

UNITED STATES PATENT OFFICE.

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PROCESS OF TREATING WOOD.

1,295,828.

Specification of Letters Patent.

Patented Feb. 25, 1919.

No Drawing.

Application filed January 20, 1917. Serial No. 143,518.

(FILED UNDER THE ACT OF MARCH 3, 1883, 22 STAT. L., 625.)

To all whom it may concern:

Be it known that I, CLYDE H. TEESDALE, a citizen of the United States, and an employee of the Forest Service of the Department of Agriculture of the United States of America, residing at Madison, in the county of Dane, State of Wisconsin, (whose post-office address is Madison, Wisconsin,) have invented a new and useful Process of Treating Wood, of which the following is a specification.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625), and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the Government, or any person in the United States, without payment to me of any royalty thereon.

My invention relates to processes for treating wood with creosote oil or other preservatives or materials of an oily nature, for the purpose of preventing its destruction by decay, insects, or any other destructive agent, and for the purpose of waterproofing it to prevent or retard subsequent absorption of moisture. The object of my invention is threefold: (1) to increase the efficiency of the present methods of treating wood with oils or similar materials by increasing the penetration of the preservative; (2) to prevent or retard their subsequent exudation or "bleeding" from the treated wood; and (3) to clean and dry the wood of excess oil and other objectionable material. It may be added that these results are accomplished with a smaller amount of preservative material than is now commonly used.

The present common practice in treating unseasoned wood is to subject it to live steam, under pressure, in a sealed retort until the wood is thoroughly heated. This step is followed by a vacuum period to remove the excess moisture. The preservative is run into the retort and applied to the wood under pressure, until the required amount has been injected. When seasoned wood is treated, the steaming, above referred to, and in some cases the vacuum, is frequently omitted. After the oil has been injected, it is common practice to apply a vacuum for the purpose of removing the excess preservative from the surface of the timber. It has been found from experience that timber treated with oil preservatives by the common

methods may, when in use, owing to conditions of weather, heat, and the like, exude some of the preservative, which may appear on the surface, and become very objectionable. The appearance of the exuded preservative on the surface of the treated material, when in use, is very objectionable, in that, in the case of wood paving blocks, it is sticky and may be carried by pedestrians to stores and dwellings, thereby causing floors, rugs, and the like to become stained and dirtied; and, in the case where the exuded preservative appears on treated material used in elevated structures, it may drip upon traffic passing by, thus causing damage. These objections occur particularly in cases where the preliminary steps of steaming and vacuum have been omitted from the process of treatment. My invention is designed to overcome these objections by giving the wood an additional steaming, either with or without vacuum treatment, after it has been impregnated with creosote by any of the common methods described. The steam may be applied either before or after the application of the final vacuum, or without the use of a final vacuum at all. The pressure and temperature of the steam and the duration of the steaming period may be as desired by the operator, but should be regulated so as not to injure the wood. I prefer not to exceed a temperature of 259° F., a pressure of 20 pounds per square inch or a duration of two hours. The effect of the steaming process, thus used, is to remove a portion of the preservative from the outer layers of the wood, and to remove dirt, tarry material, carbon, pitch, resin, and the like from the surface of the wood. It also has the effect of driving the preservative deeper into the wood and thus increasing its penetration. The vacuum applied after this steaming treatment assists in completing the removal of excess preservative, dirt, tarry matter, and the like from the surface and outer portions of the wood. In addition, it removes the excess of moisture added by the steam treatment and renders the wood cleaner and in a more attractive condition. The preservative removed in these steps may be recovered, thus effecting an economy in treatment.

To summarize, it will thus be seen that the steps in my process preferably consist in impregnating the paving blocks or timber material with creosote, or other preservatives,

by any of the common methods, but preferably by the use of the steps of steaming, vacuum and oil pressure. Upon completion of these steps, the liquid solution is withdrawn from the retort and then live steam is introduced, preferably at a temperature of from 220 to 259° F. for the purpose of rendering more fluid and partially removing excess preservative, dirt, tarry matter, and the like from the surface and outer portions of the wood. This step may then be followed by a vacuum, which completes the process of removing excess preservative, dirt, tarry matter, and the like from the outer portions and surface of the wood, and of removing any excess moisture that the steam may have introduced.

Having thus described my invention, I claim:

1. A process of preserving wood, consisting in impregnating wood with a fluid preservative, then removing therefrom some of said preservative by applying additional heat for preventing subsequent bleeding.
2. A process of preserving wood, consisting substantially in saturating wood with a fluid preservative, then partially removing said preservative by the application of additional heat in a partial vacuum.
3. A process of preserving wood, consisting of impregnating wood by suitable treatment with a fluid preservative, then removing some of said preservative from an outer layer of the treated wood by applying additional heat for preventing subsequent bleeding of the treated material.
4. A process of preserving wood, consisting in impregnating wood with a fluid preservative, then heating the treated wood externally for removing some of said preservative from the outer layer only of the wood, thereby causing exudation of preservative from the wood, whereby subsequent bleeding is prevented.
5. The process of preserving wood which comprises impregnating wood by suitable treatment with a fluid preservative, and then removing some of said preservative from an outer layer only of said wood by applying additional heat and thereby causing exudation of preservative from the wood, whereby subsequent bleeding is substantially prevented.
6. The process of preserving wood which comprises substantially saturating wood with a fluid preservative, and then removing said preservative to a substantial extent from an outer layer only of said wood by application of additional heat and a partial vacuum.
7. The process of preserving wood which comprises impregnating wood by suitable treatment with a fluid preservative, increasing the fluidity of said preservative in an outer layer only of the treated wood, and

withdrawing some of the preservative from said outer layer by means of a partial vacuum.

