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UNITED STATES PATENT OFFICE.

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UNDRESSED LUMBER AND PROCESS OF PRESERVING SAME.

SPECIFICATION forming part of Letters Patent No. 746,678, dated December 15, 1903.

Application filed July 11, 1902. Serial No. 115,224. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE C. COWLES, a citizen of the United States, residing at Bay Mills, in the county of Bay Mills and State of Michigan, have invented a new and useful Lumber and Process of Producing the Same, of which the following is a specification.

This invention relates to a novel process of treating wood to prevent sap-staining and to the product of the process.

At certain seasons of the year, particularly during the summer months, green lumber rapidly deteriorates in market value by reason of what is known as "sap-mold," which commences to form almost as soon as the board leaves the saw and gradually penetrates the board from the surface thereof, producing black and blue stains, which prevent the sale of the stock as clear lumber, and therefore greatly reduce its value.

The object of my present invention, therefore, is to devise an inexpensive and effective process for treating green or undressed lumber to prevent sap-staining, and to thereby produce lumber which may be exposed indefinitely to the open air without danger of deterioration from such cause.

To this end the process consists in subjecting the wood to a surface treatment with a neutralizing agent to prevent the formation of surface mold and affecting only that portion or surface depth of the lumber which is planed off when the stock is dressed. The result of this treatment is the prevention of sap-stains and the removal of all evidences of the treatment by the dressing of the lumber, the dressed stock being left perfectly clear and of standard color and strength.

In practicing the process the undressed board to be treated is dipped in an alkaline solution, preferably a five-per-cent. solution of bicarbonate of soda, to effect the surface treatment of the board with a neutralizing agent. The immersion of the board in the solution is as brief as possible, a fraction of a second being sufficient to cause the neutralization of the acetic acid in the surface of the wood. By this means the surface only of the wood is affected by the chemical, and fermentation and the consequent formation of the sap-mold are effectually arrested or prevented by the neutralization of that portion of the acid which is exposed to the air. It is of course understood that the mold which produces the objectionable stains is due to the fermentation of the acetic acid, as the latter is oxidized when drawn to the surface of the board by the flowing of the sap in consequence of certain atmospheric conditions. It follows, therefore, that the impregnation of the surface only of the lumber will neutralize the acid in the sap, which would otherwise ferment under the oxidizing influence of the atmosphere and produce the mold and its accompanying stain. As the initial fermentation is prevented at the surface of the board, it necessarily follows that the interior of the board will not be stained and will not be impregnated with or in any way affected by the neutralizing agent with which the surface only of the board is treated. After the stock has been dipped in the alkaline solution in the manner described it is stored in any suitable manner and either air or kiln dried. The drying of the stock in the condition in which it comes from the alkaline bath is a material step of the process, because the removal of all traces of the alkali—as, for instance, by washing—would in large measure, if not wholly, destroy the practical effect of the immersion, and the stock would be liable to subsequent staining. As a result of the rapid immersion or dipping of the stock in the alkaline bath and the subsequent drying of the stock its thin surface portion, which is planed off when the stock is dressed, becomes a protective skin, the pores of which are closed by neutralized sap and microscopic deposits of the neutralizing agent. The color of this protective skin or surface layer will be nearly, if not absolutely, natural, and when said layer is planed off in dressing the lumber the protected stock will be found to be sound, bright, and unstained and absolutely unaffected by the treatment which has prevented its deterioration.

It will therefore appear that my novel process consists in impregnating the surface of undressed lumber with an alkaline (preferably bicarbonate-of-soda) solution to such depth only as will insure the total removal of the impregnated surface when the lumber is

dressed. I have stated that a solution of bicarbonate of soda is thought to be preferable for the treatment of stock in the manner described. This is for the reason that bicarbonate of soda is almost perfectly soluble in water, is inexpensive, and is sufficiently alkaline for the purpose. I do not wish, however, to limit myself to this particular chemical, as any compound of potash, soda, or ammonia, whether caustic or carbonated, may be employed, provided it has the properties of an alkali, the strength of the solution depending, of course, upon the alkaline activity of the chemical used. Certain of the above-mentioned compounds besides being comparatively expensive will leave a crystalline deposit on the stock, which renders it comparatively unmarketable, while certain others—as, for instance, the compounds of ammonia—are too volatile, and therefore, unless properly confined, will vaporize before the stock has received the proper treatment. As stated, however, these compounds are all available, although the compounds of soda (and particularly the carbonate and bicarbonate of soda) are preferable, because they are inexpensive and do not materially discolor the lumber or leave a crystalline deposit upon the surface thereof.

It is appreciated that rapidly dipping the undressed wood in a weak alkaline solution is one of the several ways in which the rapid application of the said solution may be effected in accordance with the invention, and it is to be understood, therefore, that the invention embraces within its scope any manipulation which will result in effecting the rapid application of the solution to the wood in a manner which will produce the desired protective surface or skin without appreciably affecting the structure lying within the confines thereof.

What I claim is—

1. That process of treating undressed lumber to prevent sap-staining thereof, which consists in rapidly applying to the wood a weak alkaline solution to permit said solution to penetrate only that surface depth which is planed off by the usual dressing of the wood.

2. That process of treating undressed lumber to prevent sap-staining thereof, which consists in rapidly dipping the wood into a weak solution of sodium bicarbonate, to permit said solution to penetrate only that surface depth which is planed off by the usual dressing of the wood.

3. That process of treating undressed lumber to prevent sap-staining thereof, which consists first in rapidly dipping the wood into a weak solution of sodium bicarbonate, to permit said solution to penetrate only that surface depth which is planed off by the usual dressing of the wood, and second in drying the lumber so treated.

4. As a new article of manufacture, an undressed board having a protective skin or surface layer formed of neutralized sap and the neutralizing agent, said skin or surface layer being of a depth which will enable it to be planed off by the usual dressing of the board.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEO. C. COWLES.

Witnesses:
L. E. PERRY,
W. KENNELLY.