L. T. WILCOX.

LIQUID FUEL STOVE.

APPLICATION FILED JAN. 31, 1916.

1,355,933.

Patented Oct. 19, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

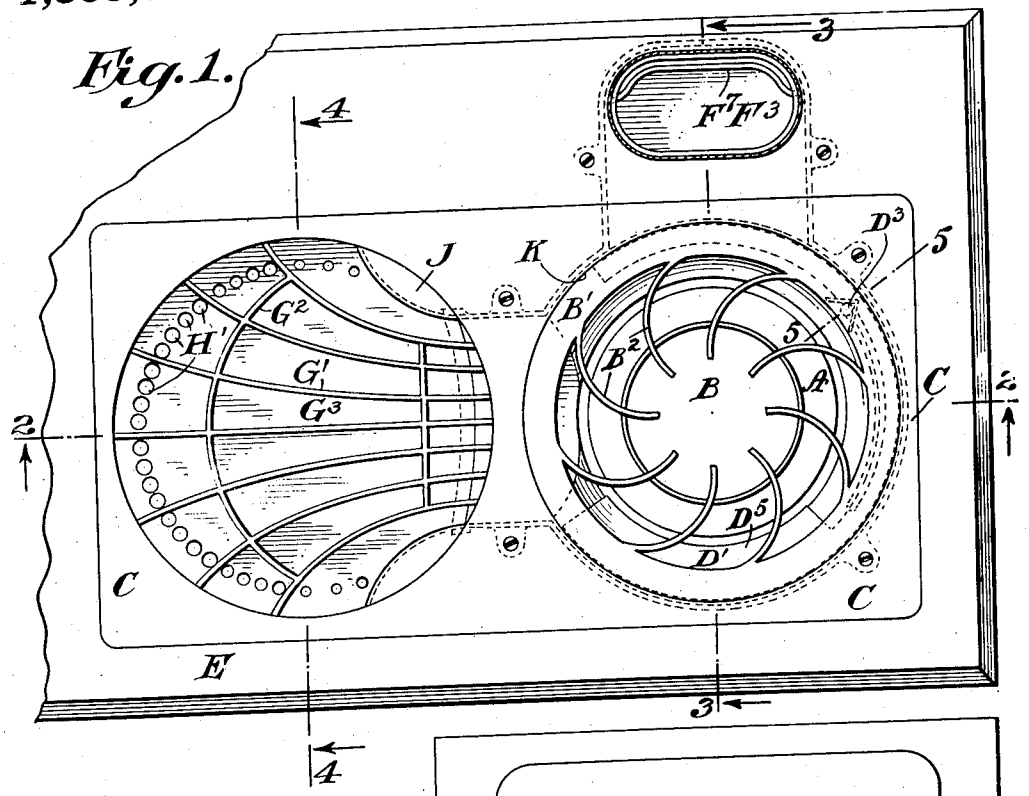
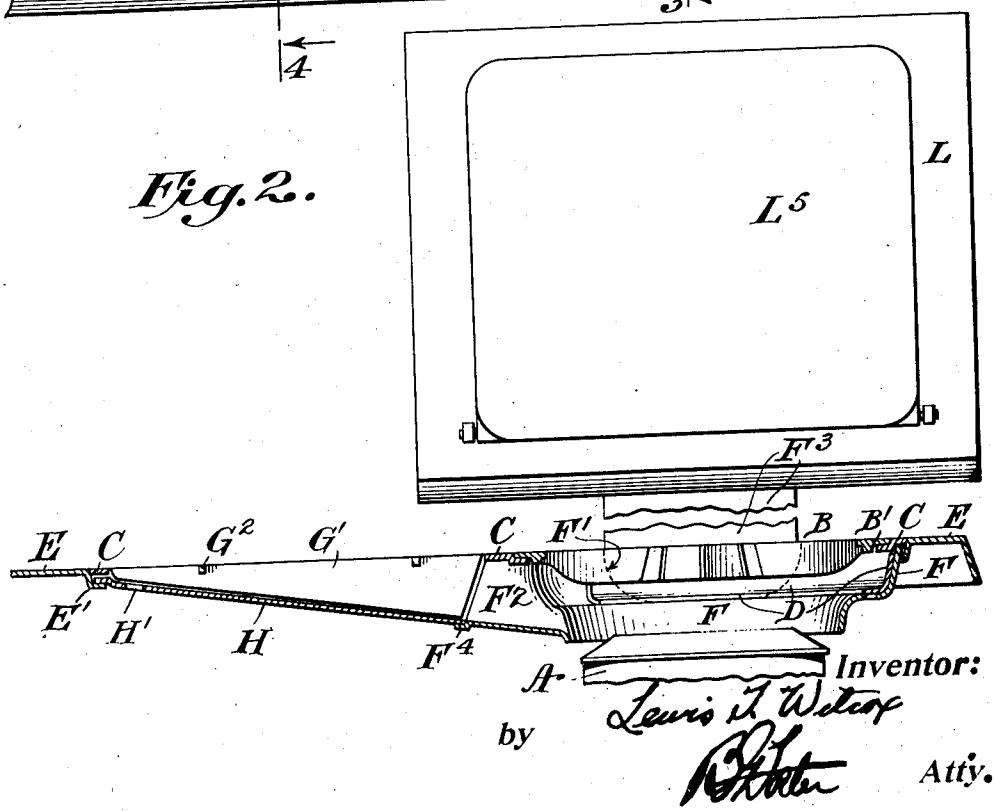


