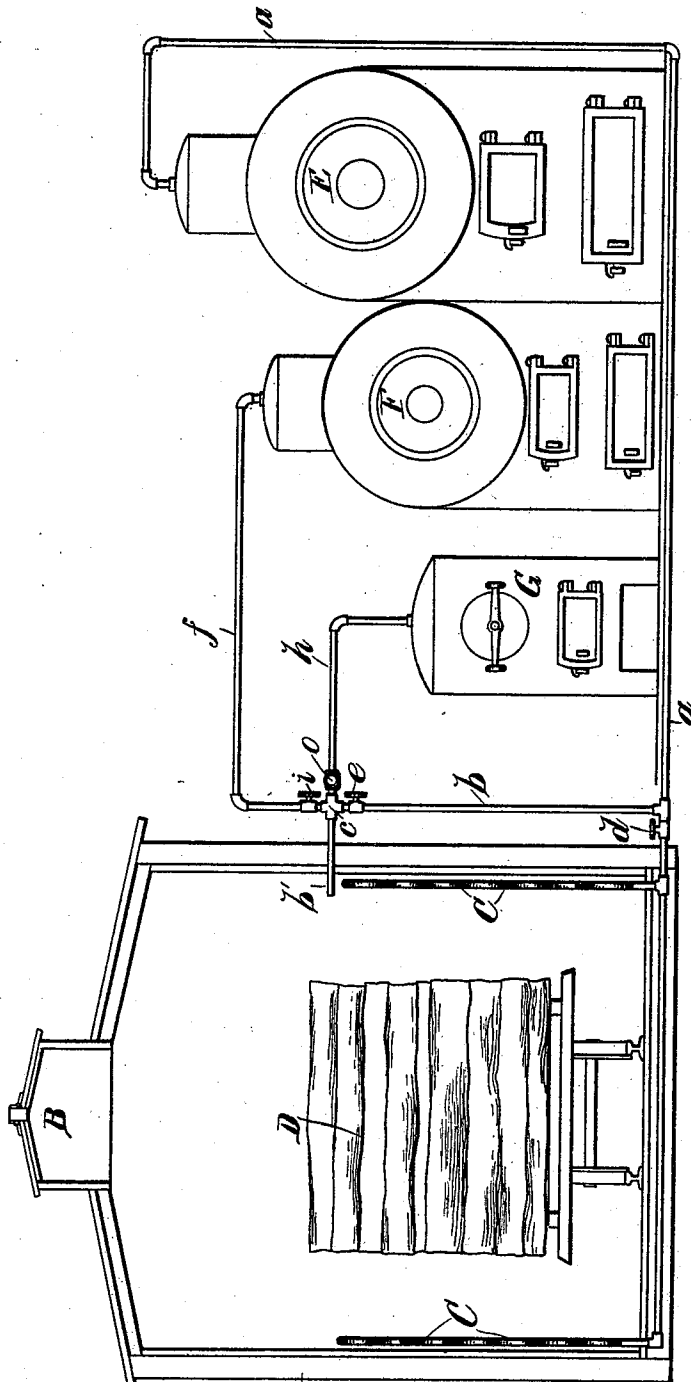


(No Model.)

J. R. BATE.  
PROCESS OF PRESERVING WOOD.

No. 522,284.

Patented July 3, 1894.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES R. BATE, OF CINCINNATI, OHIO.

## PROCESS OF PRESERVING WOOD.

SPECIFICATION forming part of Letters Patent No. 522,284, dated July 3, 1894.

Application filed June 24, 1892. Serial No. 437,809. (No specimens.)

*To all whom it may concern:*

Be it known that I, JAMES R. BATE, a subject of the Queen of Great Britain, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Processes of Preserving and Toughening Wood Fiber; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which forms a part of this specification.

This invention relates to an improved process for drying, toughening and preserving wood, and consists in a certain method, as will be hereinafter more fully set forth, the essential features of which being pointed out particularly in the claim.

The object of the invention is to provide means for so treating wood, that it may be quickly and perfectly dried, and rendered durable and tough, for the purpose of making excelsior, or for other purposes, when toughness and endurance are required. This object is attained by the method hereinafter described, and illustrated in the accompanying drawing.

Referring to the letters of reference, A designates a dry-kiln of any desired construction, provided with a ventilator B at the top, and having around the walls thereof, the steam-heating pipes C. Upon the floor of said kiln is a suitable track upon which a truck or car may be run for supporting the lumber D within the kiln while being treated.

E designates a steam boiler, the drum of which is connected through the pipe *a* with the pipes C within the kiln, and through the branch pipe *b*, coupling *c* and pipe *b'* with the interior of the kiln. The steam that is admitted to the heating pipes C being controlled by the valve *d*, and that which enters the interior of the kiln, by the valve *e* in the pipe *b*.

F designates an auxiliary boiler, which is in communication with the interior of the kiln, through the pipes *f*, *b'*. The pipe *f* being provided with a stop valve *z*. In this boiler is placed about one gallon of oil, with sufficient

water to make the requisite amount of steam for treating one kiln of lumber.

G designates a furnace suitable for the combustion of chemicals, and which communicates with the kiln through the pipe *h* and the pipe *b'*, the pipe *h* having the valve *o* therein.

The process is as follows: When green wood is being treated, it is placed upon the car and run into the kiln, when the valves *d* and *e* are opened admitting steam to the pipes C, and to the interior of the kiln, the action of which upon the wood opens the grain and drives the sap therefrom, as is well understood. At the time of the admission of steam into the kiln, there is injected therein by any suitable means, a solution of soda-ash, which alkali neutralizes the acetic acid of the wood. The steam from the boiler E is then shut off from the interior of the kiln by closing the valve *e*, and the steam from boiler F, impregnated with oil, is admitted to the interior thereof by opening the valve *z*, whereby the wood becomes saturated with this oil imbued steam, which, permeating the capillary apertures of the wood, toughens and strengthens its fiber. After which treatment, this oil laden steam is turned off, and the wood is subjected to the fumes and gases from the combustion of chemicals in the furnace G, which chemicals are carbon, chloride of sodium, and sulphur, and their proportions are about as follows:—carbon, eight per cent.; chloride of sodium, four per cent.; and sulfur, eighty per cent. This compound is burned in the furnace G, the product of which is carried into the kiln through the pipes *h*, *b'* and so acts upon the wood as to bleach it or restore it to its natural color, and preserve the fiber thereof. By this improved process, green wood may be rendered fit for working into excelsior in comparatively but few hours, that with the ordinary process would require weeks to accomplish, and by means of its toughened condition is rendered highly superior for this purpose. Where dry wood is being treated, the first step of admitting steam directly thereto from the boiler E may be omitted.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

The process of preserving wood fiber, which

consists in first placing the wood in a suit-  
ably heated kiln, and subjecting it to the di-  
rect action of oil imbued steam and a solu-  
tion of soda-ash or analogous alkali; then  
5 subjecting said wood to the action of gases  
produced by the combustion of carbon, chlo-  
ride of sodium and sulfur.

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

JAMES R. BATE.

Witnesses:

E. S. WHEELER,  
H. R. WHEELER.