June 4, 1929. J. G. CALVERT 1,715,989

GAS BURNER

Filed Aug. 9, 1927 2 Sheets-Sheet 1

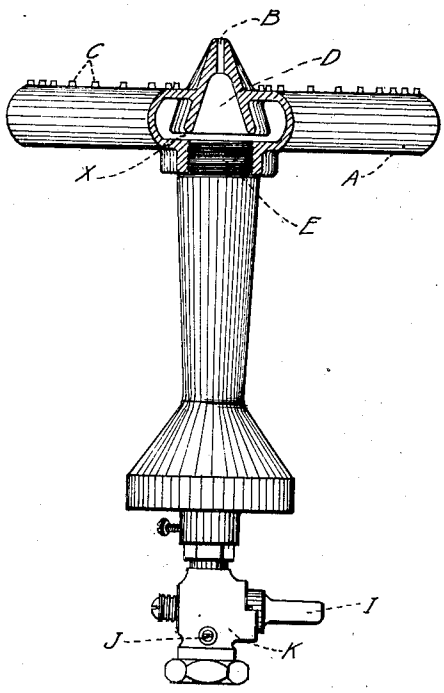


Fig. 1

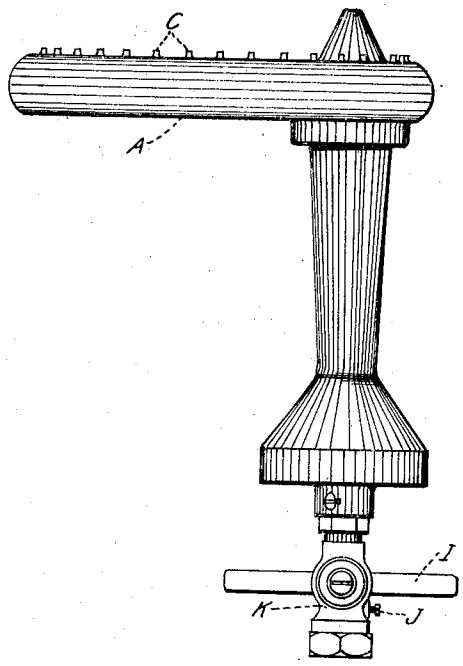


Fig. 2

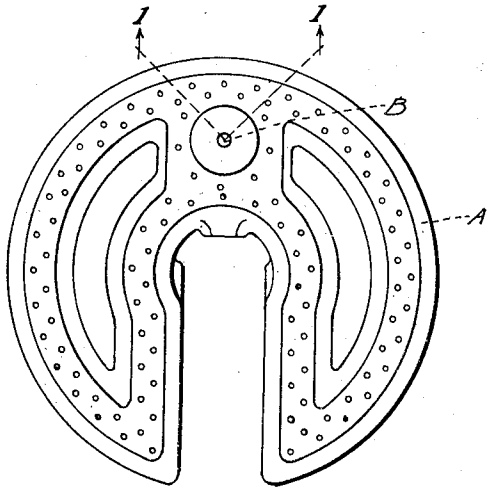


Fig. 3

INVENTOR.

John G Calvert

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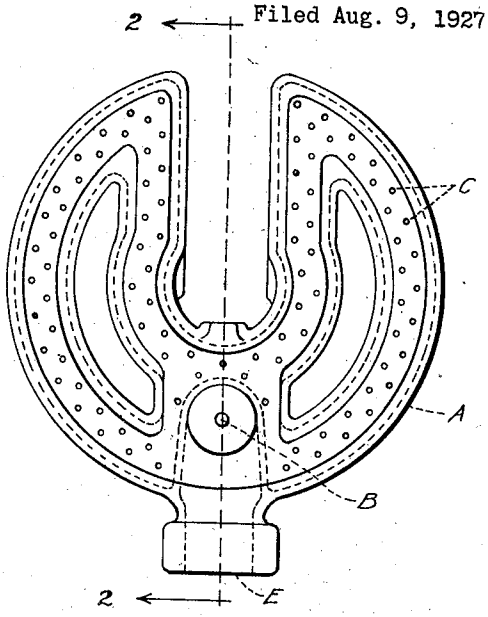


