No. 772,767. PATENTED OCT. 18, 1904.

C. F. WILLIAMS.

KILN FOR DRYING LUMBER.

APPLICATION FILED JULY 13, 1904.

NO MODEL. 4 SHEETS—SHEET 1.

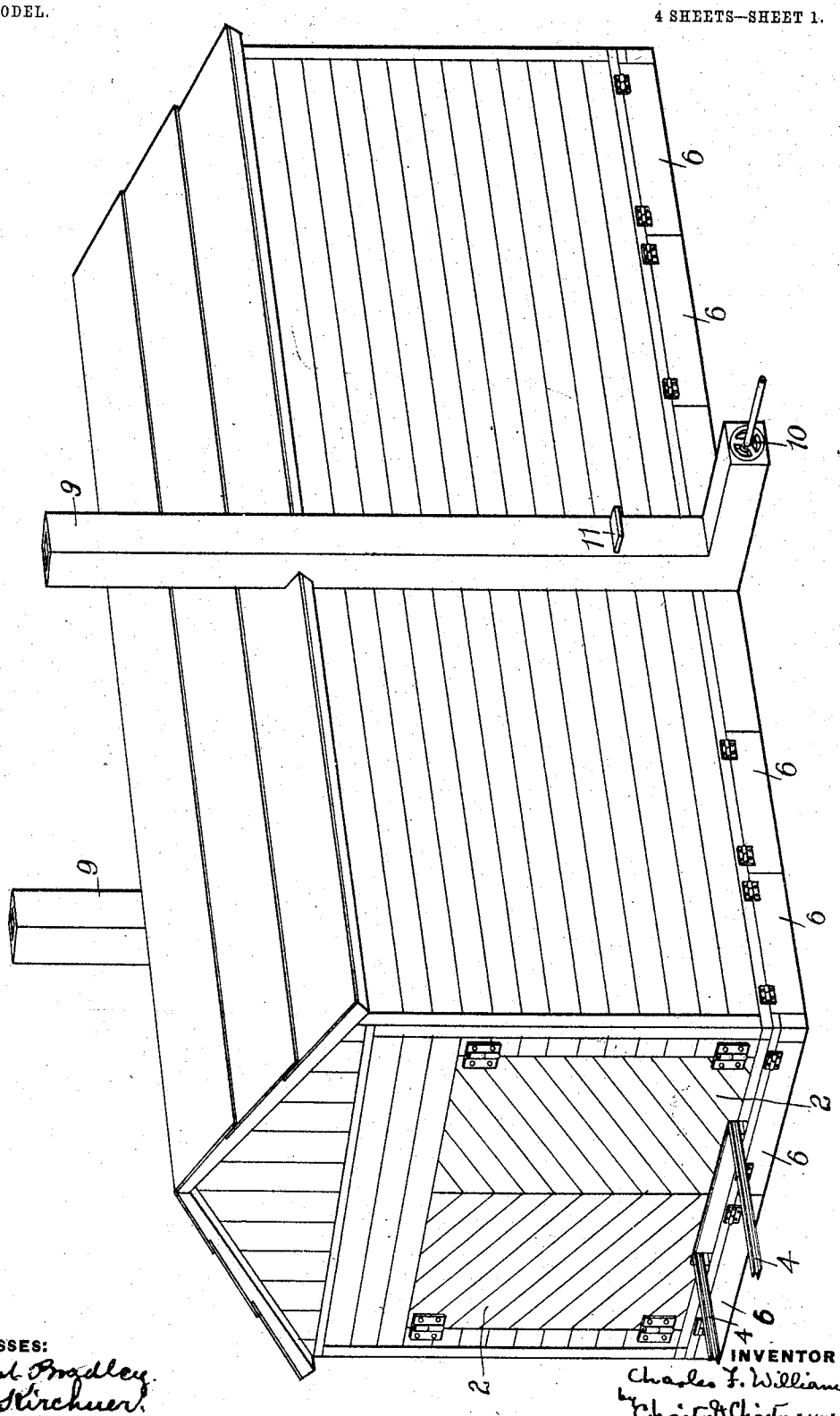


FIG. 1.

WITNESSES:
Herbert Bradley.
Fred Kirchner.

