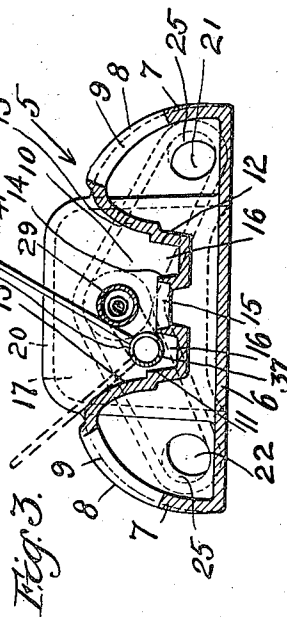
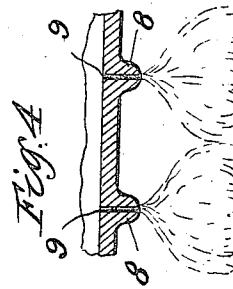
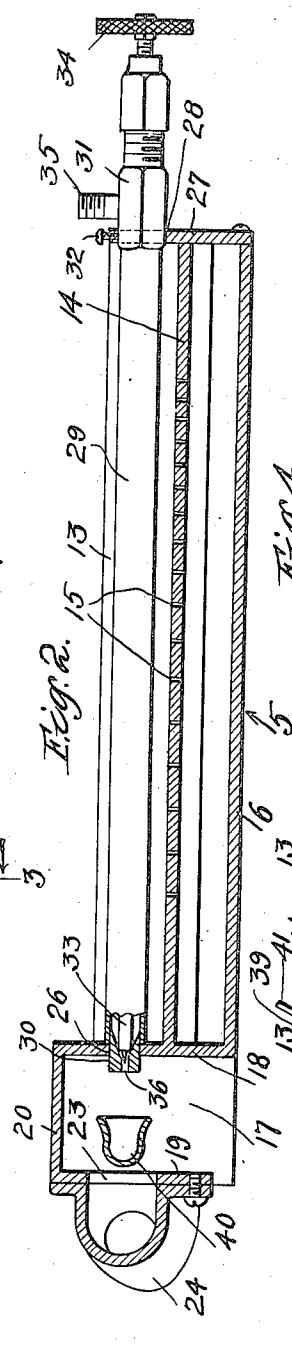
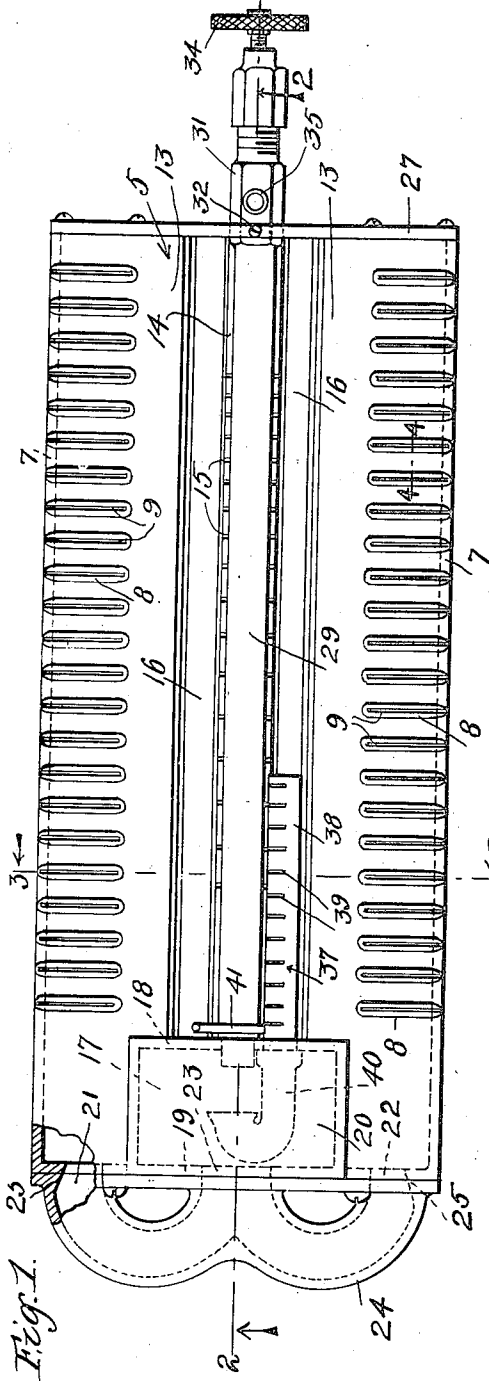