Fig. 4

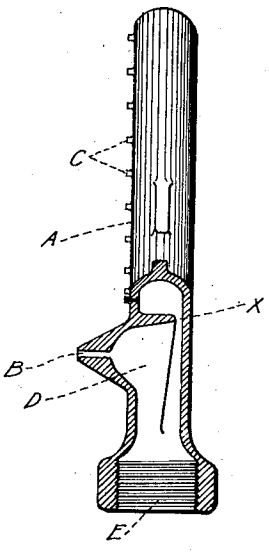


Fig. 5

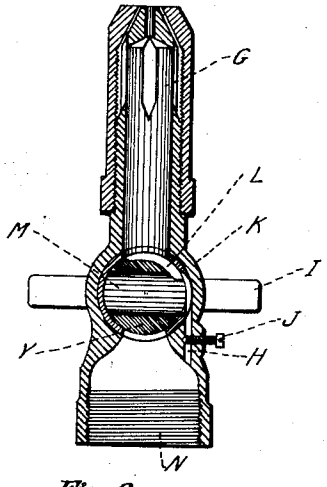


Fig. 6

John G. Calvert INVENTOR.

Patented June 4, 1929. 1,715,989

UNITED STATES PATENT OFFICE.

JOHN G. CALVERT, OF INGLEWOOD, CALIFORNIA.

GAS BURNER.

Application filed August 9, 1927. Serial No. 211,838.

My present invention has to do with a gas burner which has combined therewith a pilot light, and which may be used with a combination gas stop and by-pass valve which permits the gas to flow into the burner with sufficient pressure to light the entire burner, but which when the by-pass valve is in place permits only enough gas to escape into the burner to light the pilot.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is a front elevation of a vertical combination gas burner and pilot with combination gas stop and by-pass valve, showing a fragmentary section taken at 1—1 in Figure 3.

Figure 2 is a side elevation of a vertical combination gas burner and pilot with combination gas stop and by-pass valve.

Figure 3 is a plan view of a vertical combination gas burner and pilot.

Figure 4 is a plan view of a side inlet combination gas burner and pilot.

Figure 5 is a section on line 2—2 on Figure 4—of a side inlet combination gas burner and pilot.

Figure 6 is an enlarged central longitudinal sectional view of the combination gas stop and by-pass valve.

Similar letters of reference designate corresponding parts in all of the views of the drawings.

I show in Figure 1 and also in Figure 2 a gas burner to illustrate the use of my combination pilot and burner; the said burner per se, does not constitute part of my invention as the said combination pilot is adaptable to any kind of burner.

The device consists of a burner (A), with or without a valve (K). The burner (A) consists of an inlet (E) whereby the gas enters the burner; a chamber or inverted cone so located immediately over or adjacent to inlet (E) so that all gas entering burner inlet will rise into this chamber and out the orifice (B). When more gas enters the chamber (D) than the orifice (B) can accommodate it will escape into the main burner through the space (X) below chamber (D) and out the burner orifice (C) and there be ignited by pilot (B).

The valve (K) consists of an inlet gas opening (N); a ground stop (Y) with a passage (M) drilled through its center so that when the handle (I) is in a vertical position the gas can pass through from the inlet (N) to the body of the valve, to the variable orifice (G). When the handle (I) is turned in a horizontal position or crosswise to the valve gas passage the groove (L) cut in the stop (Y) by-passes the gas from the inlet (N) through the by-pass (H) which quantity of gas passing through this by-pass is controlled by the adjusting screw (J). The gas that is by-passed is to supply the pilot only.

