

No. 646,706.

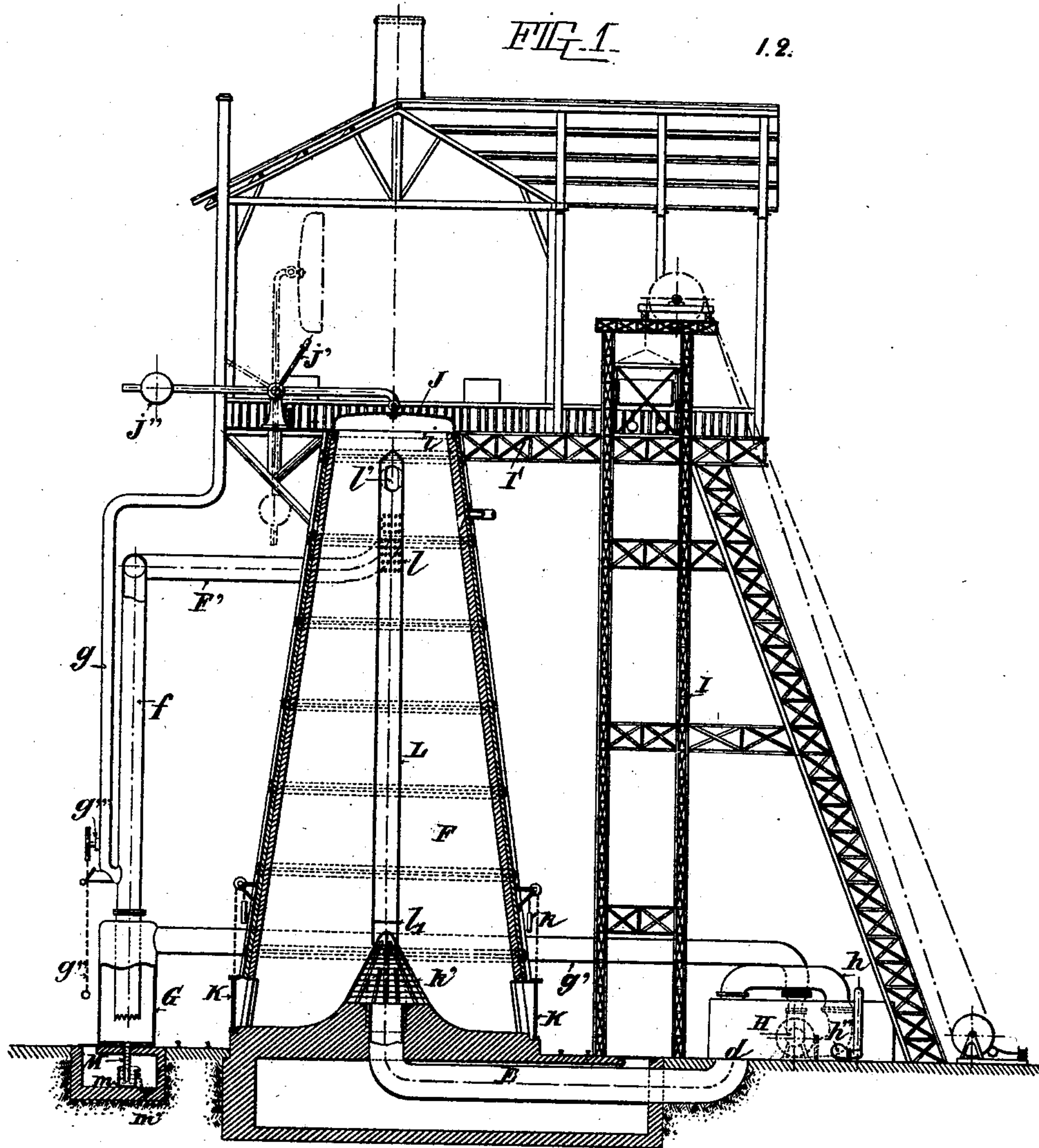
Patented Apr. 3, 1900.

