

(No Model.)

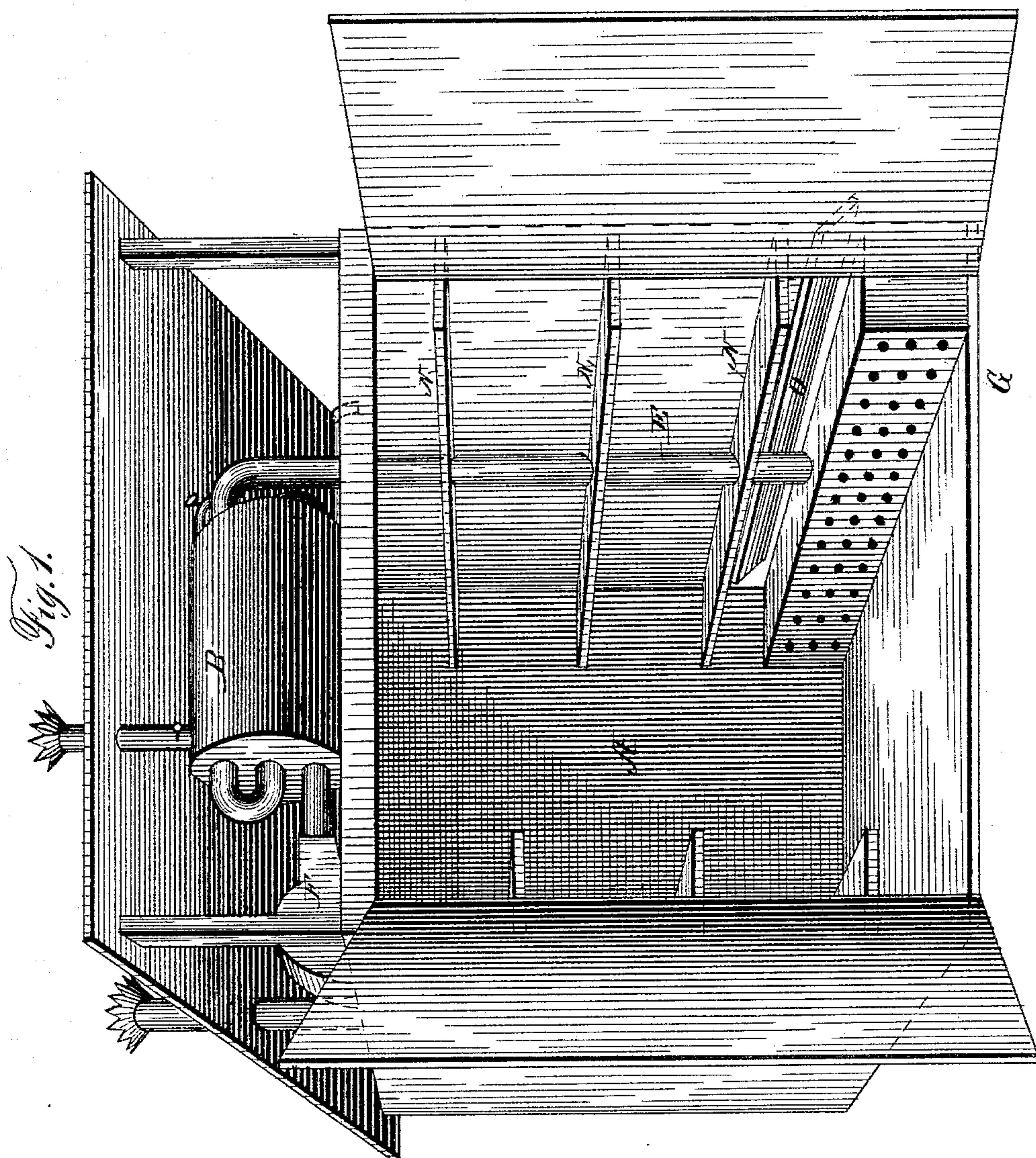
2 Sheets—Sheet 1.

W. B. BEARD.

LUMBER DRIER.

No. 321,336.

Patented June 30, 1885.



Witnesses
H. H. Benton
W. S. Boyd

Walter B. Beard,
Inventor,

By his Attorneys
Louis Ragger & Co.

