

R. J. RUNDELL.
Kiln for Drying Lumber.
No. 223,862. Patented Jan. 27, 1880.

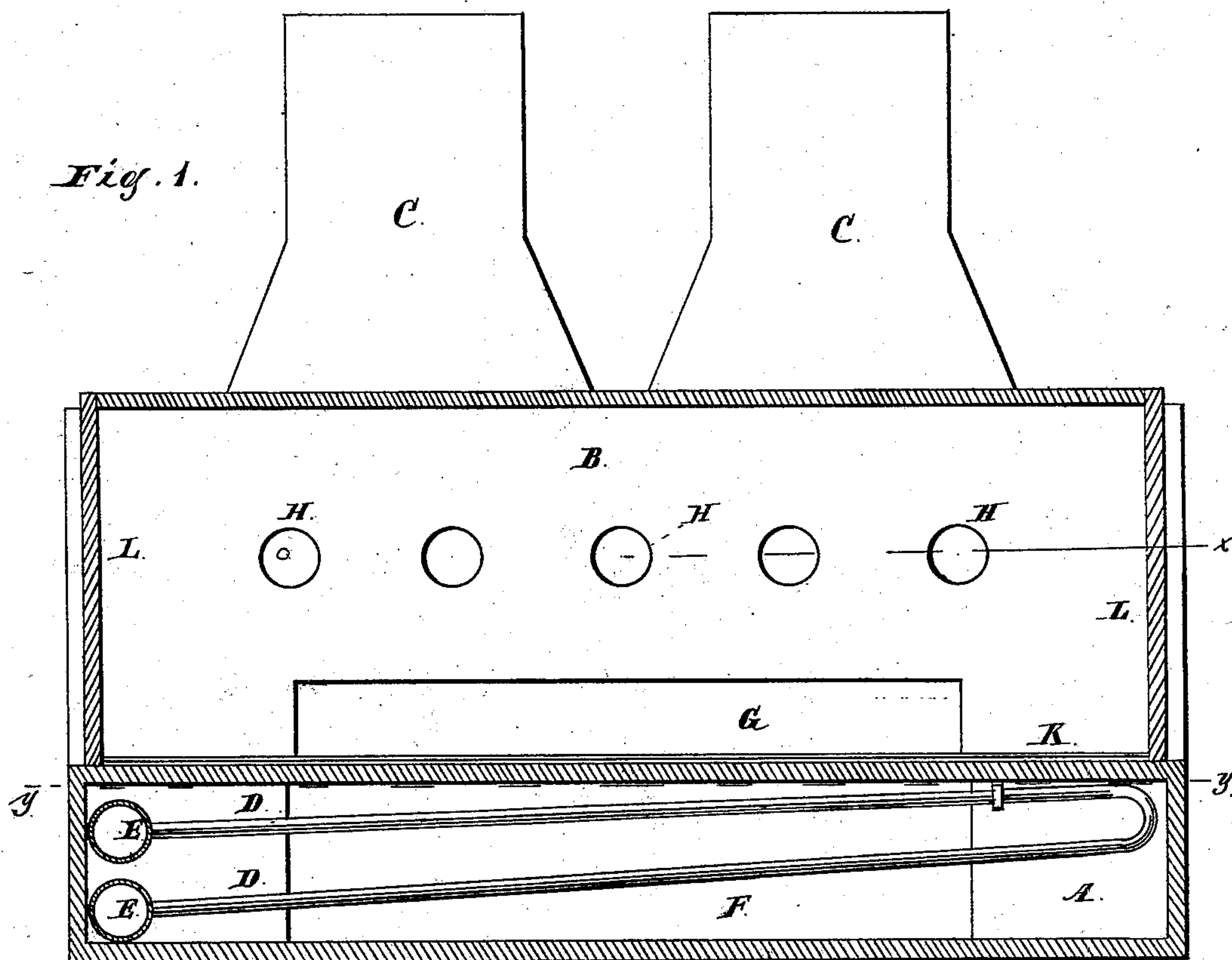
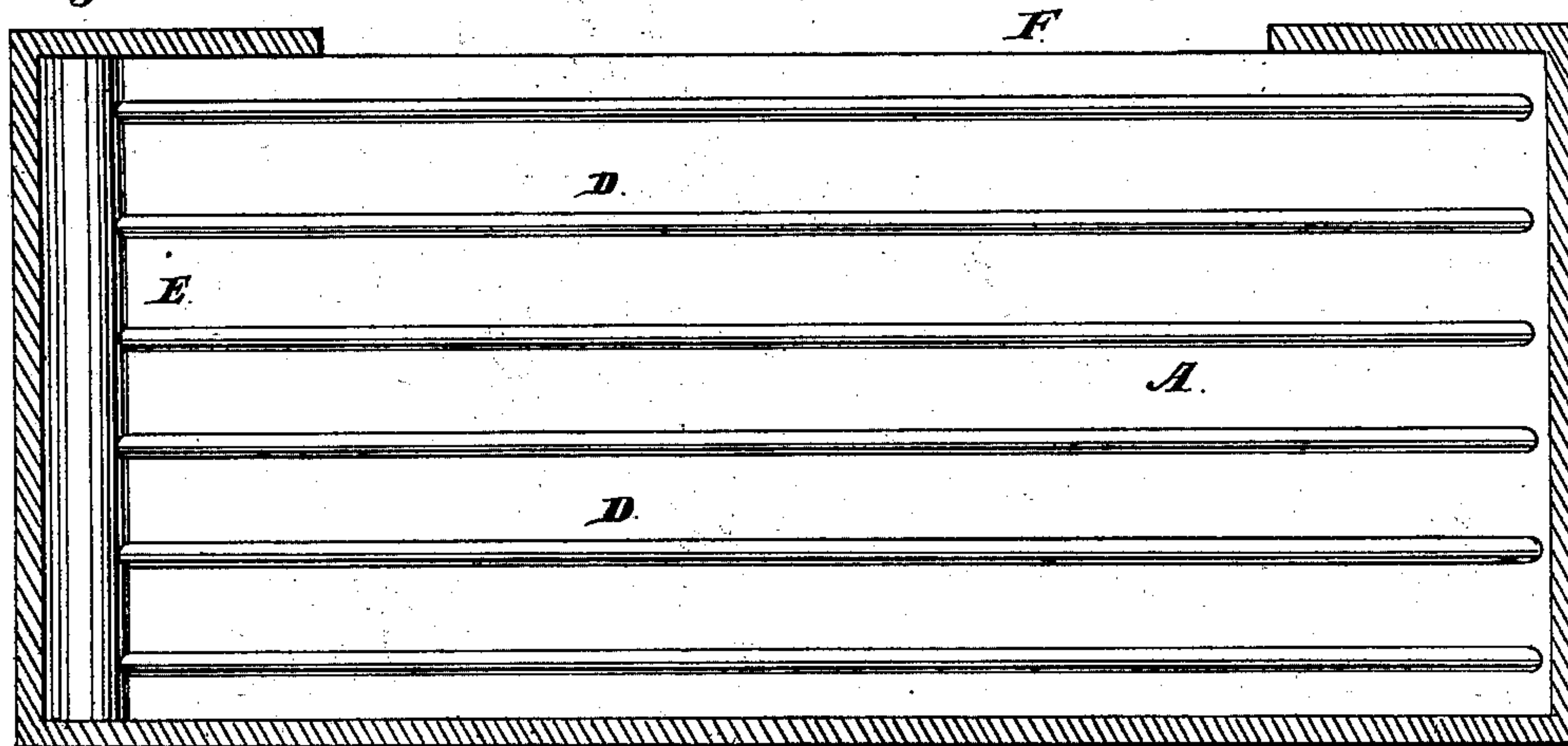