When the handle (I) is turned a half turn but still is at right angles to the gas passage way through the gas cock, the ungrooved side of the stop (Y) closes the inlet (N) and the by-pass (H). The groove (L) is cut in the stop (Y) long enough so that the by-pass is open until the main stop (M) is open completely.

The action of the cock and burner and pilot is as follows: When the gas cock handle is turned so that gas is by-passed to burner through the passage (H) the pilot (B) is lighted by the person operating same. If the main part of the burner burns at all the adjusting screw (J) is screwed in until only the pilot is burning at the right height. When there is only as much gas admitted through the by-pass as will rise of its own accord because it is lighter than the surrounding air, into the chamber (D) then only the pilot will be supplied with gas. As soon as more gas is admitted so that a pressure exists in the chamber (D) the excess gas flows into the main burner and out its orifices where it is ignited by the pilot (B).

It is evident that the valve or gas cock described is not an absolutely necessary adjunct to the use of the combination pilot and burner, for if the gas pressure is reduced in any manner the pilot and not the burner remains lighted.

There are at present automatic heaters on the market which operate the entire burner as a pilot to reduce the expense of manufacturing, but this is extravagant of gas and there is danger of the burner flashing back into the mixing chamber.

I do not restrict myself to the application of this combination gas burner and pilot, with or without combination gas stop and by-pass valve to the use of automatic or non-automatic water heaters, but it is adaptable

to any gas appliance where a pilot may or may not be used, or gas by-passed for the operation of a pilot.

My present invention, among others, has the following advantages:

1. The pilot burner is much cheaper to manufacture than a separate burner and pilot.

2. The pilot burner is more economical to operate than heaters or burners that utilize the entire burner for a pilot.

3. There is less danger of this pilot going out as the height of the flame on the pilot increases as the main burner comes on.

4. There is less danger of this pilot stopping up from soot or creosote in the gas as the pilot requires a much larger orifice than the separate pilot light because the gas in this pilot is not under any velocity, or pressure, but because of the small velocity it consumes less gas than most pilots.

5. The combination stop cock and by-pass valve saves separate valves and fittings.

6. The valve and burner combined make a semi-automatic water heater out of any combination storage water heater for practically no additional cost of production.

I have specifically described the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the said embodiment. I do not desire, however, to be understood as restricting myself to the specific construction and arrangement of parts disclosed, my invention being defined by my appended claims within the scope of which changes in structure and changes in arrangement may be made without departure from my invention.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. A gas burner comprising a body formed with a plurality of main gas discharge openings and provided with a gas inlet, said burner having an open chamber therein adapted to trap the gas before reaching said main gas discharge openings when the supply of gas to the burner is reduced and to permit excess gas to pass to said main gas discharge openings when the supply of gas is increased, said burner having a supplemental gas discharge opening directly communicating with said trap chamber and adapted to provide a pilot flame for igniting the gas issuing from said main discharge openings when the supply of gas is increased.

2. A gas burner comprising a body formed with a plurality of main gas discharge openings and provided with a gas inlet, said body having an open chamber therein adjacent said inlet adapted to trap the gas before reaching said main gas discharge openings when the supply of gas to the burner is reduced and to permit excess gas to pass to said main gas discharge openings when the supply of gas is increased, said body having a supplemental gas discharge opening directly communicating with said trap chamber and adapted to provide a pilot flame for igniting the gas issuing from said main discharge openings when the supply of gas is increased.

3. A gas burner as set forth in claim 2, wherein said body has an internal baffle depending from the top wall thereof and forming said trap chamber.

4. A gas burner as set forth in claim 2, wherein said body has a conical pilot jet on the top wall thereof and in which said supplemental gas discharge opening is formed.

5. A gas burner as set forth in claim 1, wherein a valve is provided for selectively reducing or increasing the supply of gas to the burner below or in excess of the amount adapted to be trapped in and discharged through the supplemental gas discharge opening from said trap chamber.

JOHN G. CALVERT.