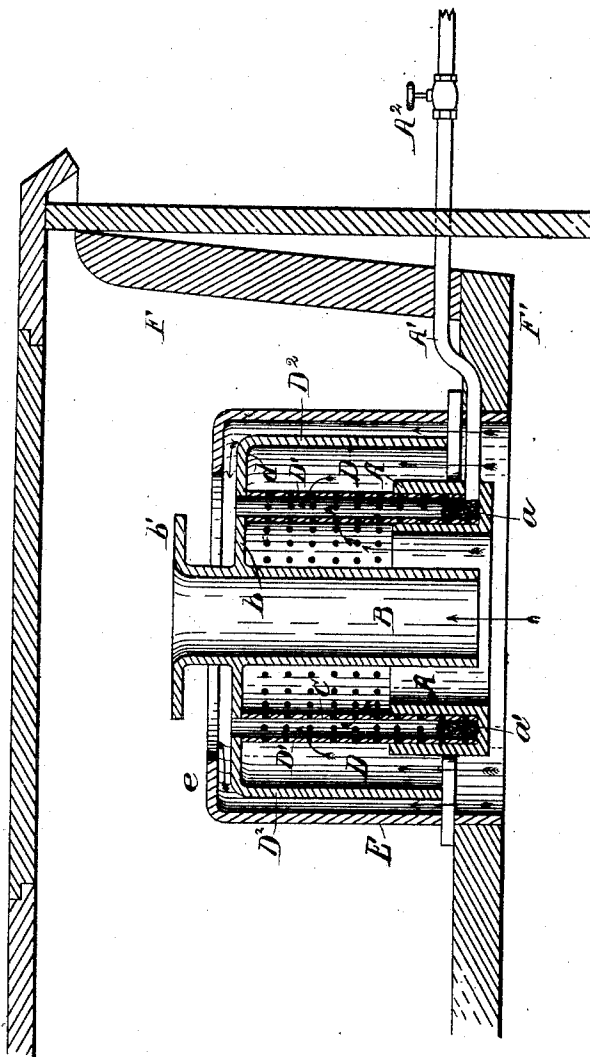


(No Model.)

E. G. MUMMERY.
HYDROCARBON BURNER.

No. 503,548.

Patented Aug. 15, 1893.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN G. MUMMERY, OF DETROIT, MICHIGAN.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 503,548, dated August 15, 1893.

Application filed December 5, 1892. Serial No. 454,109. (No model.) Patented in Canada March 20, 1893, No. 42,353.

To all whom it may concern:

Be it known that I, EDWIN G. MUMMERY, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Hydrocarbon-Burners, (for which I have obtained a patent in Canada, No. 42,353, bearing date March 20, 1893;) and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification.

My invention relates to a novel and improved self-vaporizing hydrocarbon burner, the same being intended and adapted more particularly to secure a more perfect vaporization and combustion of gasoline, kerosene, or other hydrocarbon fuels.

Various and well known objections exist to the employment of burners for hydrocarbons which require a wick. The flame is found to be very sensitive to changes in the drafts of air. Such burners are easily caused to smoke, causing a very unpleasant and injurious odor, and the deposit and diffusion of carbonaceous matter, as well as offensive odors.

The objections to wick burners and the difficulty in overcoming them, have largely unfitted them for certain purposes as for cooking and heating purposes, and where they are in use for these purposes, the desirability of a burner which will effectually vaporize the fuel and produce a perfect combustion without offensive odors, and the liability of smoking, and in a simple and readily operative manner, is well understood.

One of the chief difficulties experienced by inventors and manufacturers of oil burners of this class, has been the coating of the pipes and chambers commonly employed, with carbon. As soon as such coating takes place imperfect combustion is the inevitable result, since, as a consequence, the pipes and chambers become clogged and choked up, and are disabled thereby from efficient operation. My invention is calculated to overcome these difficulties by dispensing with all pipes and tubes, save a single supply pipe, and doing away with any vaporizing chambers liable to

be thus clogged, thus rendering any obstructive coating of the device impossible.

My invention includes the general construction, combination and arrangement of devices and appliances hereinafter described and claimed and illustrated in the accompanying drawing, which is a vertical section of a device embodying my invention.

I carry out my invention as follows:

A represents a vaporizer plate, preferably of annular form, and provided with a channeled ledge at its base, as at "a," the channel being of suitable size to hold a desired amount of hydrocarbon fuel. A' is a supply pipe communicating with said channel provided with a controlling valve A² by means of which any desired quantity of oil, or other liquid fuel may be fed to the burner. This plate may be, however, of any desired form of construction, its purpose being to receive fuel, allow its free vaporization, and when heated, to assist in the vaporization of the fuel. B is an air duct located within said plate, and separated therefrom, so as to allow a plentiful supply of air to pass upward therethrough and also between the duct and the plate. Said duct may be provided at the top with spreaders "b" and "b'." This duct, while desirable for some uses, may however, be omitted altogether without departing from the gist of my invention. Its employment will assist, when used, to supply oxygen to the center of the flame to aid in securing perfect combustion.