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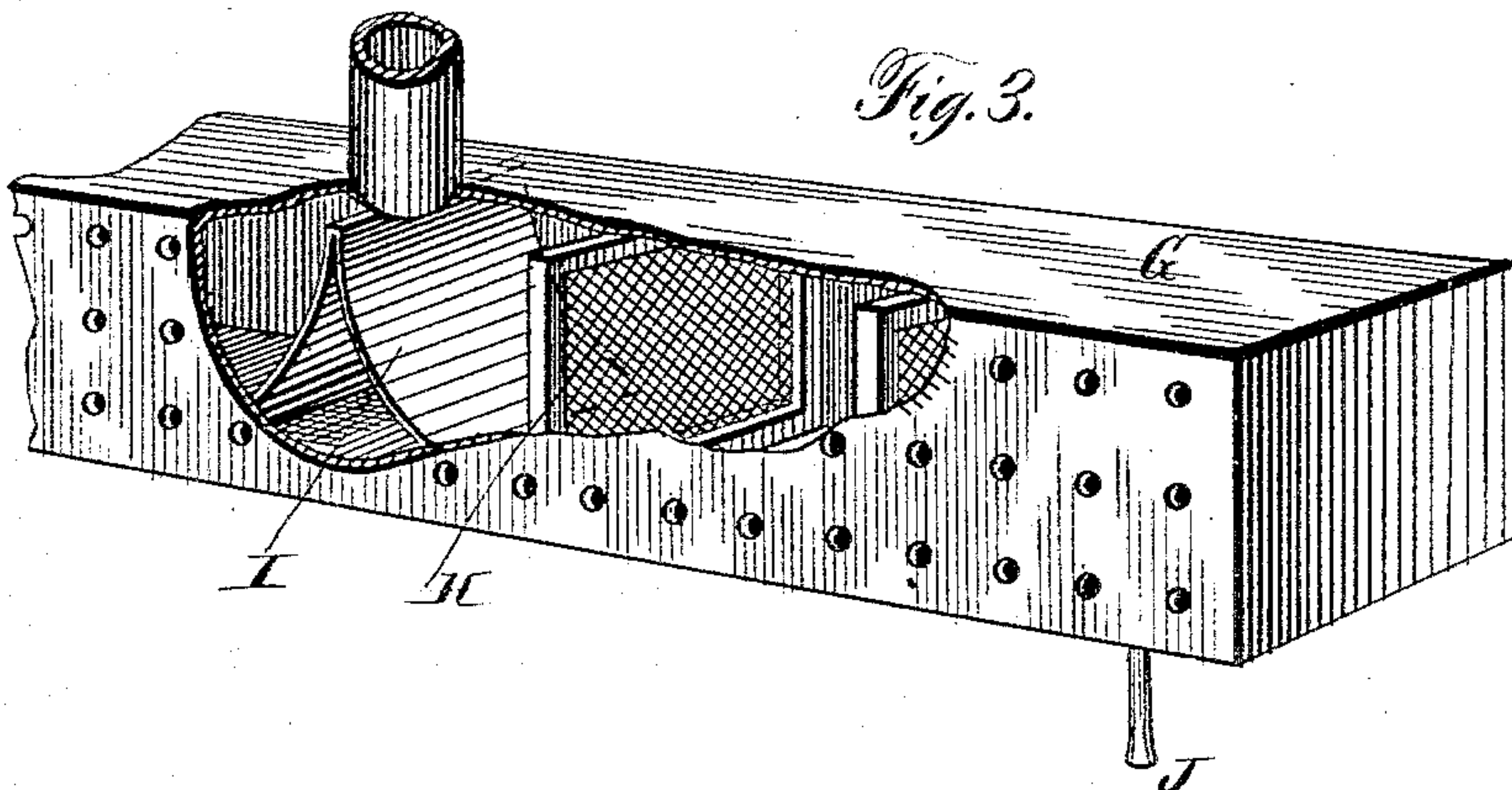
