United States Patent

Glover

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[54] **FENCE**

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[73] Assignee: **Potlatch Forests, Inc.**, San Francisco, Calif.

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[21] Appl. No.: **60,663**

[52] **U.S. Cl.** **256/19**, 256/24

[51] **Int. Cl.** **E04h 17/14**

[58] **Field of Search** 256/19, 21, 22, 24, 25, 73, 256/26

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Primary Examiner—Dennis L. Taylor

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[57] **ABSTRACT**

A wood fence of "basket weave" design including parallel rails having oppositely facing grooves and perpendicular slats held in a weave pattern by an intermediate weaver board. The slats are fabricated from veneer stock and are permanently fixed with the rail grooves. The method of fence panel fabrication includes the step of bonding the slats in the grooved rails to form a permanent structural panel.

5 Claims, 8 Drawing Figures

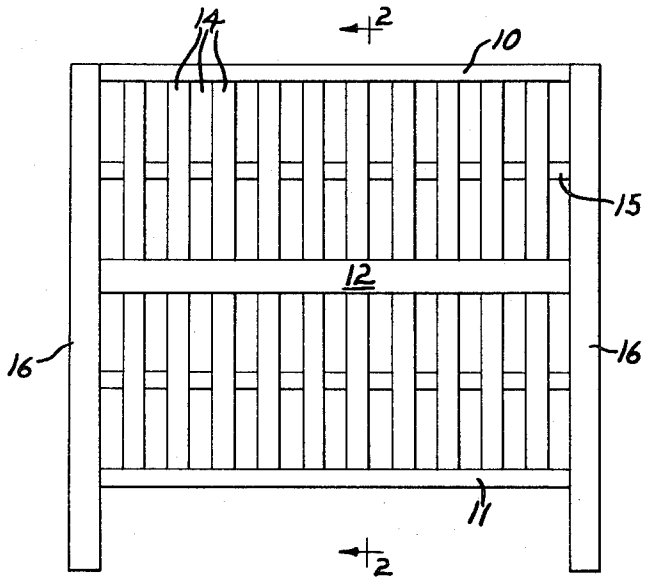


Fig. 1

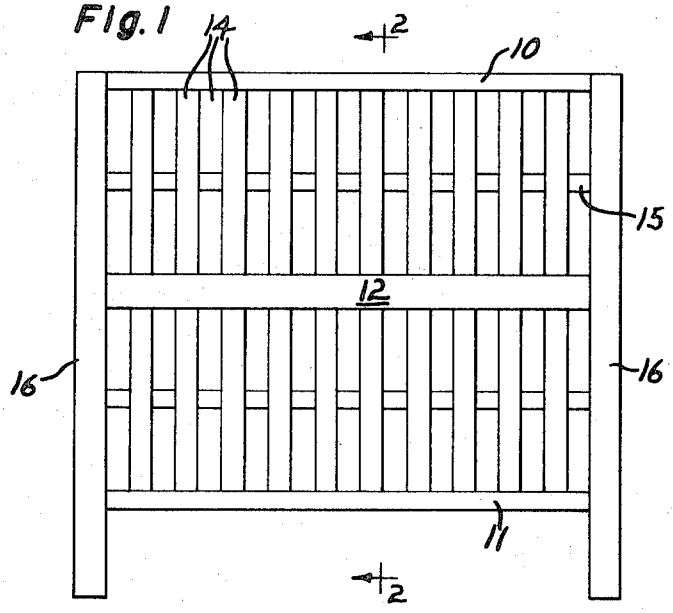


Fig. 2

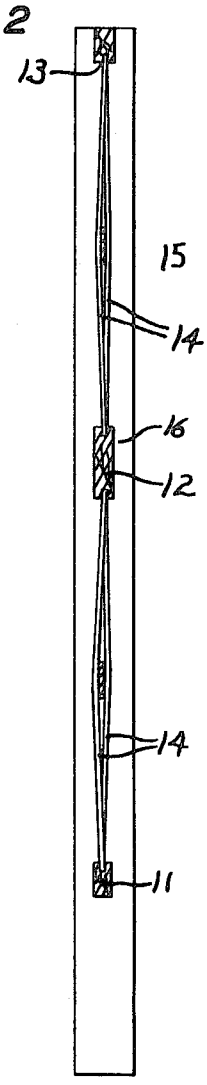


Fig. 3

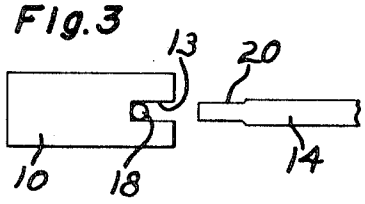


Fig. 4

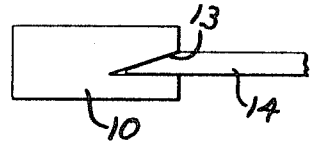


Fig. 5

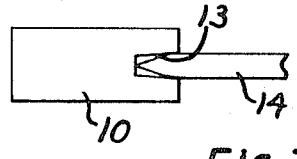


Fig. 6

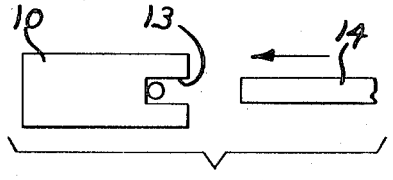


Fig. 7

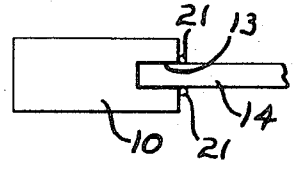
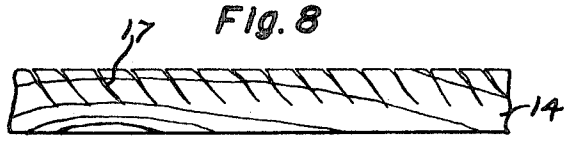


Fig. 8



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FENCE

BACKGROUND OF THE INVENTION

Basket weave design fences have been previously produced from wood materials, using sawn lumber from the fence components. Such fences have a tendency to weather in an irregular fashion, and the sawn boards are subject to development of cracks or "checking" due to expansion or contraction of the wood materials. Irregularities also develop in such fences due to the uneven thickness of sawn boards and variations in moisture content.

The present fence has been developed for two essential purposes. First, to utilize waste veneer materials rejected at the veneer clipper during plywood production. Secondly, to provide an improved fence structure capable of more uniform aging under exterior weather conditions.

One essential feature of the present fence is the use of veneer slats or strips between rigid lumber rails. The veneer replaces conventional lumber slats. The veneer slats have improved weather and aging characteristics attributable to their inherent flexibility and to the machine surface checking that occurs during veneer production. The fence is readily constructed from waste veneer, which develops from defects that occur alongside usable veneer panels and from veneer panels (fishtails) of less than normal length and having one irregular end edge.

To provide structural stability to the fence, the slats are permanently joined to the rails. The perpendicular wood members are therefore tied to one another to counteract the natural tendency of wood to arch or bow longitudinally. This insures that the slats will remain in proper placement with respect to the rails under normal exterior use over the life of the fence.

