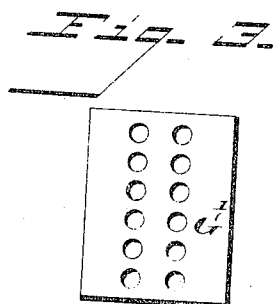
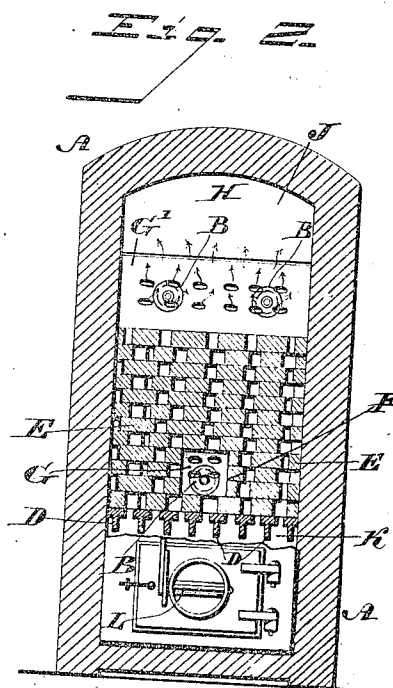
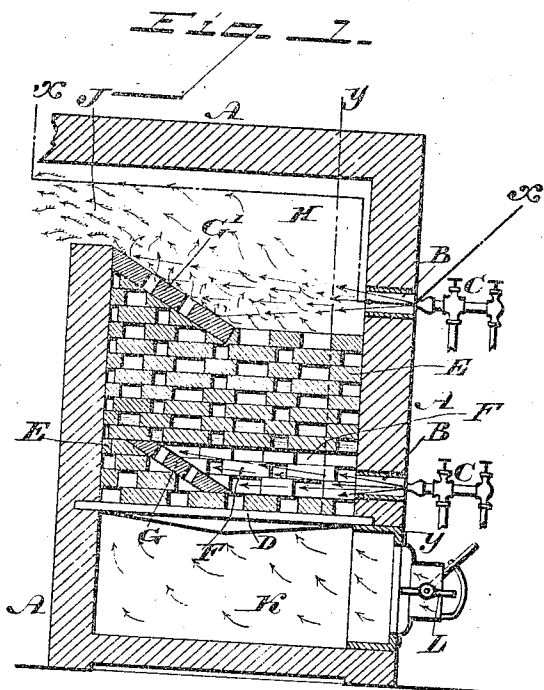


(No Model.)

S. COX, Jr.
FURNACE FOR BURNING LIQUID FUEL.

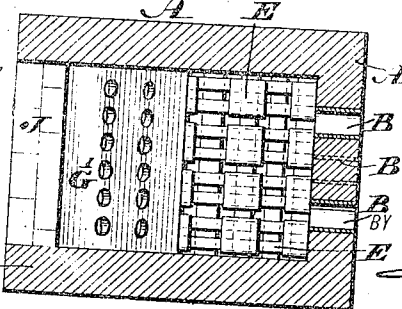
No. 473,252.

Patented Apr. 19, 1892.



WITNESSES:

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FURNACE FOR BURNING LIQUID FUEL.

SPECIFICATION forming part of Letters Patent No. 473,252, dated April 19, 1892.

Application filed July 13, 1891. Serial No. 399,333. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN COX, JR., a citizen of the United States, residing at Bridgeton, in the county of Cumberland and State of New Jersey, have invented a new and useful Improvement in Furnaces for Burning Liquid Fuel, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in furnaces for burning oil or other liquid fuel, and has for its object the construction of a device adapted to utilize crude petroleum or other oils as fuel at a slight cost and without waste or smoke; and for this purpose it consists, first, of a furnace having a series of combustion-chambers, substantially as described.

It further consists of the combination and arrangement of parts hereinafter set forth.

Figure 1 represents a longitudinal section of a furnace embodying my invention. Fig. 2 represents a vertical section on line *y y*, Fig. 1. Fig. 3 represents a top view of the perforated spray-plate embodied in my invention. Fig. 4 represents a horizontal section on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a casing having the upper and lower openings B in its front wall for the entrance therein of the oil or other liquid fuel, which is injected from the atomizers C or other suitable devices. Supported at their ends on the wall A, a short distance above the lower end thereof, are the bars D, on which is built the open or checker-work E. In the lower portion of the said checker-work is formed a combustion-chamber F, having therein and opposite to the lower openings B in the casing an inclined perforated spray-plate G, formed of fire-brick or other refractory material. On the top of the checker-work and opposite the upper openings B is a second spray-plate G', similar in construction to the plate G. The portion of space within the casing above the checker-work E forms the main combustion-chamber H of the furnace. The heated gases

or products of combustion escape from said chamber by the opening J. The space within the casing below the bars D forms an air-chamber K, the same being provided with an inlet-valve L.

The manner of operation of the device is as follows: The fuel is admitted under pressure, either alone or combined with steam, from the jets or nozzles of the atomizers C or other suitable devices through both the upper and lower openings B in the wall of the furnace and ignited as it is dashed against the spray-plates in the chambers F and H. The burning oil in the lower chamber F causes the checker-work E to become highly heated, so that the air which is admitted into the chamber K by the valve L is heated to a high degree as it passes upward through the checker-work E and a perforated plate G', and, mingling with the finely-divided particles of oil in the main combustion-chamber H, produces a very high and perfect state of combustion.

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

1. A furnace consisting of a casing with an opening in its front wall, checker-work supported in said casing below said opening, an inclined spray-plate on said checker-work opposite said opening, and an ash-pit below said checker-work, and means, substantially as described, for discharging fuel under pressure through said opening onto said plate, said parts being combined substantially as described.

2. A furnace consisting of a casing with upper and lower openings in its front wall, checker-work in said casing having a chamber therein opposite said lower opening, inclined spray-plates supported on said checker-work opposite said openings, bars supporting said checker-work, an air-chamber below said bars, and means for forcing fuel into said openings onto said spray-plates, said parts being combined substantially as described.

STEPHEN COX, JR.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. JENNINGS.