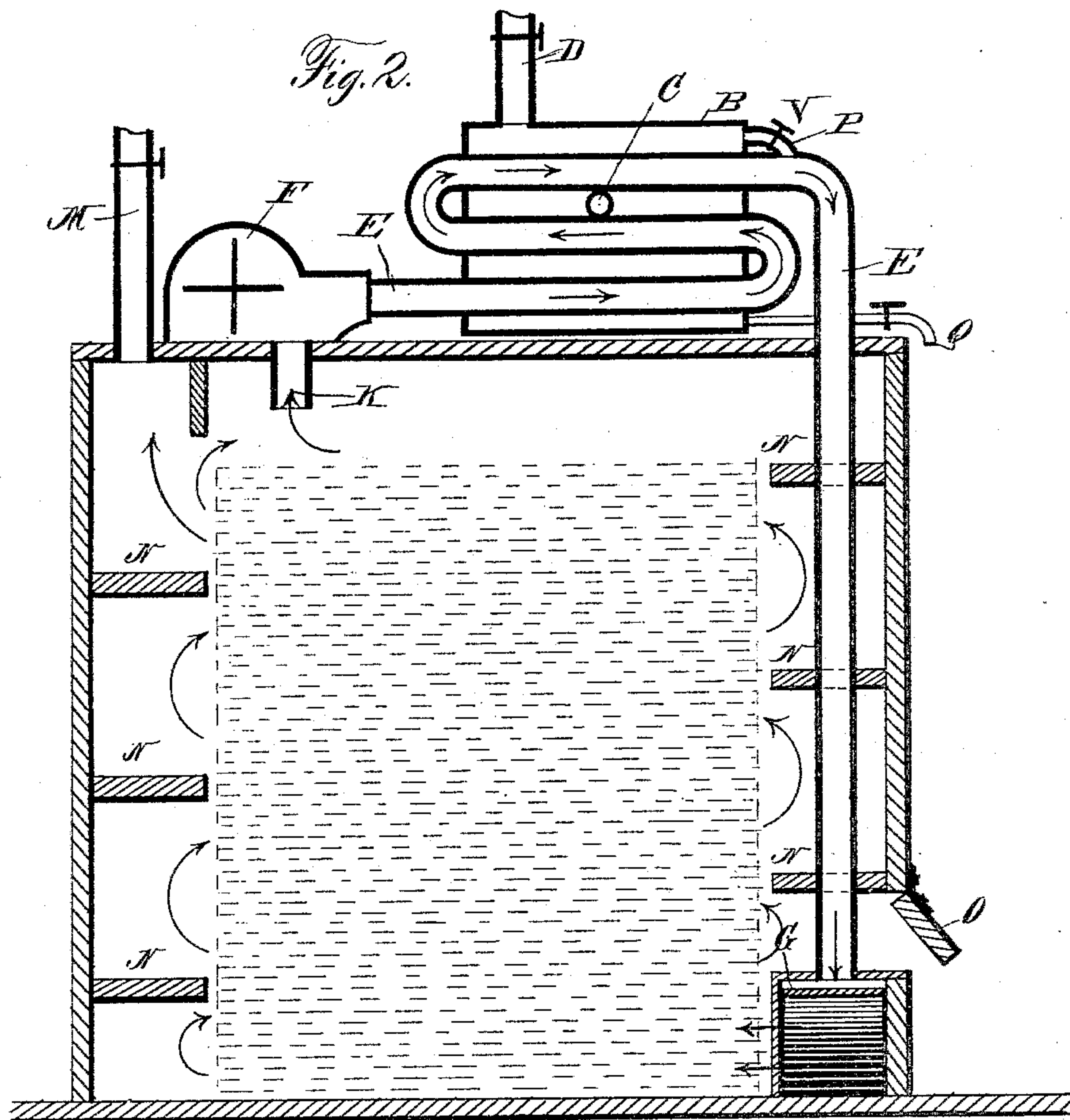
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UNITED STATES PATENT OFFICE.