Fig. 2.



Witnesses:

L. L. Bond
O. W. Bond.

Inventor:

Richard J. Rundell

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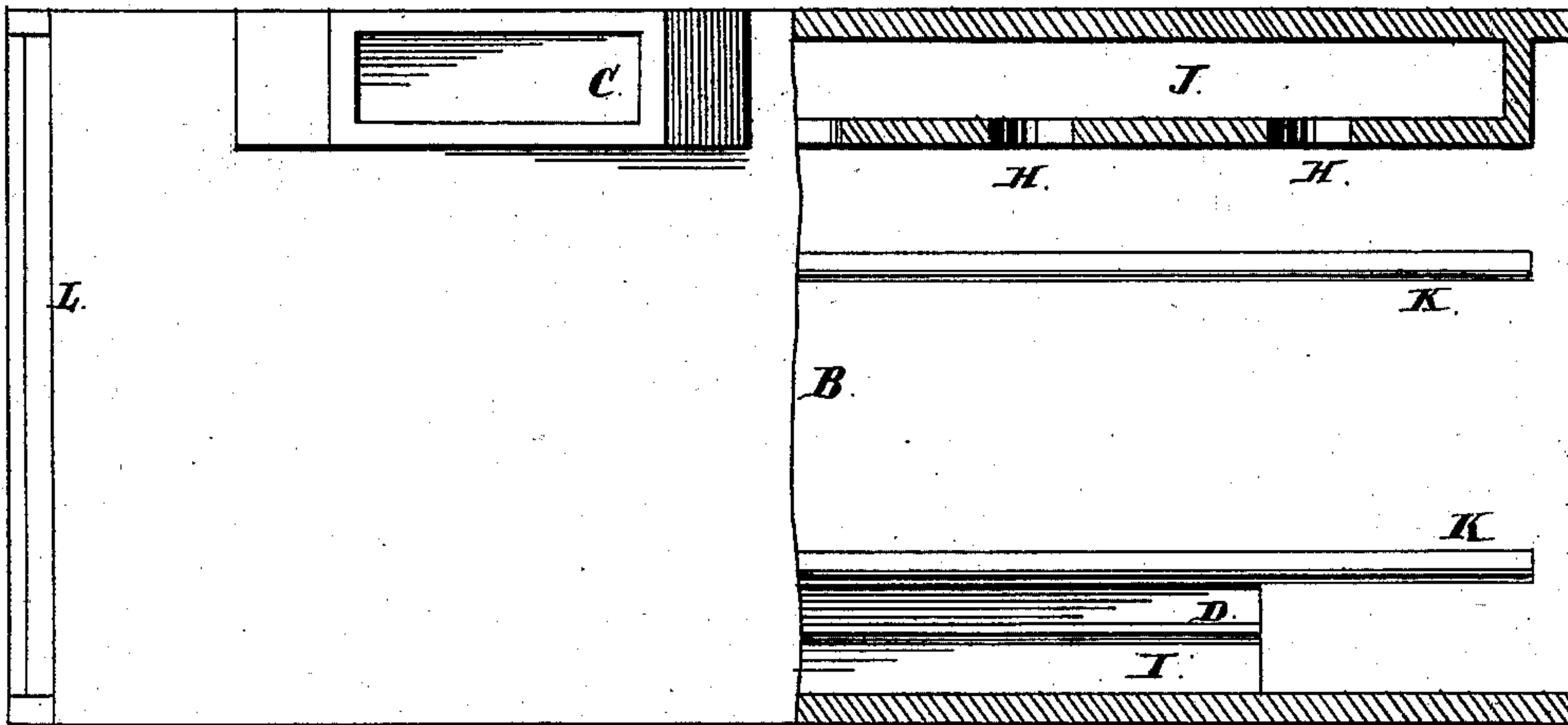


Fig. 3.