INVENTOR
Charles F. Williams,
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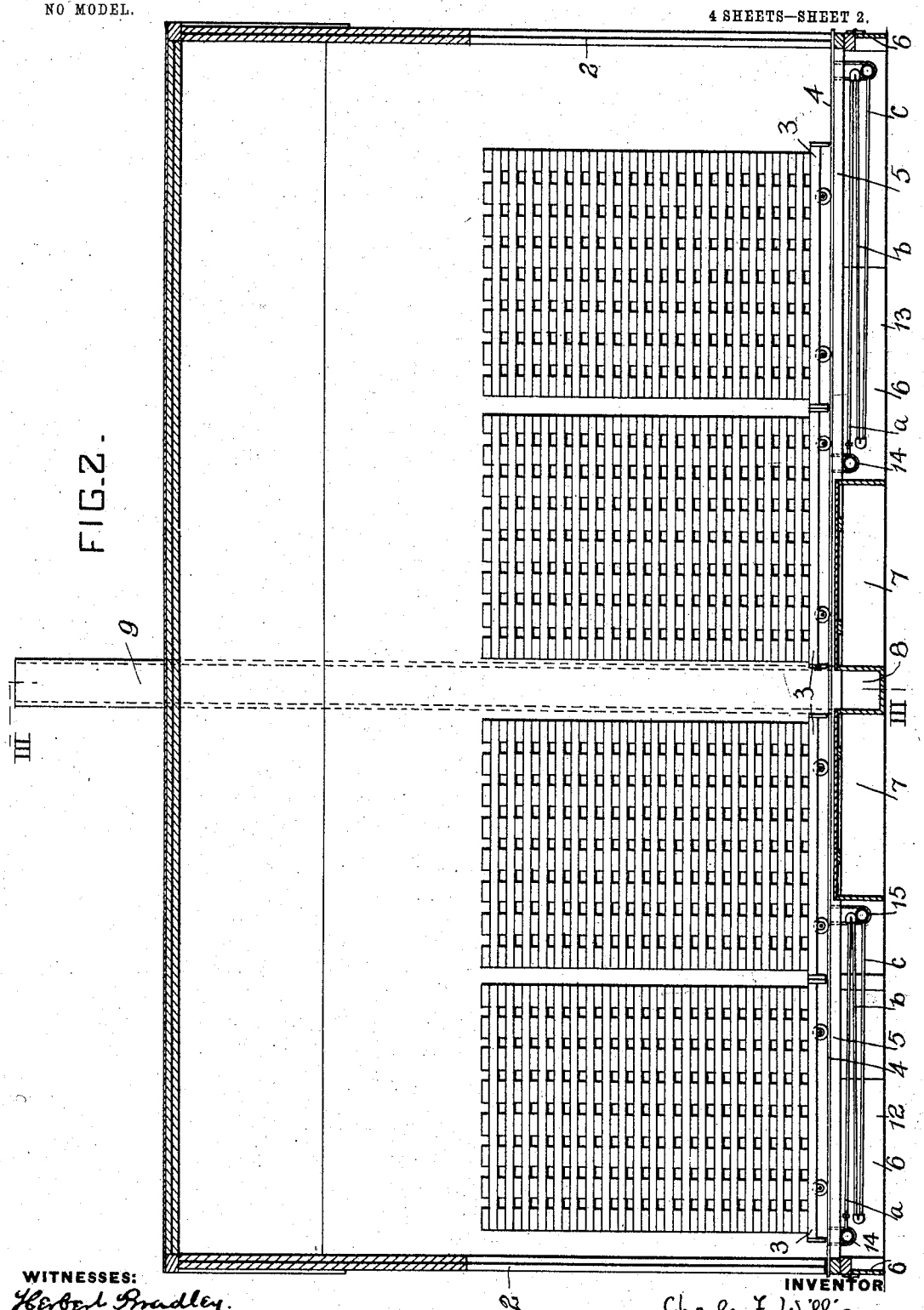
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NO MODEL. 