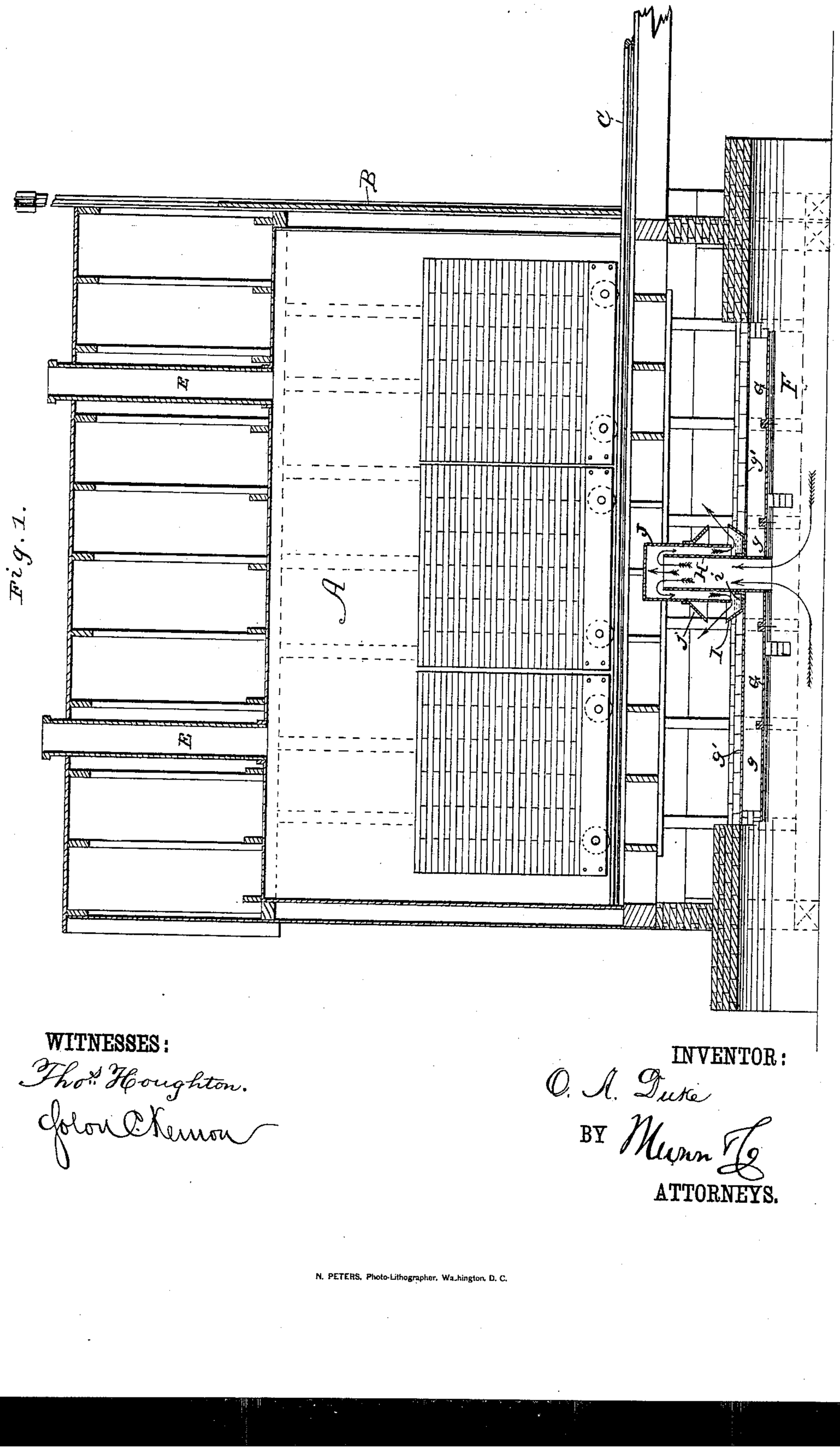
(No Model.)

2 Sheets—Sheet 1.

O. A. DUKE.

LUMBER DRIER.

No. 332,241. Patented Dec. 15, 1885.



