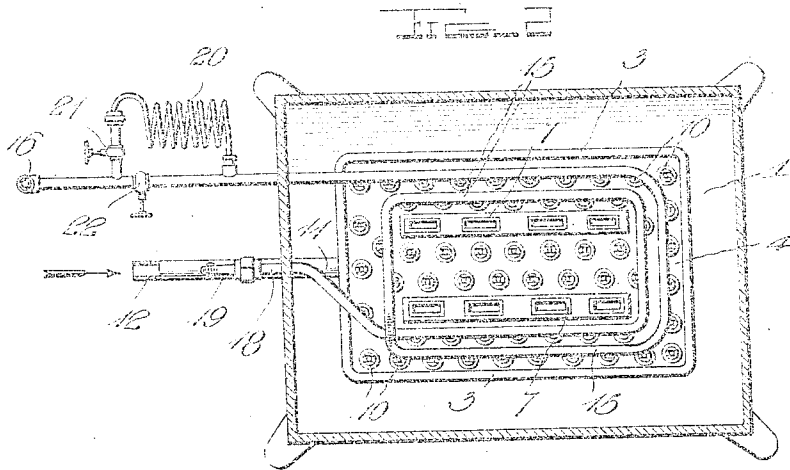
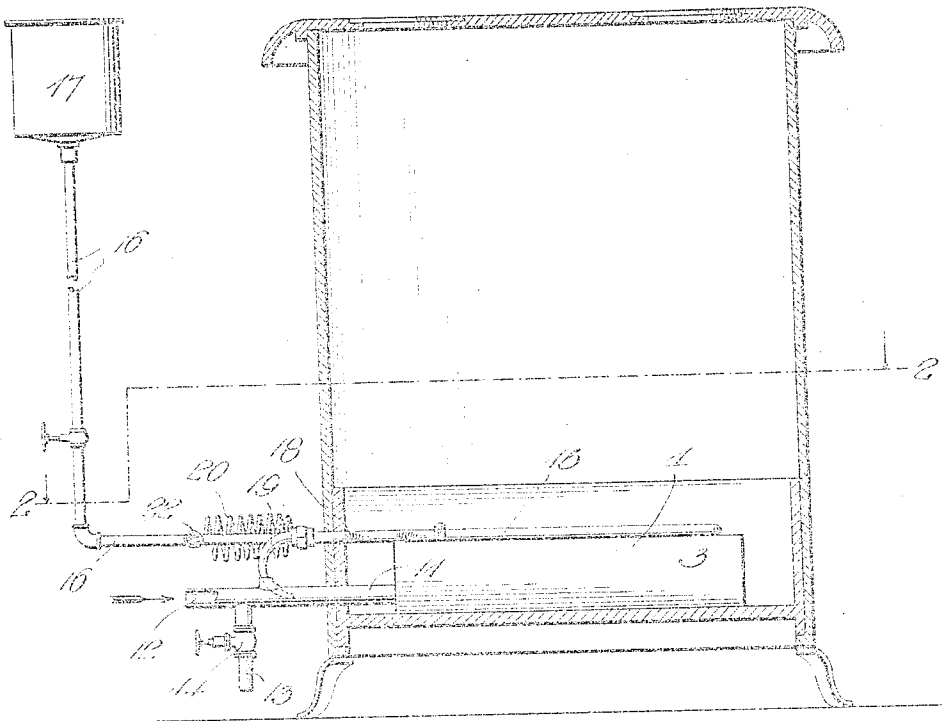


G. PONTBRIAND.  
HYDROCARBON BURNER.  
APPLICATION FILED FEB. 8, 1912.

Patented Oct. 29, 1912.

