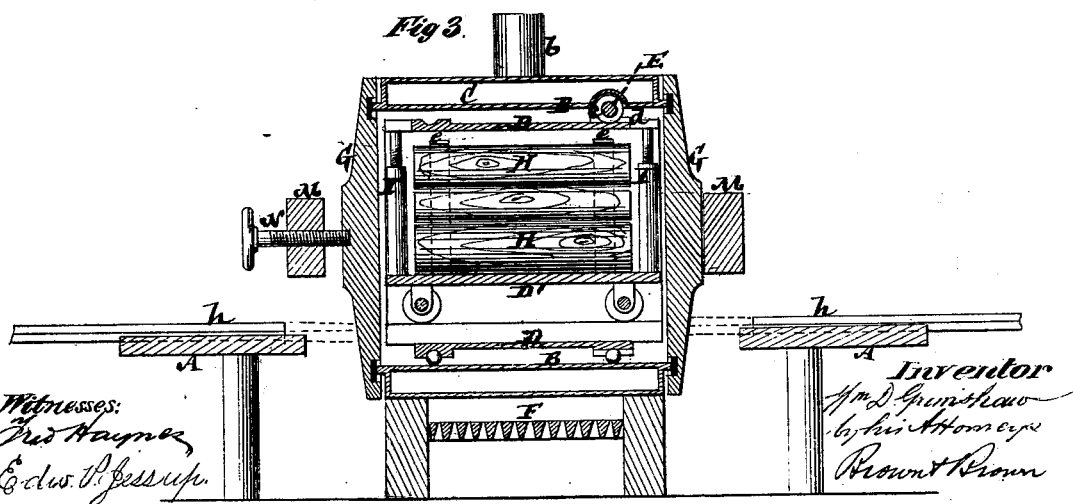
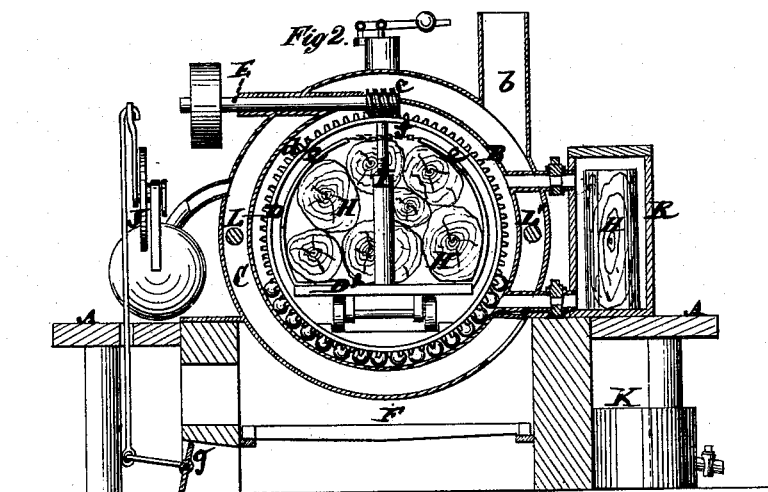
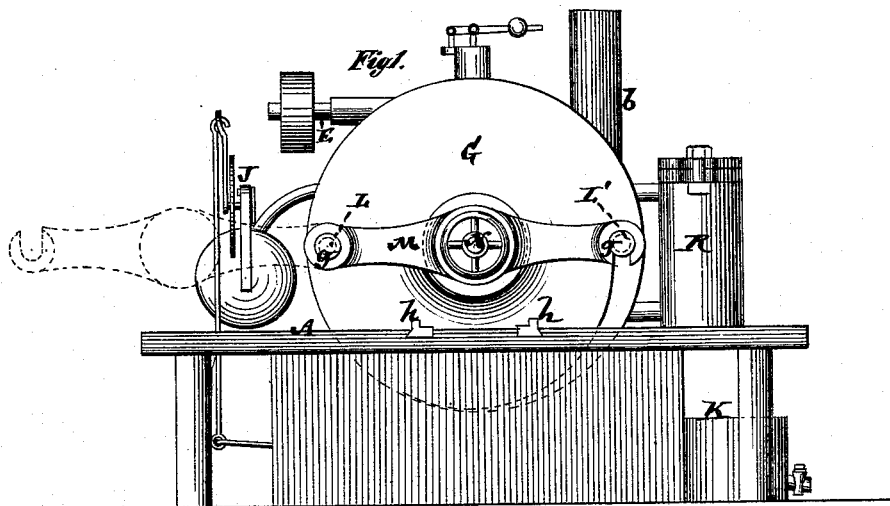