8. The process of preserving wood which comprises impregnating wood by suitable treatment with a fluid preservative, then heating the treated wood externally to increase the fluidity of said preservative substantially in an outer layer only of the wood, and withdrawing some of the preservative from said outer layer by means of a partial vacuum.

9. The process of treating wood with creosote or the like which comprises preparing the wood for the reception of creosote or the like in a suitable receptacle, applying the creosote or the like to the wood in such receptacle under pressure, and, after the wood is impregnated with preservative, applying to the wood in said receptacle live steam under pressure to increase the fluidity of the creosote only in the outer or peripheral portions of said wood, and causing a partial vacuum in said receptacle sufficient to withdraw some of the creosote from said outer portions of the wood.

10. The process of treating wood which comprises placing the wood within a suitable receptacle, applying live steam to the interior of said receptacle, producing a partial vacuum in said receptacle, then applying creosote or the like to the wood within the receptacle under pressure, next drawing off the creosote or the like from the receptacle and applying live steam to the interior of said receptacle for a period of time sufficient only to increase the fluidity of the preservative in the outer portions of the wood, and then again producing a partial vacuum therein to withdraw preservative from such outer portions.

11. The process of treating wood previously impregnated with a preservative capable of being rendered fluid which comprises rendering the preservative suitably fluid in an outer layer only of said wood, and then removing a part of the preservative from said layer, whereby subsequent bleeding is substantially prevented.

12. The process of treating wood previously impregnated with creosote or the like, to prevent bleeding, which comprises heating such impregnated wood in a suitable receptacle in such a manner as to induce fluidity of the preservative in the peripheral portions of the wood, and then causing a partial vacuum in such receptacle, whereby some of the creosote in said peripheral portions is withdrawn.

13. The process of treating wood previously impregnated with a preservative such as creosote or the like, which comprises steaming such wood sufficiently to heat up substantially only an outer layer thereof and thereby to render the preservative in said

layer suitably fluid, and subjecting the steamed wood to the action of a partial vacuum for a period of time sufficient to remove some of said preservative from said outer layer.

14. The process of treating wood, impregnated with creosote or the like, to prevent bleeding and to remove gums, pitches and the like therefrom, which comprises heating in a suitable receptacle the peripheral portions only of the wood so impregnated, whereby the creosote or the like in such peripheral portions is rendered more fluid, and causing a partial vacuum in such receptacle and thereby withdrawing preservative from such peripheral portions.

15. The process of preserving wood which comprises substantially filling the cells and voids of the wood throughout with a fluid preservative in a suitable treating receptacle, and then applying live steam to said wood for a period of time sufficient to expand and drive out a portion of the preservative from the outer layers of the wood, whereby substantially no more preservative will exude therefrom under atmospheric conditions.

16. The process of preserving wood which comprises substantially filling the cells and voids of the wood throughout with a liquid preservative in a suitable treating receptacle, and then heating the wood to a higher temperature while in said receptacle, whereby expansion of the preservative and exudation of a part thereof from the wood occurs within said receptacle.

17. The process of treating wood which comprises placing the wood in a closed receptacle, applying live steam to the wood, producing a partial vacuum in said receptacle, then applying creosote or the like to the

wood under pressure, next drawing off the surplus creosote or the like from the receptacle, and then increasing the temperature inside the receptacle to an extent sufficient to cause expansion of the preservative and exudation thereof to a substantial extent from the outer portions of the wood, whereby subsequent bleeding is substantially prevented.

18. The process of preserving wood which comprises subjecting wood to a "full cell" treatment with creosote or the like preservative, then applying heat to said wood to cause expansion of the preservative in an outer layer of the wood and exudation of a part of the preservative therefrom, and removing the exuded preservative.

19. In a "full cell" process of preserving wood with creosote or the like preservative, the final treatment for rendering the wood substantially non-bleeding, which comprises applying additional heat to the substantially saturated wood and thereby causing exudation of a sufficient quantity of preservative from the outer portions thereof to substantially prevent the wood from bleeding subsequently under conditions of practical use.

20. A wood paving block impregnated substantially through with creosote or the like preservative according to a "full cell" treatment, the peripheral portions of said block having such a degree of impregnation per unit of volume that under atmospheric conditions said block is substantially free from exudation of the preservative.

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

CLYDE H. TEESDALE.

Witnesses:

THOMAS SHAW,
ARTHUR H. FAST.