

(No Model.)

J. M. FERGUSON.
OIL GAS BURNER.

No. 514,218.

Patented Feb. 6, 1894.

Fig. 1.

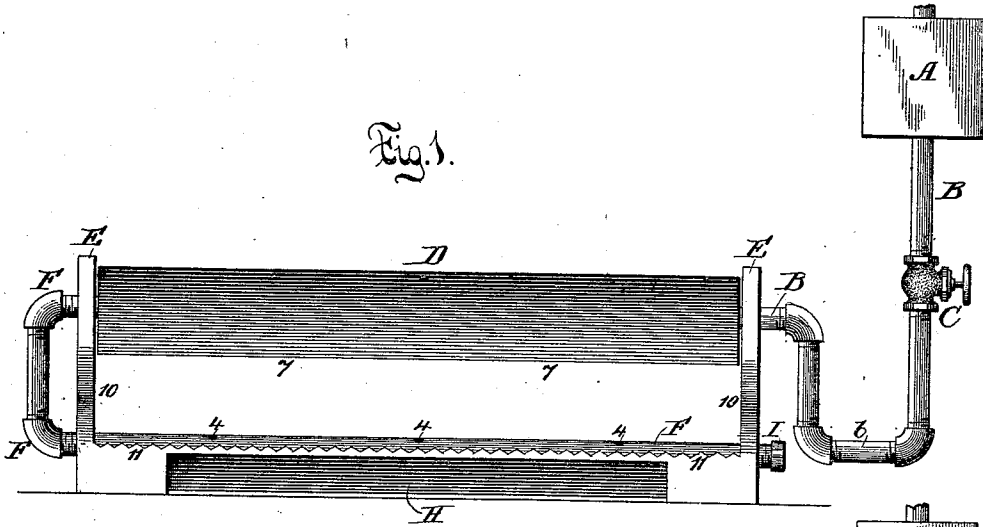


Fig. 2.

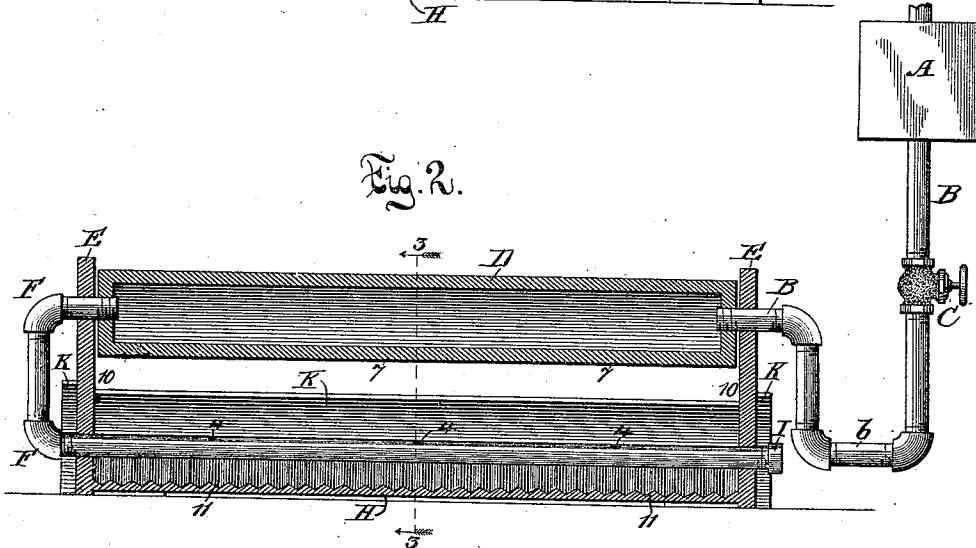
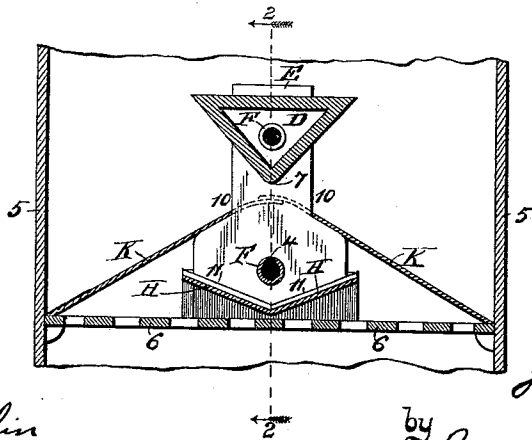


Fig. 3.



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OIL-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 514,218, dated February 6, 1894.

Application filed December 14, 1892. Serial No. 455,125. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. FERGUSON, a citizen of the United States, residing in the city of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Oil-Gas Burners, of which the following is a specification.

My invention relates more particularly to that class of apparatuses intended to be used in burning liquid fuels such as petroleum and its products; and its object is to provide a simple construction and arrangement whereby petroleum, oils, &c., can be safely and economically used as a fuel, in stoves, furnaces, and all places in which coal or wood is now used as a fuel for heating purposes, generating steam, or supplying motive power; and to this end my invention consists in the features of construction and combination of parts hereinafter more fully described and particularly pointed out in the specification and appended claims.

In the accompanying drawings Figure 1 is a side elevation. Fig. 2 is a vertical longitudinal sectional view, on the line 2—2 of Fig. 3. Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 2 showing my invention in position for use in the fire box of a stove or furnace.

In the several views, the same part will be found designated by the same letter or numeral of reference.

