

# UNITED STATES PATENT OFFICE.

ARCHIBALD B. TRIPLER, OF NEW YORK, N. Y.

## IMPROVEMENT IN PROCESSES FOR STAINING WOOD.

Specification forming part of Letters Patent No. **207,630**, dated September 3, 1878; application filed March 19, 1878.

*To all whom it may concern:*

Be it known that I, ARCHIBALD B. TRIPLER, of New York city, county and State of New York, have invented a certain new and useful Process in the Art of Coloring Wood, of which the following is a full, clear, and exact description.

The object of my invention is principally to imitate the finer qualities or more expensive kinds of woods, using the cheaper woods as a base, thereby producing an imitation which will, under ordinary circumstances of use, answer all the purposes of the natural wood, while it will be much less expensive, and, in some instances, less difficult to work.

To accomplish this, the invention consists in certain manipulations or processes which experience demonstrates as essential to the successful accomplishment of the desired ends, all of which will be hereinafter first fully described, and then pointed out in the claim.

The wood to be treated, which may be of the hard or soft varieties, is placed in a trough or tank and run into a cylinder or chamber having doors capable of being tightly closed against the admission or egress of air or steam. The doors being firmly closed, the wood is gradually heated by means of steam, which is introduced to the chamber. After the wood is thoroughly heated by this means a vacuum is produced in the chamber by the application of any suitable pump or other efficient contrivance, and the wood is allowed to remain standing in this vacuum for a greater or less time, according to the nature and condition of the material being operated upon. The wood being sufficiently prepared by this "cooking" process, the vacuum is next destroyed by the introduction into the chamber of dry live steam under a pressure of about fifty pounds to the square inch, and this pressure and condition of the steam is maintained until the pores of the wood are all thoroughly opened, the sap removed, and the material otherwise in suitable condition for the next step of the process. The time which will be required for this preparation will depend upon the character of the wood, its thickness, and its condition (whether dry or green) when introduced into the chamber, and this time must be calculated from an observance of these features.

The coloring-matters proposed to be used

are generally such as require water for a solvent, though other solvents capable of readily entering the pores of the wood may be adopted.

Having a sufficient quantity of the coloring-liquid to envelop the material made ready, the dry steam is next shut off from the containing-chamber, and the liquid admitted through a suitable valve. After this a pressure of air is created in the chamber by means of a suitable air-compressing apparatus, and the pressure is run up as high as one hundred or one hundred and fifty pounds to the square inch. There having been no air in the chamber when the coloring-liquid was admitted, it will be apparent that this pressure of air introduced subsequently will operate to drive the liquid thoroughly into and through the pores of the wood, and thus bring all the fibers into such intimate contact with the liquid as that each and every one will be completely stained; and the time required to complete this step in the process must also be judged of by the operator from a consideration of the circumstances surrounding each case.

The next step is to dry the wood which has been thoroughly saturated with the coloring-liquor; and this is accomplished in the same chamber by drawing off the liquor, again producing a vacuum in the chamber, and then passing steam through suitable pipes located at the bottom of the chamber. This operation is quickly performed, and the wood dried by radiation from the pipes without warping. It (the wood) is then removed from the chamber, and is in a condition fit for use.

Cheap woods are thus colored to imitate the more costly kinds, and may also be tinted in "fancy" shades, as may be desired.

The process is to be carefully distinguished from mere surface-staining, which requires care and several applications of the stain in order to produce the requisite color; and this coloring by the old processes is liable to be disclosed by a mere scratch, which will expose the natural color of the wood beneath.

Varnishes, paints, and polishes, or even oil, may be applied to the improved imitation without other previous preparation than mere smoothing, and in a majority of instances the imitation will answer fully as well as the genuine article.

The complete staining of all the fibers of

the wood will admit of its being cut, carved, or trimmed without disclosing its cheap nature. The working of the imitation can, in many instances, be done to advantage, since the grain of cheap wood is sometimes much more favorable than that of the harder or more rare varieties.

In making veneers, the sheets may be of any desired size, and the process renders it possible to obtain them without knots or other flaws, since cheap woods can ordinarily be formed perfect, while the costly varieties are seldom sound and clear throughout any considerable area.

Experience demonstrates that the process above described should be slightly varied in some respects, according to the condition of the material being operated upon. Should the material be dry and its pores well opened, for instance, the vacuum may be dispensed with; and in some instances I have found that heat and pressure applied in accordance with the foregoing principles are sufficient to bring about the desired ends.

It has not been deemed necessary to describe the mechanical apparatus more fully herein, or even to illustrate it by drawings, since it forms no part of the present invention. It should have a thermometer and a pressure and vacuum gage conveniently applied, and should be constructed with care and skill, so that it will perform the work required.

As before intimated, I am aware that it is not new to produce an imitation of rare woods by staining cheaper varieties; and I am also aware of numerous processes for impregnating woods with antiseptics—such, for example, as represented or explained in patent to Ira Hayford of September 4, 1877, and in numerous works explanatory of the subject. To these processes I desire it understood that I lay no claim; but,

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described process of staining wood, the same consisting in inclosing it within a chamber, applying steam-heat thereto, producing a vacuum, in which the wood is allowed to remain until the pores are thoroughly opened, then surrounding the wood with the coloring-liquor, and forcing this liquor into and through the pores by means of compressed air or hydraulic pressure, removing the coloring-liquor, and finally drying the stained wood by heating it while in a vacuum, for the purposes specified.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

ARCHIBALD B. TRIPLER.

Witnesses:

N. S. FINNEY,  
GEORGE W. PRENTISS.