No. 860,460. PATENTED JULY 16, 1907.

A. W. GEARHART.

HYDROCARBON BURNER.

APPLICATION FILED DEC. 12, 1906.

Fig. 1.

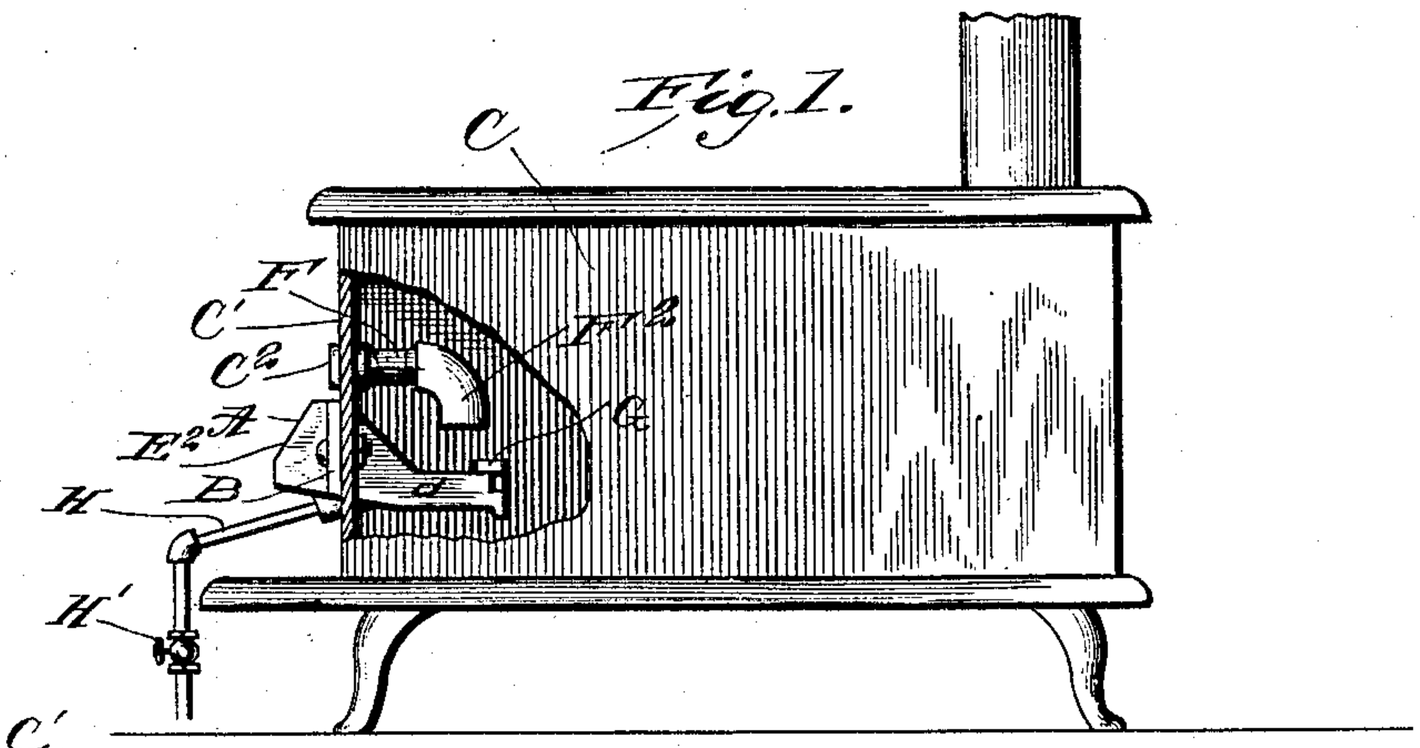


Fig. 2.

