

UNITED STATES PATENT OFFICE.

JOHN WARREN ILLINGWORTH, OF NEW YORK, N. Y.

TREATMENT OF WOOD.

1,051,596.

Specification of Letters Patent.

Patented Jan. 28, 1913.

No Drawing.

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To all whom it may concern:

Be it known that I, JOHN W. ILLINGWORTH, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in the Treatment of Wood, of which the following is a specification.

This invention relates to the treatment of wood, particularly green woods that contain gum, rosin, turpentine and acid, for the purpose of rendering the wood suitable for structural uses.

Certain woods of the evergreen character, such as fir, spruce, cypress, pine, and all woods of the coniferous type may have their value much enhanced by being subjected to the process hereinafter described.

One object of this invention is to provide a process for, and product provided by, treating wood and especially the wood of green or recently-cut trees containing gum, rosin, turpentine and acid so as to prepare the wood for quick seasoning, and fitting it for many commercial purposes for which such wood has heretofore been deemed unsuitable.

Another object is to improve coniferous or evergreen woods which have little commercial value, by rendering them less liable to decay when moist, to render them less brittle, to prevent a dripping of rosin when the wood is heated, and to prevent sap stain and discoloration, thereby greatly adding to the value of such woods.

My process is applied to green, or freshly-cut wood, in the form of logs cut to ordinary commercial length. I first strip the logs of the bark and then place the logs in water; the water may be in large tanks, or in pools formed by a dam or may be a running stream. I prefer to arrange the water tanks, or pools in series so that the water of one tank after having been used for the first soaking of the wood, may be drawn off into another tank. The temperature of the water has some influence on the period of time required for soaking the wood to displace the turpentine, wood-acid, etc. When the temperature of the water is about 50 degrees Fahrenheit, good results may be obtained, but this temperature may be varied and may be higher or lower. However, I distinctly disclaim the use of an elevated temperature such as would be obtained in boiling the wood or subjecting it to a steaming

process, as this weakens the wood in a permanent way. I leave the logs in the water until such time as a gum-like or starchy exudation appears on the surface of the log. For a slab about say four inches thick this exudation ordinarily appears about in ten days. This starchy exudation indicates that the log has been sufficiently soaked to dissolve the water-soluble gums and acids. This soaking of the green wood removes the major portion of the water-soluble gums and acids and leaves the ducts and the pores of the wood comparatively empty, thus preparing the wood for the second bath. It will be understood that the appearance of the starchy exudation evidences the fact that substantially all of the water soluble gums and acids have been removed from the wood. However, I do not limit myself to a period of immersion of the wood corresponding to the time of appearance of this starchy exudation. The wood may be soaked for a shorter period so as not to remove quite as much of the gums and acids and still obtain in a measure the beneficiary results arising from my process. On the other hand, the wood may be soaked for a longer period of time without sacrificing the advantages derived from my process. However, I find that the time corresponding to the appearance of the starchy exudation is the best suited for accomplishing the desired result without undue delay. After being thus immersed, the water should be drawn off, or the wood taken out of the water, the starchy substance which is exuded from the logs is scraped off, and the wood allowed to become air-dried, to obtain the best results, and then immersed in a second bath. However, the air drying is not essential as the wood may be immersed in the second bath immediately after being removed from the first bath. If desired the logs may be sawed into boards, planks, or other structural lumber pieces, air-dried, and then immersed in the second bath.

The second bath consists of a solution of lime, that is lime-water in the tanks or pools into which the sawed lumber pieces are immersed. The lime water is preferably in the form of a saturated solution and having a certain amount of lime in suspension. However, a saturated solution of lime water answers my purpose. The temperature is preferably similar to that I employ in the first step of soaking in water. In this bath

the lime-water effects a combination with any of the remaining acids and the resinous gums in the wood and fixes or resinates them so that subsequently there will be no dripping when the wood is heated or exposed to the sun. The required time for the sawed wood to remain in the lime-water bath will vary from two days to two weeks and will depend on the character of the wood and the sizes into which the pieces have been cut; this must be decided by the judgment of the operator. After the second bath the sawed lumber should be piled on sticks in the ordinary manner in the open air, for a period of about thirty days when it will be found as well seasoned as wood after six-months air drying.

This process may be carried out with any wood from which this starchy substance is exuded by reason of soaking and will preserve and render it less liable to attacks by insects which might otherwise destroy it. It will be observed that all operations requiring heat are dispensed with in this process.

