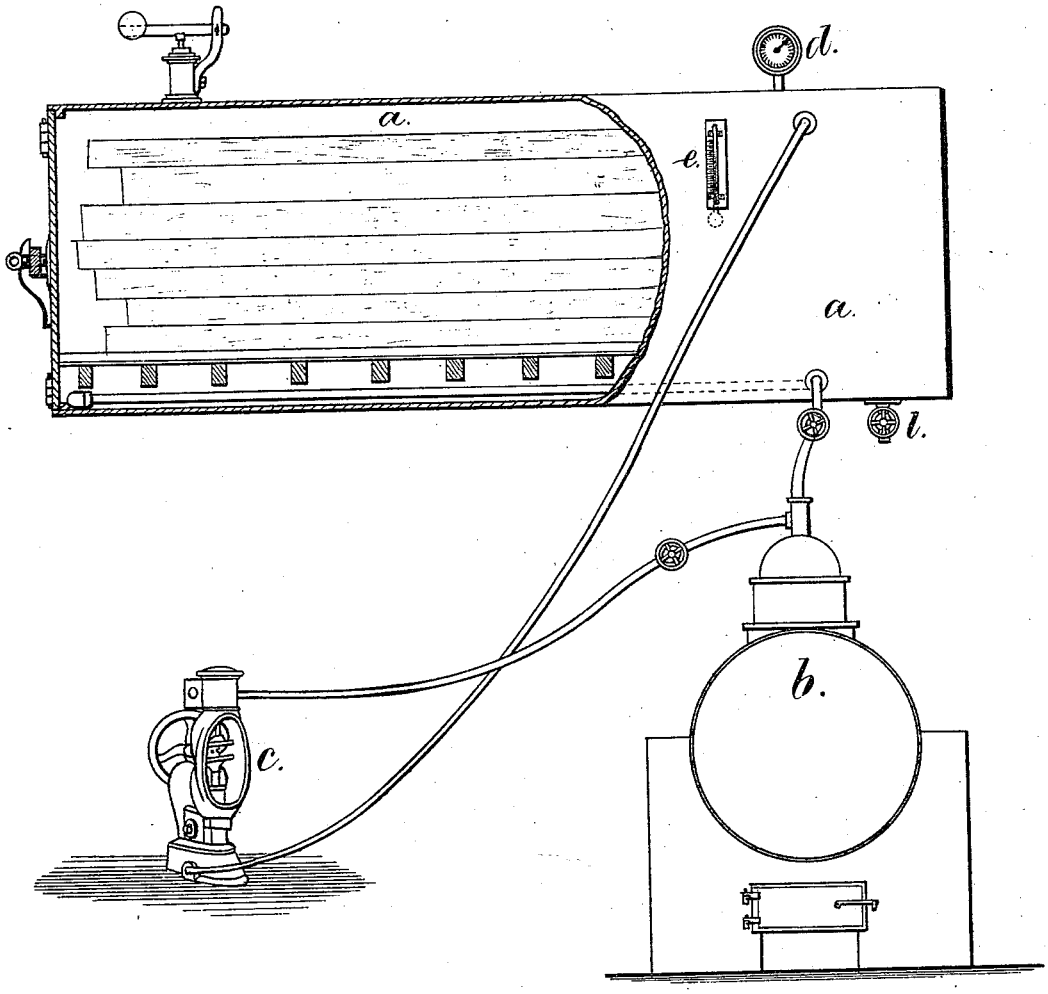
L. S. ROBBINS.

Process of Preserving Wood.

No. 165,758. Patented July 20, 1875.



Witnesses,
Chas. H. Smith
Harold Sewell

Inventor.
Louis S. Robbins.
per Lemuel W. Serrell
atty.

UNITED STATES PATENT OFFICE.

LOUIS S. ROBBINS, OF NEW YORK, N. Y.

IMPROVEMENT IN PROCESSES OF PRESERVING WOOD.

Specification forming part of Letters Patent No. 165,758, dated July 20, 1875; application filed April 2, 1875.