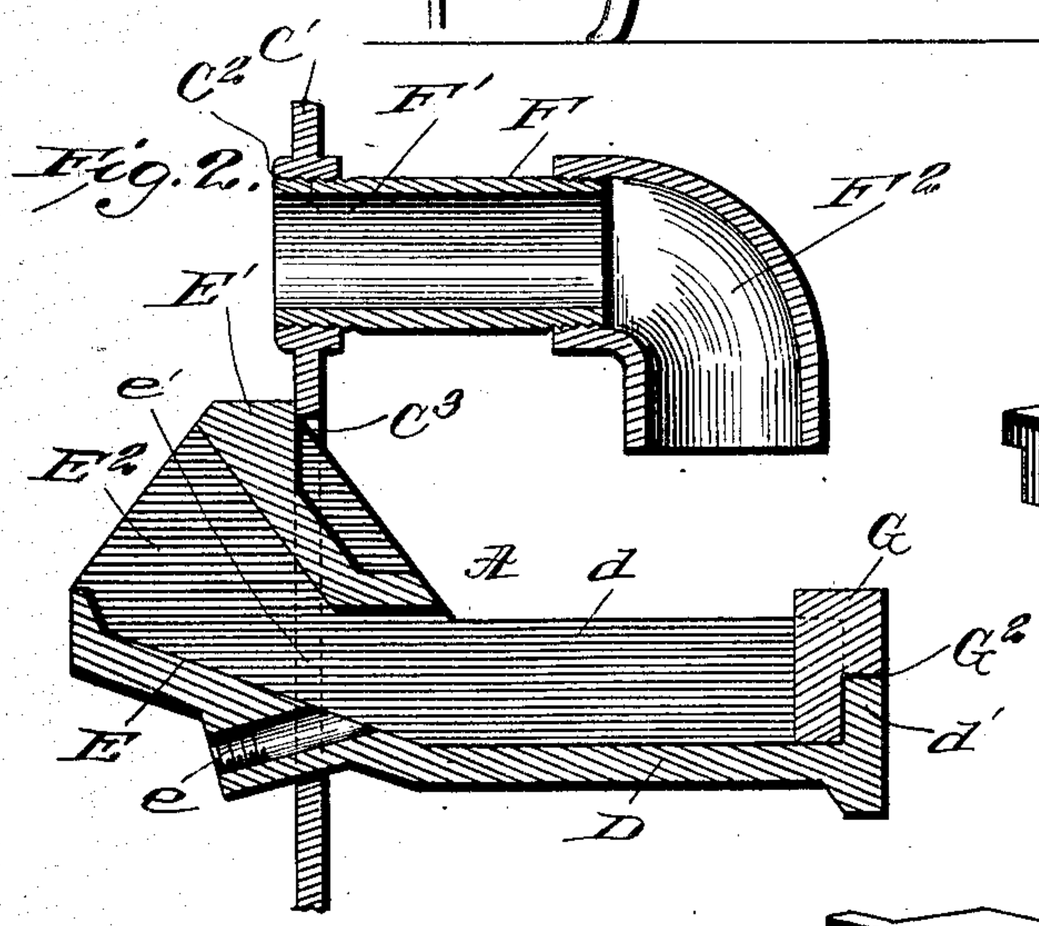


Fig. 4.

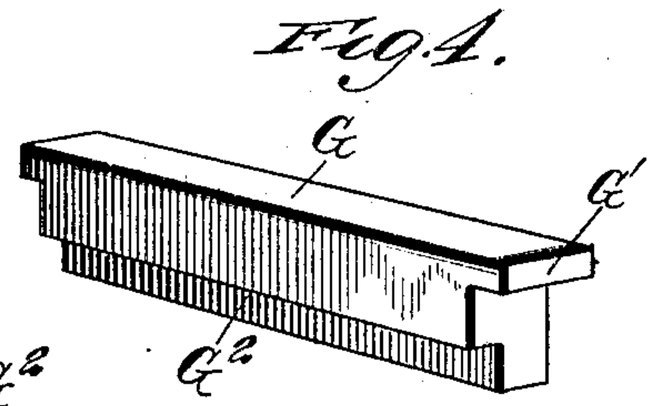
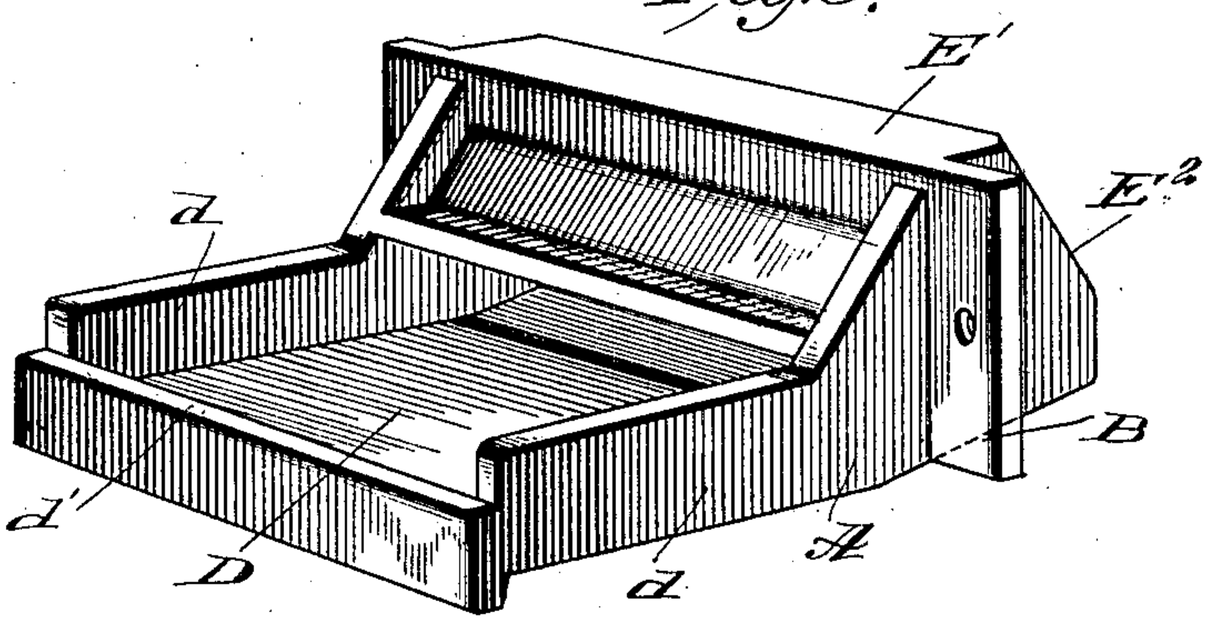