C denotes a perforated air mixer or cylinder, which may be preferably constructed of annular form. This mixer or cylinder may be constructed of perforated sheet metal, or of wire gauze, as may be desired. Its base extends downward adjacent to the channeled ledge "a." For convenience of securing said mixer or cylinder in place, its base may rest in said channel, as shown.

D denotes a shell constructed with a plate D' made of perforated sheet metal or wire gauze, and a closed rim D² spaced from the plate D' and constructed with a hood "d" at its upper end, extending across the top of the rim to the top of the mixer D'. This shell, as shown, is open at its lower end to allow the air to pass freely upward between the plate D'

and the rim D², the hood deflecting the air to control it to pass through said plate. The base of said plate D' may rest in the channel of the vaporizer plate A to hold it more firmly in place.

E is an inclosing case surrounding the previously mentioned features of the device. Said case is open at the base and also at the top, the top formed with an inwardly projecting cap or flange "e" to more efficiently control the air whereby perfect combustion is secured when the device is inclosed in a fire pot or combustion chamber of a stove. F denotes such a combustion chamber, and F' is the base thereof, through which my improved burner is shown projecting, so as to communicate freely with the outer air, to secure the admission thereto of an abundant and free supply of air. It will be evident, as indicated by the arrows, that air is thus permitted to pass through air duct B, also between the duct B and the adjacent perforated mixer C, also between the mixer D' and rim D², also between the shell D and the case E. The spreader "b" of the duct B extends into proximity to the upper end of the mixer C, thereby deflecting the air current passing upward between the duct B and said mixer, and compelling it to pass through the mixer C. The hood at the top of the shell D also compels the air to pass through the mixer D'. The vaporizing plate A is closed at the base necessarily. It will thus be seen, that when the liquid fuel is discharged into the channel of the vaporizer A, the air passing through the mixers C and D' are in close proximity thereto to readily and amply supply an abundance of oxygen, to facilitate thorough vaporization and combustion.

If gasoline is used for the fuel, it is obvious that as the gasoline flows into the channel of the vaporizer A, it is instantly vaporized by the admission of the air through said mixers, and complete combustion thereof is thereby secured, at once, by simply lighting the vapor so produced. The combustion thereof is under perfect control by means of the valve A², and can be diminished or increased at the will of the operator in the same manner as when natural or artificial gas is used for fuel. The fire so produced can be extinguished instantly by closing said valve. A device accomplishing these results is obviously of equal convenience as where natural gas is used.

When kerosene or some other oil is to be used as a fuel, I place a small quantity of asbestos or analogous material in the channel

of the vaporizer A, as shown at "a'," to serve simply to light the burner. As soon as the vaporizer plate becomes heated, vapor will be abundantly generated, the asbestos serving only a temporary function in first starting the fire. When gasoline is used, the asbestos will not be needed. A burner so constructed can be efficiently used under cover in a combustion chamber or fire pot, and in a kitchen stove will hold its perfect combustion with any or all of the stove lids removed, or in place, or while the dampers of the stove are either closed or open. A wick burner, as already observed is so sensitive to any change of air produced by a change of the stove lids that such perfect results as above described cannot be secured thereby. In my device the vapors rising from the oil or gasoline must intermingle instantly with the air passing through the adjacent mixer plates, as above described, while also an added supply of air otherwise supplied, as hereinbefore specified, intermingles with the flame in the upper regions of combustion, thus rendering the combustion complete.

What I claim as my invention is—

In a hydro-carbon burner in combination, a vaporizer plate provided with a channel in its upper surface for the reception of fuel, a supply pipe communicating with said channel, a cylindrical perforated air mixer or cylinder, the lower end of which is within the channel of the vaporizer plate, a shell around the air mixer or cylinder, provided with a closed rim at its top, and having its bottom open, a perforated cylindrical air mixer or cylinder extending from the rim of the shell to the channel of the vaporizer plate, the two cylinders being at a short distance from each other and disconnected from each other at the top, an inclosing case around the shell and a short distance therefrom; said case being open at the bottom and having its upper end provided with an inwardly projecting cup or flange, and an air duct located within the plate, the upper portion of which is provided with two annular flanges, one of which rests upon the top of the inner air mixer or cylinder and closes the top thereof, and the other one is located above the top of the inclosing case, and acts as a spreader, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

EDWIN G. MUMMERY.

Witnesses:

N. S. WRIGHT,
O. R. BALDWIN.