

# UNITED STATES PATENT OFFICE.

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## PROCESS OF PRESERVING WOOD.

945,693.

Specification of Letters Patent.

Patented Jan. 4, 1910.

No Drawing.

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*To all whom it may concern:*

Be it known that we, JUSTIN CHATEAU and JULES MERKLEN, citizens of the French Republic, residing at Paris, Department of the Seine, in France, have invented certain new and useful Improvements in Processes of Preserving Wood, of which the following is a specification.

This invention has for its object the process of conservation of wood, particularly suitable for railway ties or sleepers.

In wood conserving methods or processes as generally practiced, the wood is dried before injection of the antiseptic material. This method has been found defective, and it has also been ascertained that the antiseptic, such as creosote, penetrates more deeply in a moistened tie or sleeper than in a dry one.

The method embodying the features of the invention is outlined as to the essential steps as follows: The wood pieces or ties are disposed in a suitable vessel and steam or hot water is introduced in such manner as to fully envelop or be equally distributed over the wood or tie. When the wood has been subjected to this operation for a proper length of time the vessel is relieved of the steam or hot water and a vacuum is formed therein. The establishment of a vacuum produces an active evaporation of the moisture from the wood and cools the latter, thereby preventing deterioration of the wood by excessive heating. After this vacuum treatment the tie is then again subjected to the action of hot water or steam and to the action of a vacuum, and these operations are repeated several times, and after a last treatment by vacuum which removes the air and permanent gases which may have been liberated, the antiseptic material, such as creosote, is injected into the wood or tie under pressure. This antiseptic material is distributed throughout the whole mass of the wood by means of auxiliary fluids which are used successively and act under successively increasing pressures at intervals. These fluids comprise at least a vapor and a gas, the vapor giving by its condensation the necessary heat for maintaining the creosote in a liquid state, and the gas producing a driving or injecting action on the creosote relatively to the wood or tie.

As a specific example of the steps of the method, times and pressures relatively to a certain number of ties or sleepers, let it be assumed that it is desired to treat or impreg-

nate ninety-two beech sleepers or ties, each measuring 2.7x.22x.14 meters. These sleepers are disposed in a suitable vessel or receptacle and are subjected to the action of steam for thirty minutes under a pressure of 4 kg. per sq. cm. at a temperature of 145° C. The vessel or receptacle is then relieved of water of condensation and steam pressure and a vacuum of 40 cm. of mercury is established in the vessel and maintained for about fifteen minutes. The ties or sleepers immediately subsequent to the vacuum action are again treated by steam for the same length of time as before and under the same pressure at the same temperature, and after the water of condensation is relieved and the steam pressure cut off, a vacuum of 40 cm. of mercury is again established and maintained for a period of forty minutes. After this latter vacuum action the creosote is injected into the ties during a period of about seventy minutes under a pressure of 7 kg. per sq. cm. at a temperature of 98° C., and at the end of this period of injection the antiseptic or creosote is shut off and that which has not been taken up by the ties or sleepers is drawn off, and that which has been partially taken up by the ties or sleepers is diffused by means of auxiliary fluids, such as steam and air, subjecting the ties or sleepers during a period of about fifteen minutes to a pressure increasing until it reaches 3 kg. per sq. cm., the temperature also increasing or ascending until it reaches 135° C. While the vessel is filled with steam as a result of the immediately foregoing step, compressed air which is not heated is introduced into the vessel in order to maintain the pressure at 3 kg. per sq. cm., the temperature under these conditions lowering until it reaches 115° C. Immediately following this latter operation, steam is again introduced into the vessel in order to progressively increase the pressure to 4 kg. per sq. cm. and the temperature to 145° C. After this last step, air under pressure and at an ordinary temperature is again introduced into the vessel for about fifteen minutes to bring back the temperature to 115° and at the same time maintain the pressure at 4 kg. per sq. cm. These several steps or operations are continued every fifteen minutes until the pressure reaches 5.5 kg. per sq. cm. and the temperature is raised to 150° C. In carrying out the method as just specifically explained, the ties or sleepers will become



fully impregnated with the antiseptic material or creosote, and experiment has demonstrated that under such conditions and with the quantity of wood or the number of ties or sleepers treated as stated, the absorption of 1688 kgs. of antiseptic material is effected, or each tie or sleeper will have absorbed 18.75 kg.

What is claimed is:

- 10 The herein described method of impregnating wood with a preservative, consisting in disposing the wood in a receptacle, moistening the wood, relieving the receptacle of moisture, subjecting the wood to the action
- 15 of a vacuum to draw out a part of the moisture and cool the wood, repeating the moistening and vacuum operations, injecting an

antiseptic material into the wood while the wood is under pressure, and diffusing the injected antiseptic material by means of auxiliary fluids introduced in the receptacle at intervals under progressively increasing pressures and gradually increasing temperatures until the wood is thoroughly impregnated with the antiseptic material.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JUSTIN CHATEAU.  
JULES MERKLEN.

Witnesses:

H. C. COXE,  
EMILE KLOTZ.