4 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:
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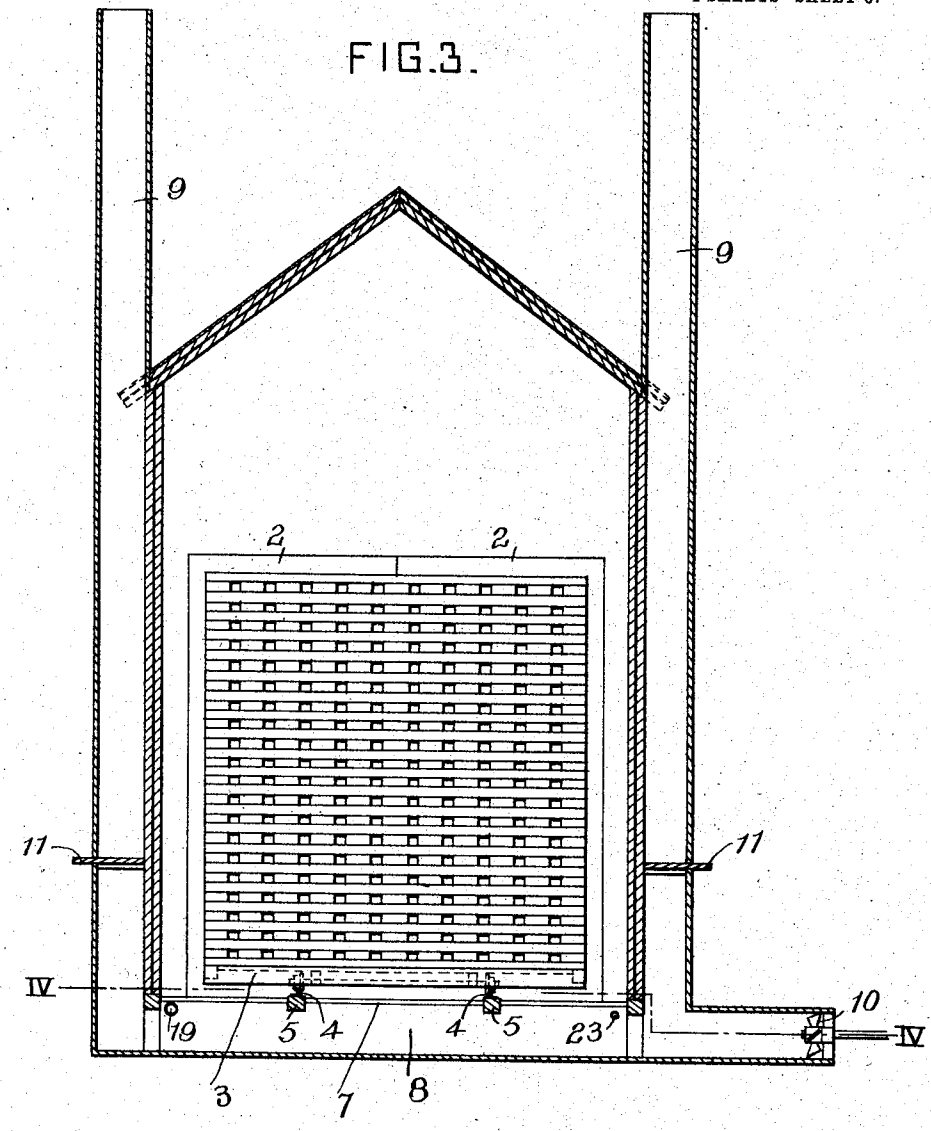
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NO MODEL. 4 SHEETS—SHEET 3.

