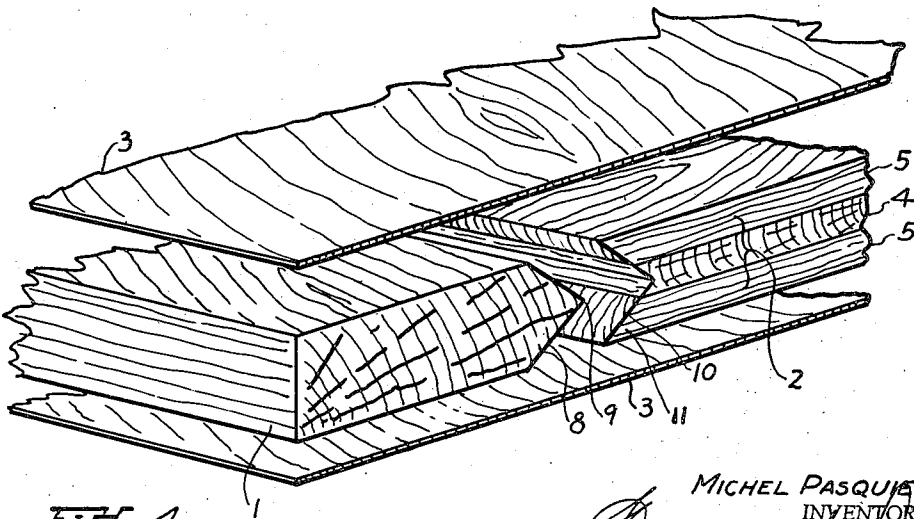


FIG. 4.

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# UNITED STATES PATENT OFFICE

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## WOOD PANEL

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3 Claims. (Cl. 20-91)

This invention relates to wood panels and the like, with particular reference to that class of wood panels having a plane or flush surface. More particularly, however, the invention relates to a novel type of joint for uniting the solid wood comprising one part of the panel to plywood comprising another part of the panel.

The present invention is embodied in a panel having longitudinal frame members or stiles, and a core member extending the full length and breadth of the panel between the stiles. The stiles are made of solid wood to facilitate machining or lipping the edges of the panel, or affixing hardware thereto by means of nails or screws. The core member is made of plywood, wherein each ply of veneer is disposed transversely of the adjacent plies. The joint for bonding together the stiles and the core member consists of a V-shaped tongue on one part and a V-shaped groove in the other part, said tongue closely fitting said groove to maintain the parts in rigid engagement. By so cutting and shaping the edges of the abutting parts the fibers of the grains of the respective parts are exposed for a considerable portion of their length at the joint. In the vernacular of the industry, these exposed grains are called "slash grains." It is relatively difficult to secure a satisfactory bond between wood parts where the joint exposes the ends of the fibers of either one or both parts, as the glue is absorbed into the exposed pores in the ends of the fibers. However, where a surface presenting flat grains is glued to another surface presenting flat grains, a satisfactory bond is easily accomplished. Applicant's joint between the stiles and core member is one where longitudinal fibers of "slash grains" are bonded together, the fibers or grains of one part being disposed across the fibers or grains of the other part. Moreover, the area of the glue bond is approximately twice the area of the plane edge surface of an abutting part. A further advantage of the invention is that the joint is overlaid with plies of wood veneers having their grains disposed transversely of the joint, thereby preventing splitting of the panel at the joint.

It is, therefore, an object of the invention to provide a wood panel having longitudinal stiles and a core member extending the full length and breadth of the panel between the stiles, whereby the core member constitutes both a core member and rails for said panel, and having a glued joint of greater area than the plane edge surface of the abutting parts, and having the joint protected from bending stresses imposed upon the

panel by overlaying the joint with plies of wood veneer having their grains disposed transversely of the joint.

These and other objects and advantages of the invention will become apparent from a careful study of the following description, wherein the significance of the reference characters in the accompanying drawing and the details of construction of a wood panel embodying the invention, as well as the particular advantages thereof, are fully explained.

In the drawing:

Figure 1 is an end elevation of a wood panel embodying the present invention, illustrating the manner in which the core member constitutes both a core member and end rails for said panel.

Figure 2 is a front or side elevation of the panel, illustrating a common use for this type of panel.

Figure 3 is an edge elevation of the panel.

Figure 4 is a fragmentary perspective view of the parts comprising the panel shown in Figure 1, the parts being shown in separated relation to illustrate the manner in which the panel is fabricated.

The drawing illustrates a panel consisting of longitudinal frame members or stiles 1, a core member generally indicated by the numeral 2, and face sheets comprising wood veneers 3. The construction does not embody transverse frame members commonly known as rails. The core member 2 is of equal thickness with the stiles 1 and so provides support between the stiles for the face sheets. An important advantage of the construction lies in the fact that from panels embodying the invention, doors of any desired length may be cut without sacrificing any of the structural features of the panel or impairing the rigidity of the door. Moreover, the residual portion of the panel may also be used, and the fact that a portion thereof has been removed in no wise decreases the strength or rigidity of that part which remains.

Preferably, the core member 2 is of laminated plywood construction, and all component parts thereof extend the full length and breadth of the panel between the stiles. The core member comprises wood veneers in which the grain of each ply is disposed across the grains of the adjacent plies. In the illustrated construction the grain of the center ply 4 is disposed transversely of the grains of the two outer plies 5. As indicated in the drawing, the grain of the center ply 4 is disposed longitudinally of the panel, parallel with the grain of the stiles 1, whereas the grains

of the plies 5—5 are disposed transversely of the panel. The stiles 1 are positioned at the respective edges of the panel for the purpose of receiving the screws or nails by which hinges 6 and latches 7, or other similar hardware, are secured to the edges of a door. Preferably, the stiles are of substantial width, and a considerable portion thereof may be trimmed away to reduce the width of the panel without destroying the usefulness of the stile.

