

UNITED STATES PATENT OFFICE.

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METHOD OF PRESERVING WOOD.

No Drawing.

Application filed November 28, 1921. Serial No. 518,396.

To all whom it may concern:

Be it known that I, WALTER R. WHEATON, a citizen of the United States, and resident of Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Methods of Preserving Wood, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in method of preserving wood.

Many kinds of preservatives have been used in preserving wood with different results, but are not satisfactory for one reason or another. Creosote is very good and has been used to a large extent, but the cost is now almost prohibitive. Zinc chloride, another good preservative, and less expensive than creosote, has also been used to advantage, but as it is soluble in water, it soon loses its value when exposed to the elements.

It is one of the objects of the present invention to overcome the before mentioned objectionable features and provide a method of preserving wood which is comparatively inexpensive and efficient in use, and well adapted for the purpose desired.

A further object of the invention is to provide a method of preserving wood in which a soluble-in-water preservative may be inserted in the pores of the wood and the pores then sealed with a waterproof substance to protect the preservative from the elements.

With the above and the objects in view, the invention consists of the improved method of preserving wood and its parts and combinations as set forth in the claims, and all equivalents thereof.

First. In using the method to preserve green timber or partly green timber, the timber is placed within a tank or container and is subjected to steam, preferably below twenty (20) pounds pressure for one or more hours.

Second. At the end of the steam bath a vacuum is drawn to remove as much of the water in the wood as possible. The vacuum should be over twenty (20) inches and held until no further appreciable amount of water is removed from the wood by continuing the vacuum.

Third. The tank is then opened to release the vacuum and the wood is then subjected

to compressed air at a pressure of twenty-five (25) to seventy-five (75) pounds for one-half hour or more, or until the inner portion of the wood or timber shows an air compression of approximately 75% of that outside of the wood.

Fourth. The wood is then subjected to a solution of zinc chloride of from two (2) to six (6) per cent in strength and the pressure on the wood is increased up to seventy-five (75) to two hundred (200) pounds per square inch. This pressure is maintained until the wood absorbs one-fourth pound or more of zinc chloride per cubic foot of wood. While the pressure is applied to the zinc chloride solution the air in the tank is permitted to escape through the top of the tank in such a manner that the air pressure in the wood does not decrease while pressure is on the zinc chloride solution.

Fifth. After the wood has absorbed sufficient zinc chloride, the tank is cleared of excess solution and a vacuum of twenty (20) inches or over is then created in the tank. This vacuum is maintained for half an hour or more, or until there is no appreciable drip of zinc chloride solution from the wood.

Sixth. Without breaking the vacuum, crude oil with either an asphalt or paraffin base is then introduced into the tank and forced into the pores of the wood under a pressure of from one hundred (100) to two hundred (200) pounds per square inch, until the wood absorbs three pounds or more of oil per cubic foot of wood.

For seasoned timber the method is modified to the extent that the initial steam and vacuum treatment is omitted.

The advantages of this improved method or process of preserving wood may be concisely summed up as follows:

1st. It is less expensive than using creosote or a creosote and zinc chloride.

2nd. The injection of the oil into the outer pores of the wood retards or prevents checking of the wood on exposure to the elements.

3rd. The injection of oil into the outer portions of the wood holds the zinc chloride within the wood for a greater length of time and therefore prolongs the life of the wood.

4th. The method prolongs the life of the wood and provides greater resistance against decay than either zinc chloride or crude oil used separately or when mixed together.

5th. The method eliminates frothing or emulsifying action common in methods using zinc chloride solution and crude oil mixed and agitated simultaneously.

6th. The method permits the wood being completely treated without rehandling or removal from the tank or receptacle.

7th. By subjecting the wood in the tank to a vacuum after the toxic salt solution has been forced into the wood, the amount of crude oil retained by the wood is substantially increased. This greatly adds to the waterproofing effect of the oil.

The introduction of compressed air in the wood prior to the injection of the salt solution into the wood increases the amount of the toxic salt which can be removed from the wood when the vacuum is applied. This in turn makes it possible to inject more of the crude oil into the wood and keep it in the wood than when the compressed air is not first introduced.