W. D. GRIMSHAW.
Process and Apparatus for Preserving and Curing Wood.

No. 218,624.

Patented Aug. 19, 1879.



UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PROCESSES AND APPARATUS FOR PRESERVING AND CURING WOOD.

Specification forming part of Letters Patent No. **218,624**, dated August 19, 1879; application filed November 29, 1878.

To all whom it may concern:

Be it known that I, WILLIAM D. GRIMSHAW, of the city and State of New York, have invented a new and useful Process of Preserving and Curing Wood, and in apparatus therefor, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to the drying, seasoning, or curing of lumber by artificial heat to make the same available for early or immediate use.

The invention consists in a novel process of preserving and curing wood by subjecting it to rotary motion while exposed to heat at a degree below that which will carbonize the fiber or decompose the resinous matters, the wood being caused to maintain a fixed position with relation to the axis about which it rotates, so that it will have a constant and uniform changing position with relation to the action of gravity upon the resinous matter it contains, whereby the melting resinous matters are prevented from settling or collecting in or at one side of the wood, the whole as hereinafter more particularly described.

The invention further consists in a novel apparatus for carrying into effect said process.

In the accompanying drawings, Figure 1 represents an end elevation of an apparatus for preserving or curing wood, adapted to carry into effect my improved process, and constructed in accordance with my invention. Fig. 2 is a transverse vertical section of the same, and Fig. 3 a longitudinal vertical section thereof.

A is the table of a main frame or structure, which may be of metal, brick, or any other suitable material, and which has mounted on it a horizontal or approximately horizontal cylinder or chamber, B, that forms the heating-chamber. This chamber or oven may be heated by an outside flue or jacket, C, from a furnace, F, having a suitable outlet or chimney, b; or it may be heated by a steam-jacket or otherwise.

Arranged longitudinally within the oven or heating-chamber B is a revolving cage or receptacle for the wood or lumber to be treated, said cage consisting of a revolving open or re-

ticulated cylinder, D, having a carriage, D', within, which carriage, while free to rotate along with the cage D, is removable lengthwise relatively to and out of the latter.

Rotary motion is or may be communicated to said cage by means of a worm, c, fast on a revolving shaft, E, and gearing with a wheel, d, on the cage.

The oven B is closed at its ends by heads G G, both of which are preferably made removable, and are secured, when closed, by any suitable means.

The wood or lumber H to be treated is packed upon the carriage D' of the cage, and firmly secured thereon and held from rattle or shake while being rotated, together with the cage, by means of elastic straps or side strips, e, and chains f, connecting the same at their free ends.

The carriage D' is firmly held in position within the cage D while the latter is being rotated by means of screw-jacks I, or other clamping means, applied to opposite ends of the cage.

A safety-valve is or may be applied to the apparatus to prevent any excessive or dangerous pressure being produced within it, and a thermostat, J, also be used to automatically control the damper g of the furnace or other valve or valves which govern the heat of the oven or heating-chamber B. There should also be a trap, K, to catch the fluids or condensed vapors collecting within the heating-chamber.

Means may also be provided, if desired, for introducing water in small quantities within the curing-chamber of the apparatus to assist the curing operation.