SUMMARY OF THE INVENTION

The invention compromises a wood fence including substantially solid panels that present a "basket weave" design appearance. Each panel includes at least a pair of wood rails with opposed open grooves facing one another. A plurality of rectangular veneer slats are arranged in side by side positions with their respective ends received within the rail grooves. A rigid weaver board is entwined through the slats and is positioned parallel to and spaced from the rails. The ends of the slats are permanently fixed to the rails.

It is a first object of this invention to provide an economical fence structure from veneer material now considered to be waste.

Another object of this invention is to provide an improved fence of "basket weave" design having more uniform structural stability and lasting appearance under normal weathering and aging in an exterior environment.

Another object of this invention is to provide a basic fence panel structure capable of assembly in a variety of patterns.

These and further objects will be evident from the following disclosure, taken together with the accompanying drawings, which illustrate a preferred form of the invention. It is to be understood that this form of the invention is presented only by way of example, and that modifications might be made in a particular assembly without deviating from the essential concepts discussed and detailed herein.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevation view showing a fence panel mounted between two upright support posts;

FIG. 2 is an enlarged cross-sectional view taken along line 2—2 in FIG. 1;

FIG. 3 is a fragmentary end view of a rail and slat, showing assembly of the panel;

FIG. 4 is a fragmentary end view of a modified rail and slat configuration;

FIG. 5 is a fragmentary end view of another modification of the rail and slat;

FIG. 6 is a fragmentary end view of another modification of the rail and slat, illustrating their assembly;

FIG. 7 is a fragmentary end view of the assembled rail and slat shown in FIG. 6; and

FIG. 8 is an enlarged fragmentary sectional view taken transversely across a veneer slat.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 show the essential structure of the fence produced according to this disclosure. The fence includes longitudinal rails 10, 11 and 12 formed of conventional sawn boards and having oppositely facing grooves 13 cut along their respective lengths. A plurality of veneer slats 14 are mounted in side-by-side positions along the rails, and the respective ends of each slat 14 are received within the grooves 13. A rigid weaver board 15 is entwined through the slats 14 intermediate their ends. The rails 10, 11 and 12 are rigidly secured to upright posts 16, which can be secured in a vertical position by any conventional method.