M. S. YEAGER.
HYDROCARBON BURNER.
APPLICATION FILED SEPT. 11, 1918.

1,353,010.

Patented Sept. 14, 1920.



INVENTOR
Matthias S. Yeager

BY
Samuel A. Strauss
ATTORNEY

UNITED STATES PATENT OFFICE.

MATTHIAS S. YEAGER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO LIBERTY BURNER CO., A CORPORATION OF CALIFORNIA.

HYDROCARBON-BURNER.

1,353,010.

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To all whom it may concern:

Be it known that I, MATTHIAS S. YEAGER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention relates more specifically to a hydrocarbon burner of the type illustrated in my application for Letters Patent entitled "Gas burners," S. N. 215,734, filed Feb. 7, 1918, allowed Aug. 1, 1918.

In the above entitled construction the burner consists of a single hollow member having divergent side walls with slotted burner plates therein, and a single gas inlet from the generator leading thereto.

It is one of the objects of this invention to provide a burner construction in which the burner chamber is provided with a double gas inlet leading from the generator, adapted to deliver the combustible mixture to the burner chamber in an even manner throughout the entire burner chamber area.

Another object of this invention is to provide a burner construction in which the gases are delivered to the burner chamber in a double stream, and which is provided with a deflecting means formed in its double manifold, whereby the gases to said burner chamber are brought together and co-mingled to form a more highly combustible mixture.

Another object of this invention is to provide a burner construction in which the generator can be maintained in a partially heated condition in order that a sufficient volume of gas may be instantly generated for the operation of the burner at its fullest capacity when desired.

Another object of this invention is to provide a hydrocarbon burner construction in which the gas generator is adjustable longitudinally of the burner, whereby to provide regulation of the air supply chamber to suit varying altitudes at which the burner is being operated.

A further object of this invention is to provide a hydrocarbon burner construction in which the gas generator connected therewith is unexposed to drafts circulating around the burner during its operation.

A still further object of this invention is to provide a gas generator construction in

which the burner slots in the walls of the burner chambers are formed in a plurality of ribs spaced apart and projecting from the outer surface of the burner chamber walls, whereby to prevent oxidation of the slots during the operation of the burner, or injury to the burner walls.

I accomplish the above objects by means of the device described herein and illustrated in the accompanying drawing, in which:

Figure 1 is a plan view of my complete burner having parts broken away to more clearly disclose the construction.

Fig. 2 is a central vertical section of my burner taken on line 2—2 of Fig. 1, looking in the direction indicated by the arrows thereon.

Fig. 3 is a cross sectional view of my burner taken on line 3—3 of Fig. 1, looking in the direction indicated by the arrows thereon, parts being shown in dotted lines to illustrate more clearly the construction.

Fig. 4 is an enlarged detailed cross sectional view of one of the slotted burner walls of my burner taken on line 4—4 of Fig. 1.

Referring more specifically to the drawings, 5 designates an elongated hollow burner head preferably formed from cast iron or similar materials, and consisting of a bottom wall 6, and longitudinally extending side walls 7, curved in cross section, as best illustrated in Fig. 3 of the drawings, each side wall being provided with a plurality of vertically disposed arched ribs in which are formed the burner slots 9. In the upper central portion of the burner is a recess 10 formed by means of longitudinally extending oppositely disposed side walls 13 and a raised centrally disposed portion 14 which is provided with a plurality of burner slots 15, clearly shown in the various figures of the drawing, the raised portion 14 between walls 11 and 12 forming troughs 16 designed to contain asbestos wicking, or similar fire resisting material which is soaked with fuel and utilized when starting the burner. At one end of the burner head 5 is formed an air inlet chamber 17, said chamber being formed by vertically disposed cross walls 18 and 19, and horizontally disposed top wall 20. Wall 19 is provided at each of its side edges with gas inlet openings 21 and 22 which communicate with the hollow burner heads,

and a centrally disposed gas inlet opening 23, these various openings registering with the openings formed in the double manifold fitting 24, which is bolted or otherwise secured to the wall 19 of the burner head, as clearly shown in Figs. 1 and 2 of the drawings.