Fig. 3.



WITNESSES

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HYDROCARBON-BURNER.

No. 860,460. Specification of Letters Patent. Patented July 16, 1907.

Application filed December 12, 1906. Serial No. 347,404.

To all whom it may concern:

Be it known that I, ALONZO W. GEARHART, a citizen of the United States, and a resident of Fresno, in the county of Fresno and State of California, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

My invention is an improvement in burners, especially designed for use in burning low grade distillates, as fuel in stoves, ranges, furnaces, or other places where heat is desired; and the invention consists in certain novel constructions and combinations of parts as are hereinafter described and claimed.

In the drawing Figure 1 is a side view partly broken away in section of a stove provided with my improvements. Fig. 2 is a vertical longitudinal section of the burner. Fig. 3 is a detail perspective view from the rear side of the body portion of the burner. Fig. 4 is a detail perspective view of the removable fire wall.

The burner, as shown, comprises a body portion A having flanges B through which bolts may be passed to secure the burner to a stove or the like C, the front plate C′ of which is provided with an opening C^2 for a draft flue and with an opening C^3 in which is fitted the body A of the burner. This body A has at its rear end within the stove a burning pan D and an inclined wall E joins with the bottom of the burner pan D within the stove C, and extends thence upwardly through the opening C^3 to the outer side of the wall plate C′ of the stove and forms with the back plate E′ and side plates E^2 the lower draft flue which inclines downwardly to a point within the stove C and communicates with the front end of the burner pan. This draft flue is open at its upper outer end and permits the free flow of air to the burner pan.

The upper draft flue F is in the form of a pipe threaded at F′ within the opening C^2 in the wall plate C′ and extending thence into the stove and having at its inner end a downwardly turned elbow F^2 opening above the burner pan near the inner end of the latter and forming a free flue for the passage of air from without the stove to a point over the burner pan.

A fire wall G in the form of a bar of metal is provided at its ends with flanges G′ which rest upon the side walls *d* of the burner pan D and at its rear side with a longitudinal downwardly facing shoulder G^2 which rests upon the upper edge of the back plate *d′* of the burner pan and is thus held securely in place so it may be readily removed whenever it is desired to replace it for any purpose.

The oil is supplied through a suitable pipe H which may be provided with a valve H′ and communicates with the body A of the burner through an opening *e* leading through the inclined wall E at a point near to the juncture thereof with the bottom plate of the burner pan.

In operation the angle at which the air enters through the front air flue in connection with the air from the top air flue is such that much stronger and steadier flame is produced than by burners of this general class. The draft is sufficient to draw all the flame arising in the burning pan and to deflect the same into the fire box in the stove, thus eliminating all danger of flames to any one using the burner. It should be understood in this connection that in referring to a stove, I wish to be understood as comprehending in such term furnaces, ranges, and other heating devices of such general class.

