

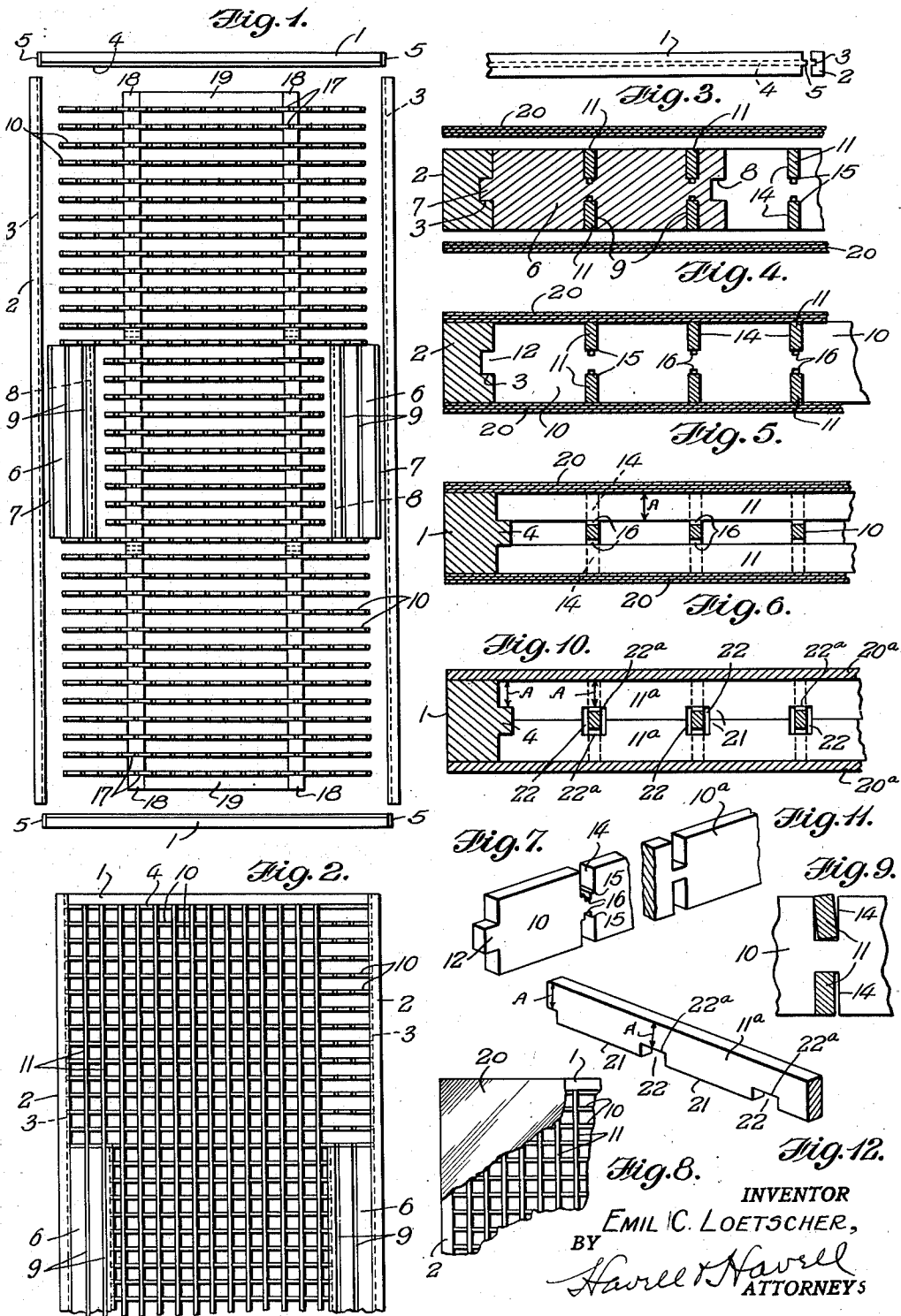
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HOLLOW PANEL

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HOLLOW PANEL

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3 Claims. (Cl. 28-91)

The object of this invention is to produce a flat panel, such as a door, table or desk top, or in fact any flat surfaced panel, employing a lattice-work core and thereby avoiding the tendency to warping and twisting, particularly in products of large size.

A further object of this invention is to make the assembling of such a panel more practical from a manufacturing standpoint, and to avoid complicated machining.

With these and other objects in view, reference will be had to the accompanying drawing, forming a part of this invention and in which:

Fig. 1 is an assembly view during a stage in the manufacture of a panel foundation,

Fig. 2 is a top plan view of a fragment of assembled foundation,

Fig. 3 is a view in end elevation of a fragment of the foundation,

Fig. 4 is a transverse sectional view taken on line 4-4 of Fig. 2, with veneers juxtaposed,

Fig. 5 is a transverse sectional view taken on line 5-5 of Fig. 2 with the veneers applied,

Fig. 6 is longitudinal sectional view taken on line 6-6 of Fig. 2 with veneers applied,

Fig. 7 is a perspective view of a fragment of a transverse lattice strip,

Fig. 8 is a top plan view of a fragment of a finished product,

Fig. 9 is a detail view,

Fig. 10 is a view similar to Fig. 6 of a modified form,

Fig. 11 is a view similar to Fig. 7 of a modified form, and

Fig. 12 is a perspective view of a modified longitudinal lattice strip.

