

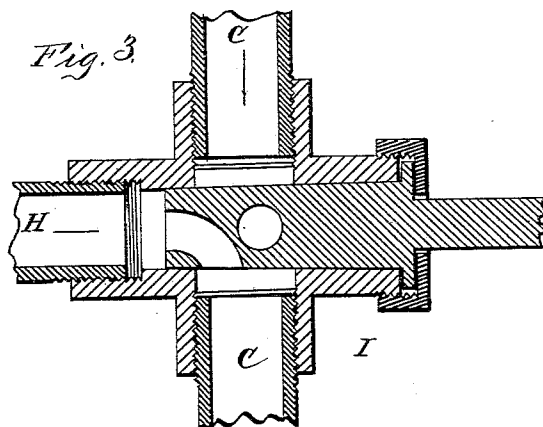
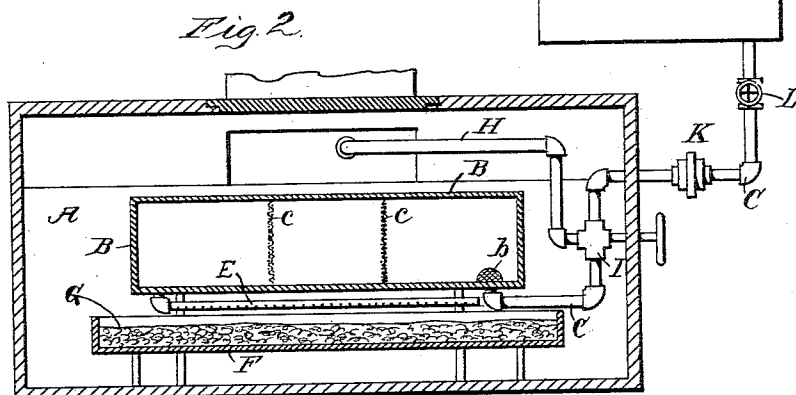
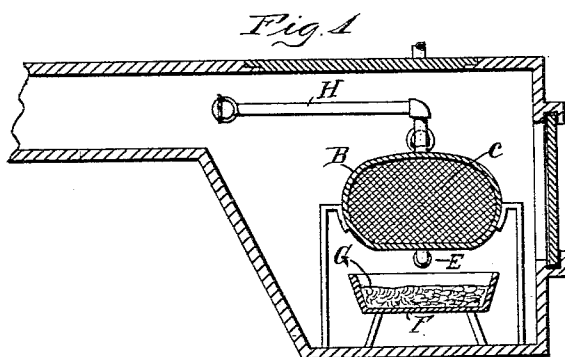
(No Model.)

O. R. ROUTH.

APPARATUS FOR BURNING PETROLEUM OILS, &c.

No. 476,560.

Patented June 7, 1892.



Witnesses

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APPARATUS FOR BURNING PETROLEUM-OILS, &c.

SPECIFICATION forming part of Letters Patent No. 476,560, dated June 7, 1892.

Application filed October 17, 1890. Serial No. 368,428. (No model.)

To all whom it may concern:

Be it known that I, OSWALD R. ROUTH, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain
5 new and useful Improvements in Apparatus for Burning Petroleum-Oils, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to
10 which it appertains to make and use the same.

This invention relates to apparatuses designed to be used in place of the usual grates in the fire-pots of common stoves, heaters, furnaces, &c.; and its object is to provide a safe
15 and economical means whereby kerosene and like petroleum-oils or liquid fuels may be used as fuel in such stoves or other heaters, the latter affording the means of a suitable draft to the flame and also on occasion support in
20 the usual way for cooking utensils or other articles to be heated.

This class of apparatus should have a high degree of utility inasmuch as a properly-constituted petroleum-oil flame is capable when
25 placed in the fire-pot of an ordinary cooking-stove or other suitable place or fire-pot not only of heating griddles or other articles or vessels placed above it, but also of heating the oven or ovens in much the same manner
30 as the flames of wood, coal, or other solid fuel. To secure an efficient flame from petroleum-oils, however, for such uses, it is desirable that the latter be converted by heat into gas or vapor before ignition; but in apparatus of the class mentioned prior to my
35 invention the gas or vapor left in the vaporizing-chamber after the extinguishment of the flame has been a source of danger, frequently causing explosions when the flame is relighted
40 by reason of the gradual admixture of atmospheric air with the contents of the gas or vapor chamber to form an explosive mixture when the apparatus is not in actual use.

My invention comprises certain novel combinations of parts, whereby this liability to explosion is prevented, and an efficient and safely-operated apparatus for burning petroleum-oils and like liquid fuels is provided.

Figure 1 is a longitudinal vertical sectional
50 view, and Fig. 2 is a transverse vertical sectional view, of an apparatus embracing my said invention and showing the same duly lo-

cated in the fire-pot of a cooking-stove. Fig. 3 is a detail view of some of the parts of said apparatus.

A is the fire-pot of the stove, in which the apparatus is to be placed for use, as shown in the drawings.