FIG. 3.



WITNESSES:
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No. 772,767. PATENTED OCT. 18, 1904.

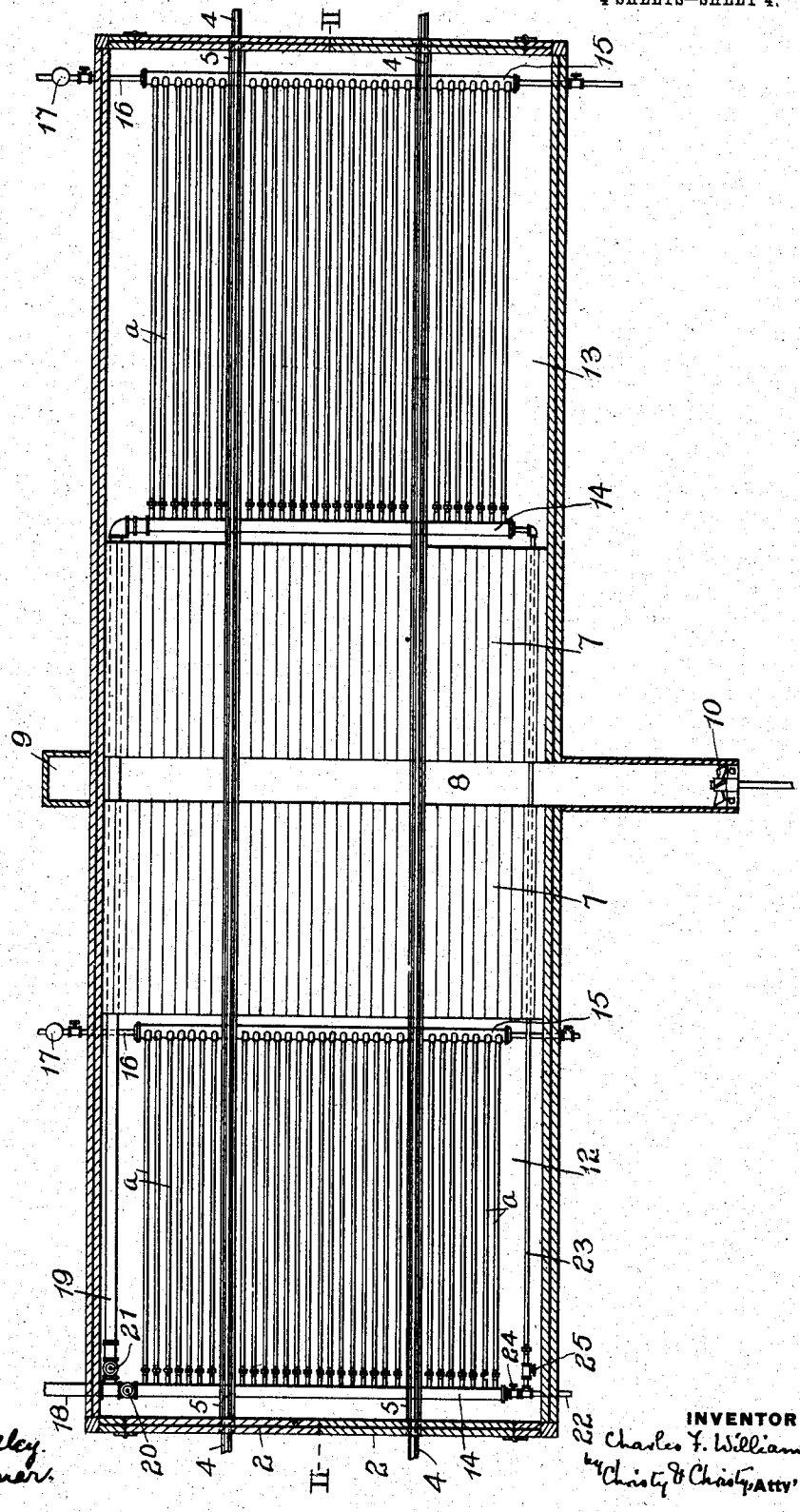
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NO MODEL. 4 SHEETS—SHEET 4.

FIG. 4.



WITNESSES:
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Fred Kirchner.

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No. 772,767. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

CHARLES F. WILLIAMS, OF MARION, MICHIGAN, ASSIGNOR OF ONE-HALF TO THE WALSH MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

KILN FOR DRYING LUMBER.

SPECIFICATION forming part of Letters Patent No. 772,767, dated October 18, 1904.

Application filed July 13, 1904. Serial No. 216,450. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WILLIAMS, a citizen of the United States, residing at Marion, in the county of Osceola and State of Michigan, have invented or discovered certain new and useful Improvements in Kilns for Drying Lumber, of which improvements the following is a specification.

The invention described herein relates to certain improvements in kilns for drying lumber.

The invention has for its object a construction and combination of parts or elements whereby provision is made for a regulated inflow of air, the heating thereof to the desired temperature, and the drawing of the heated air through the lumber and out of the building. It has heretofore been the practice to force the air into the kiln at one end and allow it to escape at the opposite end. In such kiln it is practically impossible to insure a circulation in all parts of the kiln and through all portions of the lumber passing through the kiln, and hence certain portions of the lumber would be subjected to great heat or insufficiently heated.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of my improved kiln. Fig. 2 is a sectional elevation longitudinal of the kiln. Fig. 3 is a transverse section on a plane indicated by the line III III, Fig. 2; and Fig. 4 is a sectional plan view on a plane indicated by the line IV IV, Fig. 3.