In the drawing, reference numeral 1 designates the top and bottom rails and 2 the stiles of the outer or surrounding frame of a door or other panel. The stiles are provided in their inner faces with coextensive longitudinal grooves 3 located centrally between their upper and lower faces, and the rails are provided in their inner faces with longitudinal ribs 4, also located centrally between their upper and lower faces. The ribs extend the full length of the rails and join with tenons 5 formed in the ends of the rails.

Blocks 6, known in the art as lock-blocks since they take the lock and handle hardware, are formed along one longitudinal edge with a rib 7 and along the opposite edge with a groove 8. Longitudinal grooves 9 are also formed in the upper and lower faces of the lock-block.

The aforementioned parts virtually constitute the surrounding frame for latticework which

comprises transverse and longitudinal strips 10 and 11 respectively. The transverse strips may be cut square at their ends to abut the stiles 2, but are preferably provided with tenons 12 to fit the stile grooves 3. Most of the transverse strips 10 extend from one stile to the other, except where lock-blocks are employed and in that case they extend from one lock-block to another if two lock-blocks are used, or from the lock-block to a stile if only one lock-block is employed, and these shorter transverse strips also preferably have tenons 12 to fit into the grooves of the lock-blocks or stiles.

Notches 14 are provided in the upper and lower edges of the transverse strips 10 to receive the longitudinal strips 11 which seat upon shoulders 15 and occupy the same vertical plane, as do the notches 14. The notches 14 terminate in smaller ventilation notches 16 which extend beyond and are located between the shoulders 15.

The distance from the outer edge of a stile or rail to its groove or rib is the same as that from the outer edge of the transverse strips to their shoulders 15 or tenons 12, and the same as the vertical dimension A of the longitudinal strips.

The parts are assembled by arranging the transverse strips 10 on edge in notches 17 formed in side marginal ribs 18 of a collocating gage or jig 19, with the ends of the strips 10 extending beyond the sides of the gage or jig. An adhesive, such as ordinary or casein glue, is applied on the tenons 12 and the stiles 2 are moved into engagement with the strip ends, the tenons of the longer strips 10 entering the grooves 3 of the stiles and those of the shorter strips 10 entering the grooves 8 of the lock-blocks which previously had been placed in position for their glued ribs 7 to enter the stile grooves 3. The rails 1 are next placed between the stiles 2, with an adhesive applied to their ends and their tenons 5 entered into the stile grooves 3.

The strips 11 are then inserted edgewise into the upper notches 14, which now are all aligned due to the aligning action of the stiles in bringing the ends of the strips 10 into proper position. Previous to the insertion of the strips 11, glue is applied to each at the points where they intersect the strips 10 and bear upon the ribs 4. This glue needs be applied only on the bottom edges of the strips 11, since a small amount of glue at this point will hold the strips firmly in position, though as a matter of fact the glue will distribute itself more or less onto the sides of the notches 14 as the strips enter the same.

The assembly is then turned over, the gage or

jig removed, and the strips 11 for that side of the panel similarly applied.

After the glue has set, the whole assembly is preferably sanded to uniform thickness and to remove all projections.

After sanding, the assembly is preferably run through a glue spreading machine, though the work may be done by hand, to place glue upon the edges of the rails and stiles and all edges of the lattice-work. A three ply wood veneer 20 may then be applied and placed in a press until the glue has set, after which the product is removed from the press and sanded.

In the modified form of Figs. 10 and 11, the longitudinal strips 11^a have depending portions 21, and these portions of superposed strips come into contact with each other, and may be glued together if desired. This construction requires notching of the longitudinal strips at 22, but enables the cells to be larger than in the first form, since the strips 11^a will amply support the face veneers 20 against press pressure when applying the veneers. With the first form, the cells must be relatively small to prevent the strips from sagging under press pressure. In the second form, the veneers 20^a are single ply, the nature of the wood veneer used not forming an essential part of the invention.

Ventilation is afforded between the cells through the spaces between the longitudinal strips 11 in the preferred form, and through the notches 22 in the second form, the notches 22 being wider than the thickness of the transverse strips 10. Since superposed strips 11^a engage each other by their portions 21 in the second form, the strips 11^a need not rest upon shoulders 15 of the transverse strips as in the first form and may be notched deeper at 22 to clear the shoulders 15 and provide an air passage between the bottom 22^a of the notch 22 and the shoulders 15, or in lieu thereof, the distance "A" may be maintained in strips 11^a and the notches 14^a of strips 10^a cut deeper, that is, to a depth corresponding to the base line of the notches 16 of strips 10 to provide ventilation space. While the second form has structural advantages over the first form, notching of the strips 11^a entail additional manufacturing costs.

