B. F. CAWTHON & A. J. CONNER.

Drying Kiln and Furnace.

No. 160,004. Patented Feb. 23, 1875.

Fig. 1.

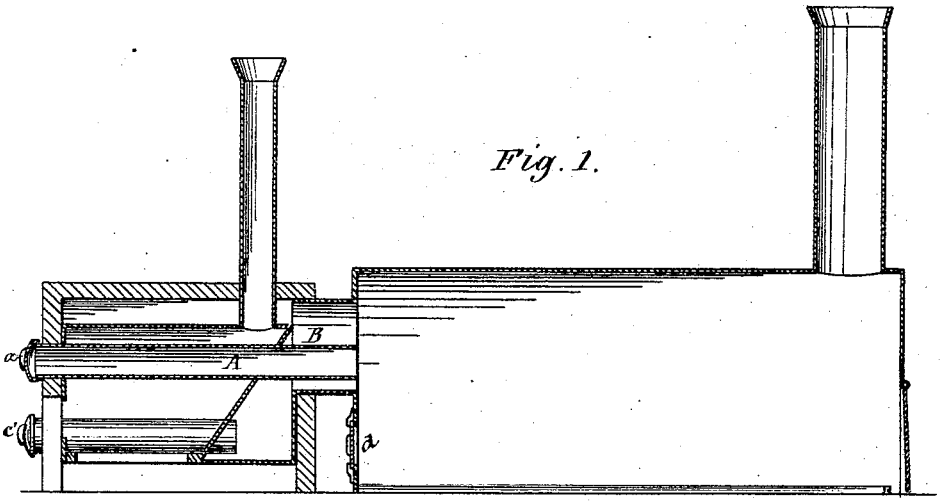


Fig. 2.

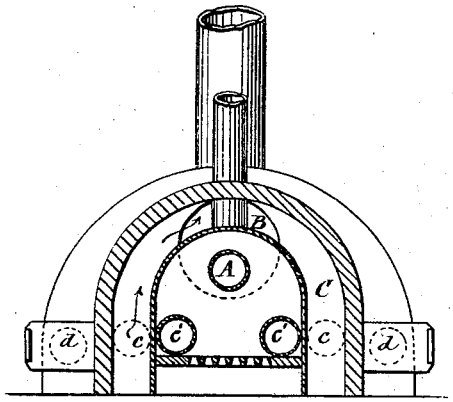
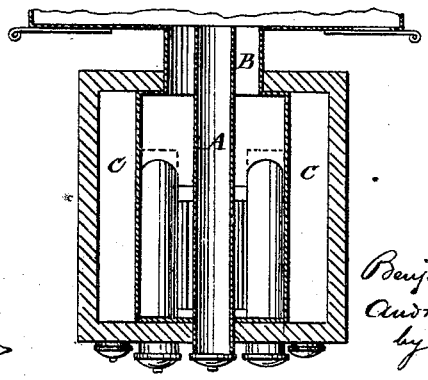


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN F. CAWTHON, OF JEFFERSON COUNTY, AND ANDREW J. CONNER, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN DRYING-KILNS AND FURNACES.

Specification forming part of Letters Patent No. **160,004**, dated February 23, 1875; application filed December 15, 1874.

To all whom it may concern:

Be it known that we, BENJAMIN F. CAWTHON, of Jefferson county, Kentucky, and ANDREW J. CONNER, of the city of Louisville, county of Jefferson and State of Kentucky, have invented a Drying-Kiln and Furnace, of which the following is a specification:

Our invention relates to a device for drying lumber, brick, peat, and other materials in a kiln with heated air.

In the accompanying drawing our invention is shown, Figure 1 being a longitudinal sectional view. Fig. 2 is a transverse section, and Fig. 3 is a horizontal view of furnace and drum.

Appropriate letters designate the different parts.

The kiln or drying-chamber is built back of and separate from the furnace, being connected therewith only by the drum B. The furnace is covered with an arched inner lining of iron of suitable thickness, extending down on each side and from front to rear. Over and parallel to this iron lining is a larger brick arched covering, springing from the ground, and forming an outer shell, leaving between the brick and iron walls an intermediate space or hollow chamber, C, as shown in Figs. 2 and 3. Into this hollow chamber fresh air is admitted through the openings *c c*, these openings having adjustable covers or registers, so as to regulate the admission of air. These openings *c c* may be increased in number, Figs. 1 and 2 showing only two. Near the top and inside of the furnace-chamber, and extending from the front to the rear, through the front and back walls of the furnace, is a main caliduct, A, having an air-supplying cover or register, *a*. This caliduct passes out at the back through the drum B, and discharges itself direct into the kiln; but we do not propose to limit ourselves to the single caliduct A. For some purposes we use more, and show two supplementary ones in the drawings, arranged at the lower part of the inside of the furnace-chamber. The drum B is made large enough to contain as its core the caliduct A, and has also the necessary space to convey the air heated in the chamber C, as well as that generated in any additional ducts or pipes. The furnace has the usual grate, doors, stack, and appurtenances to build a fire and carry off the smoke, while the kiln has at its rear end another stack to carry off the spent air, and the sap and moisture coming from the materials dried. The kiln is supplied with registers *d d*, so as to admit therein a direct flow of cool air to lower the temperature of the drying-chamber. By a proper regulation of the various sources of draft, in connection with the caliducts and registers *a*, *c*, and *c'*, a regular flow of pure heated air is conducted through the drum B direct into the kiln without having any admixture of smoke, steam, or objectionable gases arising from the fire, all of which pass out of the furnace smoke-stack, while the kiln-stack carries off all the steam, sap, and other substances forced or exuded from the materials dried. The kiln being entirely separated from the furnace, as shown in Figs. 1 and 3, a thorough and complete drying process is maintained without subjecting the materials dried to the risk of being charred or baked, which occurs when they are brought into too close contact with fire.

What we claim as our invention is—

In a drying apparatus consisting of a furnace and kiln, the combination of one or more caliducts passing from said furnace through the drum B with a kiln having registers *a c c'*, substantially as described.

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Witnesses:
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