The present invention resides in the provision of novel means of joining the inner edges of the stiles 1 to the edges of the core member 2. A difficulty confronting manufacturers of the type of panel herein illustrated is the inherent weakness of the joint between the core member and the stiles, and particularly between the core member and the stile to which hinges are secured. In doors and panels employing the commonly used tongue and groove joint between stiles and the core member, a partial failure of the glue bond often results in the panel splitting along a line at the base of the tongue. Moreover, it is difficult to accomplish a glue bond between the tongue and the groove. If the tongue is made to fit the groove tightly enough to contribute structurally to the joint, the edges of the groove act as squeegees and wipe the glue from the sides of the tongue as it is pressed into the groove. The result is a poor bond, and consequent failure of the joint if subjected to unusual stress. It will be appreciated, of course, that the problem exists only in panels which do not employ rails, since the presence of rails or other transverse frame members obviates the necessity for any other or further means for strengthening the panel along this joint.

As illustrated in the drawing, the joint between the core member 2 and the stiles 1 is made by cutting or shaping the inner edge of each stile 1 to form bevels 8, the angles of which form a vertex 9 in the plane of the center of the stile. Each edge of the core member 2 is cut or shaped to form a V-shaped groove 10, inversely conforming to the shape of the edge of the adjacent stile. When the panel is assembled glue is applied to the opposed edges of the core member and stiles and these parts subjected to pressure transversely of the panel until the glue has set. The bevels 8 on the stiles and the V-shaped groove 10 in the core member create a glue bond of much larger area than is had in those constructions where the joint is formed by the union of plane surfaces. For example, in a panel having a core member and stiles measuring  $\frac{1}{2}$  inch thick, applicant's construction provides a glued area of one square inch for every lineal inch of joint; whereas in a joint consisting of plane surfaces in parts of the same thickness, the glued area would be but  $\frac{1}{4}$  square inch for every lineal inch of joint.

The advantages of the construction, however, are not alone in the increased area of the glue bond. An important advantage resides in the fact that the solid wood of the stiles enters the grooved edge of the core member between the ends 11 of the transverse plies 5. It will be appreciated that as the edge of the stile approaches the vertex 9 of the bevel angles, the thickness of the stile is correspondingly decreased and presents a lesser resistance to splitting. No splitting action can take place within the width of the bevels 8, however, due to the presence of the transverse grains of the plies 5, which overlie the entire area of the joint. Moreover, the ends

of the transverse plies 5 are provided with a long bevel angle to expose slash grains, and in forming the joint the slash grains of the plies 5 are bonded to slash grains of the stiles 1 which are exposed by the bevels 8.

The stiles and the core member, which together constitute the framework of the panel, are overlaid with face sheets in the form of wood veneers 3 to make a panel having plane or flushed surfaces. Ordinarily the face sheets consist of one ply of wood veneer, and in the preferred practice the grain of the veneer is disposed lengthwise of the panel.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. A wood panel and the like comprising a pair of stiles, a plywood core member of equal thickness with said stiles and positioned therebetween and having at least one ply with grain normal to said stiles, all component parts of said core member extending the full length and breadth of said panel between said stiles whereby said core member constitutes both a core member and rails for said panel, the inner edge of each stile being beveled, each edge of said core member being shaped to form a groove inversely conforming to the shape of the beveled edge of the adjacent stile, said stile closely fitting said groove to maintain said core member and stile in rigid engagement, the ends of the outer plies of wood veneer forming said core member overlying said stiles the width of the joint between stiles and core member for preventing splitting of the panel at the joint therebetween, and a face veneer overlying said core member and stiles and presenting a plane surface, whereby a door of any desired length, up to the length of the panel, may be cut from said panel without sacrificing any of the structural features thereof.

2. A wood panel and the like comprising a pair of stiles, a core member of equal thickness with said stiles and positioned therebetween, said core member extending the full length and breadth of said panel between said stiles whereby said core member constitutes both a core member and rails for said panel, the grain of the wood in the core member running at right angles to the grain of the wood in the stiles, the inner edge of each stile being beveled, each edge of said core member being shaped to form a groove inversely conforming to the shape of the beveled edge of the adjacent stile, said stile closely fitting said groove to maintain said core member and stile in rigid engagement, a ply of wood veneer having its grain running transversely of said panel overlying said joint on each side of said panel for preventing splitting of the panel at the joint therebetween, and a face veneer overlying said core member and stiles and said aforementioned ply of wood veneer and presenting a plane surface, whereby a door of any desired length, up to the length of the panel, may be cut from said panel without sacrificing any of the structural features thereof.

3. A wood panel and the like comprising a pair of stiles, a plywood core member of equal thickness with said stiles and positioned therebetween and having at least one ply with grain normal to said stiles, all component parts of said core member extending the full length and breadth of said panel between said stiles whereby said core member constitutes both a core member and rails for said panel, the inner edge of each stile being beveled, each edge of said core

member being shaped to form a groove inversely conforming to the shape of the beveled edge of the adjacent stile, said stile closely fitting said groove to maintain said core member and stile in rigid engagement, a ply of wood veneer having its grain running transversely of said panel overlying said joint on each side of said panel for preventing splitting of the panel at the joint

5 therebetween, and a face veneer overlying said core member and stiles and said aforementioned ply of wood veneer and presenting a plane surface, whereby a door of any desired length, up to the length of the panel, may be cut from said panel without sacrificing any of the structural features thereof.

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