Gas inlet openings 21 and 22 which communicate with the hollow burner chamber 10 have on their outer edges inwardly curved surfaces 25, as best shown in Figs. 1 and 3 of the drawings, which direct the gases issuing into the chamber of the hollow burner head toward each other. By directing the gases toward each other as they enter the combustion chamber they are brought together and again co-mingled so as to form a highly combustible mixture, the air and gas being more thoroughly mixed by being brought into such intimate contact with each other after the initial mixing.

Wall 18 is provided with a centrally disposed aperture 26, while closure wall 27 at the opposite end of the burner is provided with a hexagonal opening 28. Mounted in the apertures 26 and 28 and directly above the raised portion 13 of the recess 10 is a gas generator of conventional form, consisting in this instance of a cylindrical tube 29, having a reduced portion 30 formed on one end thereof which passes through the aperture 26 in wall 18. The other end of tube 29 terminates in a hexagonal fitting 31 which passes through the hexagonal aperture 28, being held in an adjusted position by means of a set screw 32. The generator is provided with the usual needle valve 33 which is operated by means of a hand wheel 34, the hexagonal fitting 31 being provided with a fuel inlet 35. Controlled by a valve (not shown) the reduced portion 30 is provided with the usual gas outlet orifice 36 through which the generated gas is delivered into the mixing chamber.

To provide for instantaneously starting the operation of the burner, I have provided a gas pilot fixture 37, which consists of an elongated tube 38 having burner slots 39 formed therein and a gas inlet tube 40 formed integrally therewith having a curved bell-shaped end which is disposed when in operation directly in front of the gas outlet orifice 36 of the generator, as clearly shown in Figs. 1 and 2 of the drawings. Slotted tube 38 lies and extends longitudinally in one of the starting troughs 16, as clearly shown in Figs. 1 and 3 of the drawings, so that the burner slots 39 will direct the flames issuing therefrom directly against the generator.

A handle 41 is secured to slotted tube 38 so that the gas inlet tube 40 may be rotated into or out of register with the gas outlet orifice 36 of the generator when desired. By

providing a pilot fixture lighting device, I am enabled when the burner is in full operation to generate sufficient gaseous mixture to heat the burner sufficiently so that when it is desired to put it in full operation it may be done so with little or no inconvenience, the gases being generated in a larger volume immediately on the opening of the generator valve.

By forming the burner slots in ribs 8 a partial vacuum is formed in the space between the ribs by the flames issuing from the slots on the operation of the burner, thereby keeping the burner walls 7 in a comparatively cool condition and preventing oxidation of the burner slots, which is common to most burner constructions not provided with slotted ribs.

In order to provide for an efficient operation of the burner at different altitudes, I have provided a longitudinal adjustment of the generator 29, the end of the tube 30 being brought toward or away from the inlet opening 23 formed in the double manifold, this provision enabling the operator to form a proper mixture of the gas and air.

In the operation of my burner, the burner head may be provided with legs or supports (not shown) so that the burner may be supported in a range or furnace in the desired position. The fuel valve on the fuel line which is connected to the inlet pipe 35 is opened to feed the fuel to the generator. The wicking in the trough 16 is then saturated with sufficient fuel so as to heat the generator to vaporize the fuel passing there-through. As soon as the generator becomes sufficiently heated so as to generate a sufficient volume of gas, the valve wheel 34 is opened sufficiently so that gases may issue through the orifice 36 into the inlet 23 of the double manifold 24. The gases which are directed through the manifold outlets 21 and 22 issue into the chamber and are deflected toward each other in the inwardly curved surfaces 25 thus distributing the same in an even manner throughout the chamber formed in the burner head, a portion of the gases entering the hollow burner head passing through the burner slots 15 located directly beneath the generator, which continues to heat the same for vaporizing the fuel passing therethrough during the operation of the burner.

