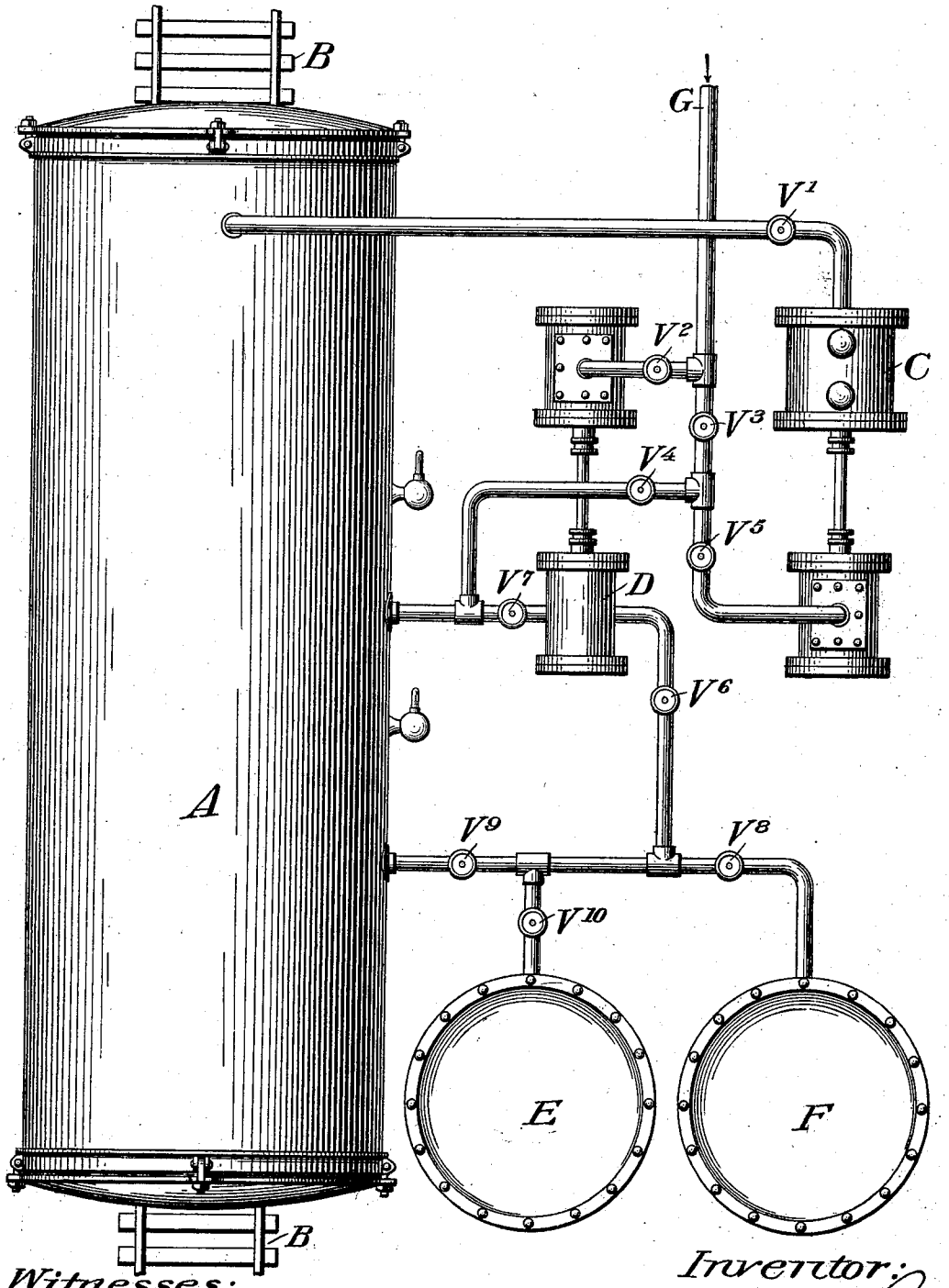
No. 698,134. Patented Apr. 22, 1902.

H. B. PHILLIPS.

PROCESS OF DRYING REDWOOD LUMBER.

(Application filed July 17, 1901.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY B. PHILLIPS, OF BERKELEY, CALIFORNIA.

PROCESS OF DRYING REDWOOD LUMBER.

SPECIFICATION forming part of Letters Patent No. 698,134, dated April 22, 1902.