WALLER B. BEARD, OF JACKSON, MISSISSIPPI.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 321,336, dated June 30, 1885.

Application filed March 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALLER B. BEARD, of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Hot-Air Lumber-Driers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of a dry-house fitted with my improved apparatus for drying lumber. Fig. 2 is a sectional view of the same; and Fig. 3 is a perspective view of the steam-distributing box at the bottom of the house, with a portion of it broken away to show a portion of its interior arrangement.

The same letters refer to similar parts in all the figures.

This invention relates to improvements in apparatus for drying lumber by the use of steam and hot air, and has for its object to provide an apparatus that will first saturate the lumber with steam and then replace the steam with hot air, thus drying the lumber quickly and effectually with one apparatus; and it consists of the arrangement and construction of the apparatus as follows:

In the accompanying drawings, A represents a steam-tight chamber, on top of which is placed a steam-drum, B, supplied with exhaust-steam from the engine through a pipe entering at C and escaping through an escape-pipe or chimney, D.

E is a pipe leading from a rotary fan or other power-blower, F, and passing back and forth through the steam-drum a sufficient number of times (generally three or four) to heat the air passing through it, and then passing down into a steam-distributing box, G, in the chamber A. This blower has an opening for admitting cold air when desired. The box is perforated upon its side opening into the chamber, and has transverse partitions of wire-gauze H, extending across its interior, for the purpose of taking up any excess of moisture that may be in the steam. At the bottom of the pipe E is a deflector, I, for the purpose of dividing the current of steam or air and caus-

ing it to pass to the extreme ends of the box. At one end of the box is a drip, J, or escape for the water that becomes condensed in passing through the pipe or box.

K is a short pipe or hood leading from near the ceiling of the chamber to the fan, by means of which the hot air is taken up after its passage through the lumber in the chamber and forced through the pipe E through the steam-drum, where it is reheated and again passed down through the pipe E into the box G, and through the perforations in the side of the box into the chamber and through the lumber. In this way the greatest amount of heat is utilized with the least loss or waste.

L is a small dividing-board or projection extending down from the top of the chamber between the pipe K and a chimney, M, or escape-pipe. Two opposite sides of the chamber are supplied with shelves N N, if desired, which are arranged at such distances apart on each side that when the chamber is filled with lumber arranged in layers the steam or air will be caused to pass back and forth through the different layers or courses by the shelves which alternate at the ends or sides of the building, as shown.

O are doors at the bottom of the side of the chamber for the admission of cold air when it is desired to regulate the temperature of the chamber.

P is a short pipe connecting the interior of the drum with the pipe E, and having a suitable valve, V, for closing it when it is not desired to have such connection.

Q is a drip-pipe for the escape of any water that may have accumulated in the drum. The chimneys or escape-pipes D and M are each supplied with a suitable valve for opening or closing the same, as desired.

The operation of my improvement is as follows: After the lumber that it is desired to dry is placed in the chamber the fan at the top is started and a current of air is caused to circulate through the apparatus. As soon as this air becomes thoroughly heated by repeatedly passing through the steam-drum, the valve in the pipe P is opened and the one in the chimney D is closed. This causes the steam which is coming into the drum to pass into the pipe E and be blown or forced into the

chamber A and thoroughly saturate the lumber with hot steam, which tends to heat the sap and moisture of the lumber and force it out and fill the lumber with hot water or steam.

5 After this process has been kept up for a sufficient length of time the valve in the pipe P is closed, and the valve in the chimney D is opened, and also the valve in the chimney M, and either the doors O or the openings into
10 the fan are also opened. This allows a current of hot dry air to circulate through the lumber until the steam and sap or moisture of any kind has been completely evaporated out of the lumber and it is dry. A few hours'
15 exposure to the sun and air makes it ready for use, and it will be found to be as well seasoned as though it had lain for years exposed to only the action of the atmosphere.

By making two chambers instead of one,
20 and having two fans and sets of pipes, the capacity of the apparatus can be greatly increased, or even doubled.

By the use of my improvement the chamber can be filled with hot air or steam, as desired,
25 by simply opening or closing a couple of valves, and in case of fire all that is necessary is to fill the chamber with steam and the fire is extinguished. It will operate with the exhaust-steam from the engine, thus saving the expense of a separate boiler.
30

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

35 1. In a lumber-drier, the combination, with a suitable chamber, of a rotary fan or power-blower, a steam-drum, a pipe leading from said

blower through said drum and into said chamber near its floor, and means for operating said blower and supplying said drum with steam, substantially as and for the purpose set forth. 40

2. In a lumber-drier, the combination, with a chamber having shelves at its opposite sides arranged at different heights, of a box at one side of said chamber having perforations on one side and transverse partitions of wire-gauze across
45 its inner section, a steam-drum, and means for circulating the air successively through said chamber and said drum, substantially as and for the purpose set forth.

3. In a lumber-drier, the combination of
50 a suitable chamber having shelves across two of its opposite sides, and a perforated box having wire partitions across its inner section and a divider or deflector at its center, doors opening into said chamber for admitting air, 55 two openings at the top of said chamber with a projecting wall between them, one of said openings leading into a pressure-blower and the other into a chimney, a steam-drum, a pipe leading from said blower through said drum 60 and into said perforated box in said chamber, and a pipe having a valve and connecting the interior of said drum with the interior of said pipe leading into said box and chamber, and means for operating said blower and for supplying said drum with steam, substantially as
65 and for the purpose set forth.

WALLER B. BEARD.

Witnesses:

M. KAHN,
T. D. PACE.