Fig. 2.



Inventor:

Lewis T. Wilcox

by

Atty.

L. T. WILCOX.

LIQUID FUEL STOVE.

APPLICATION FILED JAN. 31, 1916.

1,355,933.

Patented Oct. 19, 1920.

2 SHEETS—SHEET 2.

Fig. 3.

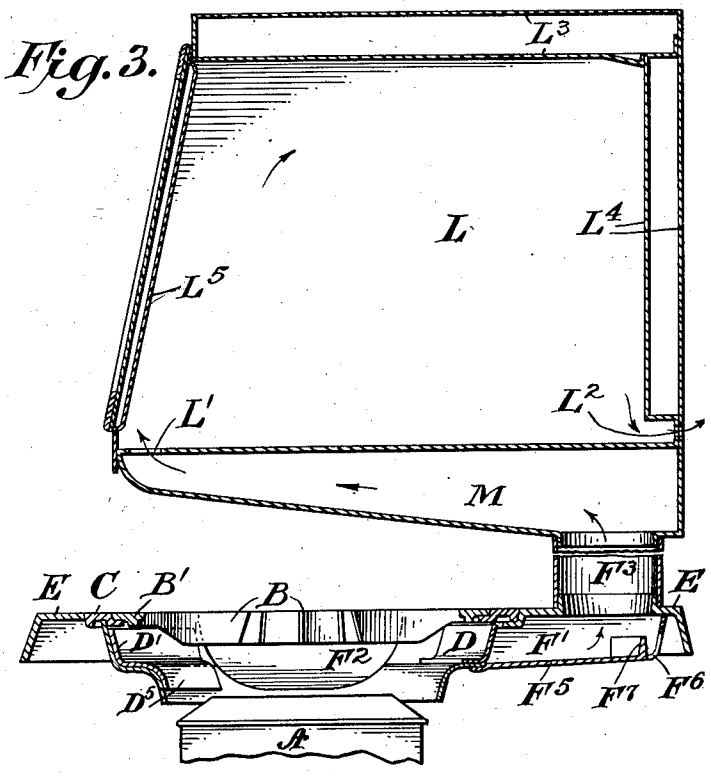


Fig. 4.

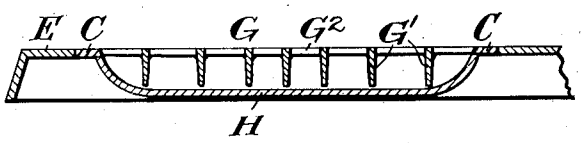
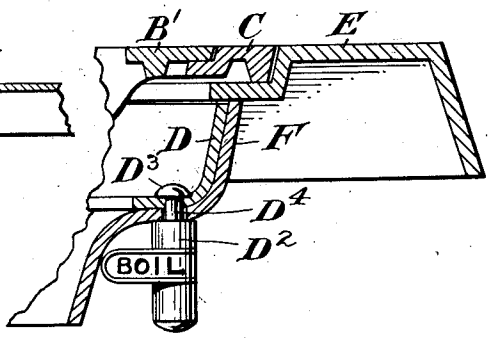


Fig. 5.



Inventor:

Lewis T. Wilcox

by

Atty

UNITED STATES PATENT OFFICE.

LEWIS T. WILCOX, OF PEEKSKILL, NEW YORK.

LIQUID-FUEL STOVE.

1,355,933. Specification of Letters Patent. Patented Oct. 19, 1920.

Application filed January 31, 1916. Serial No. 75,332.