While the method has been described in connection with zinc chloride and crude oil, it is to be understood that sodium fluoride, or other salts and crude oils, paraffin or asphaltic base, coal tar creosotes, water gas tar, water gas creosote, coal tar or any asphaltic flux may be used without departing from the spirit and scope of the invention.

From the foregoing description it will be seen that the method of preserving wood is very simple in its application and is well adapted for the purpose described.

What I claim as my invention is:

1. A method of preserving wood, consisting in forcing into the wood a toxic salt solution and increasing the pressure until the wood has absorbed a certain amount of the solution, then subjecting the wood to a vacuum for a certain length of time to remove surplus solution and then without breaking the vacuum subjecting the wood to oily waterproofing material and then placing the oil under pressure until the wood absorbs a certain amount of oily waterproofing material.

2. A method of preserving wood, consisting of subjecting the wood to air pressure for a predetermined length of time and then subjecting the wood to a toxic salt solution and increasing the pressure and maintaining the pressure until the wood has absorbed a certain percentage of the solution, then subjecting the wood to a vacuum for a certain length of time to withdraw surplus solution from the wood, and then without breaking the vacuum subjecting the wood to oily waterproofing material and then placing the oil under pressure until the wood absorbs a certain amount of oily waterproofing material.

3. A method of preserving wood, consisting of subjecting the wood to air pressure

for a predetermined length of time and then subjecting the wood to a toxic salt solution and increasing the pressure and maintaining the pressure until the wood has absorbed approximately one-fourth pound or more of the toxic salt per cubic foot of wood, then subjecting the wood to a vacuum of 20 inches or more for one-half hour or more after the wood has been impregnated with the solution, withdraw surplus solution from the wood and then without breaking the vacuum subjecting the wood to oily waterproofing material and then placing the oil under pressure until the wood absorbs three pounds or more of oily waterproofing material per cubic foot of wood.

4. A method of preserving wood, consisting of subjecting the wood to twenty-five (25) pounds to seventy-five (75) pounds air pressure for approximately one-half hour or more, or until the inner portion of the wood shows an air compression of approximately 75% of the pressure outside of the wood and then while maintaining this air pressure in the wood subjecting the wood to a toxic salt solution of from two (2) to six (6) per cent in strength under a pressure of seventy-five (75) pounds or more per square inch and maintaining the pressure until the wood has absorbed one-fourth pound ($\frac{1}{4}$ lb.) or more of the toxic salt per cubic foot of wood, and as the pressure is applied, the air in the container in which the wood is held is permitted to escape from the upper portion of the container, and then draining the container of solution and subjecting the wood to a vacuum of twenty (20) inches or more approximately one-half hour or more until the vacuum within the wood reaches 75% or more of the intensity of that within the container to remove the surplus solution from the wood, and then without breaking the vacuum introducing crude oil, with either an asphalt or paraffin base, into the container and then forcing the same into the wood under a pressure of one hundred (100) to two hundred (200) pounds per square inch until the wood absorbs three pounds or more of oil per cubic foot of wood.

5. A method of preserving wood, consisting of subjecting the wood to steam preferably less than twenty (20) pounds pressure per square inch for one or more hours, then releasing the steam and applying a vacuum for one-half hour or more and then subjecting the wood to compressed air at twenty-five (25) to seventy-five (75) pounds pressure per square inch for one-half hour or more, while holding this air pressure in the wood introducing a zinc chloride solution against this pressure and increasing the pressure to seventy-five (75) to two hundred (200) pounds per square inch until the wood absorbs a certain amount of the solution and then draining the solution from the cylinder

and then creating a vacuum of twenty (20) pounds per square inch until the wood inches or more around the wood for one-half hour or more to remove the surplus solution absorbs three pounds or more of oil per cubic foot. 10
and then without breaking the vacuum in-
5 troducing a crude oil into the tank and then In testimony whereof, I affix my signa-
forcing it into the wood under a pressure of ture.
one hundred (100) to two hundred (200)

WALTER R. WHEATON.