UNITED STATES PATENT OFFICE.

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ART OF COLORING AND GRAINING WOOD.

939,016. Specification of Letters Patent. **Patented Nov. 2, 1909.**

No Drawing. Application filed June 5, 1908. Serial No. 436,795.

To all whom it may concern:

Be it known that I, WILLIAM A. HALL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented or discovered certain new and useful Improvements in the Art of Coloring and Graining Wood, of which the following is a specification.

Artificially grained effects have heretofore been produced on the surfaces of wood by means of rollers or dies having small projections arranged to form indentations to simulate the grain of the wood when the latter is impressed by said rollers or dies, such indentations being, in some cases, immediately filled with coloring matters applied by the same machines which have the indenting rollers; and in other cases the artificial grained effects are developed by staining the surfaces of the wood subsequent to the indenting operations. Wood treated as just stated has, however, only a grained surface appearance, the stain not penetrating the wood to any considerable extent, so that if the wood be deeply scratched or marred the lighter natural color of the wood beneath the surface appears, and cabinet work or the interior wood finish of buildings in which such artificially grained wood is used is thus seriously damaged in appearance or is, at least, rendered more or less unsightly.

The present invention has for its object to produce artificially grained wood made from some of the cheaper or more common woods, such as birch, beech or maple, and having any desired grained or figured and colored effects to imitate some of the rarer or more expensive woods, such as walnut, mahogany, rosewood, etc., and which will be so stained or colored beneath its surface or throughout that should it accidentally become deeply scratched or marred the lighter natural color of the wood will not show; and thus, in such cases, the unsightly effects which might otherwise result will be avoided.

In carrying the invention into effect the wood to be transformed is first preferably subjected to the action of machines comprising rollers such, for example, as those shown and described in U. S. Patents Nos. 204,078, 214,990, 238,181 or 472,260, and having small indenting projections. If the wood is to be made to imitate natural mahogany these indenting projections will be of such a character and so arranged as to produce a surface which will be partly stippled and will partly comprise slight elongated recesses such as natural mahogany presents on its surfaces when planed or when smoothly cut, as in the form of veneers, and before being varnished or finished. The wood, with its surfaces thus indented is then subjected to a coloring operation preferably such as described in my U. S. application No. 373,152. That is to say the thoroughly seasoned and indented wood is placed in a cylinder or other closed receptacle and is subjected to the action of a vacuum of about twenty-five inches until practically all of the air is withdrawn therefrom, this operation being preferably accompanied by a gentle heat of 90° to 100° F. to expand the pores of the wood to facilitate the removal of the air therefrom. This vacuum action renders the wood very absorbent, and a coloring solution is then admitted into the receptacle to fill the same or at least to fully immerse the wood. A high hydraulic or pneumatic pressure is then applied to the chamber of the receptacle to cause the coloring solution to penetrate the wood more or less deeply according to the time which the pressure is continued. This will preferably be for several hours, so that the coloring solution will be infused throughout the wood so far as possible, although the coloring material will be largely lodged in the grain cells and the more porous portions of the wood and in the indentations, in the form, more or less, of pigment deposits, especially when wood or bark extracts, such as will preferably be used for the coloring solutions, are employed.

After the wood has been treated, as above described, to infuse the coloring matter well into it, it will preferably next be subjected to a boiling or steaming operation for the purpose of diffusing the coloring material, first largely deposited in the more porous portions of the wood, throughout the latter, so that there will be no uncolored streaks in the finished product. This boiling, or steaming process, (which should be carried on at a temperature of about 212° F., so that the wood will not be injured by high heat) may be carried on in the cylinder or receptacle in which the wood has already been treated, or in another and less expensive receptacle, preferably the latter. The boiling of the wood, when this is done to diffuse the color, should be in the coloring solution.

Instead of coloring the wood by the vacuum and pressure process, as hereinbefore stated, the coloring material may be infused into and diffused throughout the wood by boiling the latter for two or three days or more (according to the thickness and hardness of the wood) in an open vat or tank. Also if it be desired to render the artificially colored and grained wood fireproof any suitable fireproofing solution may be infused into the wood, either by mixing the fireproofing solution with the coloring solution and thus impregnating the wood with both solutions simultaneously, or by infusing the fireproofing solution into the wood after the coloring solution.

Having thus described my invention I claim and desire to secure by Letters Patent:—

1. Artificially grained and colored wood produced from a relatively common or inexpensive wood and having its surface indented to imitate grain figures and also having its body colored throughout to simulate in shade or appearance a relatively rare or costly wood, the coloring matter being largely lodged, as pigment deposits, in the softer or more porous and indented portions of the wood, but being also diffused throughout the denser parts of the wood.

2. The herein described process for producing artificially grained and colored wood, consisting in indenting the surfaces of the wood to simulate grain figures and infusing a coloring solution into the body of the wood and then diffusing the same throughout the wood by boiling or steaming the same.

3. The herein described process for producing artificially grained and colored wood, consisting in indenting the surface of the wood to simulate grain figures, then subjecting the wood to vacuum action, to withdraw the air therefrom, then forcing a coloring solution into and throughout the wood by pressure, and then diffusing the coloring material in the wood by boiling or steaming the same.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM AUGUSTUS HALL.

Witnesses:

JOHN CARRINGTON YATES,

WALTER M. SCHEUMAKER.