In previous processes for preserving or curing wood by the application of heat, and in which the wood has remained stationary during its treatment, the resinous and other natural juices settle by gravitation in the lower portion of each stick or piece of wood, thereby unequally affecting the fiber, uniformity, porosity, and durability of the wood, all of which defects are obviated by rotating the wood while under treatment, and the various matters or juices not passed off by evaporation are equally diffused throughout the wood and its homogeneity is preserved, the al-

buminous matters coagulating and filling the pores and keeping said natural fluids or juices in the wood, which has its fiber hardened and its resilience increased.

As hereinbefore observed, it is desirable that both end lids or heads G G of the oven or heating-chamber B should be made removable or to open and close.

It is furthermore desirable that the same holding or securing and releasing means should apply to both heads or lids G G, to obviate delay in charging and discharging the wood from the cage in the oven or heating-chamber. To this end longitudinal rods L L' are arranged to pass through both heads G G on the one L of which the heads G G are free to swing as pivots, while they hook on to or over the other rod, L', to provide for the opening or swinging to one side of said heads. Spiders or cross-bars M M are also similarly connected with said rods outside of the heads G G, and within collars or heads g on the opposite ends of said rods. In this way or by these means a single screw, N, working through one of the cross-bars M as a nut or box, and bearing against one of the heads G, serves, according to the direction in which it is turned, to tighten up or liberate both heads G G.

The carriage D', which is free to travel in or out of both ends of the cage D in the oven or heating-chamber B, has combined with it on the table A tracks h h at both or opposite ends of the apparatus, to facilitate the entry and removal of said carriage or any number of carriages in succession from opposite ends of the apparatus when the heads or covers G G are opened or swung to one side for the purpose.

The cage D is also constructed at one portion of its inner circumference to correspond with the tracks h h on the table A, which tracks may be fitted to slide longitudinally, so as form a continuity with the ways on the inside of the cage, as shown by dotted lines in Fig. 3, or intermediate track-sections may be inserted to fill the space between the tracks h h and the cage at opposite ends of the apparatus when the heads G G are thrown back or open. When both of said heads G G are closed, and one carriage, D', containing wood under treatment, is within the oven or cage therein, a second carriage may be undergoing the operation of being loaded with a fresh charge, so that on opening the heads G G, and bringing the cage D to a suitable position af-

ter the wood in it has been sufficiently treated, the carriage containing said treated wood may be run out of one end of the apparatus on one set of tracks h h, while the carriage containing the green or new wood to be treated is run into the oven from the tracks h h on the opposite ends of the apparatus, thus economizing time in charging, discharging, and recharging the oven.

In communication with the oven, curing or preserving chamber of the apparatus is an indicator or outside trying-chamber, R, within which a piece of wood corresponding to the pieces on the carriage in the oven may be inserted at the same time that said carriage is introduced within the oven, for the purpose of ascertaining, on opening said indicator, and without opening the oven or curing-chamber, the extent or effect of the curative process on the wood in the oven.

I claim—

1. The process of preserving and curing wood, substantially as herein described, the same consisting in subjecting the wood to rotary motion while exposed to heat at a degree below that which will carbonize the fiber or decompose the resinous matters, the wood being caused to maintain a fixed position with relation to the axis about which it rotates, whereby the melted resinous matters are prevented from settling or collecting in or at one side of the wood.

2. The combination, with the oven or heating-chamber, and with a cage arranged to rotate therein, of a carriage for holding the wood within the cage, made capable of withdrawal lengthwise from the latter, and means for securing said carriage to the cage, to provide for their rotation in concert, substantially as specified.

3. The combination, with an oven or heating-chamber, of a revolving carriage or receptacle for the wood, made capable of rotation within said oven and of movement lengthwise therethrough, opposite heads or end lids arranged to open or close both ends of said oven, and tracks outside of the ends of the oven for the carriage to run upon when entering and leaving the oven, substantially as specified.

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Witnesses:

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