

UNITED STATES PATENT OFFICE.

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ART OF COLORING WOOD.

933,435.

Specification of Letters Patent.

Patented Sept. 7, 1909.

No Drawing.

Application filed November 6, 1907. Serial No. 460,933.

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 Wood, of which the following is a specification.

This invention relates to the art of treating wood in such a manner that from some of the more common or inexpensive woods, such as birch, beech or maple, products closely resembling some of the more expensive woods, such as walnut, mahogany or rosewood, are secured; and the invention has for its object to produce products, of the class referred to, at much less expense than is necessarily incurred in the production of products described in certain applications for patents which have heretofore been made by me, and in which products the wood is colored throughout to a uniform or nearly uniform shade, so that it may be worked up as lumber in any shapes requiring the wood to be cut through in being thus worked up. Thus in order to meet a large demand for woods of rich dark colors, with highly developed grain figures, at moderate prices, a less expensive process than that required for coloring the wood throughout to uniform deep shades has been found necessary; and in carrying out the present invention I produce products which are artificially colored, more or less, throughout, (excepting possibly for a few occasional light streaks in some very hard inner portions of the wood) but in which products the exterior portions of the wood, to a depth of approximately $\frac{1}{16}$ of an inch, are colored to very deep shades, with lighter shades of color in the inner portions of the wood. In thus producing rich dark colors in the shallow exterior portions of the wood to a depth of approximately $\frac{1}{16}$ of an inch, the wood will be suitable for use for all ordinary purposes not requiring it to be cut into after coloring, as also for purposes in which the surfaces produced by cutting subsequent to the coloring process will not be greatly exposed; and thus no ordinary scratches will show through the darker colored exterior portions of the wood; and even if the wood be cut into somewhat deeply the lighter interior color is not likely to show very much, if at all, for the reason

that the wood will be colored to a certain extent through and through. 55

In coloring wood through and through, to deep shades, a cubic quantity of seasoned hard wood, such as birch, beech or maple, will absorb, when fully impregnated, approximately its own weight of the coloring solution; and in order to obtain dark colors throughout the body of the wood it is necessary to utilize concentrated solutions. For this reason considerable expense is necessarily incurred in the production of the most desirable forms of artificially colored woods; but for many purposes a wood which is of rich dark color only to a depth of about $\frac{1}{16}$ of an inch can be used as efficiently as woods which are artificially colored to dark shades throughout, and can be produced at very much less expense. Also in the production of artificially colored wood which is of a uniform deep shade throughout it is necessary, in more easily attaining the best results, to make a selection of the wood itself, by using either all sap wood or all heart wood; or if this be not done a diffusion process, subsequent to the coloring process, is required; but in the production of colored wood in accordance with the present invention an ordinary run of the cheaper woods, sawed through and through into boards, may be employed. 85

In carrying the present invention into effect I take, as just above indicated, an ordinary run of the cheaper woods, such as birch, beech or maple, which has been sawed through and through into boards containing both the sap wood and the heart wood. These boards, after being thoroughly seasoned, are preferably planed to remove the roughness incidental to the sawing, and are then subjected, in a closed receptacle, to the action of a vacuum of preferably 25 inches, or above, for the purpose of extracting the air therefrom and rendering the same absorbent. A solution of coloring matter, preferably made from the extracts of bark, such as hemlock, oak or spruce, is then introduced into the chamber and is immediately absorbed by the wood; and to expedite the coloring operation a high pressure may, if preferred, be applied to the chamber of the receptacle to force the coloring matter into the wood quickly. The solutions preferably employed will be of comparatively low spe- 105

cific gravity, and will have a lower capillarity than is necessary in the use of the solutions required for a complete impregnation of the wood in coloring the same to deep shades throughout. The solutions which will be employed in accordance with the present invention will preferably be so prepared that they will contain certain proportions of solid matter in a more complete solution, or in a more finely divided state, than other portions; and in treating the wood the more soluble portions or constituents of the coloring solution will penetrate and thus color the wood throughout its entire thickness to a considerably darker shade than the original color, but with no attempt at a thorough uniformity of diffusion. There may be, in practicing the present invention, occasional light streaks in the central denser portions of the wood, but as these central portions or constituents of the wood will never be fully exposed, such light streaks are not seriously objectionable.

The less soluble portions of the coloring solution, or the portions of the solution of lower capillarity, will penetrate the wood to a depth of about $\frac{1}{16}$ of an inch; but these less soluble portions, being very rich in coloring matter, will cause the exterior portions of the wood to be stained to deep rich shades; and as the coloring matter will be unevenly deposited, with greater deposits in the porous portions of the wood in the annular rings and grain cells, the grain of the wood will be very highly developed to produce very pleasing ornamental effects.

The boards or planks thus treated will be

carefully dried to make them ready for use; and in finishing their surfaces it is only necessary to pass them through sanding or scraping machines which will not deeply cut or abrade the outer and more richly colored portions thereof.

By the practice of this process very handsome artificially colored woods may be produced at very much less expense than when the wood is colored through to deep shades; and for many uses this artificially colored wood, having deep rich shades and highly developed grain effects in its exterior portions to a depth of $\frac{1}{16}$ of an inch or so, will be valuable and will answer the same purpose as though the wood had been artificially colored to deep shades throughout.

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

The herein described process of coloring wood, consisting in depositing a comparatively large amount of coloring matter in the outer portions of the wood, and a relatively lesser amount of coloring matter in the inner parts thereof, by impregnating the wood throughout with a coloring solution of varying penetrating constituents and varying capillarity, substantially as hereinbefore set forth.

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

WILLIAM AUGUSTUS HALL.

Witnesses:

C. M. SWEENEY,
J. D. KLINGE.