

P. G. FINN.
Lumber-Drier.

No. 220,225.

Patented Oct. 7, 1879.

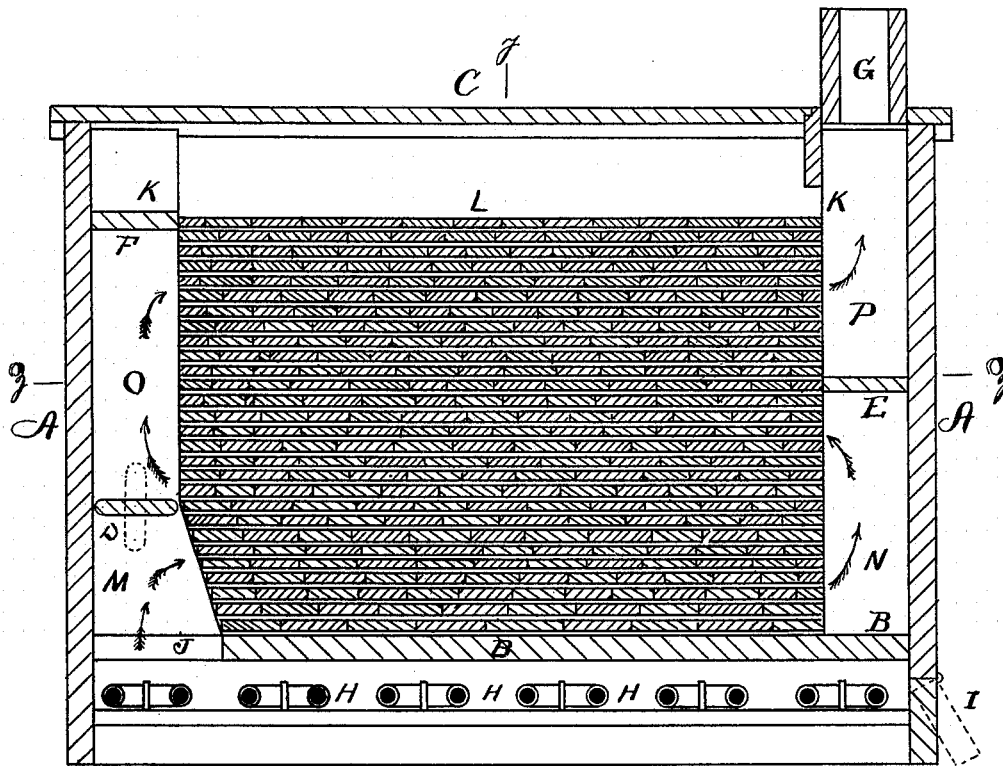


Fig 1

WITNESSES

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D. K. Dean

INVENTOR

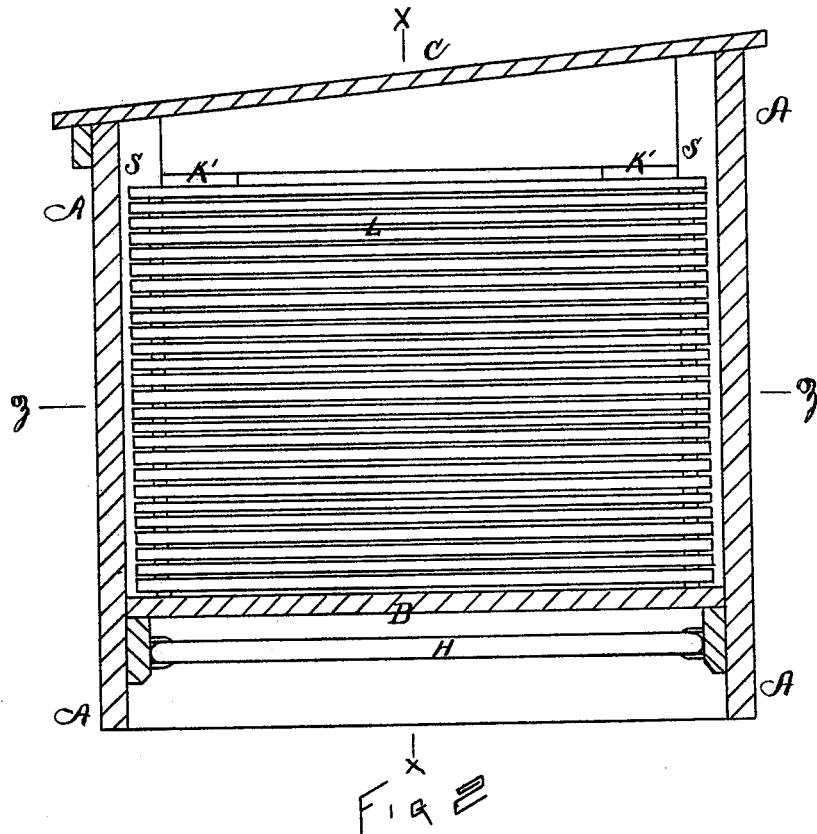
Philander C. Finn

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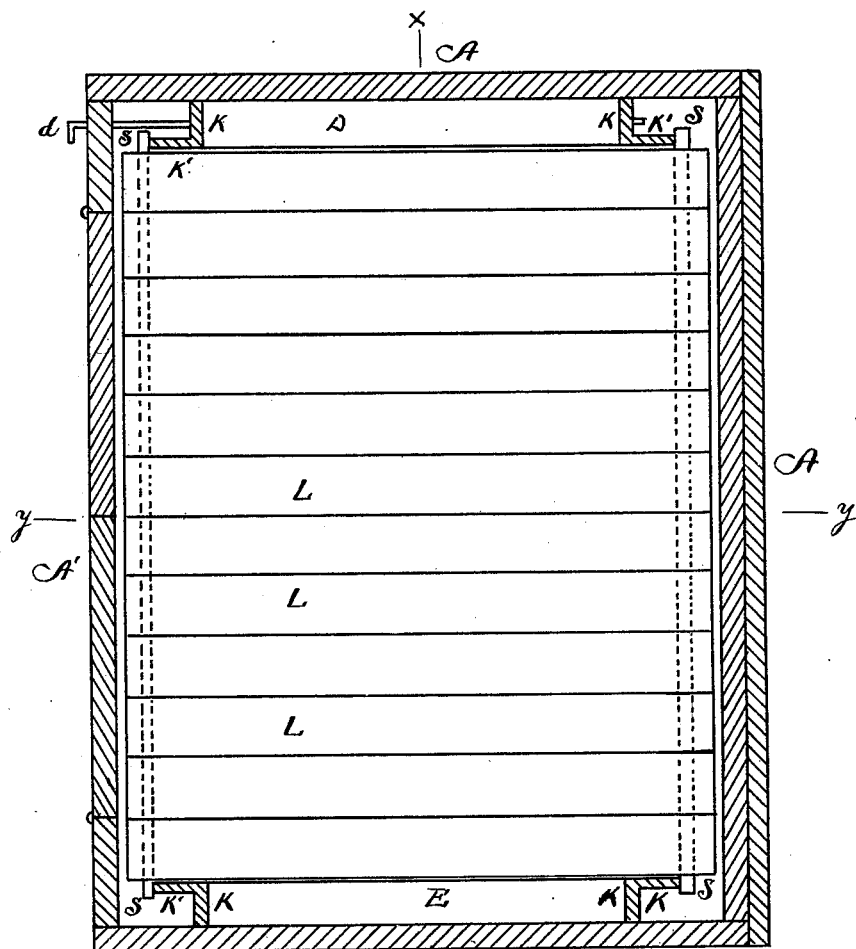


FIG 3

WITNESSES

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UNITED STATES PATENT OFFICE.

PHILANDER G. FINN, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN LUMBER-DRIERS.

Specification forming part of Letters Patent No. **220,225**, dated October 7, 1879; application filed July 16, 1879.

To all whom it may concern:

Be it known that I, PHILANDER G. FINN, of Erie, in the county of Erie and State of Pennsylvania, have invented a new and useful Lumber Dry-Kiln; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of dry-kilns for drying lumber, and consists in an improved construction of the kiln and the manner of piling the lumber therein.

My device is shown in the accompanying drawings, as follows:

Figure 1 is a vertical longitudinal sectional view taken on the line *x x* in Figs. 2 and 3. Fig. 2 is a vertical transverse sectional view taken on the lines *y y* in Figs. 1 and 3. Fig. 3 is a horizontal longitudinal sectional view taken on the line *z z* in Figs. 1 and 2.

The parts of the kiln are as follows: A A A A are the outer upright walls. C is the top or roof. B is the floor. H H, &c., are the steam-pipes, arranged below the floor. G is the escape-pipe or chimney. J is the throat or opening for the hot air to enter the kiln from the steam-pipe chamber. I is the fresh-air inlet. M N O P are hot-air flues. A' are doors to be opened when filling or emptying the kiln. L represents the lumber in the kiln. S are strips which lie between each layer of lumber.

