

No. 774,915.

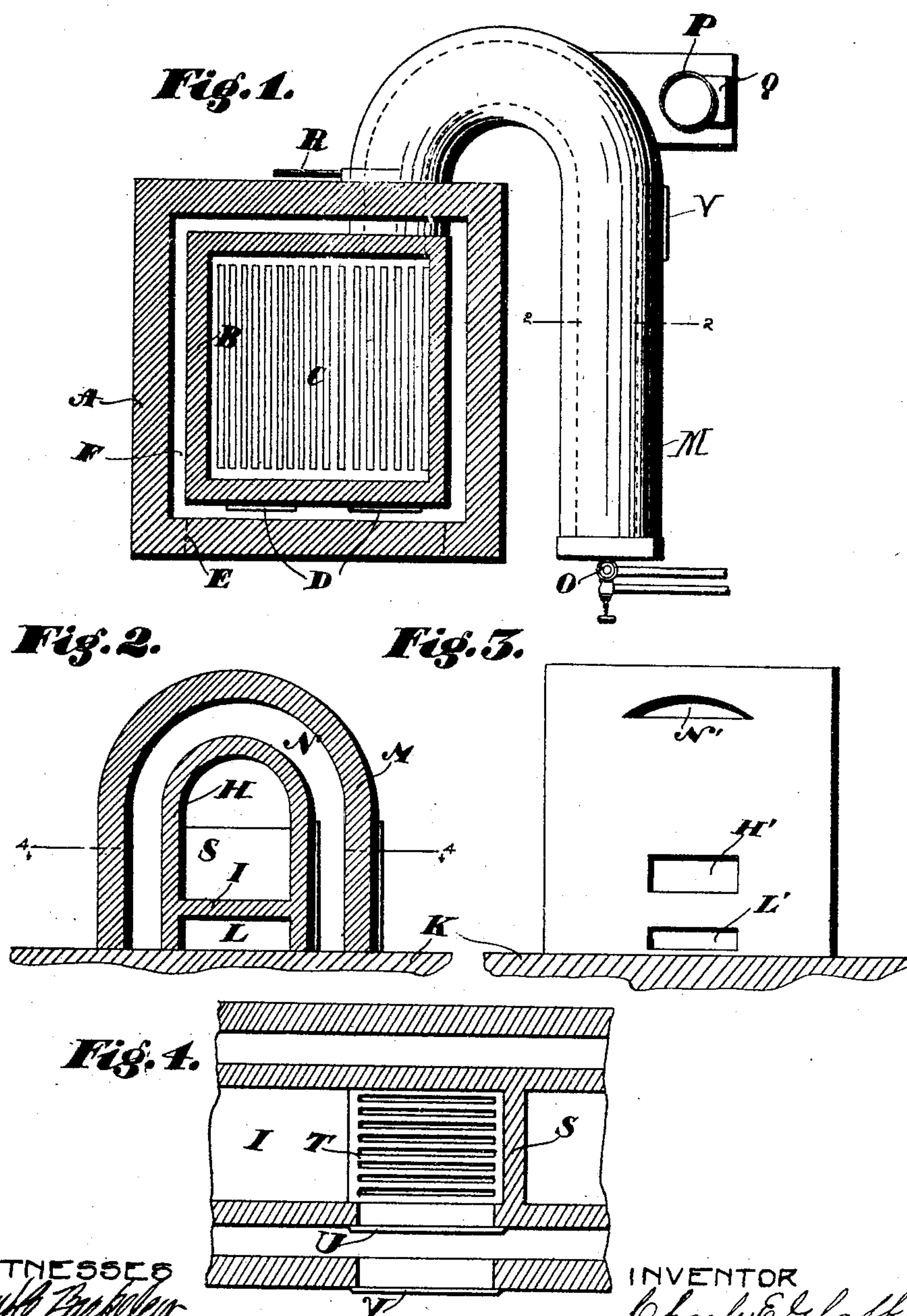
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MALT KILN.

APPLICATION FILED JULY 18, 1904.

NO MODEL.



WITNESSES
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MALT-KILN.

SPECIFICATION forming part of Letters Patent No. 774,915, dated November 15, 1904.

Application filed July 18, 1904. Serial No. 217,129. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. GLAFKE, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented new and useful Improvements in Malt-Kilns, of which the following is a specification.

My invention relates to means for utilizing as a fuel in malt-kilns liquid hydrocarbon or pulverized coal; and the object thereof is to produce a kiln in which said fuel may be utilized in drying malt. I accomplish this object by the mechanism described herein and illustrated in the accompanying drawings, in which—

Figure 1 is a plan of my improvement applied to a malt-kiln of ordinary construction, the kiln-furnace being shown in horizontal section and a portion of the smoke-stack also being shown in like section. Fig. 2 is a cross-section on the line 2 2 of Fig. 1 of the combustion draft-flue looking toward the rear. Fig. 3 is a front elevation of the combustion draft-flue. Fig. 4 is a cross-section on the line 4 4 of Fig. 2 looking in the direction of the arrow.

In the drawings, A is a wall which surrounds the central kiln-furnace B and forms a cold-air flue F around the furnace, which is of ordinary construction.

C represents grate-bars in the furnace, which may be used at any time for burning coke in the furnace. Doors D in the furnace-walls afford means whereby coke may be placed on the grate-bars.