Due to imperfections in machine work, there are usually variations in the thickness of the strips 11 and 11^a or even in the notches 14, whereby spaces will occur between the walls of the notches 14 and strips 11 and 11^a sufficient for ventilation without the employment of the additional vents 16, however when the machining is more accurate, provision must be made as previously outlined for the passage of air between the bottoms of the strips 11 and 11^a and where they intersect the strips 10.

Usually, the notches 14 are cut 1/64" wider than the thickness of the strips 11, 11^a so as to make entry of the strips 11, 11^a into the notches 14 easier. The stated inaccuracies along with the warping or twisting of the strips 11 and 11^a will cause them to assume various positions within the notches, binding sometimes against one wall and sometimes against another wall of the notches 14, thereby imparting considerable bracing action even though the strips 11 and 11^a may be loosely fitted into the notches 14.

It will be noted that the lock-blocks are located and confined by the various strips and that the ones that are embedded in the lock-blocks in no manner impair the utility of such blocks or inter-

fere with the placement of the usual door hardware.

A door made in this manner weighs approximately one-half of what a solid flush door made by conventional methods weighs. This produces a saving of not only one-half of the freight costs, but also a great saving in the amount of the core lumber required for making the door or other panel.

If desired, synthetic lumber such as is set forth in my application for patent Serial No. 692,811, may be used for the veneer, and is highly desirable since it has equal strength in all directions and is not open to the objection that it will split in any direction. It permits a thinner veneer to be used and may be used single ply and will readily receive a paint or even paper thin natural wood veneer.

Even the lattice strips may be made of the same synthetic lumber and will have a greater degree of accuracy as to thickness since they will all be cut from sheets of accurate and uniform thickness.

The lattice strips 11 and 11^a need not be continuous, but may be sectional, the sections preferably making joint at points where they intersect the strips 10 though there is no great objection to the joints occurring between said strips 10, since provision is made in the various forms for amply supporting the upper and lower strips regardless of where their joints may occur.

The facings 20 and 20^a may be omitted without destroying the utility of the foundation for certain purposes, such as grille doors, but the construction is designed particularly to receive the facings.

What is claimed is:

1. A structural unit, comprising an outer frame of jointed members, a first series of parallel strips located between opposite members of the frame and parallel therewith, said strips having spaced notches each with substantially parallel edges provided in their front and rear edges and of a depth less than half the depth of said strips, a second and a third series of parallel strips located between other opposite members of the frame and parallel therewith, the strips of the second series being set into and adhesively secured in the notches in the front edges of the first series, the strips of the third series being set into and adhesively secured in the notches in the rear edges of the first series, corresponding strips of the second and third series abutting each other at points between the strips of the first series, the front and rear edges of all the strips being flush respectively, and panels secured to the front and rear edges of the various strips and to corresponding edges of the outer frame.

2. A structural unit, comprising an outer frame of jointed members, a first series of parallel strips located between opposite members of the frame and parallel therewith, said strips having spaced notches each with substantially parallel edges provided in their front and rear edges and of a depth less than half the depth of said strips, a second and a third series of parallel strips located between other opposite members of the frame and parallel therewith, the strips of the second series being set into and adhesively secured in the notches in the front edges of the first series, the strips of the third series being set into and adhesively secured in the notches in the rear edges of the first series, the width of the notches in the strips of the first series being

greater than the thickness of the strips received therein permitting easy insertion of said strips if warped into said notches, corresponding strips of the second and third series abutting each other at points between the strips of the first series, the strips of the second and third series being adhesively secured together, the front and rear edges of all the strips being flush respectively, and panels adhesively secured to the front and rear edges of the various strips and to the corresponding edges of the outer frame.

3. A structural unit, comprising an outer frame of jointed members, a first series of parallel strips located between opposite members of the frame and parallel therewith, said strips having spaced notches each with substantially parallel edges provided in their front and rear edges and of a depth less than half the depth of said strips, a second and a third series of parallel strips located between other opposite members of the frame and parallel therewith, the strips of the second series being set into and adhesively secured in the notches in the front edges of the first

series, the strips of the third series being set into and adhesively secured in the notches in the rear edges of the first series, corresponding strips of the second and third series having their inner edges abutting each other at points between the strips of the first series and adhesively secured together, certain strips of the first series being shorter than others of the same series, a lock-block secured to one of the members of the outer frame and extending longitudinally thereof and being located between said member and the ends of the shorter strips of the first series and being also provided with longitudinal grooves, certain of the strips which are laid into the notches of the strips of the first series continuing through the grooves of the lock-block and adhesively secured therein, the front and rear edges of strips of all the series and the front and rear faces of the lock-block being flush respectively, and panels secured to the front and rear edges of the various strips and front and rear faces of the lock-block and to corresponding edges of the outer frame.

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