By the use my process a product is provided which has all of the characteristics of high-grade white pine or Washington spruce, it being blanched or whitened by the process, so that its appearance is much different from that of the same pine or spruce when used without the treatment. Its grain is close and it can be painted without being shellacked first, which is necessary with all pines, except white pine; because unless the pine is shellacked, the resin will exude when the wood becomes heated. By this process the resins and acids become fixed or resinated and the pores or ducts of the wood are impregnated and substantially closed with lime thereby preserving the wood, increasing its life and strength and rendering it tough and resilient.

Having thus described my invention, I claim as new:

1. The process for treating green woods containing resins and acids consisting in cutting the wood in the desired lengths and then removing the bark therefrom, then immersing the wood in water at a temperature considerably below the boiling point until a starchy exudation appears on the surface thereof, then removing this starchy substance and drying the wood in the open air, then sawing the wood into lumber pieces, then immersing the lumber pieces in lime water to combine with and to fix the remaining gums and acids in the wood and to impregnate the pores and ducts with lime, and then drying the lumber in open air.

2. The process of treating coniferous or evergreen wood of low commercial value such as second growth pine and spruce consisting in first soaking the wood in water at a temperature considerably below the

boiling point until a starchy exudation appears on the surface thereof to remove the water soluble gums and acids which is evidenced by said starch-like exudation appearing on the surface of the wood, then removing said exuded products, then air drying the wood, then sawing the wood into lumber, then soaking the wood in lime water until the pores and ducts are filled with the solution, and then air drying the lumber thereby causing the pores and ducts to become filled with a deposit of lime, for the purpose set forth.

3. The process of treating coniferous or evergreen wood of low commercial value such as second growth pine and spruce and improved by first soaking the wood in water at a temperature considerably below the boiling point until a starchy exudation appears on the surface thereof to remove the water-soluble gums and acids which is evidenced by said starch-like exudation appearing on the surface of the wood, then sawing the wood into lumber, then soaking the wood in lime water until the pores and ducts are filled with the solution, and then air drying the lumber thereby causing the pores and ducts to become filled with a deposit of lime, for the purpose set forth.

4. The process of treating coniferous or evergreen wood of low commercial value such as second growth pine and spruce and improved by first soaking the wood in water at a temperature considerably below the boiling point until a starchy exudation appears on the surface thereof to remove the water soluble gums and acids which is evidenced by said starch-like exudation appearing on the surface of the wood, then removing said exuded products, then sawing the wood into lumber, then soaking the wood in lime water until the pores and ducts are filled with the solution and then air drying the lumber thereby causing the pores and ducts to become filled with a deposit of lime, for the purpose set forth.

5. The process of treating coniferous or evergreen wood of low commercial value such as second growth pine and spruce and improved by first soaking the wood in water at a temperature considerably below the boiling point until a starchy exudation appears on the surface thereof to remove the water-soluble gums and acids which is evidenced by said starch-like exudation appearing on the surface of the wood, then removing said exuded products, then soaking the wood in lime water until the pores and ducts are filled with the solution, and then air drying the wood until the remaining gums and acids are fixed and the pores and ducts are filled with a deposit of lime.

6. The process of treating wood consisting in immersing the same for a predetermined period of time in water at a tempera-

ture considerably below the boiling point so as to remove a substantial portion of the water soluble gums and acids contained in the wood, and then immersing the wood in a solution of lime so as to fix the gums and acids remaining in the wood and rendering them insensible to heat.

7. The process of treating wood consisting in immersing the same for a predetermined period of time in water at a temperature considerably below the boiling point so as to remove a substantial portion of the water soluble gums and acids contained in the wood, then removing the wood from the water and then drying the same, and then immersing the wood in a solution of lime so as to fix the gums and acids remaining in the wood and rendering them insensible to heat.

8. The product consisting of a low grade wood such as fir, spruce, cypress, pine, etc., said wood being substantially free from water soluble gums and acids, any gums

and acids remaining in the wood being fixed or combined with lime so as to be insensible to heat, the fixed state of the gums and acids causing the wood to be dense and resilient.

9. The product consisting of a low grade wood such as fir, spruce, cypress, pine, etc., said wood being substantially free from water soluble gums and acids, any gums and acids remaining in the wood being fixed or combined with lime so as to be insensible to heat, the pores and ducts in the wood being filled with lime and presenting a bleached appearance, the fixed state of the gums and acids causing the wood to be dense and resilient.

Signed at New York city, in the county of New York and State of New York this 11th day of August A. D. 1911.

JOHN WARREN ILLINGWORTH.

Witnesses:

FRANK M. ASHLEY,
GREEN B. RAUM.