In the use of some burners of the general type illustrated and which have mixing chambers at the outer ends of the burners, if the draft is not quite strong enough or is unsteady, or a lid is temporarily removed from the stove the oil in the mixing chamber frequently becomes ignited and must be blown in either with the breath or with a suitable contrivance, and the person using the stove is in danger of burning the face when so blowing. By the construction shown the draft is sufficient at all times to keep the fire off the boiling oil and when a lid is removed the oil will catch on fire but will be deflected by the draft by replacing the lid or a tea-kettle in its place. Difficulty has also been experienced in this class of burners by the heating of the lid immediately over the fire pot too hot, which will warp the stove out of shape in a little while. By the construction shown in the accompanying drawing I overcome this difficulty by the combination of the upper and lower draft flues which deflect the fire from the direct blast against the lids and spread it out through the fire pot and stove.

In the use of the burner a small quantity of oil is allowed to flow through the supply pipes into the burning pan. A wick of some suitable substance, such as asbestos, is immersed in the oil and then ignited. This will keep the oil burning until sufficiently heated when the wick can be removed and the oil will continue to burn in this manner indefinitely, the valve or stop cock H′ in the supply pipe being regulated to supply oil in accordance with the requirements of the stove. As the draft increases it will be found that the combustion takes place in the burning pan, while the draft from the lower air flue carries the gas off the oil and the draft from the said lower air flue and that from the upper air flue will meet, the draft from the said air flues being sufficient to carry the products of combustion around the flues in the stove or furnace and heat the oven perfectly as well as heating the surfaces of the stove or furnace.

The body A of the burner being made in a single casting is not likely to get out of order and may be readily cleaned out at any time by the use of a small iron scraper.

It will be noticed that the oil is conducted directly into the burning pan entering the same adjacent to

the dividing line between the lower draft flue and the bottom of the said burning pan, the lower draft flue being inclined downwardly so the air will be drawn downward and into the burning pan through the opening or throat *e'* at the bottom of said lower draft flue. The joint action of the upper and lower draft flues draws the flame inwardly and spreads it out through the stove wherein the burner may be located.

When the burner is placed in the stove ready for use the front end thereof projects outwardly from the stove door or wall plate so that about one-half of the lower flue will be outside of the stove, permitting the air to enter directly from the outside through the lower as well as through the upper flue. I thus secure an important advantage in that the vaporizing chamber is eliminated and the oil is conducted directly into the burning pan without passing through the vaporizing chamber rendering the construction of the burner simpler and the process much less complicated than when a separate vaporizing chamber is employed.

It will be understood that the wall plate C' may be a part of the front of the stove or may be the door of the stove as desired.

I claim—

1. The improved burner herein described comprising in combination with the stove wall plate having an upper opening for the upper draft flue and a lower opening for the burner body, a burner body fitting in said lower opening and having within the stove a burning pan and an upwardly inclined draft flue extending upwardly from the outer end of the burning pan through the lower opening in the wall plate to a point outside of the stove, an upper draft flue secured at its outer end in the upper opening of the wall plate and extending thence inwardly over the burner pan and having at its inner end a downwardly turned elbow over the burner pan, and a fire wall in the form of a bar flanged at its ends to rest upon the side walls of the burning pan and provided on its outer side with a longitudinal downwardly facing shoulder resting upon the rear plate of the burner pan, substantially as set forth.

2. The combination of a stove wall plate having upper and lower openings, an open burner pan fitting in said lower opening and having a draft flue and an upper flue communicating at its outer end with the upper opening in the stove wall plate and extending inwardly over the burner pan and having a downturned elbow opening above the burner pan, substantially as set forth.

3. In a burner, a burner pan provided at its inner end with a fire wall in the form of a removable bar having flanges to rest upon the side walls of the pan and a downwardly facing longitudinal shoulder to rest upon the back wall of the pan, substantially as set forth.

4. The combination with the wall plate, of a burner fitting therein and having a body portion provided at its inner end with a burner pan and at its outer end with a lower draft flue in communication with said burner pan, and an upper draft flue extending from said wall plate inwardly over the burner pan and communicating with a downwardly turned elbow discharging above said pan, substantially as set forth.

ALONZO W. GEARHART.

Witnesses:
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