WITNESSES:

Thos. Houghton.

John C. Kenyon

INVENTOR:

O. A. Duke

BY Munn & Co

ATTORNEYS.

(No Model.)

O. A. DUKE.

2 Sheets—Sheet 2.

LUMBER DRIER.

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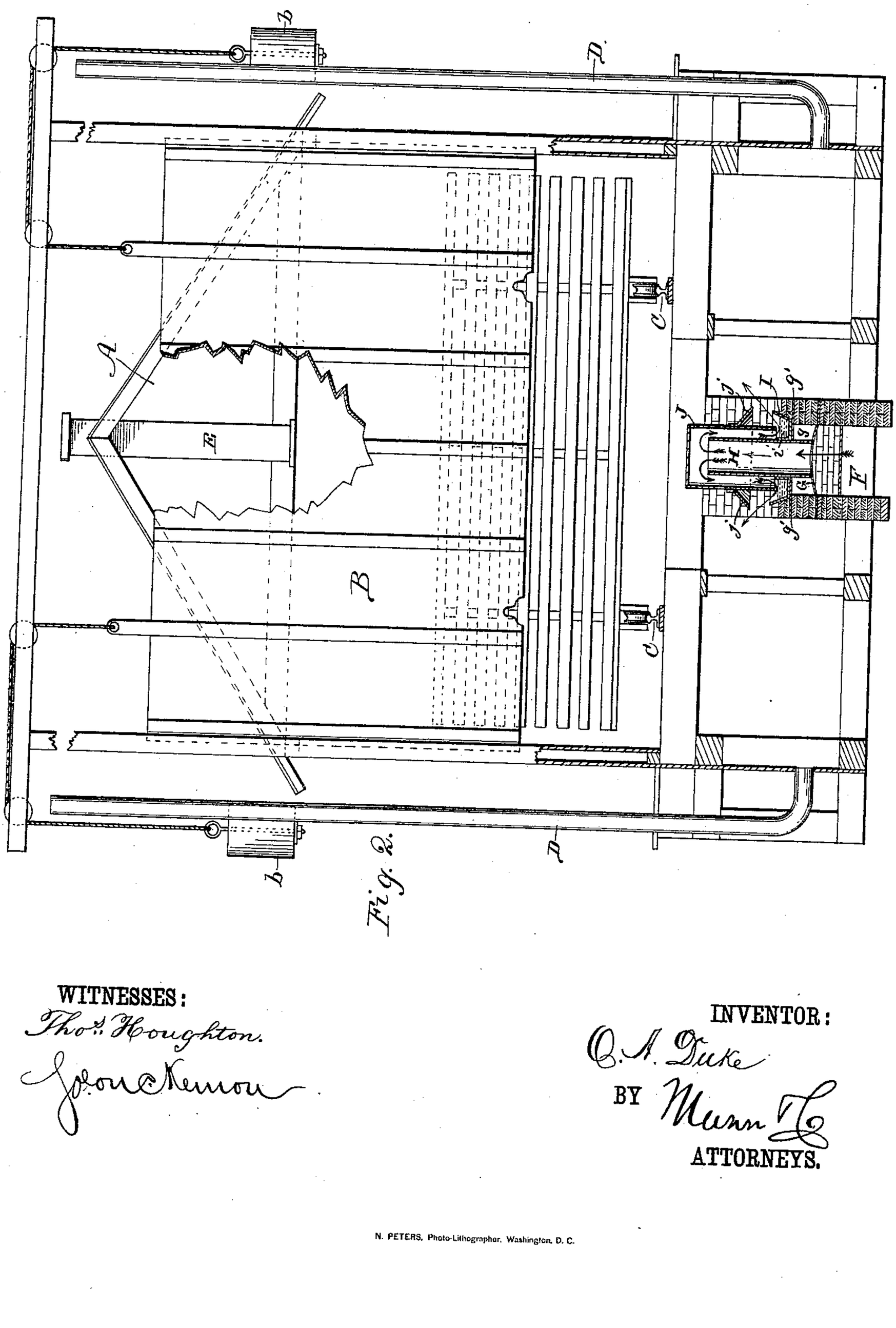

Fig. 2.

