

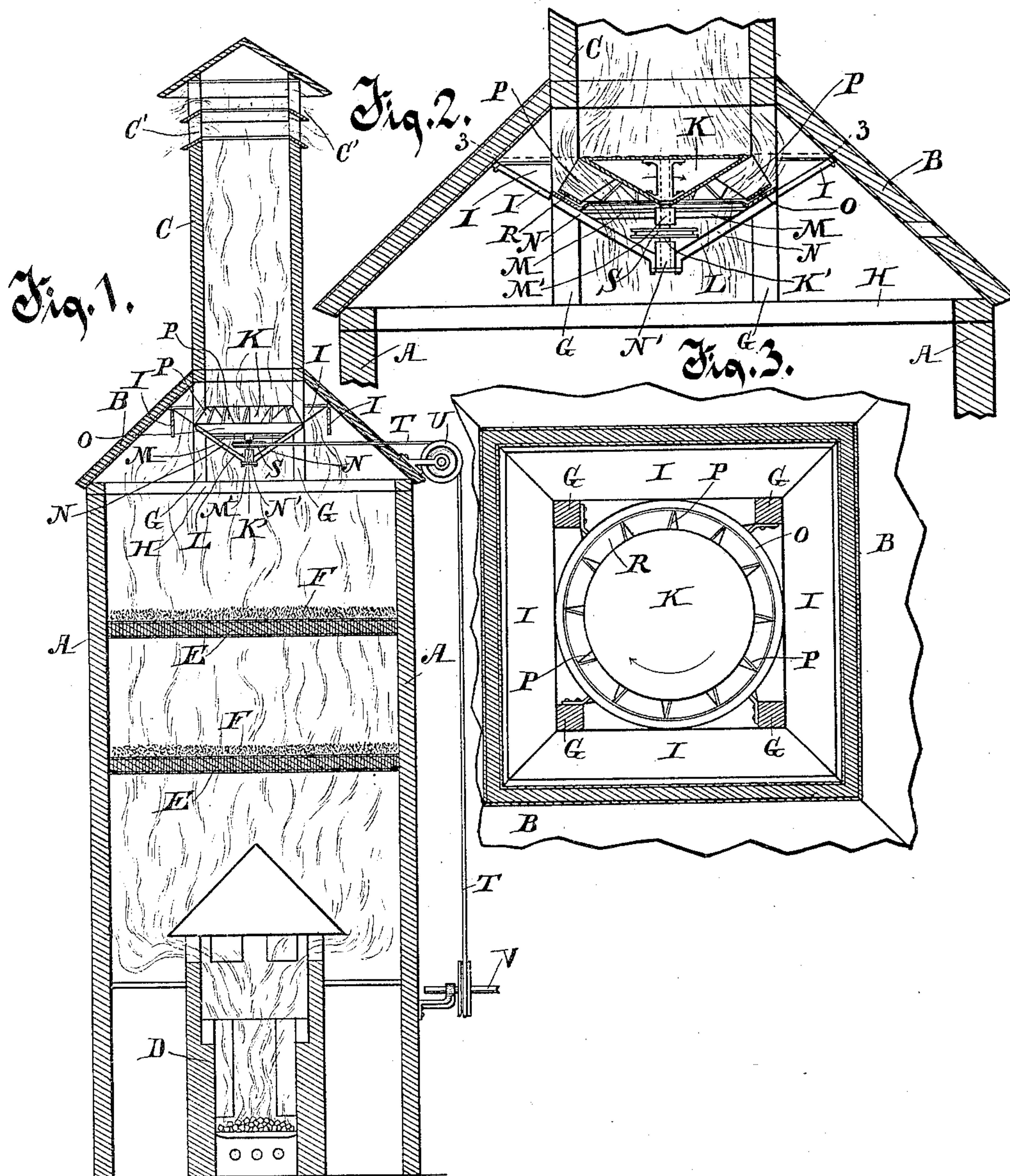
(No Model.)

J. F. DORNFELD.

MALT KILN.

No. 467,747.

Patented Jan. 26, 1892.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JOHN F. DORNFELD, OF WATERTOWN, WISCONSIN.

## MALT-KILN.

SPECIFICATION forming part of Letters Patent No. 467,747, dated January 26, 1892.

Application filed September 29, 1890. Serial No. 366,430. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. DORNFELD, of Watertown, in the county of Jefferson and State of Wisconsin, have invented a new and useful Improvement in Malt-Kilns, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in that class of malt-kilns in which artificial heat is used for drying the grain or malt spread on perforated floors; and the object of my invention is the construction of the malt-kiln in such form as to adapt it for use both without and with fans for increasing the ventilation and movement of air therein.

In the drawings, Figure 1 is a vertical sectional view of a malt-house in which my improved devices are embodied. Fig. 2 is an enlarged central vertical section of the malt-house at the roof, showing the lower end of the cupola and my improved fan therein. Fig. 3 is a transverse section of the malt-house on line 3 3 of Fig. 2, looking downwardly.