A. is a supply chamber or reservoir.

B. is a pipe leading from A to the gas chamber, D.

C is an ordinary valve so constructed as to open or tightly close the pipe B. B is trapped as shown at *b* and enters the gas-chamber D, preferably at one end of said gas-chamber.

From the gas-chamber D, and preferably, the end opposite from that at which the pipe B connects with D, extends a pipe F which is directed downward the main portion of which is parallel with the lowest portion of D and perforated with numerous small holes, 4—4—4, as shown in Fig. 2.

I is a cap closing the lower end of the pipe F.

Underneath the perforated portion of the pipe F is a ribbed V shaped receptacle, H, which may be called an igniting pan.

E is an upright standard, which, with its standard at the lower portion and with the

igniting pan H, forms one piece. The standard E through which the pipes F and B pass, serves not only to support the gas forming chamber D, but also affords a good broad foot or base at the lower portion to rest upon the grates of the fire box, as shown in Fig. 3.

K—K, which may be called air conductors or blowers, are flat sheets of any suitable material, preferably sheet iron, the upper portions of which rest upon both sides of the standard E, at points, as 10—10, above the perforated tube or pipe F, and between F and the lowest line 7—7 of the gas-chamber D, thus leaving a narrow opening above the pipe F the length of the gas-chamber D. From the points 10—10, K—K, extend downward and outward until they meet the grate 6—6 of the fire box. When thus constructed and placed in the fire box of a stove, furnace, or other suitable casing, which provides the requisite amount of air for combustion, together with smoke flues for draft and as outlets for the smoke and other products of combustion not perfectly consumed, my device operates as follows: Turn the valve C, thus allowing the oil in the tank A, to flow through the pipe B into the chamber D. When the space in the chamber D is filled with oil to the level of the opening at F, the oil flows downward through the pipe F and out at the points of perforations 4—4—4, into the igniting pan H. When a small quantity of oil has thus accumulated in the igniting pan H, close the pipe B at C, and light the oil in the pan H, the flame from the burning oil in the pan H is directed by K—K against the lowest line, 7—7, of the chamber D, and by reason of the triangular shape of the chamber D, the flame is divided and envelops the chamber D thus heating and vaporizing the oil therein; the vaporized oil or gas thus generated being prevented by the trap at *b* from passing through the pipe B in turn passes through the pipe F, and is ignited, at the points of perforation 4—4—4 in the pipe F, by the flame from the igniting pan. When the gas-forming chamber D is so heated as to readily convert the liquid fuel therein, into gas, then turn on the supply of liquid fuel from the reservoir A. The fuel thus supplied will, as it reaches the gas-forming chamber D, in turn be converted into vapor, and the vapor thus formed, passing the

pipe F will be ignited at the points of perforation of said pipe, and continue to burn until the supply is cut off or exhausted.

It will readily be seen that, should it be desirable to heat a larger surface than one burner sufficed for, or should it be desirable to generate a large amount of steam for motive power, two or more burners constructed substantially as above might be placed side by side in the firebox, care only being taken that the lower portions of the air conductors or blowers K, K, are placed in such a manner as to provide the requisite draft to fan the flame in each burner when in use, and thus produce a nearly perfect combustion, and an efficient flame.

The great utility of this class of apparatus will be readily appreciated, since an efficient petroleum flame when properly placed may be used in the fire box of a stove, heater, furnace, locomotive, stationary, or marine furnace or any other similar space where it may be required for heating purposes, generating steam or for motive power. The difficulty in this class of apparatus heretofore has been to eliminate all danger of explosions and at the same time have a nearly perfect combustion. These difficulties I have overcome by the improved triangular shape of the gas-forming chamber D and the pipes F and B connecting therewith, the air conductors or mixers K—K, and the V shaped ribbed igniting pan.

The oil in the V shaped ribbed igniting pan presents a thin broken surface, by reason of the shape of the igniting pan and can easily be ignited without the use of wicking. The air mixers or blowers K—K convey the air coming through the grates 6—6 of the fire box to a point immediately above the place at which the gas from the pipe F is ignited, thus insuring a uniform and powerful draft to fan the flame; while the improved triangular shape of the gas chamber, with one angle of the triangle directly above the pipe F, divides

and breaks up the flame and mingles it with the air conveyed to this point by the blowers K—K, thus insuring a nearly perfect combustion; the pipe F opening into the gas chamber D, at the central or upper portion of the end area of the gas chamber D, safely conducts all gas formed in the chamber D, to the point of ignition in the pipe F, without danger of priming.

I do not claim broadly herein the combination with a supply tank of a gas forming chamber, a pipe connecting them, a perforated tube and a burner located beneath the chamber and connected therewith.

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

1. In an apparatus for burning petroleum, oils or liquid fuels in stoves, furnaces, or other heaters, the combination with a V shaped ribbed igniting pan, of a gas forming chamber, a standard supporting the gas forming chamber, and the air deflectors K, K. constructed of flat sheets of metal, which extend downward and outward from the standard E toward the grate, 6, 6, of the fire box.

2. In an apparatus for burning petroleum, oils or liquid fuels in stoves, furnaces or other heaters, the combination with a triangular shaped gas forming chamber D, of a V shaped ribbed igniting pan H, directly below the gas forming chamber D, a standard E supporting the gas forming chamber D, a perforated pipe F between the gas forming chamber D, and the igniting pan H, and connected with the gas forming chamber D as shown, and air deflectors K, K. extend downward and outward from the standard E toward the grate 6, 6, of the fire box, all substantially as shown and for the purposes herein set forth.

JOHN M. FERGUSON.

Witnesses:

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