2 SHEETS-SHEET 1.

1,042,881



Witnesses

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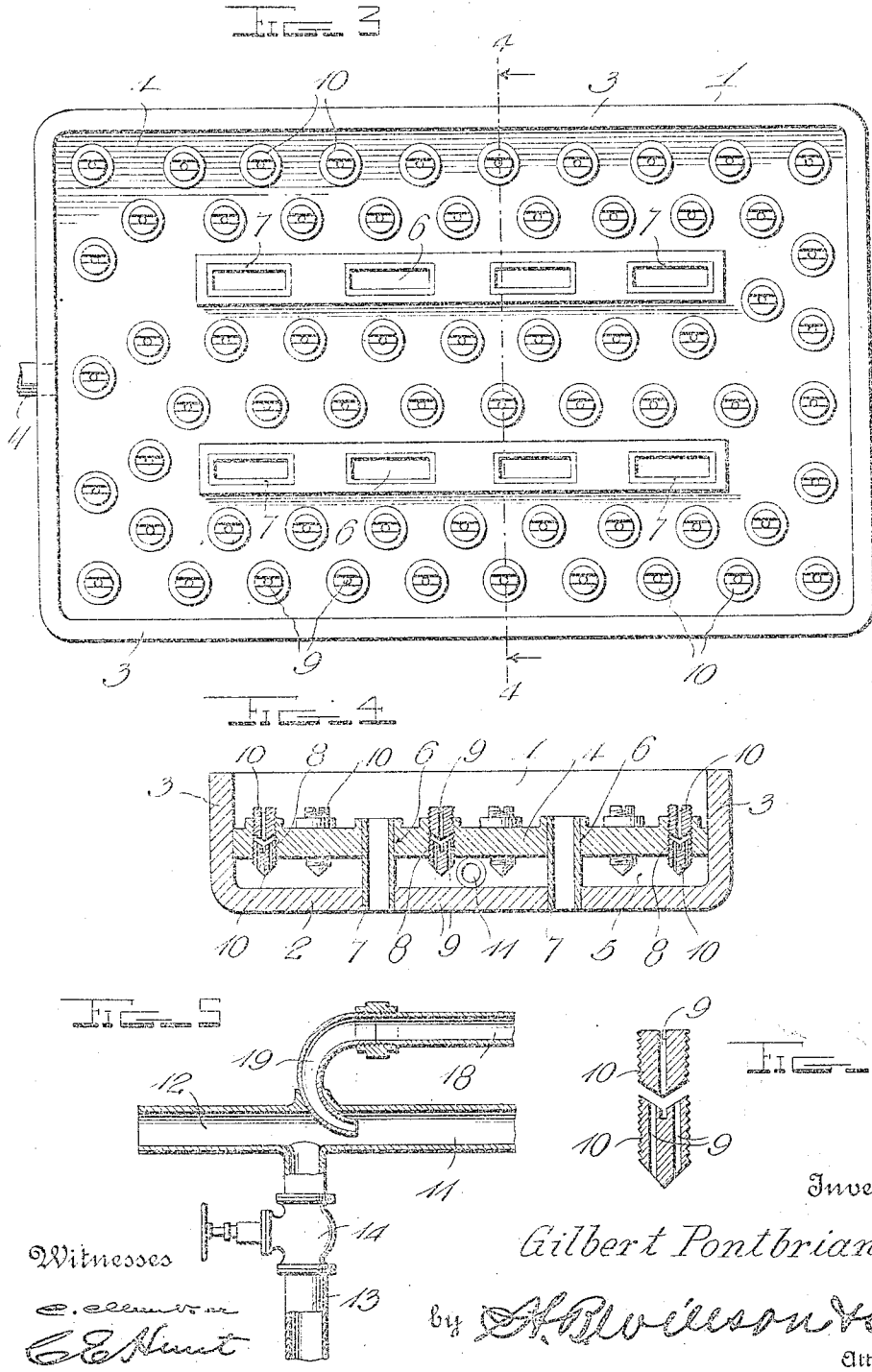
Attorneys

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2 SHEETS-SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

GILBERT PONTBRIAND, OF WEST WARREN, MASSACHUSETTS.

HYDROCARBON-BURNER

1,042,821.

Specification of Letters Patent. Patented Oct. 29, 1912.

Application filed February 8, 1912. Serial No. 676,312.

*To all whom it may concern:*

Be it known that I, GILBERT PONTBRIAND, a citizen of the United States, residing at West Warren, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in hydro-carbon burners and more particularly to the fuel feeding and mixing mechanism thereof.

One object of the invention is to provide a burner of this character having an improved construction and arrangement of fuel feeding and mixing mechanism whereby gas and steam are mixed before being fed to the body of burner.

Another object is to provide an improved means for heating the oil for the purpose of generating the gas forming part of the fuel.

With these and other objects in view the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings; Figure 1 is a vertical section of a stove showing my improved burner applied thereto; Fig. 2 is a horizontal sectional view on the line 2-2 of Fig. 1; Fig. 3 is a plan view of the burner; Fig. 4 is a cross sectional view on the line 4-4 of Fig. 3; Fig. 5 is a detail sectional view of the steam and gas mixing mechanism. Fig. 6 is a detail vertical sectional view of one of the adjustable tips or valve plugs of the burner.

Referring more particularly to the drawings, 1 denotes my improved burner which comprises a hollow body of any suitable shape and which is of preferably rectangular oblong form to fit within the fire box of a stove. The burner body comprises a bottom plate 2 having on its edges upwardly extending flanges 3. Fitting closely in the flanges 3 and secured thereto in any suitable manner is an upper plate 4 which is spaced a suitable distance above the lower plate to provide a fuel receiving space 5. The flanges 3 are of sufficient width to project above the top plate 4 as shown. Formed in the top and bottom plates of the burner and preferably arranged in parallel rows on oppo-

site sides of the center thereof are alined passages 6 in which are arranged air conducting or ventilating tubes 7, through which air is permitted to pass from beneath the burner. The top plate 4 adjacent to the passages 6 is preferably increased in thickness to provide an upwardly extending offset around the upper end of the tubes 7 as shown.