The malt-house, so far as its exterior is concerned, is constructed in a form in common use. It has vertical side walls A A and corresponding end walls, (not shown in the drawings,) a roof B, and a central upwardly-extending cupola C, provided with ventilating-apertures C' C' near its top. The kiln is also provided with a furnace D, and perforated floors E E, adapted to receive the malt F F thereon for drying. Two floors E E are shown in the drawings, but a larger number of floors, one above the other at a distance apart, may be used, if desired. The air heated by the furnace D rises freely, passing through the floors E E successively and through the malt thereon, and with the fumes passes upwardly and out through the cupola C. During cold weather and in certain states of the atmosphere the process of drying the malt in a kiln constructed in this manner can be successfully carried on by the upward movement of the heated and rarefied air without any other than the natural means for creating an upward movement of the air and proper air-passages and ventilation to permit this free movement of the rarefied air and fumes upwardly. At other seasons of the year and in

other states of the atmosphere it is desirable and sometimes necessary to provide means for creating an artificial movement or draft of air upwardly through the kiln. For this purpose I construct the kiln in such manner as to provide near the base of the cupola a central upwardly-opening passage only, in which I place a ventilating-fan arranged to be revolved in the air-passage. For this purpose in constructing the kiln I preferably continue the corner-posts G G of the cupola through the roof B of the kiln down to the beams or plates H H, extending across the kiln at the top of the walls. Within the vertical space bounded by the posts G G, I locate a fan, and the space outside of the posts G G beneath the roof B is covered and closed by swinging doors I I, which are hinged to the roof and extend and are secured temporarily to the posts G G. These doors I I close the space within the roof B outside of the posts G G, whereby the upward current of air is permitted to pass upwardly only within the space bounded by the posts G G. These doors are intended to be closed only when it is necessary or desirable to establish a draft upwardly by means of a fan or artificial means other than the mere operation of the furnace.

When the upward movement of the air is established by the heat from the furnace alone, it is desirable to have as free a passage as possible for the air upwardly, and at such times the doors are unfastened from the posts G G and are allowed to swing open, hanging downwardly, as shown in Fig. 1. In connection with a kiln constructed in the form hereinbefore described a ventilating-fan can be used in any of the many forms well known; but I have devised and advisably use a fan constructed and arranged in a novel manner, and for which construction and arrangement I reserve the right to apply for Letters Patent within the time allowed by law.

As I make no claim herein to the peculiar form and arrangement of the fan, I describe it only briefly, as follows: A frame L, consisting of the horizontal arms M M and the oblique arms N N, integral with the annular plate O, is secured rigidly to the posts G G. The arms M and N run diametrically across



from side to side of the plate O, the arms M at the center being at a distance from the arms N, the arms at their inner ends being respectively formed into journal-boxes M' and N'. A frame or disk K, having a circular cone-shaped under surface, is fixed on a spindle K', having its bearings in boxes M' and N'. This disk K forms the main frame or support of the fan. To its under surface are secured a number of downwardly-extending wings or blades P P, projecting therefrom at right angles to the conical surface of the disk, the lower edges of which are permanently secured to an annular plate R.

A pulley S is fixed on the spindle K', conveniently between the boxes M' and N', and a rope-cable T running on it and over an idle-pulley U and on a pulley on a driving-shaft V is adapted to communicate motion to the fan.

When it is necessary or desirable to use a fan in the kiln, the doors I I are closed and the fan is made to revolve by motion communicated thereto from the driving-shaft V, whereby an upward current of air from the kiln through the cupola will be produced.

The arrangement and location of the doors and fan may be changed without departing from the spirit of my invention, provided the doors and fan are located near each other at the base of the cupola and are so arranged that when desired the doors can be closed and the only remaining air-passage from the malt-

house to the cupola will be one in which the fan is located.

What I claim as new, and desire to secure by Letters Patent, is—

1. A malt-kiln consisting of a house with vertical walls and a roof, a cupola opening upwardly therefrom, which cupola is of considerable height and is of less horizontal extent than the malt-house, and doors located at the base of the cupola arranged to close the passage for air upwardly from the house into the cupola, except only a passage in which a fan is located, substantially as described.

2. In a malt-kiln, the combination, with a fan at the base of the cupola in the passage for air thereto, of doors arranged near the fan and so as to close the passage for air upwardly from the house to the cupola except through the fan, substantially as described.

3. The combination, with a malt-house having an upward passage for air therefrom to the surmounting cupola, of swinging doors adapted to close a large portion of the passage, a suction-fan located in the unclosed portion of the air-passage to the cupola, and means for driving the fan, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. DORNFELD.

Witnesses:

JOHN G. CONWAY,  
F. SCHMUTZBER.