Opening through the walls of the furnace is the J-shaped horizontal combustion draft-flue H, which in vertical cross-section is U-shaped, as best shown in Fig. 2, and is provided with a floor I, elevated a short distance above the foundation-floor K, thereby providing an air-channel L beneath said flue-floor, which opens into the furnace below the grate-bars. Surrounding said combustion-flue is a U-shaped jacket M, which is covered with asbestos or other heat-insulating material to prevent the radiation of heat and to enable its utilization in the channel N in heating the air which passes therethrough. This channel likewise opens into the furnace struc-

ture of the kiln. The front of this channel and of the combustion-flue is closed, as shown in Fig. 3, leaving a draft-opening N' for the channel and an opening H' for the combustion-flue, through which the oil-burner O projects. This burner may be of any approved construction. An opening L' affords means for the air to enter channel L.

Opening into the combustion-flue near the center thereof is a smoke-stack P, which is provided with a damper Q, which is opened when the fire is first started, so that if the fire should smoke the smoke would pass up the stack and not into the furnace to contaminate the malt. The combustion-flue is also provided with a damper R back of the stack, which is closed when the damper Q of the stack is opened, thereby compelling all the products of combustion to pass up the stack. As soon as the walls of the combustion-flues are thoroughly heated damper R is opened and the stack-damper Q is closed, and thereafter all the products of combustion pass into the furnace and up through the malt-house in the same manner that the heat from the furnace when coke is used as a fuel passes.

When pulverized coal is used as a fuel instead of liquid hydrocarbon, it must be fed into the combustion-flue by an air-blast, and near the rear end thereof I provide a baffle to cause the heavier particles of ash to be deposited upon the grate-bars T, and in the side of the flue I provide a door U and in the jacket another door, V, through which doors the ashes may be removed. These grate-bars and baffle may be used when liquid hydrocarbon is used as a fuel. The air which enters channel L will then pass up through the grate-bars, and the baffle will cause it to pass to the top of the flue, thereby causing it to more intimately mix with the products of combustion passing therethrough.

It will be observed that I have provided an auxiliary horizontal flue which may be built in and connected to the furnaces in malt-kilns that are now in common use without interfering with their construction materially and without interfering with their usefulness for the utilization of coke as a fuel and that by the use of this auxiliary flue liquid-hydrocarbon fuel may

be used for the purposes of drying malt, or pulverized coal may be used as a fuel for said purposes. It will be seen that a portion of the flue is straight, while the other portion thereof is, 5 curved. This shape is adapted, on account of its peculiar fitness, for application to malt-kiln furnaces already built; but the flue could be straight, if desired, it being only necessary that there shall be sufficient length of flue to 10 thoroughly heat the walls thereof to such a degree that no unconsumed products of combustion may escape therethrough and that the air which passes around the flue and within the jacket shall also become thoroughly heated before passing into the kiln-furnace. I pre- 15 fer the J shape, as shown in Fig. 1, because thereby the space in the malt-house is better utilized than if the flue were straight.

Having described my invention, what I 20 claim as new, and desire to secure by Letters Patent, is—

1. In combination a kiln-furnace provided with grate-bars adapted for burning coke; and a supplemental horizontal flue U-shaped in 25 vertical cross-section opening into the furnace provided with the grate-bars; a jacket surrounding the top and sides of said horizontal flue at a distance therefrom whereby there is formed therebetween an air-chamber which 30 opens into said furnace and means to supply liquid-hydrocarbon fuel into the end of said horizontal flue opposite the end that enters the furnace.

2. In combination a kiln-furnace provided 35 with grate-bars adapted for burning coke; and a supplemental horizontal flue U-shaped in vertical cross-section opening into the furnace provided with the grate-bars; a jacket surrounding the top and sides of said horizontal 40 flue at a distance therefrom whereby there is formed therebetween an air-chamber which opens into said furnace; an air-chamber below the floor of the horizontal flue and opening into the central furnace, and means to supply

liquid-hydrocarbon fuel into the end of said 45 horizontal flue opposite the end that enters the furnace.

3. In combination a central kiln-furnace; a supplemental J-shaped horizontal flue opening into said central furnace; an air-channel 50 below the floor of said horizontal flue; a jacket surrounding the top and sides of said horizontal flue at a distance therefrom whereby there is inclosed an air-chamber surrounding the 55 top and sides of said horizontal flue which opens into said central furnace; a stack connected with said horizontal flue near the center thereof; a damper in said stack; a damper in said horizontal flue at the rear of said stack, and means to supply fuel into the inlet of said 60 horizontal flue.

4. In combination a central kiln-furnace; a supplemental J-shaped horizontal flue opening into said furnace; an air-channel below 65 the floor of said horizontal flue; a jacket surrounding the top and sides of said horizontal flue at a distance therefrom, whereby there is inclosed an air-chamber surrounding the top and sides of said horizontal flue which opens 70 into said central furnace; a stack connected with said horizontal flue near the center thereof; a damper in said stack; a damper in said horizontal flue at the rear of said stack, and means to supply fuel into the inlet of said hori- 75 zontal flue; grate-bars in the floor of said horizontal flue near the central portion thereof; doors in the side walls of said flue and jacket at said grate-bars; and a baffle in said horizontal flue near to and back of the grate- 80 bars in the floor thereof.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of July, 1904.

CHARLES E. GLAFKE.

Witnesses:

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