

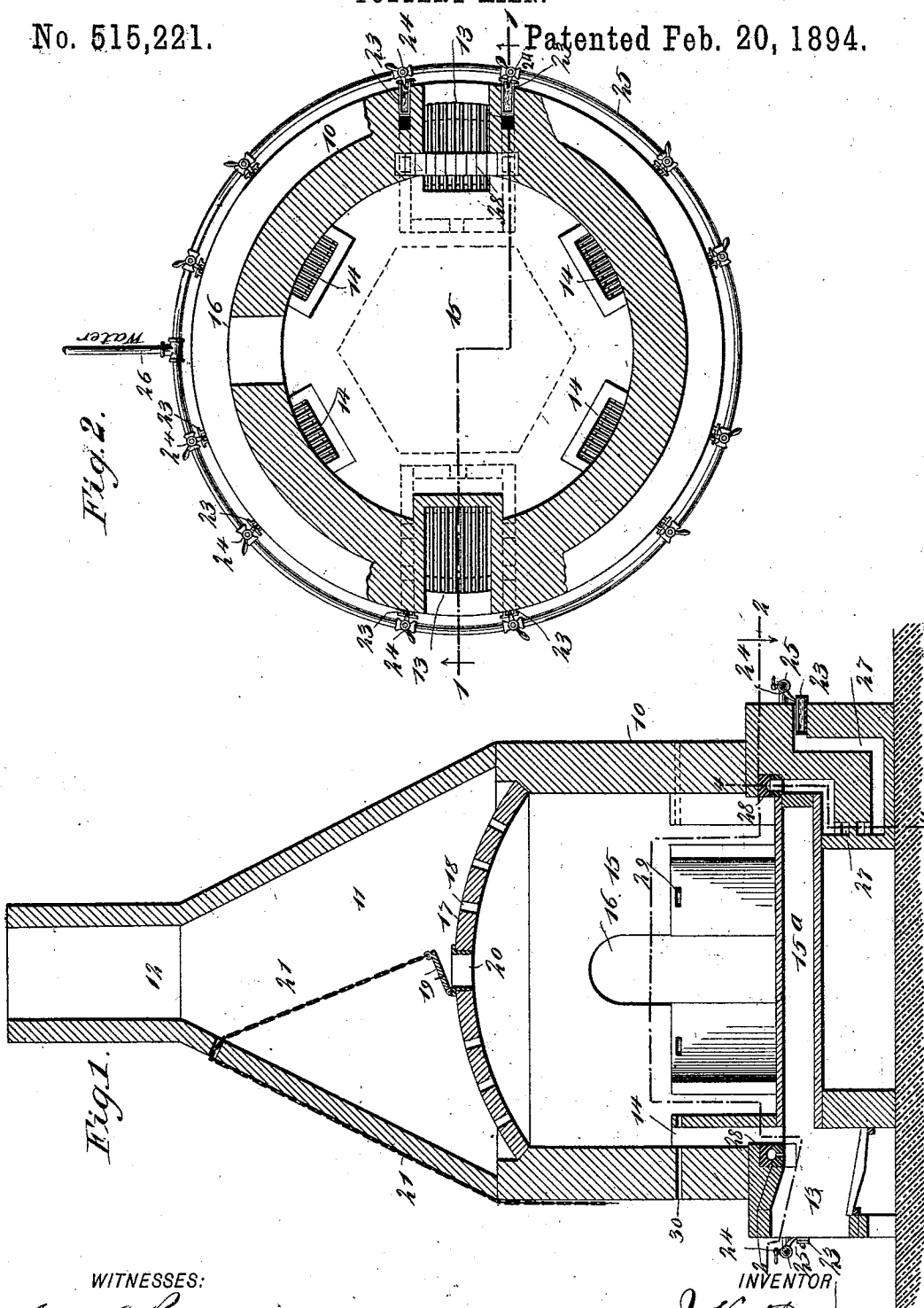
(No Model.)

2 Sheets—Sheet 1.

J. HAWTHORN.
POTTERY KILN.

No. 515,221.

Patented Feb. 20, 1894.



WITNESSES:

John A. Hennes
C. Sedgwick

INVENTOR

J. Hawthorn
BY *Munn & Co*

ATTORNEYS.

(No Model.)

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Fig. 4.