In the practice of my invention the kiln, which may be of any desired length or width, is formed with double walls, tarred paper or other suitable material being interposed between the walls to render them air-tight. Doors 2 are provided at each end for the admission and discharge of trucks 3, in which the lumber is piled in such manner that air can pass freely through the piles on the cars. The rails 4, along which the cars move, are supported on sills 5 some distance above the floor or plane of the lower edges of the building. Doors 6 are arranged at and adjacent to the ends of the building for the admission of air into the space below the level of the rails. Bulkheads 7, closely planked on the sides and top, are arranged across the building, so as to form between them an air-chamber 8, connected at its ends to stacks 9 for the natural escape of air. At one end the air-chamber 8 is connected to an exhaust-fan 10, which may be driven in any suitable manner. When the fan is employed, the valves 11 in the stacks should be closed. The bulkheads are made of considerable width, preferably approximately the length of the trucks, and extend up to or nearly to level of the rails 4, thus forming, in connection with the ends of the building, air-heating chambers 12 and 13, into which the air flows through the openings controlled by the doors 6.

In order to heat the air passing through the chambers 12 and 13, a series of pipes adapted to be heated by live or exhaust steam are arranged in these chambers immediately below the plane of the rails 4. A convenient construction of heaters consists of connected headers 14 and 15, arranged at the ends of the chambers 12 and 13. The connections between these headers form the heating-surfaces and consist of three lines or sections *a*, *b*, and *c* of pipe, the sections being connected together by elbows. The section *a* inclines from the header 14 and the section *b* from the elbow connecting it with section *a*, and section *c* inclines from the elbow connecting it with section *b* to the header 15, which is lower than header 14. By this construction all water of condensation will flow into headers 15, which are provided with outlet-pipes 16, connected to steam-traps 17 of any suitable construction. Exhaust-steam is supplied to the headers 14 through pipes 18 and 19, each provided with valves 20 and 21, so that either or both of the heaters may be operated at will. Live steam is supplied to both headers 14 by pipes 22 and 23, having valves 24 and 25. By this construction live steam can be admitted to one of the heaters and exhaust-steam to the other.

In operating the kiln the trucks carrying the lumber move successively step by step through the kiln. When first placed in the kiln, the lumber is directly over one of the heaters and the dry hot air passes through the lumber, taking up the moisture therefrom. The air laden with moisture is drawn to and through the chamber 8 by the fan or by draft up through the stacks. The trucks should be so arranged as not to cover the chamber 8, but rather so that two stacks of lumber will form continuations of the sides of the air-chamber, as shown in Fig. 2. It will be observed that just prior to its removal from the kiln each truck-load is directly above a heater and that the air from this heater is drawn up and back to the air-chamber 8.

It is characteristic of my improvement that air after taking up moisture from one stack of lumber passes directly out of the kiln and does not come into contact with another stack, as would happen in a kiln where the air enters one end and passes out at the other end.

I claim herein as my invention—

1. A kiln provided with openings adjacent to its ends for the admission of air in combination with means for regulating the inflow of air, means arranged adjacent to the ends of the kiln for heating the air, and means connected to the kiln intermediate of its ends for drawing air from the kiln whereby the drying-air is caused to flow from either or both ends through the lumber to the opposite opening, substantially as set forth.

2. In a kiln the combination of bulkheads arranged transversely of the kiln and dividing its lower portion into three chambers or compartments, the end chambers provided with openings for the admission of air, doors for regulating the inflow of air, means arranged in the end chambers for heating the air, and means connected to the intermediate chamber for drawing the air from the kiln, substantially as set forth.

3. A kiln provided with end and intermediate open-topped chambers, means for regulating the flow of air into the end chambers, means connected to the intermediate chamber for drawing air from the kiln, steam-coils arranged in the end chambers and having independent connections to the steam-supply, substantially as set forth.

4. A kiln provided with end and intermediate open-topped chambers, in combination with means for regulating the flow of air into the end chambers, means connected to the intermediate chamber for drawing air from the kiln, supply and outlet headers arranged in the end chambers, and a series of connections from the supply to the outlet headers, each connection of three downwardly-inclined connected sections of pipe, substantially as set forth.

5. A kiln provided with end and intermediate open-topped chambers, in combination with means for regulating the flow of air into the end chambers, an exhaust-fan connected to the intermediate chamber, and means located in the end chambers for heating the air, substantially as set forth.

In testimony whereof I have hereunto set my hand.

CHARLES F. WILLIAMS.

Witnesses:
E. J. PARR,
P. J. WANGEN.