

(No Model.)

2 Sheets—Sheet 1.

J. M. HOOTON.
LUMBER DRIER.

No. 420,686.

Patented Feb. 4, 1890.

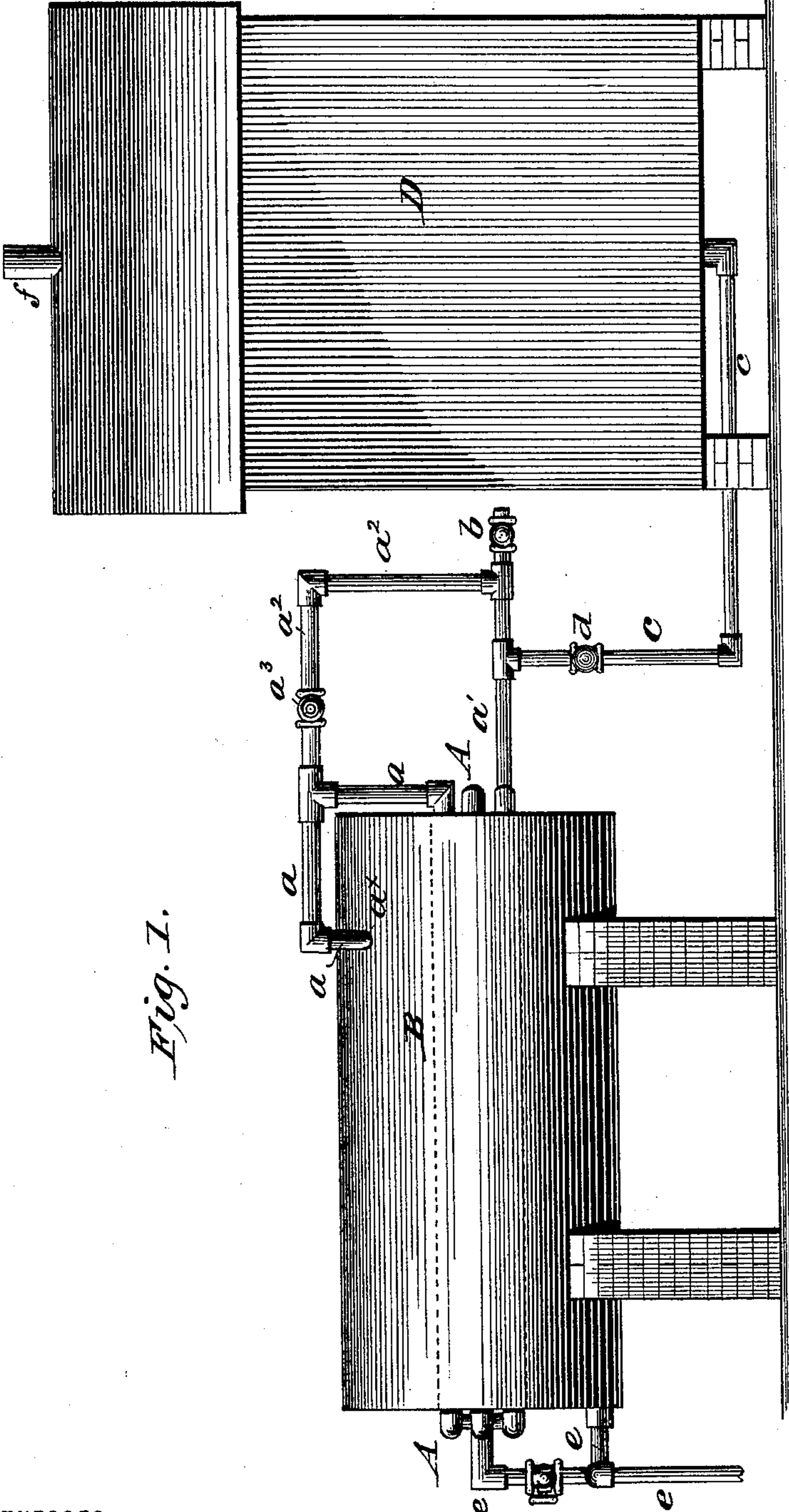


Fig. 1.