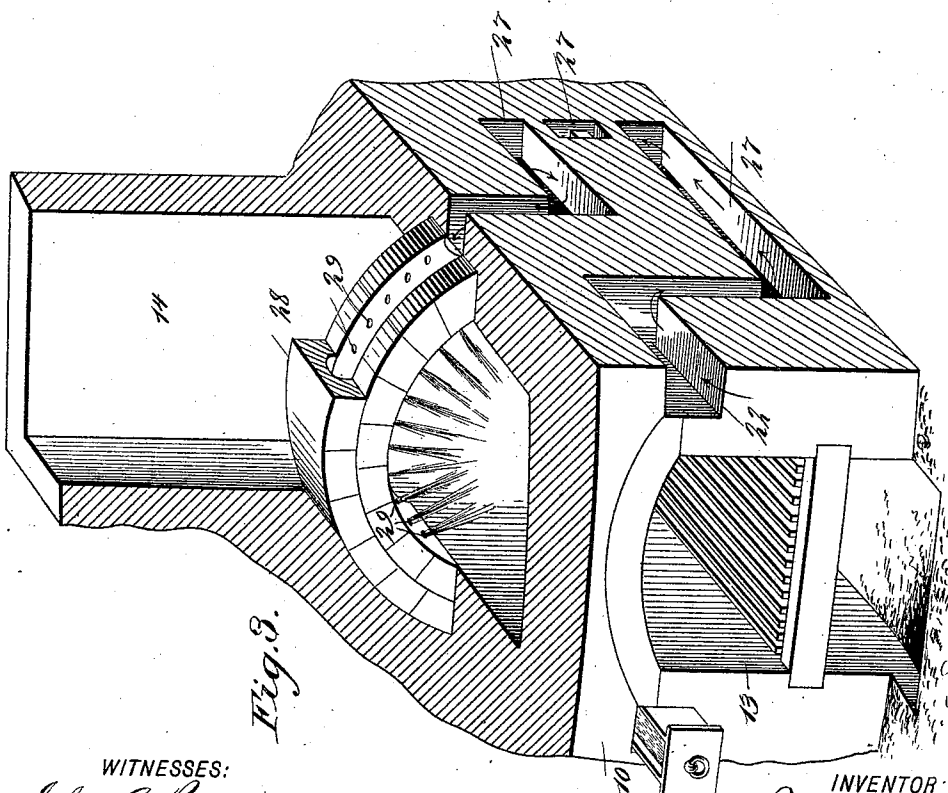
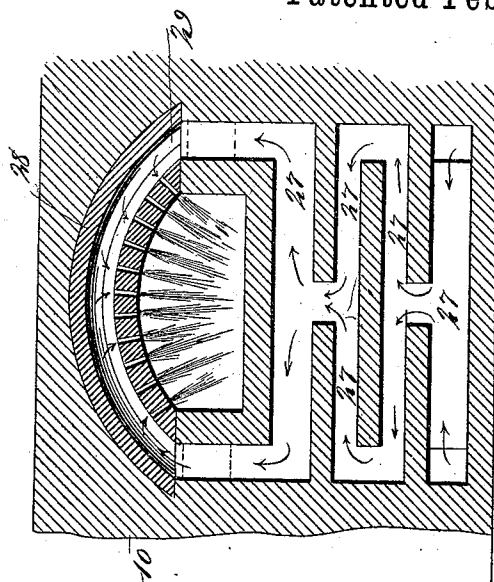


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN HAWTHORN, OF TRENTON, NEW JERSEY.

POTTERY-KILN.

SPECIFICATION forming part of Letters Patent No. 515,221, dated February 20, 1894.

Application filed September 6, 1893. Serial No. 484,926. (No model.)

To all whom it may concern:

Be it known that I, JOHN HAWTHORN, of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Pottery-Kilns, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of kilns which are used for baking pottery, and the object of my invention is to produce a kiln which is of simple construction and is adapted to apply hydrogenous heat to the pottery which is being baked. It is customary to bake the pottery by means of a carbonaceous heat, which causes the biscuit or body portion of the pottery and the glazed portion to be heated with different effects, so that the pottery when completed is crazed or crackled. This is owing to the hard nature of the heat, but by combining hydrogen with the carbonaceous heat so as to generate hydro-carbon gas, a more intense but yet milder heat is produced, which thoroughly bakes the pottery but leaves it perfectly smooth, and moreover, the arrangement which I employ for generating the hydro-carbon gas, and applying it causes a great saving of fuel.