B is a chamber into which, through a pipe C, the petroleum-oil or liquid fuel is supplied
60 from a tank D, which should be placed at such a height that the oil may flow readily to said chamber B. From the lower part of said chamber extends a pipe or tube E, the main
65 length of which is brought to a horizontal position, as shown more fully in Fig. 2, and which is perforated with numerous small holes. Placed below this perforated horizontal tube, the outer end of which is closed, or substantially so, is a pan F, in which is placed
70 a mass G of asbestos or like material. This mass G constitutes what may be termed a "kindling-burner," inasmuch as it is so provided and arranged with reference to the perforated pipe as to receive therefrom a quantity
75 of oil sufficient by its combustion to bring the oil in the chamber to a vaporized condition. When the oil ceases to be supplied to said kindling-burner, the vaporized fuel is caused to pass out from the perforations of
80 said pipe and is ignited at said perforations by the flame from the kindling-burner. It will be noticed that the supply of vaporized fuel at said perforations necessarily precedes the exhaustion of the oil, which has been supplied to said mass or kindling-burner G, as
85 described. The liquid fuel being supplied to the chamber B passes down through the openings or perforations in the tube E upon the mass G of asbestos. It is ignited upon the
90 latter and the flame heats the chamber B, so that the oil or liquid fuel in the latter is vaporized, and the thus-generated vapor escaping through the perforations in the pipe E is brought in contact with the flame, and is thus
95 in its turn ignited and continues to burn above the asbestos until the supply of oil is turned off, the gaseous products of combustion from the flame passing off through the adjacent flues or smoke passages of the stove.
100

From the pipe C extends a branch pipe H, which leads to any suitable exit—as, for example, the just-mentioned flue or smoke-passages of the stove. At the junction of the

pipe H with the pipe C is the seat of a three-way cock, and a three-way cock I is placed thereat and in such relation with the pipes H and C that when turned to one position it will shut off communication between the pipe H and the pipe C, leaving open communication between the tank D and the chamber B, and when turned to another position will shut off communication between said tank and chamber and open communication between the chamber and the pipe H, which latter, being open at its remote end, permits the escape of all vapors from the chamber when the cock I is turned to the last-named position.

It will be observed that by the construction and operation above set forth communication between the tank and the chamber is closed when the flame is extinguished and this closing of said communication is accomplished simultaneously with the opening of the pipe H, so that the latter permits the escape from the chamber of whatever vapor may have remained in it at and after the extinguishment of the flame. The chamber being thus immediately emptied of vapor, the formation of explosive compounds in said chamber is prevented and all danger in starting the apparatus into renewed operation and relighting the flame below the chamber is avoided.

To prevent any back-pressure of vapor in the chamber B when the apparatus is in use, the pipe C is provided with a check-valve K, which opens toward said chamber and closes toward the tank. Any ordinary or suitable construction of check-valve, provided it be arranged as just indicated, may be employed.

Over the mouth *a* of the pipe C, where the same connects with the interior of the chamber B, is placed a cap, cone, or dome *b* of fine wire-cloth, and the said chamber is internally divided by any desired number of partitions *c*, also of fine wire-cloth. The cap or dome *b* and the partitions *c* prevent the volume of vapor from its great mobility from passing too rapidly through and from the chamber into the perforated tube or pipe E, thereby insuring a more equable and properly-controlled supply of the vaporized fuel at the outlets or perforations of said tube or pipe. Said wire-cloth partition or partitions also prevent the volume of vaporized fuel from

pressing back too forcibly against the column of oil or liquid fuel in pipe C. By thus substantially preventing back-pressure against the column of descending oil the normal supply of oil from the tank to the chamber through the pipe C is assured. It is of course to be understood that the apparatus may be used not only in connection with the fire-pot of a common stove, as described, but may be used, also, in any suitably-constructed casing which will provide the requisite draft of air to supply the flame and the requisite outlet for the escape of the gaseous products of combustion—as, for example, the fire-box of a boiler-furnace or other suitably-arranged furnace, heater, or the like. In order to enable the oil in the tank D to be shut off entirely, when desired, from the other parts of the apparatus, the pipe C may be provided with a common valve or stop cock L for such purpose.

What I claim as my invention is—

1. In an apparatus for burning liquid fuel in stoves or other heaters, the combination, with a supply-tank, of a gas-forming chamber, a pipe connecting them, another pipe having valved connection therewith and having an open end adapted to enter a flue, and a burner located beneath the chamber and connected therewith.

2. In an apparatus for burning liquid fuel in stoves or other heaters, the combination, with a supply-tank, of a gas-forming chamber, a pipe connecting them, an outlet-pipe connected thereto, a three-way cock at the junction adapted to open communication only between the tank and chamber or between the chamber and outlet-pipe, and a burner located beneath the chamber and connected thereto, so as to receive its supply therefrom.

3. The combination, with the tank D, chamber B, pipe C, perforated tube or pipe E, and kindling-burner G, constructed and arranged as described, of the branch pipe H, extended from the pipe C, and the check-valve in said pipe C, all substantially as and for the purpose herein set forth.

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Witnesses:

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