

(No Model.)

C. M. GEARING.
LIQUID FUEL FURNACE.

No. 316,890.

Patented Apr. 28, 1885.

Fig. 1.

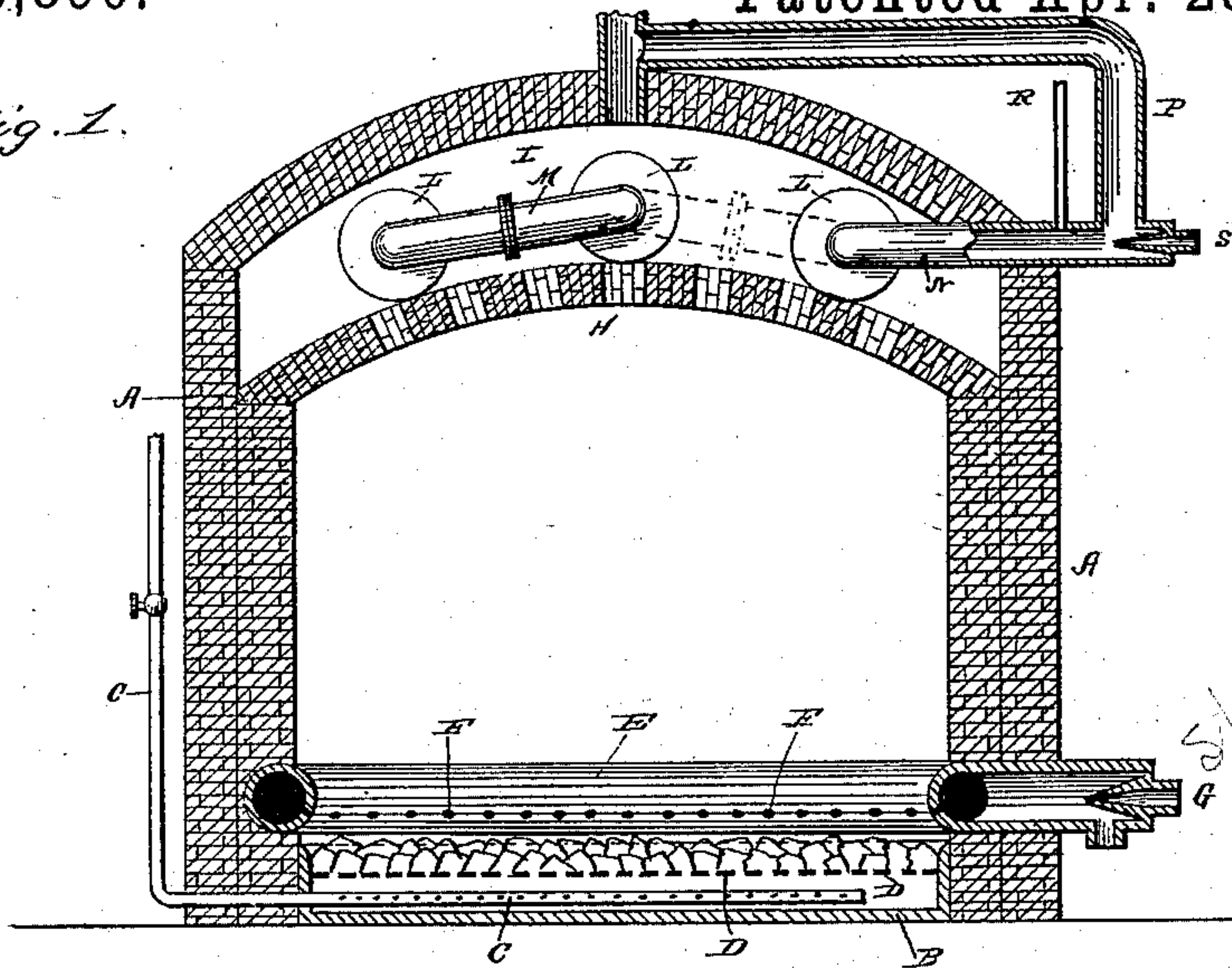
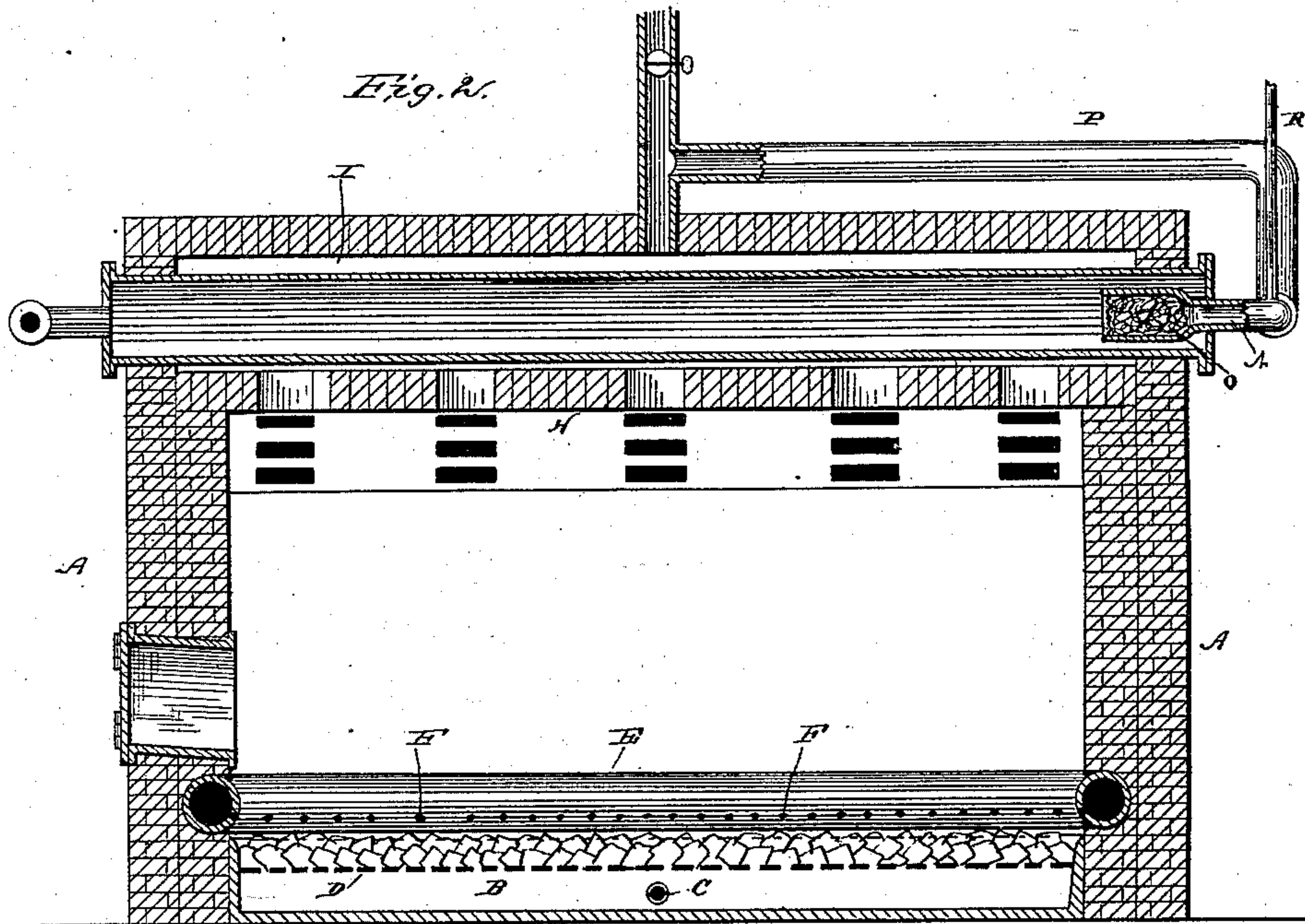