The fence illustrated in FIG. 1 is only one example of a fence made according to this disclosure. It shows a center rail 12 having grooves 13 along both its upper and lower surfaces, with slat assemblies extending upwardly and downwardly from the rail 12. Many variations are possible. The rail 12 might be eliminated all together by using longer slats 14 and either moving the weaver boards 15 somewhat closer to one another or inserting a third weaver board 15 at the elevation of rail 12. The rails might be positioned vertically and the slats 14 might be horizontal. The upper and lower panels might be formed with separate rails and alternated at opposite sides of the posts 16. Therefore, this disclosure is to be read in the context that it is concerned with one or more fence panels that include a pair of parallel spaced rails having opposed rails having opposed grooves within which veneer slats are secured in side by side positions.

The application of this panel to various fence assemblies present numerous design possibilities. One such possibility relates to the construction of "skirts" about the foundation members of a mobile home. By using the present assembly in a horizontal slat configuration, the top or bottom of the units may be trimmed to meet individual or custom height specifications.

The slats 14 are not produced from sawn lumber, as has been conventional in prior fences of "basket weave" design. Such sawn boards are relatively stiff and differ substantially in thickness, particularly after being dried and subjected to normal exterior weather conditions. Sawn boards also crack longitudinally due to continual expansion and contraction with temperature and moisture variations. These cracks or "checks" occur without prediction and in a random, nonuniform manner. They normally occur after the fence has been constructed and painted or stained, and the subsequent opening of the cracks detracts from the uniform finish desired in such fence construction. Such cracks are not open during factory staining, or during normal installation at the site. When they later open, natural wood is exposed, which contrasts with the stain, color or other surface effect applied to the fence.

In contrast to sawn boards, veneers are of substantially uniform thickness due to the more accurate machining of material produced by a plywood lathe. More importantly, the "peeling" of a log results in the veneer being "checked" due to the action of the knife on the rotating log surface. This is illustrated in FIG. 8, which shows the upper surface of a veneer slat having a number of parallel cracks or checks 17 extending to various depths. When the slat is in a flattened condition, these checks are rather closely spaced and not normally visible to the eye. However, they do present slight openings through which stain or finishes can penetrate. They also provide stress relief across the entire face of each veneer slat 14, so that contraction and expansion due to weather conditions can be accomodated without cracking the slat throughout its total thickness. Slight opening of these checks does not detract from the appearance of the slat, since factory applied stains or other finishes will have penetrated the cracks and the

open areas will have the same color as the outside surfaces of the slats.

The slats **14** can be produced from waste material available from plywood production or veneer production. If veneer that is relatively free from defects is being used, the slats can be cut to size by gang ripping and trimming. If the slats are to be produced from small waste areas and "fishtail" veneers, a punch is probably preferable for production forming of the rectangular slats. The maximum slat length recoverable from fishtail stock is four feet, and other logical increments of length for slats would be three feet and two feet. Actual slat length would be slightly less than these nominal figures, depending upon the width and combinations of rails used in a panel. In normal construction, the actual panel height would be in complete increments of one foot.

After initial production of the veneer slats **14**, it is preferable that the slats, as well as the rails and weaver boards, be dried, using a conventional lumber dry kiln and a lumber kiln schedule.

It is important that the dried slats **14** be cut to a common length so as to insure proper fitting of each slat **14** in the grooves **13**. The slats can be trimmed in quantity by manual or automated saws to insure uniform length. The longitudinal edges of slats **14** should also be trimmed, where necessary, to produce acceptable uniformity in width. This is particularly important when the fence panels are to be assembled by machinery in an automated process.

The rails **10**, **11** and **12** can be constructed of any of several sizes and board species. Rough cedar of nominal 1 × 4 size is preferable, although the rails can be made of suitable grades and species of nominal 1 × 4, 2 × 3, 2 × 4, 1 × 2 or 1 × 3 size, or combinations thereof. The horizontal length of the fence panels will conventionally be either 6 feet or 8 feet. The height of the fence can be any desired height.

The fence panels can be finished by dipping in a penetrating stain. This would particularly take advantage of the natural checked condition of the veneer slats, as discussed above.