A. LAMBIOTTE.
APPARATUS FOR DRYING WOOD.

(Application filed Dec. 8, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
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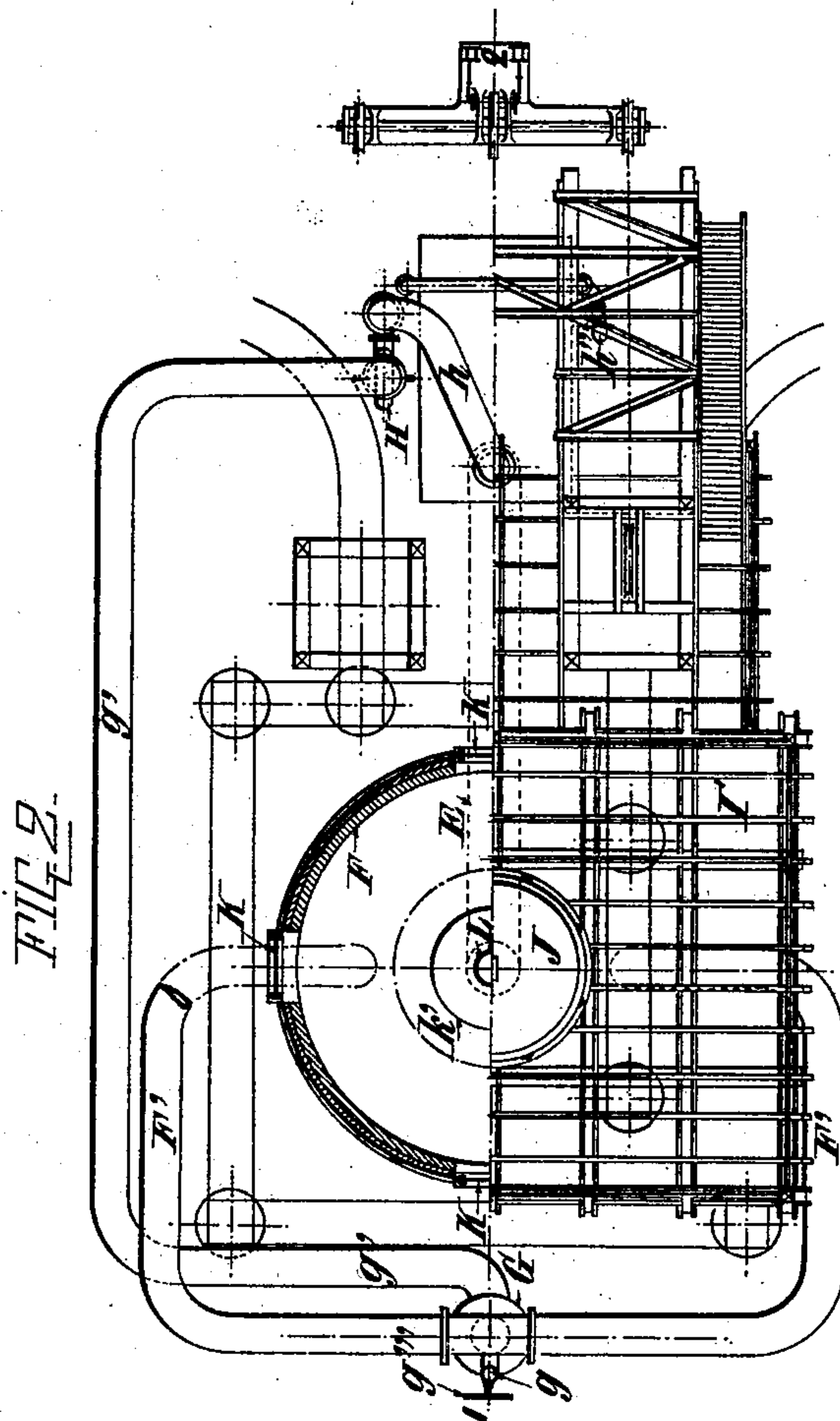
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UNITED STATES PATENT OFFICE.

AUGUSTE LAMBIOTTE, OF PARIS, FRANCE.

APPARATUS FOR DRYING WOOD.

SPECIFICATION forming part of Letters Patent No. 646,706, dated April 3, 1900.

Application filed December 3, 1897. Serial No. 660,611. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTE LAMBIOTTE, a citizen of the Kingdom of Belgium, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Processes of Drying Wood and Apparatus Therefor, of which the following is a specification.

This invention relates to a process of and apparatus for drying wood.

The pyroligneous industry is mainly based upon the dry distillation of wood. This operation, of whatever species may be the wood submitted to it, is carried out in a close vessel or chamber. The dimensions of the apparatus used, the temperature at which the distillation is performed, and the time during which it is continued for a given volume of wood treated vary according to the particular circumstances in each case. In this connection one important fact has been observed. The hygrometrical condition of the wood is an important factor upon which the process of distillation greatly depends and one that has a marked influence upon the output. Dry wood, all things being equal, will yield more acetic acid and more methylene than moist wood, both these products being collected in the form of a comparatively-small volume of pyroligneous acid.

