J. WHITE.

GRAIN DRYING KILN.

No. 186,027. Patented Jan. 9, 1877.

Figure 1,

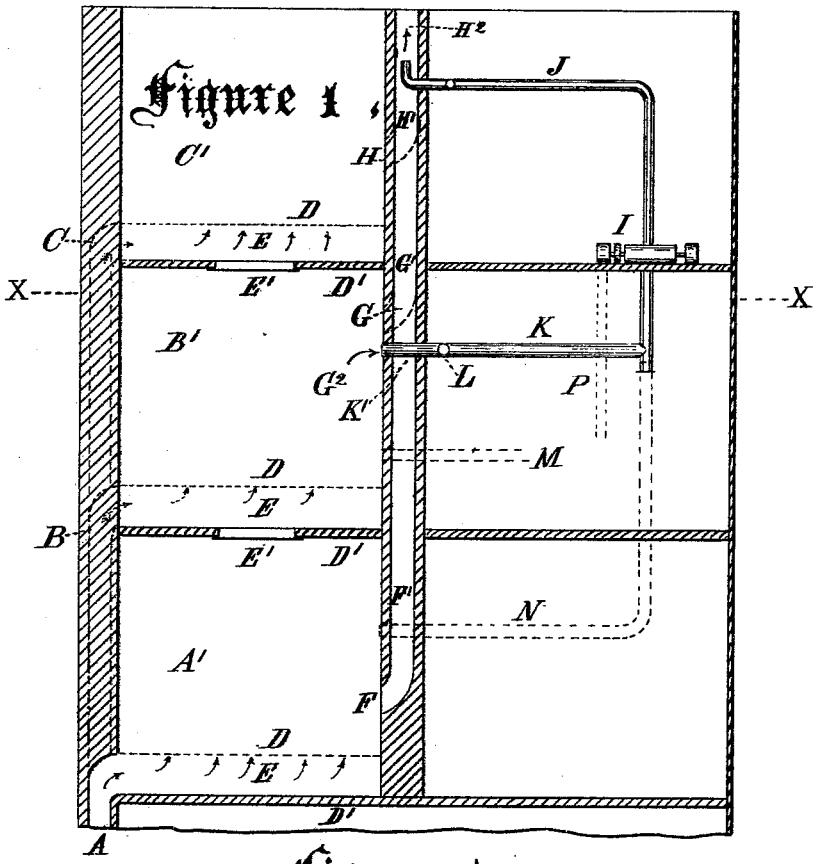
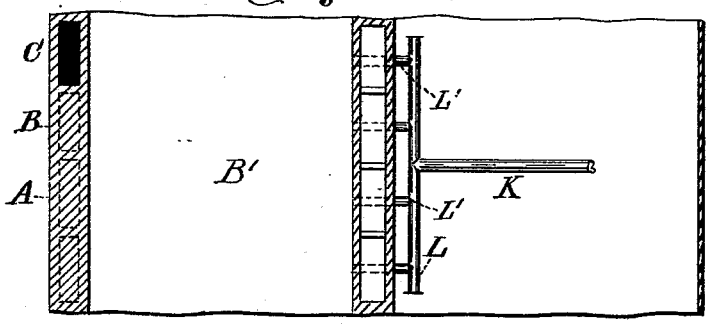


Figure 2,



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN WHITE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN GRAIN-DRYING KILNS.

Specification forming part of Letters Patent No. **186,027**, dated January 9, 1877; application filed October 9, 1876.

To all whom it may concern:

Be it known that I, JOHN WHITE, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Kilns for Drying Grain, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The object of this invention is to provide a simple and efficient means for rapidly exhausting or carrying off the vapor as it rises from the grain during the process of drying; and it consists, first, in the combination of an air exhausting and forcing apparatus with a malt or other grain drying kiln, the air forcing and exhausting device being arranged as an auxiliary to the natural draft of the flue by having the exhaust-tube for assisting in carrying off the air and moisture placed at some convenient point, so as to open into the kiln below the opening leading to the flue, while the tube or pipe for forcing out the air and moisture as it comes from the kiln, is made to enter the said natural-draft flue at some point above the opening leading into said flue from the kiln, and, by means of a bend or elbow, the current of air and vapor is directed upward and out of the flue, and thereby increases the natural draft of the flue. By this means I obtain a double advantage by first exhausting an additional quantity of air and vapor from the kiln, and then increase the natural draft of the flue by forcing the air and moisture out through the top of the same, in the manner above described.

In said drawings, Figure 1 represents a vertical longitudinal section through a malt or grain drying kiln, and Fig. 2 is a transverse horizontal section through line X X, Fig. 1.

The letters A B C represent the flues for conducting warm air from the furnaces, which are made in the usual way, are well known, and need no further description here. The flues A B C are arranged side by side, as shown, A conducting air to the kiln A′, B to B′, C to C′, &c. D is the usual floor, of perforated sheet metal, for supporting the grain to be dried. D′ is the main floor placed below it far enough to leave sufficient air-space E. E′ is a door, which may be made to slide in grooves or swing on hinges, so as to be conveniently opened or shut, for purposes hereinbefore mentioned. The letters F, G, and H represent the openings from the several kilns leading to the draft-flues F′, G^1, and H^1, for drawing the warm dry air from the furnaces up through the perforated floors D and grain to be dried. I is an ordinary fan blower, but any other device for exhausting and forcing air will answer. It receives its motion from a belt, P, driven by suitable engine-power. K represents the exhaust-pipe. It is connected to the pipe L, having pipes L′, when a number of flues in the same kiln are connected; or, when there is but one opening for an outlet in a kiln, the pipe may pass directly through, as shown at K′ below the flue-opening G. J is the outlet-pipe from the blower, which is placed so as to terminate in an elbow in the flue above the opening H.

It will be readily seen that the current of air produced by the fan will take the direction shown by the arrows G^2 and H^2, thereby exhausting the air from the kiln B′, and increasing the natural draft through opening G and flue G^1 by means of the current of air and vapor passing up and out at H^2. It will also be seen that the relative arrangement of the pipes may be varied. They may be placed either above or below the flue-openings, or at any convenient point, as shown by dotted lines M or N. The dotted lines N also show the arrangement of the pipes for reaching the kilns below.

I claim as my invention—

An air exhausting and forcing device I, provided with a pipe, K, for exhausting the air from the kiln, in combination with a pipe, J, arranged within a natural-draft flue near the top or outlet, as specified, through which the air and gases exhausted from the kiln are forced for the purpose of increasing the draft of said flue, substantially as described.

JOHN WHITE.

Witnesses:

AMOS W. SANGSTER,

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