

UNITED STATES PATENT OFFICE.

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ART OF TRANSFORMING WOOD.

933,437.

Specification of Letters Patent.

Patented Sept. 7, 1909.

No Drawing.

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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 Transforming Wood, of which the following is a specification.

This invention relates to the art of transforming or coloring wood for the purpose of producing from some of the cheaper woods, such as maple or white and yellow birch, products resembling higher priced woods, such as black cherry black walnut or mahogany; and the invention comprises certain improvements on the invention covered by my U. S. Patent No. 891,987, June 30, 1908. The invention or discovery set forth in my said patent had for its object, in transforming wood, not only to color, but also to harden or vulcanize the same, and consists in treating the wood, at high temperatures of over 212° F. with certain alkaline solutions. It has been found, however, that, for certain purposes, it is objectionable to harden or vulcanize the wood in the coloring operation, particularly the heart portions of the wood; as it increases the tendency of the wood to warp, check or crack; and the present invention or discovery has for its object to prevent the wood from being hardened or vulcanized, to any considerable extent, when being treated, at the high temperatures desirable, with a coloring alkaline solution the astringent action of which, when treated at such high temperatures, has a tendency to harden or vulcanize the wood; and this object is effected by using saccharine matter in the alkaline coloring solution, such saccharine matter offsetting the hydrolytic or astringent action of the alkali on the wood cellulose.

In carrying the invention into effect wood is immersed in an alkaline coloring solution containing about ten per cent. of saccharine matter, preferably ordinary commercial molasses; although any of the cheaper varieties of brown sugar or other saccharine matter may be employed if desired. The wood to be transformed and colored with the alkaline coloring solution containing saccharine matter will preferably be treated by the vacuum and pressure process, particularly when dark colors are desired, although the alkaline-saccharine coloring matter may be forced into and throughout the wood simply

by boiling the latter under pressure in the solution and without the vacuum treatment.

When treating the wood in an alkaline solution containing saccharine matter by the vacuum and pressure process the wood, placed in a closed cylinder or other suitable receptacle, will first be subjected to a vacuum of about 25 inches to withdraw the air therefrom, and the alkaline-saccharine coloring solution will then be admitted to the chamber of the receptacle and a suitable pressure applied to force the solution into and throughout the wood which will then preferably be boiled for several hours under pressure and at a temperature preferably above 220° F., because alkaline solutions at low temperatures, and not containing foreign coloring matter, have very little coloring effect on lumber. For very dark colors a boiling temperature of about 265° F. will be preferable. In thus treating the woods at these high temperatures the alkaline saccharine solution will be very penetrative, and will so permeate the heart portions of the wood as to color such heart portions to darker shades than the sap portions, which is contrary to the usual effect in treating woods with solutions containing foreign coloring matter in solution, which it is difficult for the heart wood portions to absorb, and which is readily dialyzed from the solution, the heart wood having a higher dialyzing effect than the sapwood.

In coloring any light-colored woods to dark colors, with a view of imitating black walnut, mahogany, etc., it is desirable to have the heart portions darker than the sap portions; for the reason that it is so in the natural woods; but in all other methods of coloring wood heretofore practiced the sap portions of the wood have always been colored darker than the heart portions thereof, which is a reversal of the appearance produced by nature, and is therefore more or less undesirable.

The effect of the saccharine matter in the alkaline solution is to keep the ligneous matter of the wood soft and pliable; this being due to the fact that the saccharine matter counteracts the astringent or hydrolytic action of the alkaline solution. Thus wood which has been transformed and colored by the process above described with an alkaline coloring solution containing saccharine matter, may be rendered very dark and rich in color without being, when dried, much (if

any) harder or more dense than when in its natural condition.

Having thus described my invention or discovery, I claim and desire to secure by

5 Letters Patent:

1. The herein-described transformed wood colored to a darker shade than its natural condition and containing saccharine and alkaline matter.

10 2. The herein-described process of transforming or coloring wood consisting in permeating the wood throughout with a solution containing saccharine and alkaline coloring matter and by which process the heart portions of the wood are colored to darker shades than the sap portions of the wood.

15 3. The herein described process of transforming wood, consisting in treating the

same at a high temperature with an alkaline solution containing saccharin, and which 20 solution is caused to permeate the wood throughout.

4. The herein - described process of transforming or coloring wood, consisting in boiling the same under pressure and at 25 temperatures above 220° F. in an alkaline coloring solution containing saccharine matter, and which solution is caused to permeate the wood throughout.

In testimony whereof I affix my signature, 30 in presence of two witnesses.

WILLIAM AUGUSTUS HALL.

Witnesses:

ELVA D. FOLLETT,
H. FRACTER.