WITNESSES:

Thos. Houghton.

Jos. Kennon

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UNITED STATES PATENT OFFICE.

ORMAN A. DUKE, OF CLANTON, ALABAMA.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 332,241, dated December 15, 1885.

Application filed February 26, 1885. Serial No. 157,085. (No model.)

To all whom it may concern:

Be it known that I, ORMAN A. DUKE, a citizen of the United States, residing at Clanton, in the county of Chilton and State of Alabama, have invented certain new and useful Improvements in Lumber-Drying Kilns, of which the following is a description.

Figure 1 is a longitudinal section through the center of the kiln. Fig. 2 is a transverse section through the center of the same.

My invention relates to kilns for drying lumber by the direct application of artificial heat obtained by the combustion of fuel in a suitable furnace.

It consists in the detailed construction of the parts hereinafter fully described, by which all the hot air, smoke, and gases given off by the said furnace are made to pass through a pan containing water in such a manner and in such close proximity to the surface of the said water that all sparks carried off from the furnace, with the hot air and smoke, will fall into the water and be quenched, instead of being carried up and impinging upon the lumber. All the hot air and gases given off by the furnace will therefore act directly upon the lumber without any of the loss of heat which necessarily occurs when the heat is applied in an indirect manner, while all danger of the lumber being fired by sparks escaping from the furnace is done away with.

In the drawings similar letters of reference indicate corresponding parts in all the figures.

A is the dry-kiln, consisting of a framed structure provided with a sliding door, B, through which the lumber is introduced and removed from the kiln.

b are weights by which the door B is counterbalanced.

C are rails laid upon joists level with the ground outside the kiln, so that the lumber may be run into or out of the kiln upon suitable wheeled carriages.

D are cold-air flues connected with the lower part of the kiln beneath the rails C, and carried up on the outside of it to a level a little above the top of the roof.

E are smoke-flues in the top of the kiln, which pass up through the roof and carry off all the waste heat, smoke, and the steam or vapor given off from the lumber.

F is a furnace in the lower part of the kiln, beneath the rails C, and adapted to be fired from the outside of the same at both ends.

G is an iron plate curved upward, which covers that part of the furnace inside the kiln. An air-space, *g*, is left over plate G. This space is inclosed on the top by the flat plate *g'*.

H is a flue in the center of the kiln, connected to the furnace at its lower end and extending upward into the kiln.

I is a pan placed on plate *g'* and surrounding the flue H. The bottom of this pan is covered with water *i* to about one-half of its depth.

J is a hood extending over the top of the flue H downward and surrounding it nearly to the level of the surface of the water *i*, contained in the pan I.

j is a guard-plate secured round the hood J, so as to cover the exposed portion of the pan.

The hot air, smoke, and gases given off from the furnace pass upward in the direction of the arrows through the flue H, and are deflected downward onto the surface of the water *i*, contained in pan I. Any sparks which may be carried off with the hot air and smoke will fall into the water *i* and be quenched, while the hot air will ascend in the direction of the arrows into the interior of the kiln. The guard-plate *j* serves as an additional protection, as any sparks which may strike it from below will fall back into the water, and it also prevents the pan from being filled with any rubbish which may fall from above when the kiln is being filled with lumber.

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

1. In a lumber-drying kiln, the combination of the flue H, connected with the furnace at its lower end, the hood J, and pan I, containing water, so that the hot air and gases are allowed to pass upward into the kiln, while the sparks fall into the water and are quenched, substantially as described and shown.

2. In a lumber-drying kiln, the combina-

tion of flue H, connected with the furnace at its lower end, the hood J, pan I, containing water, and guard-plate *j*, substantially as described and shown, and for the purpose set forth.

3. The combination of a lumber-drying kiln provided with smoke-flues E and cold-air flues D, a furnace situated in the lower part of said kiln and provided with plates G and *g'*, forming the space *g* between them, flue H, hood J, and pan I, containing water, substantially as described and shown, and for the purpose set forth.

ORMAN A. DUKE.

Witnesses:
W. H. JONES,
JAS. D. BIVINGS.