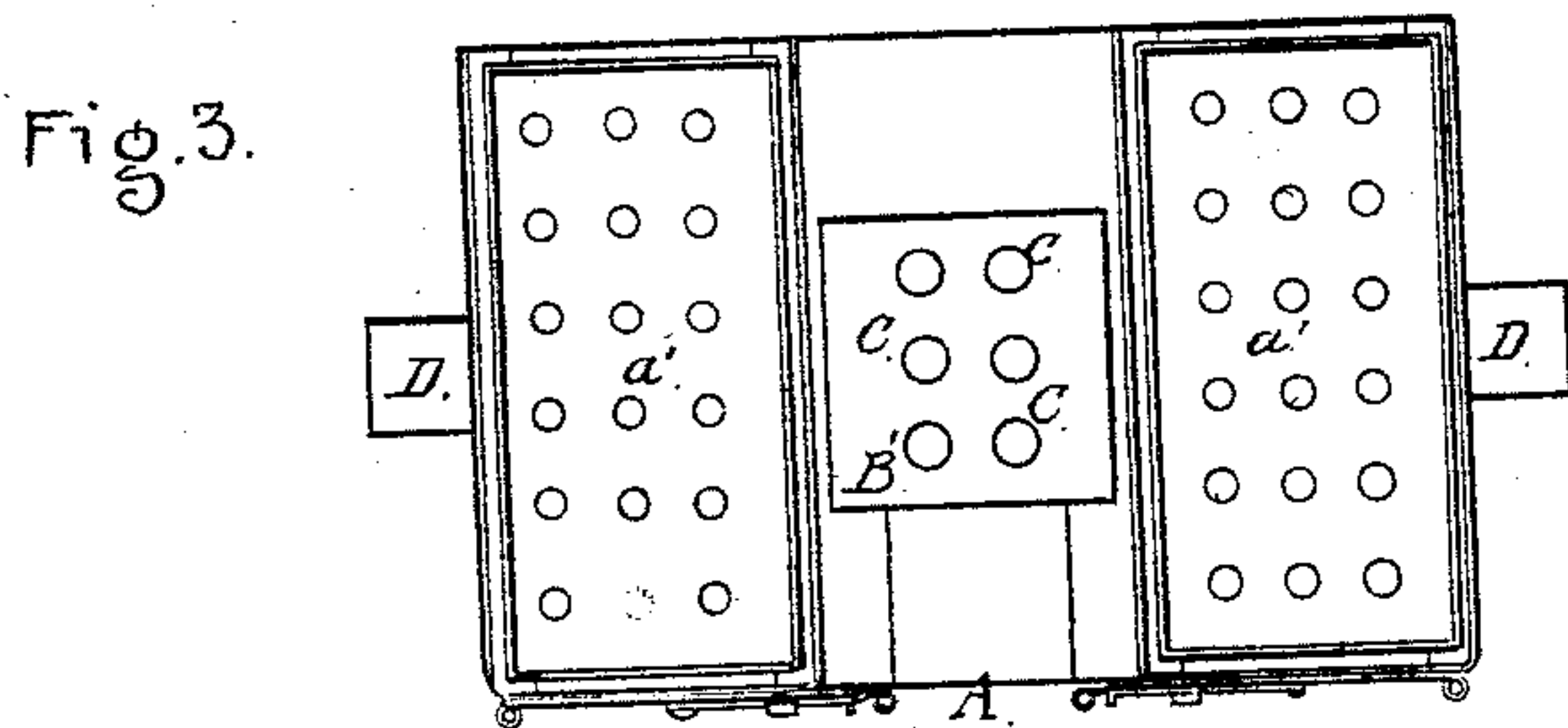


Patented Nov. 17, 1868.



B R Hawley
By his Atty
M Randall BRC

United States Patent Office.

B. R. HAWLEY, OF NORMAL, ILLINOIS.

Letters Patent No. 84,117, dated November 17, 1868.

IMPROVEMENT IN DRYING-KILNS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, B. R. HAWLEY, of Normal, in the county of McLean, and State of Illinois, have made certain new and useful Improvements in Drying-Houses or Kilns; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The subject of this invention is a drying-house or kiln, to be used for drying fruit, grain, lumber, clothes, &c. The invention relates to a peculiar arrangement of the cold and hot-air ducts, and also to the combination therewith of tubular heaters for warming the air which is to do the drying in the house or kiln.

To enable others skilled in the art to make and use my improved dry-house or kiln, I will proceed to describe its construction and operation.

Figure 1 of the drawings is a sectional elevation, bisecting the said house or kiln longitudinally.

Figure 2 is a sectional plan of the same, taken on the line *x-y* of fig. 1, and disclosing the air-passage around the fire-box.

Figure 3 is a central sectional plan, taken on the line *x'-y'* of fig. 1.

The outer walls A of this house or kiln may be constructed of any of the most approved materials used for this purpose.

In the bottom part of the house will be the fire-box B, which will be enclosed by the vertical walls of the hot-air chamber B', so as to leave an air-passage, *b*, surrounding the said fire-box on all sides, except that occupied by the fuel-door.

From the top part of the fire-box rise the smoke-tubes C, which are also enclosed within the hot-air chamber B', and which convey the smoke from the furnace to the smoke-pipe C', and thence to the chimney D.

The wells of the hot-air chamber B' extend nearly to the top of the house or kiln, or at least to the height of the top shelf or floor.

Surrounding the hot-air chamber, or arranged by the side of it, are the drying-chambers A', which are fitted with shelves, *a'*, or other equivalent devices, for sustaining the article which is to be dried.

The cold air which is fed into this kiln first enters the chamber or passage *b*, at the bottom of the house,

which is to stand upon short legs, *a*, for this purpose, or a cold-air duct may be provided instead. While passing up through the chamber *b*, which is a very narrow one, the cold air comes in direct and intimate contact with the heated plates of the fire-box, and consequently it is quickly heated thereby. Then, as the air ascends into the hot-air chamber B', above the fire-box, the smoke-flues or tubes C will very rapidly impart to it a considerable increment of heat, and thus it will be fitted for the purpose for which it is intended.

From the top end of the chamber B' the heated air will pass over into the chamber A', in the direction of the arrows, and down through the said chambers, to the bottom thereof, where it will pass into and escape through the up-cast shafts or chimneys D.

Ducts *a'* should be provided at the bottoms of the chambers A', for the purpose of affording ready access for the heated air from the corners of said chambers to the said shafts or chimneys.

By means of the foregoing arrangements, a very large volume of air may be heated, and applied to drying-purposes, and the heat will be economized, firstly, by the mode of heating it in *b* and B'; and secondly, by allowing the spent and dampened air to escape from the bottom of the kiln or house, where, of course, it will be dampest and coldest, instead of from the top, as other kilns do, and where, of course, the hottest air is lodged.

Having described my invention,

What I claim is—

1. The dry-house or kiln A, when provided with an inlet, *b*, surrounding the fire-box, at or near the base of the house, and with the heating-chamber B', which is to be so arranged as to conduct the heated air to the top of the building, and the up-cast shafts or chimneys D, when the latter are arranged to take the vitiated or spent air from the bottoms of the chambers A', substantially as described and for the purpose shown.

2. The fire-box B, the smoke-tubes C, and the hot-air chambers *b* and B', when constructed and employed as and for the purpose set forth.

B. R. HAWLEY.

Witnesses:

M. RANDOLPH,
S. M. RANDOLPH.