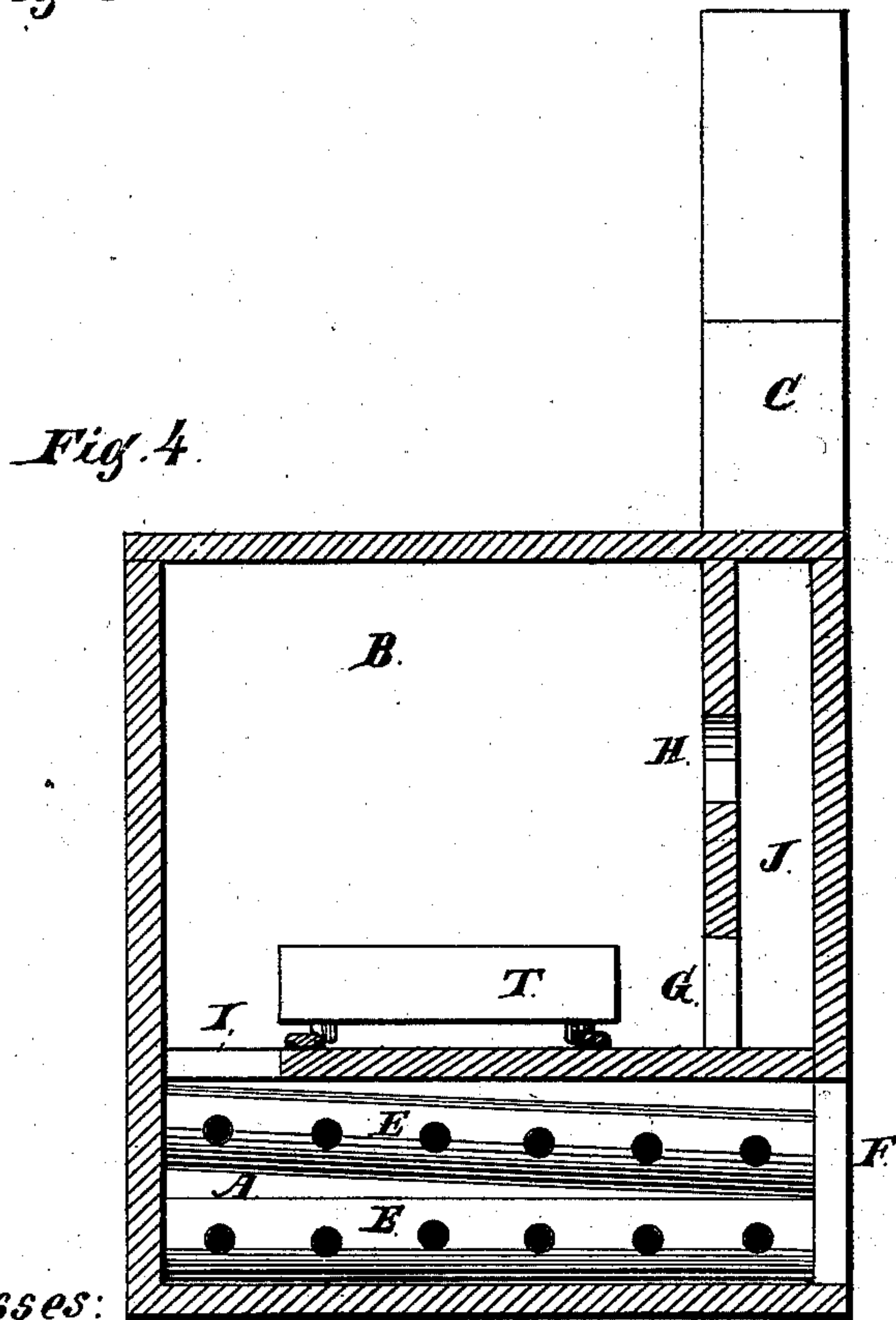


Fig. 4.

Witnesses:

L. L. Bond
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Inventor:

Richard J. Rundell

UNITED STATES PATENT OFFICE.

RICHARD J. RUNDELL, OF CHICAGO, ILLINOIS,

KILN FOR DRYING LUMBER.

SPECIFICATION forming part of Letters Patent No. 223,862, dated January 27, 1880.

Application filed July 14, 1879.

To all whom it may concern:

Be it known that I, RICHARD J. RUNDELL, of Chicago, Cook county, and State of Illinois, have invented certain new and useful Improvements in Kilns for Drying Lumber, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section; Fig. 2, a horizontal section on line *y y* of Fig. 1; Fig. 3, a plan view, partly in section, on line *x* of Fig. 1; and Fig. 4, a cross-section.

The object of this invention is to improve the construction and operation of kilns for drying lumber; and its nature consists in making the air-passages so as to operate sidewise of the kiln and sidewise on the lumber, by the construction and operation of the devices as hereinafter set forth.

In the drawings, A indicates the lower or air-heating chamber; B, the drying-chamber; C, the chimneys; D, the steam-pipes; E, the steam drums or heads; F, the cold-air opening into the heating-chamber; G, the opening from the drying-chamber into the flue-space; H, additional openings from the drying-chamber into the flue-space; I, opening for the passage of heated air from the chamber A to the drying-chamber; J, the flue-space; K, rails or track for the trucks or cars; T, truck or car, and L doors.