The proportion of water contained in wood that is to be distilled as a result of the hygrometrical tendency of such wood generally varies between thirty-five per cent., the maximum at the time of felling, and eighteen or sometimes as little as fifteen per cent., being the minimum to which it dwindles down fifteen or eighteen months after the felling period. Besides, if it is to be reduced to this minimum the wood must be very carefully piled up. Indeed after having been stripped of its bark and cut up it has to be deposited under shelter, (in a shed or outhouse,) where it may dry under the natural influence of the wind. Now all these operations involve considerable expense, as, in addition to the cost of the management of the concern and of the labor employed in stripping, cutting, and piling up the wood, heavy interest has generally to be paid on the large capital raised for the purpose of securing the requisite timber-supplies.

With a view, therefore, of insuring a practically-perfect desiccation of the wood, (for I contrive to relieve it from all but mere traces of the water it contained, owing to its hygrometrical nature,) while at the same time avoiding or at all events largely reducing the above-mentioned items of expense, I have devised the process of rapid artificial desiccation hereinafter described. It was a problem attended with great difficulty. I have solved it, nevertheless, thereby achieving a result not attained before.

My invention consists of certain features of construction to be hereinafter described and then claimed.

In the drawings, Figure 1 represents a vertical section of my apparatus for drying wood, and Fig. 2 is a sectional plan taken on a level with the floor.

My apparatus utilizes a drying mixture of smoke, burned gases, and steam at the temperature required for thorough desiccation and which issues from a suitable furnace (not shown) and passes into a flue E to the base of the drying-chamber F. This gas mixture on entering the drying apparatus becomes diffused throughout the pile of wood and finally escapes through a pipe F'. From this point the mixture redescends through a vertical pipe f into the condenser G. From the vertical pipe f there branches off an outlet-pipe g, through which the mixture in excess escapes. On leaving the condenser G and passing through a pipe g' the gas mixture reaches the fan H, which through the pipe h forces the same into the furnace. (Not shown.)

Having thus broadly described the general arrangement of one or a series of drying-chambers, I will now consider in detail each of the successive parts that go to form such a drying-chamber.

An elevator I, placed beside the drying-chamber, serves for raising the trucks, loaded with the wood to be dried, up to a platform I'. On being placed on this platform the trucks are wheeled up to the orifice i of the drying apparatus. When this apparatus is completely filled with timber to be dried, the lid J is put down on the top of it by operating a lever j'. In order to facilitate this operation, the weight of the said lid J is balanced by a counterpoise j''. In Fig. 1 the dotted lines

show the lid open and the full lines represent it closed.

At the base of the drying-chamber there are provided doors K, balanced by weights k , such doors being kept hermetically closed while operations are proceeding and only opened to admit of the removal of the wood or timber when the desiccation thereof is completed.

10 The gas mixture which is to effect the desiccation of the timber contained in the drying-chamber is admitted below into a conical chamber k' , termed the "gas-distributor."

15 The gas mixture on reaching the center of this conical distributor k' escapes through the sides and is directed toward the bottom of the drying apparatus by the entire series of orifices k'' , which are formed by the set of plates which go to form the outer distributor-wall.

20 In the center of the drying-chambers there is located a pipe L, closed at its base at l and resting upon the distributing-cone k' . The gases after having passed through the mass of piled-up wood in the drying-chamber enter the cen-

25 tral pipe L through all of the set of apertures l formed in the upper part of that pipe. Thence the gases issue through the two pipes $l' l''$, (only one of which can be seen,) which lead up to the pipe F', Fig. 1. The sum total

30 of sectional areas of all the apertures l should be double the sectional area of the pipe L.

The gas mixture issuing from the branch pipe F' descends along f , whence, as before stated, the mixture in excess escapes into the atmosphere through the pipe or chimney g , it being possible to regulate the escape of the gases or to cut off the connection of the drying-chamber with the atmosphere by means of the door

or valve g''' , operated by a draw-chain g'' , Fig. 1. The gas mixture remaining behind 40 in the system of pipes then descends to the condenser G through the pipe f , serrated at its extremity for the purpose of facilitating the condensation of the moisture and the dripping of the same. The condensation-water 45 descends through the tube M into a tank or trough m , adapted to act as a siphon, whence according as it comes down it passes off into a channel or gutter m' , provided for the purpose. The gas mixture on getting rid by such 50 means of part of the moisture it contained eventually passes to the fan H through the pipe g' , whence such mixture is once more put into circulation after mixing with the products of combustion escaping from the furnace 55 A, which imparted to it the requisite temperature, variable at will between 120° and 250° centigrade.

What I claim as new is—

In an apparatus for drying wood, a wood- 60 drying chamber, comprising an upright container, a heat-distributor in the bottom of the same, a central tube closed at its lower end and arranged above the distributor, being provided with apertures in its upper part, and 65 an exit-pipe leading from the apertured portion of said central tube, out of the drying-chamber, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 70

AUGUSTE LAMBIOTTE.

Witnesses:

EDWARD P. MACLEAN,
ANTOINE ROUSSANNES.