

# United States Patent Office.

CHARLES MASSEY CRESSON, OF PHILADELPHIA, PENNSYLVANIA, AS-  
SIGNOR TO AMERICAN WOOD PROTECTION COMPANY.

Letters Patent No. 109,872, dated December 6, 1870.

## IMPROVEMENT IN SEASONING AND PRESERVING WOOD.

The Schedule referred to in these Letters Patent and making part of the same.

I, CHARLES MASSEY CRESSON, M. D., of Philadelphia, county of Philadelphia and State of Pennsylvania, have invented an Improvement in Seasoning Wood and Protecting it from Decay, of which the following is a specification.

### *Nature and Object of the Invention.*

My invention consists in the application, substantially as described hereafter, of liquids to timber, during the heating of the latter, for the purpose of rendering less soluble those parts which are most liable to decay.

### *General Description.*

The first result of the application of heat to unseasoned timber is to convert the surface-moisture into vapor; a portion of this vapor escapes into the surrounding atmosphere, while the remainder passes into the mass of the timber and is condensed, finally reaching the central portions, if the heat be long enough continued.

In this manner, the pores at the surface of the timber are deprived of their liquid contents and shrink, while those at the center are engorged with additional moisture and swell, so that the timber becomes cracked in the outer portions, and this cracking is of greater extent when the process of vaporizing the water is a rapid one.

It is necessary, however, in order to insure perfect seasoning, that the whole of the free water be expelled from the timber, and to do this it is essential that the whole mass of the timber be heated to or above 212° Fahrenheit.

In my patent of July 7, 1868, for seasoning timber, I treated the latter in such a manner that while the timber was being heated throughout its mass to 212° Fahrenheit, the surface was kept coated with a mixture of liquids of various volatilizing points, which liquids were obtained from the condensation on the surface of the wood of vapors introduced into the chamber in which the wood was being heated.

The effect of this treatment may be briefly described as follows:

In addition to the water volatilized a portion of another liquid was also volatilized, and condensed within the log with the vapors of water, while the surface was wetted with a sufficient amount of liquid not volatilizable at the temperature to which the surface was necessarily exposed to heat the central parts, so that the pores at the surface were sufficiently filled to prevent cracking.

By observations upon the practical workings of the process and apparatus then patented, I find that I can materially quicken and cheapen the process by the employment of an occasional shower-bath of

the liquids of various volatilities, and in this way not only save the amount of fuel necessary for the volatilization of a portion of the oils used to replace the water, but also secure a sufficient amount of liquid upon the upper surface of the timber treated, which the use of vapor alone does not always secure.

To treat timber by this process, I place it in a chamber with walls so constructed as to prevent, as far as possible, the outward radiation of heat, the wood being stacked openly, to separate the surfaces of the pieces.

Beneath the ceiling of the chamber are secured perforated pipes, by means of which the warm liquids can be showered upon the timber at proper intervals.

That portion of the liquid not adhering to the surface or penetrating the timber, drops down to the bottom of the chamber, and is there treated by a coil of steam-pipes, or flows from thence back to a heater or still.

The excess of vapor and moisture driven from the wood may be passed through a condensing apparatus for the recovery of the oils, and the chamber must be so arranged with flues or steam-pipes that the temperature of the wood can be raised to the proper point.

The mixture of liquids employed should be composed of those volatilizing between 180° and 300° or 320° Fahrenheit, and of such a nature that they will not oxidize or promote oxidization, and will form gelatinous mixtures with the gummy or albuminous matters of the wood.

The process of heating and showering should be continued until the center of the timber reaches 212° Fahrenheit, and care should be taken that the surface temperature does not exceed 290° Fahrenheit, as at 300° Fahrenheit I find the strength of the timber to be rapidly reduced.

Where the time required in the operation is not of moment, it will be found best not to raise the temperature of the surface of the wood above 235° or 240° Fahrenheit as the timber will be less liable to crack when a longer time is employed in its treatment.

The time necessary to heat green oak timber to 212° Fahrenheit, the surface being maintained at 280° or 290° Fahrenheit, varies from an hour and a half to two hours per inch in timber of small dimensions, in a chamber not only seven feet square, heated by steam-pipes, arranged on the bottom and sides.

After the completion of the operation, the timber can be removed from the chamber and allowed to cool.

This mode of treatment by occasional showers of

liquids, is suited to ordinary air-seasoning, but for the preservation of timber, it is best to treat all of the albuminous matter to above 212° Fahrenheit, so as to render them insoluble in water.

*Claim.*

The treatment, substantially as herein described, of timber with liquid applications while the said timber is being heated.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES M. CRESSON, M. D.

Witnesses:

WM. A. STEEL,

JNO. B. HARDING.