To all whom it may concern:

Be it known that I, LEWIS T. WILCOX, a citizen of the United States, residing at Peekskill, in the county of Westchester and State of New York, have invented new and useful Improvements in Liquid-Fuel Stoves, of which the following is a specification.

The improvements relate to stoves adapted to use liquid hydrocarbon as a fuel. In such stoves the liquid is first broken up into fine particles by a wick, or in some other manner, and presented to the heat of the flame in this form for vaporization, then mixed with oxygen to form carbon monoxid and then completely consumed, the result being the usual carbon dioxid or carbonic acid gas. The improvements relate to cooking burners, and in these burners the ordinary blue flame combustion cone, consisting of concentric perforated cylinders between which the process of combustion is carried on, are usually employed. Where the lighter hydrocarbons are used a slight disturbance of the conditions in which the combustion takes place is not ordinarily productive of undesirable results, but where kerosene or other heavy hydrocarbon is used as a fuel the most favorable conditions must be very carefully observed, and disturbance carefully guarded against. Consequently some of the uses to which the lighter hydrocarbons have been put have not yet been realized with the desirable and available heavy hydrocarbons.

One of the objects of the present improvements is to provide a burner which may be used with kerosene or other relatively heavy hydrocarbon liquid fuel in conjunction with an oven and a boiler, in addition to the usual cooking hole above the burner, without disturbing the operation of the blue flame or other combustion device employed and which will operate under the different adjustments required in an efficient and satisfactory manner. Another object is to so construct and arrange the device that it may be embodied in an ordinary coal range and used separately or in conjunction therewith.

The nature and details of the improvements are hereinafter described and claimed and illustrated in the accompanying drawings, in which Figure 1 is a plan of a one burner stove, embodying the improvements a portion being cut away; Fig. 2 is a vertical section of the same with an oven shown in front elevation, on the line 2—2 of Fig. 1, looking in the direction indicated by the arrows; Fig. 3 is a vertical section at right angles to the section of Fig. 2, taken on the line 3—3 of Fig. 1, looking in the direction indicated by the arrows, an oven also being shown in this view taken on the same plane; Fig. 4 is a vertical section on the line 4—4 of Fig. 1 looking in the direction indicated by the arrows; Fig. 5 is an enlarged vertical section on the line 5—5 of Fig. 1.

The blue flame combustion chamber A is suitably mounted and supplied with fuel, and has its top immediately below the grid B on the cooking hole K, so that the flame and heated products of combustion will play against the bottom of a cooking utensil placed on said grid. The grid consists of a ring B′ and spiral prongs B^2 extending therefrom to a point near the middle of the opening. These prongs are of blade-like form and extend below the ring B′ which is flat and is supported by having its edges resting on the stove top C. It will be seen that these spiral prongs give the heated products of the burner a whirling motion and cause them to travel in a manner similar to the movement of fluids under centrifugal force. This causes the said heated products to seek escape laterally, particularly when a cooking utensil or cover is placed on the grid B, and to pass off through the oven flue F^3 or the grid B of the auxiliary cooking hole J, as the case may be, when the damper D is manipulated so as to open one or the other.

The stove top E has the rectangular inset C forming a part of the said top and provided with the cooking holes J and K. If desired this construction may be repeated so as to provide any desired number of cooking holes for a corresponding number of burners.

Depending from the top and surrounding the cooking hole K is a shield and guide F in the form of a skirt like an inverted truncated cone. It is supported by being secured to the underside of the top by means of suitable lugs receiving bolts or other fastening means, and has a neck F^2 extending to the auxiliary hole and an opening leading to the flue entrance F′. The neck F^2 is slightly contracted as it extends out-

wardly, and terminates at the pan H, which terminates in the depending flange E′ of the top E and is supported thereby. As the bottom of this pan is upwardly inclined, a continuous channel gradually decreasing in depth is formed by the neck F^2 and the said pan. At the outer part of the pan and in its bottom are a series of orifices H′, through which the heated combustion products may escape when the opening J is closed by a cooking utensil or otherwise. The channel just mentioned is divided into a series of outwardly flaring longitudinal compartments by the depending flanges G′ of the fanlike grid G, and these flanges are connected by the cross strips G^2 and G^3, so that these three parts form a rigid grid member, upon which a cooking utensil may be supported.