To all whom it may concern:

Be it known that I, LOUIS S. ROBBINS, of the city and State of New York, have invented an Improvement in Process of Preserving Wood, of which the following is a specification:

Wood has been heated in a chamber for driving off the watery matters in the form of vapor, or kiln-drying the same. This operation is performed to prevent the subsequent shrinkage of the wood; but it is well known that the strength of the wood is decreased and the weight lessened by the kiln-drying operation.

Wood has been compressed in molds, and heated for the curing of such wood, and for giving to it the shape of the mold. In this case the curing operation is not adapted to irregular articles, and the treatment cannot be relied upon, because the pressure may vary more or less, according to the perfect tightness of the molds.

My invention consists in a process for curing wood, wherein the wood is heated to about 212° Fahrenheit, to expel the atmosphere from the pores, and then the temperature is increased simultaneously with an increase of atmospheric or gaseous pressure within the closed vessel containing the wood. By the surrounding increased atmospheric pressure the vaporization of the sap is prevented, and the vaporizable products are coagulated and diffused with nearly uniformity throughout the mass and retained, so that the pores of the wood are freed from air and filled to a considerable extent, and the vegetable juices and liquid matter that would promote fermentation are so changed by the heat that the risk of fermentation and decay is avoided to a great extent.

In carrying out my process of preparing wood any suitable apparatus may be employed, but I have shown in the drawing means that can be used.

The chamber *a* is adapted to receive the wood, and it will be of a size suitable to the material operated upon. It will generally be provided with a track in the bottom, with a car into which the wood is piled, and said car is run into the chamber *a*, and the end closed by a suitable head or doors. The boiler *b* is connected to coils of steam-pipes within the chamber *a*, so that the temperature of such chamber *a* may be raised to any desired degree of heat. Hot water may take the place of steam, or heated air may be introduced. The air-pump *c* is employed to force air into the chamber or receiver *a*, and a pressure-gage, *d*, and thermometer at *e* should be provided.

The wood confined in the chamber or receiver *a* is heated, and when the temperature is such that the vapors begin to distill, say about 212° Fahrenheit, then the air-pump is set to work, and atmospheric air is forced into such chamber, and the pressure is increased in about the ratio of one pound for each degree of temperature, so that the pressure will be sufficient to prevent the evaporation of the juices, resinous and watery matters from the wood, and the resinous matters are melted and dispersed with considerable uniformity throughout the wood, so as to fill up the pores of the wood, and the atmosphere will largely be excluded, because the vapors in the wood will expand and fill the pores before the atmospheric pressure is increased, and, hence, there will be nothing to interfere with the melted resinous matters penetrating the mass with great uniformity by capillary attraction, and these resinous matters, that would distill in the form of hydrocarbon vapors at atmospheric pressure, are confined by the increased pressure, and solidify with the wood and render it very dense. The vegetable albumen is also solidified, and the result of the treatment is a very strong, uniform, and hard wood, free from sap and other matters that would hasten its destruction by fermentation. This heating operation tends to destroy insects and germs that might destroy the wood or injure the same. When the curing process has been continued a sufficient time, which will depend upon the sizes of the pieces under treatment, and their quality, the pressure is not to be relieved suddenly, but the heat is to be shut off, the air-pump continued in action, and a cock at *l* opened, which will allow the heated air to escape, and the supply and delivery of the air are to be so regulated that by the time the temperature is reduced to about 200° Fahrenheit the pressure will be about the same inside the chamber as outside of it.

By this process the sap and resinous materials are melted and changed, so as to become fixed at the same time that they are more thoroughly diffused throughout the wood, and the mass is rendered more uniform and homogeneous; hence this operation may properly be termed vulcanizing the wood.

I claim as my invention—

The process herein specified of curing wood by heating the same to a temperature of about 212° Fahrenheit in a vessel to expel the atmosphere from the pores of the wood, then increasing the temperature and simultaneously increasing the pressure in about the proportion specified by forcing into such vessel atmosphere or gas, for the purposes and substantially as set forth.

Signed by me this 29th day of March, A. D. 1875.

LOUIS S. ROBBINS.

Witnesses:
GEO. T. PINCKNEY,
CHAS. H. SMITH.