WITNESSES:

Witnessed by
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J. W. Myster

INVENTOR

J. M. Hooton
BY Maria L

ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

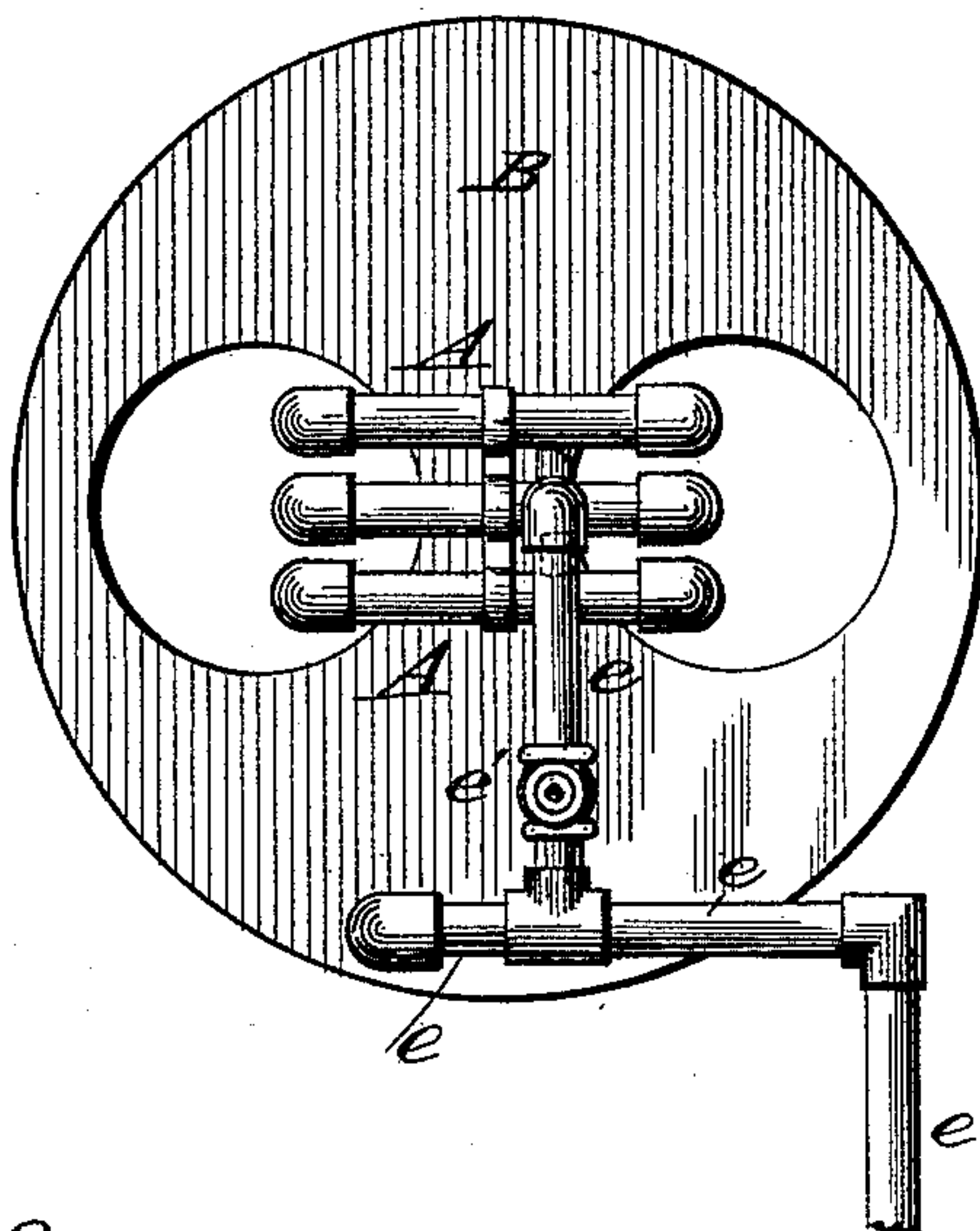
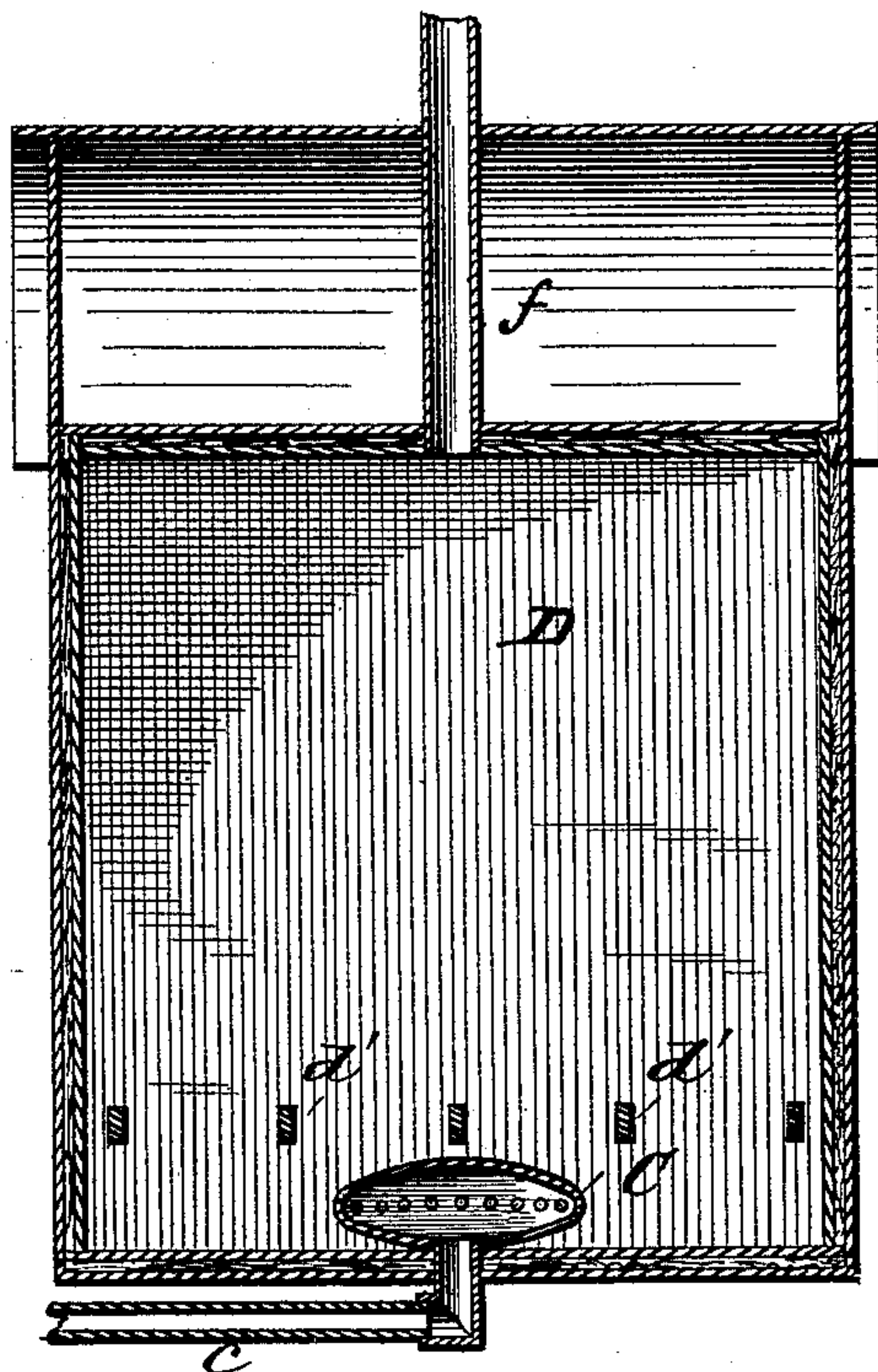