One important feature of the present fence is the permanent connection or attachment of the slats **14** within the grooves **14**. FIGS. **3–7** illustrate a few of the ways this might be attained. In FIG. **3**, a bead of suitable water-insoluble adhesive **18** is first placed along the base of the groove **13** and the end of the panel **14** is then forced inwardly to seat against the groove. Conventional "hot melt" adhesives are very suitable for this step. The ends of panel **14** can be compressed between hot platens to temporarily reduce their thickness as indicated at **20**. After assembly, the wood material will expand substantially to its original thickness, thereby providing a strong frictional bond in addition to the adhesive bond.

In FIG. **4**, the groove **13** and the end of slat **14** are tapered to produce an alternate friction fit. In FIG. **5** a rectangular groove **13** is illustrated with a tapered end formed on slat **14**. In FIG. **6** the groove **13** and slat **14** are substantially identical in thickness. After slat **14** is forced into groove **13**, excess adhesive **18** is forced outwardly along each side of slat **14**, forming beads **21** (FIG. **7**) to keep water out of groove **13**.

The grooves **13** can be either slightly wider than the slat thickness or slightly less in width than slat thickness, depending upon the selection of glue and the degree of frictional fit desired between them. A frictional fit is desirable with slot curing adhesives, so as to temporarily hold the slats and rails relative to one another during assembly. This also might be accomplished by use of a "hot melt" adhesive to provide a temporary joint, using a slower curing exterior wood adhesive for a permanent bond. It is also possible and desirable to permit a small bead of the adhesive to be forced outwardly between adjacent slats. The intermediate bead of adhesive can then act as a "compression block" to maintain minimum separation of the slats so that they can be readily sprung in opposite directions during insertion of the weaver boards **15**. This slight separation between slats if further desirable to accomodate normal expansion of the slats due to weather conditions.

The veneers used in the production of slats **14** can vary in thickness from one fence design to another. It is contemplated that the slats **14** will be constructed from heavy veneer having a thickness of one-eighth inch or one-sixth inch. A suitable species for the slats is Douglas Fir veneer. For light usage, such as privacy screens, fence panels might be made from veneers of one-tenth inch thickness. The maximum veneer thickness would be about five-sixteenth inches, which is the maximum practical thickness for peeling veneer by conventional procedures.

The weaver boards **15** need not be permanently attached to the slats **14**. Temporary securing of the weaver boards can be accomplished by small nails or staples. After the fence is installed, these can be removed so as to prevent rusting of the wood surfaces. The weaver boards **15** will be maintained in place due to the opposed compression forces exerted by the strung slats **14**. No staples or nails are necessary to maintain the slats **14** in grooves **10**. In fact, these conventional attaching devices are undesirable in this instance, since there is a great possibility that they would engage the slats **14** through veneer checks and be of questionable structural utility.

Many variations might be achieved using the basic concepts discussed above. For these reasons, only the following claims are intended as definitions of the present invention.

Having thus described my invention, I claim:

1. A wood fence panel comprising:

a pair of parallel dried rigid wood rails each having open grooves including groove surfaces facing toward one another and extending along the respective lengths thereof, the grooves of each pair of rails being opposed and directed toward one another;

a plurality of dried rectangular flexible wood slats arranged in side-by-side positions with the ends thereof received within said grooves, each slat end having a thickness and surface configuration complementary to and substantially equal in dimension to the separation and configuration of the groove surfaces, each slat being formed of veneer stock having a longitudinal grain configuration;

and a centrally located dried rigid weaver board abutting opposite surfaces of adjacent pairs of said slats, said weaver board being parallel to and spaced from said rails;

the respective ends of each slat being fixed to said rails within the groove by adhesive bonds.

2. A fence panel as set out in claim **1** wherein the slats are formed from waste veneer stock produced during plywood fabrication.

3. A fence panel as set out in claim **1** wherein the assembled rails, slats and weaver board are surface stained, whereby the veneer checks are stained along with the exterior wood surfaces.

4. A fence panel as set out in claim **1** wherein the respective ends of each slat are fixed within the rail grooves by a water-insoluble adhesive bond.

5. A fence panel as set out in claim **1** wherein the panel comprises:

a third rigid wood rail parallel to and spaced outwardly from one of said pair of rails by a distance substantially equal to the length of said slats;

said one rail further having an open groove facing toward said third rail and extending along the length of said one rail;

said third rail having a similar groove facing toward said one rail and extending along the length of said third rail; and

a plurality of wood slats formed of veneer stock having a longitudinal grain configuration and a weaver board being interposed between said one rail and said third rail in a fashion identical to those between said pair of rails, the respective ends of each slot being fixed to said rails by adhesive bonds.

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