Fig. 2.



WITNESSES

Chas. H. Davis
J. J. McCarthy.

INVENTOR

Chas. M. Gearing
By L. M. Alexander Attorney

UNITED STATES PATENT OFFICE.

CHARLES M. GEARING, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO J. R. McKEE, JR., OF SAME PLACE.

LIQUID-FUEL FURNACE.

SPECIFICATION forming part of Letters Patent No. 316,890, dated April 28, 1885.

Application filed January 10, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. GEARING, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Liquid-Fuel Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of this invention is to utilize crude petroleum or other combustible liquid as fuel, and for the manufacture of gas for heating and illuminating purposes, as more fully hereinafter specified. These objects I attain
15 by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a transverse vertical sectional view of a furnace, showing my invention applied thereto; and Fig. 2 a longitudinal vertical sectional view of the same.

20 The letter A indicates the walls of the furnace, which in the present instance are constructed of masonry, with an inner lining of fire-brick or other refractory material. The said furnace at the bottom is provided with a pan or receptacle, B, into which extends a perforated pipe, C, leading from a suitable reservoir containing the petroleum or other liquid fuel, the pipe being provided with a
25 cock or valve, whereby the quantity of oil supplied to the pan may be regulated. The pan is provided with a perforated diaphragm, D, upon which is placed a mass of broken fire-brick or other similar refractory material, for
35 the purpose hereinafter explained.

Just above the upper edges of the before-mentioned pan, and embedded in the walls of the furnace, is a pipe, E, having a series of perforations, F, inclined at an angle, as shown,
40 whereby a series of jets of steam and air may be forced upon the bed of fire-brick, the said pipe being provided with a steam-injector, G, by means of which a current of steam and air may be supplied under pressure.

45 The upper part of the furnace is provided with an arched partition, H, which is perfo-

rated, as shown, and above said partition is a combustion-chamber, I, in which the gases generated below are finally consumed.

My invention in the present instance is illustrated in connection with a series of gas-generators, L, and their connections, M, N, P, R, and S, located above the perforated arch-wall H; but as these devices form no part of my present invention, further description of the
55 same is deemed unnecessary.

The operation of my invention will be readily understood from the above description, and is as follows: The crude petroleum or liquid fuel is fed into the pan at the bottom of the furnace, saturating the fire-brick. It is then ignited, and a current of steam and air is forced in through the pipe embedded in the walls of the furnace. The burning vapors and gases then pass up through the perforated arch, which becomes heated thereby, so as to fix the gases previous to entering the combustion-chamber above, where they are finally burnt, resulting in an intense heat.

I do not claim, broadly, the pan located at the bottom of the furnace in connection with the oil-distributing perforated pipes, as these devices form the subject-matter of a previous patent granted to me.

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

The combination, with the pan or receptacle located in the bottom of the furnace, of the perforated diaphragm located in the pan, the fire-brick covering said diaphragm, the oil-supply pipe leading into the pan, and the perforated pipe and injector whereby a current of steam and air may be injected upon the ignited fuel, substantially as and for the
85 purposes specified.

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

CHARLES M. GEARING.

Witnesses:

JAMES F. ROBB,
H. W. HAGAN.