In the top plate 4 are arranged a plurality of burner openings 8 through which the fuel from the space between the upper and lower plates of the burner is discharged and ignited. If desired the walls of the burner openings 8 may be threaded and into the same may be screwed valve plugs 10 formed in adjustable sections having fuel passages 9 through which the fuel passes and is ignited, and by means of which the flame is controlled.

Connected with the body of the burner at one end is a fuel mixing chamber 11 which is preferably formed by the inner end of a steam supply pipe 12 through which steam is conducted from any suitable source to supply to the burner. Connected with the steam supply pipe 12 at the outer end of the mixing chamber is a drain pipe 13 having therein a cut off valve 14. The drain pipe 13 is provided to permit any water of condensation to drain from the steam before the latter passes into the mixing chamber.

Arranged at a suitable position on the top plate of the burner is a gas generating coil 15, one end of which is connected with an oil supply pipe 16 by which oil is conducted from a tank 17 or other source of supply to the coil. The opposite end of the coil 15 is connected to a gas conducting pipe 18 which leads to and is connected with the fuel mixing chamber 11 in the steam supply pipe 12. If desired the end of the gas conducting pipe 18 may be provided with a reducer 19 where the same enters the mixing chamber, thus causing the gas to be injected into the mixing chamber in a smaller stream and with greater force thereby causing the gas to thoroughly mix with the steam in said chamber.

By arranging the coil 15 as herein shown and described it will be seen that the oil will be effectually heated and converted into gas after the burner is lighted. In order to generate sufficient gas for starting the burner, I provide an auxiliary heating coil 20 the ends of which are connected at a suitable

distance apart to the oil supply pipe 16 at any desired position in the pipe. In the inlet end of the coil 20 is arranged a cut off valve 21, while in the oil supply pipe between the points where the ends of the coil 20 are connected, is arranged a cut off valve 22. In starting the burner, a lamp or torch of any suitable character is placed beneath the coil 20 after which the valve 22 in the oil pipe is closed and the valve 21 in the coil is opened, thus causing the oil to flow through the coil 20 wherein the same is heated and sufficient gas generated to supply the burner until the main generating coil 15 has become heated to a sufficient extent to convert the oil passing therethrough into gas, after which the valve 21 in the auxiliary coil is closed and the valve 22 in the oil supply pipe is opened, thus permitting the oil to flow directly to the main generating coil as will be readily understood.

While I have herein shown and described the burner to be applied to the fire box of a cook stove, it is obvious that the same may be constructed in a suitable manner for use in connection with heating stoves, steam boilers, or any other objects with which a burner of this character may be employed. It will also be obvious that the burner may be employed for burning other forms of gas, generated independently from the burner and when so employed the heating coil and mixing chamber as herein shown and described may be dispensed with.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is;

1. In a burner of the character described, a hollow body having formed in its upper

side a plurality of burner openings, air conducting passages arranged through said body, a fuel mixing chamber connected with said body, a steam supply pipe connected with said mixing chamber, a gas generating coil arranged on said body, an oil supply pipe connected with said coil, and an auxiliary gas generating coil connected with said oil supply pipe.

2. In a burner of the character described, a body comprising a bottom plate having on its edges upwardly extending flanges, a top plate secured in said flanged edges of the bottom plate and spaced a suitable distance above the latter to form a fuel receiving chamber, said upper plate having therein a plurality of burner openings, air conducting tubes arranged through the said body and having their upper and lower ends secured respectively in said upper and lower plates of the body, a fuel mixing chamber connected with the fuel receiving chamber of the body, a steam supply pipe connected with said mixing chamber, a valved drain pipe connected with said steam supply pipe whereby the water of condensation is drained from the steam before entering said mixing chamber, a main gas generating coil arranged on said body, a gas conducting pipe to connect one end of said coil with said mixing chamber, an oil supply pipe connected with the opposite end of said coil, an auxiliary gas generating coil having its ends connected with said oil supply pipe, a valve arranged in said oil supply pipe between the connecting ends of the coil whereby the flow of oil through the pipe is cut off and turned through the coil, and a valve arranged in the inlet end of the coil to close the latter when the valve in the oil supply pipe has been opened.

In testimony whereof I have herewith set my hand in presence of two subscribing witnesses.

GILBERT PONTBRIAND.

Witnesses:

FRANK E. LA LIBERTE,  
NATHAN J. DEMERS.