Fig. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES M. HOOTON, OF AVENGER, TEXAS.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 420,686, dated February 4, 1890.

Application filed September 7, 1888. Serial No. 284,839. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. HOOTON, of Avenger, in the county of Cass and State of Texas, have invented a new and useful Improvement in Lumber-Driers, of which the following is a specification.

This invention contemplates certain improvements in lumber-driers, wherein the drying agent or medium principally employed is superheated steam, having for its object to effect the drying of the lumber in an expeditious and thorough manner, at the same time effecting the equal distribution of the steam and the removal of all moisture, sap, and resinous matter forced to the surface of the lumber, while by the rapid passage of the steam through the drying chamber or kiln a current of hot air is produced, which greatly augments the drying process. Provision is also made for extinguishing flames in case of the taking fire of the lumber from the steam, as also for the running off water previous to the admission to the superheating-pipes of steam and for the protection of the pipes against the action of heat when not conducting the drying process.

To these ends the nature of my invention consists of means adapted to superheat steam and supply it to a drying-chamber, substantially as hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is an end elevation of the same with the feed or cold-water pipe broken away. Fig. 3 is a central vertical section of the drying chamber or kiln with the steam-pipe broken away.

I employ a coil of pipe A, which I apply to the ordinary two-flue type of steam-boiler B. The coil of pipe A is continuously passed a number of times through each flue of the boiler and outside thereof at the ends of the boiler. The pipe A is connected at one end of its upper layer by a pipe-section *a*, made, preferably, in a double-elbow form, with the steam-chamber of the boiler B. The pipe A has its lower layer extended, as at *a'*, and its said extension connected at the same end of the boiler as that end thereof where connection is made between the pipe A and pipe-

section *a* with the pipe A by an elbow pipe-section *a*², which is provided with a cock *a*³, for a purpose hereinafter explained. The extension *a'* of pipe A is provided with a cock *b*, and to it intermediately of the pipe *a*² and said cock *b* is connected a pipe *c*, also provided with a cock *d* and extending to and provided with a rose or nozzle C, arranged in the bottom of the drying chamber or kiln D. At the opposite end of the boiler B connection is effected between the pipe A and a water-reservoir by a pipe *e*, which also has connection with the water-chamber of the boiler, and which is provided with a cock *e'*.

The drying chamber or kiln D is suitably constructed to permit of the piling or the proper disposition of the lumber therein for drying, having in its lower portion joists or sleepers *d' d'*, braced in position, upon which rests the bottom portion of the lumber. The sleepers or joists *d' d'* also provide a space below the same for the reception of the end of the pipe *c* and its rose or nozzle C, permitting the distribution of the steam under and its reaching or acting upon the lumber throughout the drying chamber or kiln.

The drying chamber or kiln D is practically air-tight, being built with double walls, the intermediate space between which is filled in with sand, sawdust, dirt, or other suitable medium.

The pipes between the boiler and the drying chamber or kiln are in practice inclosed within a casing or boxing packed or filled in with a suitable material or medium. It may be the same as used in packing or filling the space between the walls of the drying chamber or kiln to exclude it from contact with the external air.

The drying chamber or kiln is provided with an outlet-pipe *f* for the escape of the steam after having acted upon the lumber, said pipe passing centrally up through the roof-chamber from the ceiling to and out through the roof proper, as shown.

A suitable outlet provided with a cock is in practice supplied to the drying chamber or kiln D at the bottom to draw or pass off the water of condensation.

In lieu of applying the coil of pipe A to a

boiler, as herein shown and described, it is obvious that it may be used in connection with a furnace and secure the same results.

In practical operation, the cock d being
 5 opened and cocks $a^3 e'$ closed, steam enters the pipe a at a^x , next traverses the coil in boiler A, thus becoming superheated, and then, passing through pipe c , escapes from nozzle C into the kiln-chamber D. When the lumber in
 10 the latter has been sufficiently dried, the cock d of pipe c is closed, thus shutting off steam from the kiln. At the same time the cocks a^3 and e' are opened, so that water may enter the coil to prevent it from burning out during the time when the kiln is not in use. It
 15 will be seen that at such time when cock a^3 is open the pipe a^2 forms an open connection with both ends (or upper and lower portions) of the coil A. This is necessary in order to
 20 provide free circulation of water in the latter and a free escape (into the boiler) of the steam generated in the coil, for it has been found that without pipe a^2 it is impossible to keep water in all portions of the coil, owing
 25 to the intense heat causing steam to be generated so rapidly that more than one outlet from the coil is necessary. When it is again desired to admit steam to the kiln D, the cocks a^3 and e' are closed and b opened.
 30 Then the water in the coil will be forced out at b and be followed by a discharge of steam. As soon as this appears cock b is closed and

d opened, and superheated steam will then enter the kiln as before.

Having thus fully described my invention, 35 what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a steam-boiler and a drying chamber or kiln, of the coil of pipe arranged in the boiler-flues and having 40 a suitable feed-pipe connection at one end and at the other end an elbow-connection a with the steam-chamber of the boiler, the angled pipe a^2 and extension a' , respectively provided with cocks a^3 and b , and respectively 45 connected with said elbow-pipe and coil, and the pipe c , having cock d , as shown and described.

2. The combination, with a steam-boiler and a drying chamber or kiln, of the coil of 50 pipe arranged in the boiler-flues, a valved feed-pipe $e e'$, connected both with the boiler and coil at one end, an elbow-pipe connection a with the steam-chamber of the boiler and the opposite end of the coil, the angle-pipe a^2 , 55 and extension a' , respectively provided with cocks a^3 and b , and respectively connected with said elbow-pipe and coil, substantially as set forth.

JAMES M. HOOTON.

Witnesses:

J. T. JAMES,
 FRANK M. SEWELL.