The body or walls of the kiln are usually made of masonry; but they may be made partly of iron or wood or other suitable material, or of any material suitable for such purposes. They may also be made of any desired length, so as to dry the desired quantity of lumber in the desired time.

I have shown two chimneys; but for short kilns one will be sufficient, and for long kilns—say seventy feet in length—three will be found advantageous.

The doors L may be of any suitable form, and are hinged or hung or arranged to be raised, so that a car or truck loaded may be admitted.

The air-heating chamber A is provided with a number of steam-pipes, D, which are, by preference, placed lengthwise of the chamber, as shown, and which are connected with cross-

heads, drums, or pipes, into either one of which steam may be admitted and exhausted from the other whenever necessary. The heads and pipes are inclined, so that the water of condensation may be properly drawn off.

The opening F may be covered with one or more doors, so as to regulate the flow or amount of air passing through. The openings G H may also be provided with doors or dampers.

The floor of the drying-chamber B is provided with rails or a track for the ease of getting the lumber in and out; and by loading the lumber lengthwise of the truck or cars, as in the ordinary way of loading for transportation, I can dry any length of lumber without building a wide kiln, as is necessary for long lumber when the heated currents of air traverse the kiln lengthwise.

The upper row of holes or openings, H, serves to distribute the air at its outflow, so as to prevent the air from passing across the kiln too low down, and these openings can be provided with covers, so as to close one-third or one-half or more of them when it is not desired to use the entire kiln, or for drying small quantities in large kilns, and by discharging the air into the common flue J the draft of all of the chimneys will be equalized.

In operation, after the lumber is in position and the end doors closed, the cold air passes in at the opening F among the steam-heated pipes. When it is heated it passes from the heating-chamber A through the opening I in the floor of the drying-chamber B, thence through and around the lumber, and then out through the openings G H H, flue J, and chimney or chimneys C.

By this arrangement of the chambers and air-passages the operation of the kiln is crosswise instead of lengthwise, and I avoid carrying air laden with moisture from one car to another, or from one end of the kiln to the other; and I have found in actual practice that there is a great advantage gained in the rapidity of drying by carrying the heated air across the kiln instead of compelling it to traverse its entire length, as its action is more direct and the air is more rapidly changed.

I am aware that driers have been heretofore

constructed with separate heating-chambers and drying-chambers in which loaded cars were run on suitable tracks; but they operated endwise, or from one mass of material to be dried to another mass or load. As the air usually contains from three to five per cent. of moisture, and will only carry seven per cent. at ordinary temperature, it is important to discharge it as soon as possible after it has reached, or nearly reached, its limited capacity. I obviate the difficulty of passing the air from one car to another by supplying a very large quantity, and by passing the air across the kiln to its exit without having the same air come in contact with the contents of more than one car, and by directing such contact sidewise against the lumber, so as to give the air-currents the shortest time possible in crossing a loaded car. By this arrangement the air never becomes surcharged so as to impart moisture, and it does not remain in contact with the material to be dried long enough to so nearly reach the limit of its carrying capacity that it will be sluggish in its action; and I am by this arrangement enabled to dry lumber rapidly and thoroughly with the air at a comparatively low temperature for such purposes, so that I can effectively pass large quantities through the kiln.

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

1. The combination of the heating-chamber A and drying-chamber B with the air-passages F, I, and G, operating to heat and carry the heated air sidewise across the kiln, substantially as and for the purpose specified. 35

2. The auxiliary small exit openings or holes H, in combination with the main exit-opening G, at or near the floor, and side opening, I, and flue J, substantially as described. 40

3. The combination of one or more chimneys or outlets, C, with the flue J, openings G and I, and chambers B A, arranged to carry the currents of air sidewise across the drying-chamber, track, and loaded cars, substantially as and for the purpose set forth. 45

4. In a lumber-drying kiln, a side cold-air inlet, F, opening into the heating-chamber, in combination with the side opening, I, from the heating-chamber into the drying-chamber, and an escape, G, on the opposite side of such drying-chamber for the moisture-laden air, whereby the heated air is carried across the kiln without passing from one car to another, substantially as specified. 50

RICHARD J. RUNDELL.

Witnesses:

L. L. BOND,
O. W. BOND.