Other details of construction will fully appear hereinafter.

At each end of the kiln are placed, on each side, uprights K, which keep the lumber off the ends of the kiln, and leave a space. At one end of the kiln two horizontal pieces, D F, divide this space, and at the other end of the kiln one such piece, E, divides the space then formed by the uprights K. (See Fig. 1.) These partitions form the air-flues M N O P.

The arrows in Fig. 1 show the direction of the hot air, which is as follows: It first passes through the throat J into the flue or space M. It then finds its way through the spaces left between the layers of lumber, and enters the space N at the other end of the kiln. The partition D confines the air in its passage to the lower section of the pile of lumber.

When the air has reached the space N, it rises and re-enters the pile of lumber, and passes through the portion thereof which lies

above the partition D and below the partition E, and passes into the space O, when it again rises and enters the section of the pile which lies above the partition E and below the partition F, and finally passes into the space P, from whence it is free to leave the kiln through the chimney G. Thus it has passed through the lumber three times.

As the two lower sections of the pile receive the air when it is hottest, they will dry first. I therefore make the partition D in the form of a damper, and, by turning it into the position shown by dotted lines in Fig. 1, the spaces M and O are thrown together, and the air will pass directly up and through the upper section of the pile. This is done the last few hours of the drying, and brings the whole pile to a uniform dryness.

The manner of piling the lumber in order to secure this circulation of the air is as follows: The boards all lie transverse the kiln, and are placed closely together at their edges. Strips S lie transverse the lumber and lengthwise of the kiln, between each two layers of boards, near the ends of the same. This forms between each two layers of boards a free open passage for the air from end to end of the kiln. No hot air whatever comes in contact with the ends of the boards. No hot air enters the space between the ends of the boards and the sides of the kiln, and, except in stormy weather, the sides of the kiln could be removed and not interfere with the process of drying. An advantage arising from this is the avoidance of season-checks.

At right angles to the uprights K are placed boards K', which face the lumber. These are simply guides for laying the strips S against. When boards of the length shown in the drawings are used, the strips lie on the outer edge of the boards K'; but if shorter boards were used the strips would be laid against the inner edges of the boards K'. When laid as shown the boards K' also close the passages through the lumber and divert the air into the flues.

The advantages of my kiln are: First, cheapness and simplicity of construction; second, complete circulation of the air through the pile of lumber, thus bringing the hot air in contact with both sides of each board; third, not exposing the ends of the lumber to the heat, caus-

ing them to season slowly, and thus avoiding cracking; fourth, complete control of the air in its movements, causing it to circulate as desired through the lumber, thus bringing all the lumber to an even or uniform state of dryness.

I am aware that it is common to pile lumber with strips between the layers of boards, so as to allow the air to circulate freely through the pile, and I do not intend to claim such a manner of piling lumber; but my invention consists in thus piling the lumber, in connection with devices for forcing the air through the interspaces thus formed, and thus securing a proper circulation of air.

What I claim as my invention is—

1. In a board-kiln, the combination, with the end walls, bottom, and steam-pipe chamber of the same, of the upright partitions K, placed substantially as described, so as to form air ducts or flues at the ends of the pile of lumber, substantially as set forth.

2. In a board-kiln, the combination, with the end walls, bottom, and steam-pipe chamber of the same, of upright partitions K and horizontal partitions D E F, placed substantially as described, so as to form air spaces or flues M N O P, substantially as set forth.

3. In a board-kiln, the combination, with air-

flues M N O P at the ends thereof, formed substantially as described, of a board-pile formed of boards lying across the kiln, and strips S lying lengthwise of the kiln at or near the ends of the boards, thus forming interspaces which serve as air-ducts from the flues at one end of the kiln to the flues at the other end of the kiln, substantially as and for the purposes set forth.

4. In a board-kiln which has vertical passages for hot air at opposite ends thereof, the combination, with said vertical passages, of a pile of boards, piled substantially as described, so as to have horizontal passages through the same connecting with the said vertical passages, and obstructions placed in said vertical passages substantially as shown, so as to divert the hot air from a vertical to a horizontal direction, and cause it to flow through the horizontal passages in the board-pile from the vertical passage at one end to the vertical passage at the other end of the kiln, substantially as and for the purposes set forth.

In testimony whereof I, the said PHILANDER G. FINN, have hereunto set my hand.

PHILANDER G. FINN.

Witnesses:

JNO. K. HALLOCK,
S. S. SPENCER.