When it is desired to shut off the gas from the burner temporarily to save fuel the gas pilot device is rotated by means of handle 41 so that the bell-shaped inlet of the device is directly in front of the gas outlet orifice 36 of the generator, and the valve 33 is adjusted so as to admit only a small quantity of fuel to the chamber 17. By this means only sufficient gas is generated to keep the pilot lighted, and thereby keeping the generator sufficiently hot so that when it is

desired to put the burner in full operation it may be done without the necessity of lighting the wicking in the starting troughs.

It will be noted from the foregoing description that I have provided a hydrocarbon burner construction which is extremely efficient in its operation, mainly for the reason that the gases delivered to the hollow burner head are distributed evenly throughout its entire area, and moreover, by deflecting the gases issuing into the chamber against themselves the same are more evenly distributed.

What I claim is:

1. A gas generator construction, comprising a hollow burner head, the walls of which are provided with burner slots having gas inlet openings leading thereto, the said burner head being further provided with a gas mixing chamber having a gas outlet leading therefrom, a gas manifold secured to said burner head having passageways communicating and registering with the gas outlet opening of the mixing chamber and the gas inlet openings leading to the burner head, a gas generator mounted on said burner head adapted to deliver generated gases to the mixing chamber, means to regulate the volume of gas issuing from said generator, a gas pilot mounted on said burner head, said pilot being provided with gas flame slots adapted to direct the flames against the said generator, one end of said pilot projecting into the gas mixing chamber and having its mouth disposed in front of said gas generator outlet orifice, and means to bring said outlet mouth into or out of register with the outlet orifice of the generator.
2. A gas generator construction, comprising a hollow burner head, the side walls of which are provided with burner slots, said hollow burner head having gas inlet openings leading thereto, said burner head being also provided with a gas mixing chamber having a gas outlet leading therefrom, a gas manifold secured to said burner head for delivering generated gas thereto, a gas generator mounted above said burner head adapted to deliver generated gases through the mixing chamber to the gas manifold, means to regulate the volume of gas passing through said generator, a gas pilot mounted above said burner head adjacent to and in parallel relation with said generator adapted to heat the same when

regulated to supply only sufficient gas to keep said pilot burning, and means for rendering the gas pilot inoperative during the operation of the burner head.

3. A gas generator construction, comprising a hollow burner head, the side walls of which are provided with burner openings, said burner head being provided at one end thereof with a gas mixing chamber, a gas generator mounted on said burner head, the discharge end of said generator terminating within said mixing chamber, said gas mixing chamber having a gas outlet leading therefrom, a gas manifold having two branches secured to said burner head and registering with the gas outlet therein for delivering gas to the hollow burner head, said hollow burner head having gas inlet openings, said openings registering with the discharge ends of the branches of the gas manifold, and a deflecting means formed on each of the discharge ends of the gas manifold branches whereby the gases issuing therefrom will be deflected toward each other on their entrance into the hollow burner head.

4. A hydro-carbon burner construction, comprising a hollow burner head having a plurality of burner openings in each of its oppositely disposed side walls and also having a plurality of centrally disposed openings in its top walls, said burner head having a mixing chamber at one end thereof, a gas generator mounted above said burner head and over said centrally disposed burner openings, the discharge end of said generator terminating within said mixing chamber said burner head having a gas outlet opening leading from said mixing chamber and also being provided with gas inlet openings one on each side of said gas outlet opening, and a gas manifold having two branches secured to said burner head and registering with the gas outlet opening leading from the mixing chamber for delivering gas to the hollow burner head, the branches of said gas manifold registering with the gas inlet openings in the burner head, whereby the gaseous fuel will be equally distributed throughout the entire interior area of the burner head.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of August, 1918.

M. S. YEAGER.