Application filed July 17, 1901. Serial No. 68,665. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY BYRON PHILLIPS, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Processes of Drying Redwood Lumber, of which the following is a specification.

This invention relates to the process of drying redwood lumber by application of air or gases saturated with hot water or steam under pressure and after this treatment withdrawing the sap from its containing wood by means of exhaustion of air or gas and water-vapor with a vacuum-pump, and has for its object to render the process more expeditious and considerably cheaper.

In drying redwood lumber the soluble and volatile constituents of the sap are discharged from the wood, and this has hitherto been effected by the action of air, heat, and moisture at the normal pressure of the atmosphere.

Instead of depending solely upon the agency of air, heat, and moisture at normal pressure I employ, first, an increase of pressure above the normal air-pressure in order to upset the stable equilibrium of contained sap by means of a pressure-pump, and, second, a decrease of pressure below the normal air-pressure to produce a rapid discharge of contained sap from its containing wood by means of a vacuum-pump, both in combination with air, gases, and water-vapor. I attain these objects by the arrangement of apparatus illustrated in the accompanying drawings, in which—

A is a drying-chamber with locking-doors at each end and with suitable pressure and vacuum gages attached; B B, a car-track on which a car loaded with green lumber is introduced into the chamber and removed at the other end after treatment without handling; G, a steam-supply pipe extending to chamber A and also to pressure-pump D and vacuum-pump C.

E is a storage gas-tank for a suitable dissolving and bleaching gas. The bleaching is to prevent surface stains from the acid sap. F is another storage gas-tank for a preserving and fireproofing gas to be admitted to the chamber A after a vacuum has been produced therein by means of the vacuum-pump C and filling the vacant pores of the lumber to the subsequent exclusion of air. This gas may be made to still further penetrate the lumber by application of pressure with the pressure-pump D, if required.

V′ to V^{10} are hand-valves for controlling the various manipulations, reversing their order, omitting or repeating at will, and as shown on drawing will be readily understood and may be stated more in detail, as follows: First, introduce a car of lumber, stowed on edge, into the chamber and securely close the doors. Second, valves 2, 4, 7, and 9 being closed, valves 1, 3, and 5 being open, proceed to exhaust air from chamber by means of vacuum-pump C. Third, the air having been nearly exhausted, valves 1, 4, 6, 7, and 8 being closed, valves 9 and 10 being open, introduce chlorin gas, stored in tank E, into the chamber until the vacuum-gage shows one-half atmosphere-pressure in the chamber. This is to prevent discoloration of surface of lumber by the acid sap. Fourth, valves 1, 2, 5, 7, and 9 being closed, valves 3 and 4 being open, introduce steam from steam-supply G into the chamber until the steam or pressure gage shows five pounds pressure within the chamber. Fifth, valves 1, 3, 4, 6, and 9 being closed, valves 2 and 7 being open, operate the pressure-pump D until the pressure-gage shows a pressure of about eighty pounds in the chamber. Sixth, allow a period of time for saturation of lumber varying with the thickness of same, for lumber one inch thick about one hour. Seventh, valves 2, 4, 7, and 9 being closed, valves 1, 3, and 5 being open, operate the vacuum-pump C until the vacuum-gage shows as near a vacuum as is possible to obtain in the chamber. Eighth, allow a period of time for discharge of sap from lumber. No arbitrary time can be stated, as it depends on the character of the lumber, the dense heavy lumber from butts of redwood-trees requiring more time than the lighter more porous lumber from the upper portion of the trunks. It also depends upon the thickness of the lumber and also upon the perfection with which the preceding steps have been executed. This period of time will vary from two to ten hours. Ninth, valves 1, 4, 7, 6, and 10 being closed, valves 8 and 9 being open, admit carbonic-acid gas, stored in tank F, to

the chamber until normal air-pressure is obtained within. Tenth, allow a period of time for penetration of gas into lumber, for lumber one inch thick two hours and other thicknesses in proportion.

What I claim as my invention, and desire to secure by Letters Patent, is—

The process of drying redwood lumber by application under a mechanically-induced pressure of air and gases saturated with water-vapor, followed by exhaustion of gases, air, vapor and sap by a mechanically-induced vacuum and the subsequent filling of the vacuous interstices of the wood with carbonic-acid gas, substantially as herein described.

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

H. B. PHILLIPS.

Witnesses:
F. F. FINLAY,
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