

# UNITED STATES PATENT OFFICE.

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## ART OF TRANSFORMING WOOD.

964,017.

Specification of Letters Patent.

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No Drawing.

Application filed March 30, 1908. Serial No. 424,077.

*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 has for its object to produce, from comparatively inexpensive woods, products resembling, in color and texture, some of the fine light colored cabinet woods, or to produce fancy colored woods with highly developed "grain" effects, and desirable as ornamental woods in cabinet work or for other uses, and different in color from any natural or untreated woods. This object is accomplished, and products such as are just above mentioned are produced, by a novel process of treating the inexpensive woods in such a manner as to color them, throughout their bodies, to any shades which it may be desirable to produce or imitate, and causing the "grain" to be prominently developed.

For producing the results as just indicated reliance is had upon the action of certain colorless salts upon the tannic acid or other tannic matters contained naturally in the wood itself. By "colorless salts" reference is intended to be made to salts which, although not strictly "water white," would not of themselves serve as coloring matters to produce the shades or effects desired; but which, acting chemically on substances in the wood, do, in conjunction with such substances, effect a transformation in the appearance of the wood. The salts or reagents which are employed for coloring the wood, and with which the wood is impregnated throughout, produce more of an insoluble precipitate of a different shade or color in the grain cells in the concentric annual rings than in the other parts of the wood; this being due to the fact that the annual rings contain a larger percentage of tannic acid than is contained in the other parts of the wood.

In carrying the invention or discovery into effect the wood is preferably first sawed into boards, planks, flitches or deals, of any convenient size, and is well seasoned or dried. The dry wood is then saturated or impregnated throughout with a solution of a salt to be used for producing any desired

light color differing from the natural color of the wood. This will preferably be effected by first subjecting the dry wood to the action of a vacuum in a closed tank or receptacle, for the purpose of removing the air and rendering the wood absorbent, then introducing the solution into the tank or receptacle and forcing such solution into and throughout the wood under hydraulic pressure, such treatment not necessarily requiring any heat. The wood may, however, be treated by an open vat process, and in such case the solution will preferably be heated to or near the boiling point. The open vat process will, however, require more time.

For producing lumber having shades of light silver grays a 3° to 4° Baumé solution of ferrous sulfate or ferrous acetate, or other salts of iron, will preferably be employed; and for producing light browns or light reds 4° to 6° Baumé solution of sodium carbonate or other similar salts, will preferably be employed.

It will be understood that this process can be effectively utilized only on woods that contain, throughout their entire structure, a certain percentage of tannic acid or ligneous matter which will be acted on by the colorless salts employed, to stain the woods to the desired shades. The woods which I have thus far found more suitable for operation on by this process are maple and birch, although any wood containing any compound of tannin may also be utilized to secure the above described results.

An important result effected by this novel process is that the natural grain of the wood is greatly developed in appearance, producing remarkable figured effects with woods in which, in their natural or untreated state, the grain is comparatively inconspicuous, or in which it naturally shows but little. The cause of this greatly developed appearance of the figures of the grain, when treated by this novel process, is that a larger percentage of tannin, or allied matter, to be acted on by the colorless salt, is deposited or contained in the open grain cells and in the annular rings of the wood, so that much darker shades are produced by the action of the salts in the annular rings than in the harder portions of the wood where less tannin exists, thereby bringing out the "grain" very conspicuously.

Having thus described my invention I



claim and desire to secure by Letters Patent:—

1. The improvement in the art of treating wood for the purpose of transforming its appearance and producing light shades of color different from the natural color of the wood, consisting in impregnating or saturating the wood throughout with a solution of a practically colorless salt, which, acting on the tannin or allied matter, contained in the wood, produces the shade or color desired, such treatment forming an insoluble precipitate by the action of the salt employed on the tannin of the wood existing in a much larger percentage in the grain cells, thereby developing and rendering very prominent the "grain" thereof, while coloring the entire body of the wood throughout but to lighter shades than those given to the "grain".

2. The improvement in the art of treating wood for the purpose of transforming its appearance, consisting in first drying or seasoning the wood, then subjecting the dried wood to a vacuum process in a closed tank or receptacle, for the purpose of removing the air therefrom, then introducing a solution of a practically colorless salt into the tank or receptacle and forcing the same into and throughout the wood by pressure, such treatment forming an insoluble precipitate by the action of the salt employed on the tannin of the wood existing in a much larger percentage in the grain cells, thereby prominently developing the "grain" thereof, while coloring the entire body of the wood throughout, but to lighter shades than those given to the "grain".

3. The improvement in the art of treating wood for the purpose of transforming its appearance and producing light shades of

color different from the natural color of the wood, consisting in impregnating or saturating the wood throughout with a solution of a salt of iron which, acting on the tannin or allied matter contained in the wood, produces the shade or color desired, such treatment forming an insoluble precipitate by the action of the salt employed on the tannin of the wood existing in a much larger percentage in the "grain" or annual rings than in the other parts, thereby developing and rendering very prominent the "grain" thereof, while coloring the entire body of the wood throughout, but to lighter shades than those given to the "grain".

4. The improvement in the art of treating wood for the purpose of transforming its appearance, consisting in first drying or seasoning the wood, then subjecting the dried wood to a vacuum process in a closed tank or receptacle, for the purpose of removing the air therefrom, then introducing a solution of a salt of iron into the tank or receptacle and forcing the same into and throughout the wood by pressure, such treatment forming an insoluble precipitate by the action of the salt employed on the tannin of the wood existing in a much larger percentage in the "grain" or annual rings than in the other parts, thereby prominently developing the "grain", while coloring the entire body of the wood throughout but to lighter shades than those given to the "grain".

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

WILLIAM AUGUSTUS HALL.

Witnesses:

ANNIE B. WALTERS,

WALTER M. SCHEUMAKER.