The inner edge of the pan H is supported on the horizontal flange F^4 of the neck F^2, and the inner edge of the flue member F^5 supports the edge of the shield F at the flue opening. At the outer end of this member is an opening F^6 protected by a baffle-plate F^7, so that the combustion products may escape therethrough when for any reason they cannot pass freely through the flue F^3 into the oven. By these provisions the heat is directed to the auxiliary cooking hole and the flue in such a manner that it will pass freely thereto, and at the same time the choking of the burner and the consequent interference with the combustion are avoided. The lower edge of the depending shield and guide F is about at the top of the burner, but as the diameter of the said shield is greater than that of the burner an annular space is provided between them through which air may pass to supply the combustion at the top of the burner and increase the volume of heated fluid.

The damper mechanism extends around the inside at the upper part of F through an arc of approximately 270 degrees and is provided with a handle D^2 having a pin D^3 extending through a slot D^4, by which the movement of the said handle and damper are limited to approximately 90 degrees of the circumference of the hole B. The damper D′, which controls the supply of heat to the auxiliary opening, has a depending portion D^5 conforming substantially to the size and shape of the opening to the neck F^2, so that it will completely close the said opening, when in closed position. As the principal use of the auxiliary opening is for boiling it is desirable to have a sign on the handle D^2, which is brought into view when the boiler is in operation. This is illustrated in Fig. 5, and as the stove is operated from the right hand end, as shown in Fig. 5 of the drawings, this sign will be visible only when the damper D^5 is open. A similar sign—as "Bake"—indicating that the baking damper is open may be displayed on the opposite side of the handle, which is exposed to view when the oven is ready for use.

In order to open the damper to the boiler or the oven it is necessary only to move the handle D^2 in one direction or the other, until its pin comes in contact with the end of the slot (see dotted lines Fig. 1). Thus when the handle is moved to its extreme position on the right the oven damper is closed and the boiling damper opened, and when it is moved in the opposite direction the oven damper is opened and the boiling damper closed. If desired the damper may be so constructed and arranged that both openings may be used at the same time. This may be done by having the two dampers disconnected and constructed to be operated by separate handles.

The oven L is mounted at the top of the flue F^3 in any suitable manner, and receives the heat from the burner through the intermediate compartment M, which tapers upwardly from the outlet of the flue to the openings L′ in its bottom at the front. Small openings L^2 through which the heated air of the oven may escape are provided at the bottom of the oven on the side opposite the openings L′. The oven is preferably provided with double walls L^3 and L^4 so as to insulate the interior, and the front of the oven is provided with a hinged door L^5 of similar construction.

What I claim is:

1. The combination with a liquid fuel burner of a stove top, provided with an opening adapted to be positioned over the burner and to permit the free passage of heat and combustion products therethrough and a grate located in said opening, comprising a supporting frame and curved members extending from the outer portion of said grate inwardly toward the center thereof and toward the center of said opening from all sides thereof, and a plurality of conduits leading from a point between the said burner and grate in different lateral directions.

2. The combination with a liquid fuel burner of a stove top, provided with an opening adapted to be positioned over the burner and to permit the free passage of heat and combustion products therethrough and a grate located in said opening, comprising a supporting frame and curved members extending from the outer portion of said grate inwardly toward the center thereof and toward the center of said opening from all sides thereof, a plurality of conduits leading from a point between the said burner and grate in different lateral directions, and a damper constructed and arranged to close one of said conduits and

open the other when moved in one direction, and to open the one and close the other when moved in the opposite direction.

3. The combination with a liquid fuel burner of a stove top, provided with an opening adapted to be positioned over the burner and to permit the free passage of heat and combustion products therethrough and a grate located in said opening, comprising a supporting frame and curved members extending from the outer portion of said grate inwardly toward the center thereof and toward the center of said opening from all sides thereof, and a conduit leading from a point between the said grate and burner in a lateral direction, an upwardly extending flue communicating with said conduit and a heating compartment mounted above the grate and in communication with said flue.

4. The combination with a liquid fuel burner of a stove top, provided with an opening adapted to be positioned over the burner and to permit the free passage of heat and combustion products therethrough and a grate located in said opening, comprising a supporting frame and curved members extending from the outer portion of said grate inwardly toward the center thereof and toward the center of said opening from all sides thereof, and a conduit leading from a point between the said grate and burner in a lateral direction, an upwardly extending flue communicating with said conduit and a heating compartment mounted above the grate and in communication with said flue, said conduit having an opening below the point of communication with said flue.

In testimony whereof I have hereunto set my hand in presence of the subscribing witness.

LEWIS T. WILCOX.

Witness:
MARY H. LEWIS.