To this end my invention consists of certain features of construction, and combinations of parts, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a vertical section of a furnace showing my improvements, on the line 1—1 in Fig. 2. Fig. 2 is a sectional plan view on the line 2—2 of Fig. 1. Fig. 3 is an enlarged detail sectional perspective view illustrating the arrangement of one of the fire boxes, and the flue which conveys the steam to the fire-boxes to form hydro-carbon gas; and Fig. 4 is a vertical section on the line 4—4 of Fig. 1, and illustrates the zigzag course of one of the steam flues.

The furnace 10 is of the usual exterior appearance, being preferably of a circular shape when viewed in cross section, as in Fig. 2, and having the dome-like top 11 which terminates at its upper end in the chimney 12. At necessary intervals in the outer lower portion of

the furnace are the fire-boxes 13 which are of substantially the usual kind, and from the rear ends of the fire-boxes, flues 14 lead in the usual way to the baking chamber 15, which is provided with a suitable door 16 to enable the pottery to be placed in the furnace and removed, and the chamber has the usual hollow floor 15^a which connects with the fire-boxes so as to be sufficiently heated. The above arrangement is substantially of the usual kind and forms no part of my invention. The chamber 15 is also provided with substantially the usual top 17 which is provided with perforations 18 through which a portion of the smoke may pass, and with a main smoke flue or outlet 20 which is controlled by a damper 19, which is provided with a chain 21 or its equivalent, extending upward and outward through the furnace wall and hanging down within easy reach so that the damper may be operated by properly manipulating the chain. On each side of every fire-box 13 are horizontal openings 22 which form a part of the steam flues hereinafter described, and in these openings are held removable pans or drawers 23 in which water is placed to generate steam. The water is supplied to these pans by means of cocks 24 in a pipe 25, which pipe encircles the furnace and the cocks 24 may be adjusted so that the supply of water will exactly compensate for the evaporation in the pans. The pipe 25 is supplied by means of the pipe 26 connecting with a source of water supply; and while the arrangement of pipes described is preferably employed, the water may be supplied to the pans in any other convenient way, without departing from the principle of my invention. The openings 22 merge at their rear ends in zigzag flues 27 which are made in the wall of the furnace, and each flue terminates at its upper and inner end in the hollow bridge wall 28 of the adjacent fire-box 13, which bridge wall is provided with numerous jet openings 29 delivering into the rear end of the fire-box at a point adjacent to the lower end of the flue 14. The furnace is provided with the usual sight holes 30 so that the interior of the baking chamber may be observed. When the furnace is used, the pans 23 are opened so as to receive water from the cocks 24 and this also admits air to the flues

27 so that sufficient oxygen may be provided to combine with the steam and the gases of the coal, to form a hydrocarbon gas. The fire-boxes 13 are provided with coal in the usual way, and the heat from these boxes generates steam in the pans 23, and the steam and air flow together through the flues 27 and by the time the steam and air have reached the bridge walls 28, the steam will have become superheated and will be ejected in jets into the rear end of the fire-box, as shown in Fig. 3, thus mingling with the gases of the coal at points near the flues 14, so that an intense heat is generated and is delivered through the said flues into the baking chamber 15.

It will be seen that as the fire gets hotter, a greater amount of heat is generated, and the steam and air acting as described, cause a great saving of fuel, and for this reason the furnace may be made with a smaller dome and chimney, as less draft is required than in the ordinary coal burning furnace. The hydrogen combined with the carbon of the coal as specified, acts mildly on the pottery, so that the latter is thoroughly baked without being crazed or crackled.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A pottery kiln, comprising a furnace having a suitable baking chamber, fire-boxes arranged around the furnace, and connecting by flues with the baking chamber, zigzag flues connecting with the outer air and provided with jet openings delivering into the fire-boxes, and evaporating pans arranged in the flues, substantially as shown and described.

2. The combination with the furnace, the fire-boxes and the hollow bridge walls of the boxes, the bridge walls having jet openings delivering into the fire-boxes, of flues connected with the outer air and with the hollow bridge walls, and evaporating pans held in the flues, substantially as shown and described.

3. The combination with the furnace, the fire-boxes, the zigzag flues in the furnace walls, and the evaporating pans arranged in the outer ends of the flues, of a water supply pipe adjacent to the furnace, and cocks on the pipe arranged to deliver into the evaporating pans, substantially as shown and described.

JOHN HAWTHORN.

Witnesses:

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EDWARD TITTENSOR.