L. T. WILCOX.

GAS BURNER.

APPLICATION FILED AUG. 18, 1914.

1,216,529.

Patented Feb. 20, 1917.

3 SHEETS—SHEET 1.

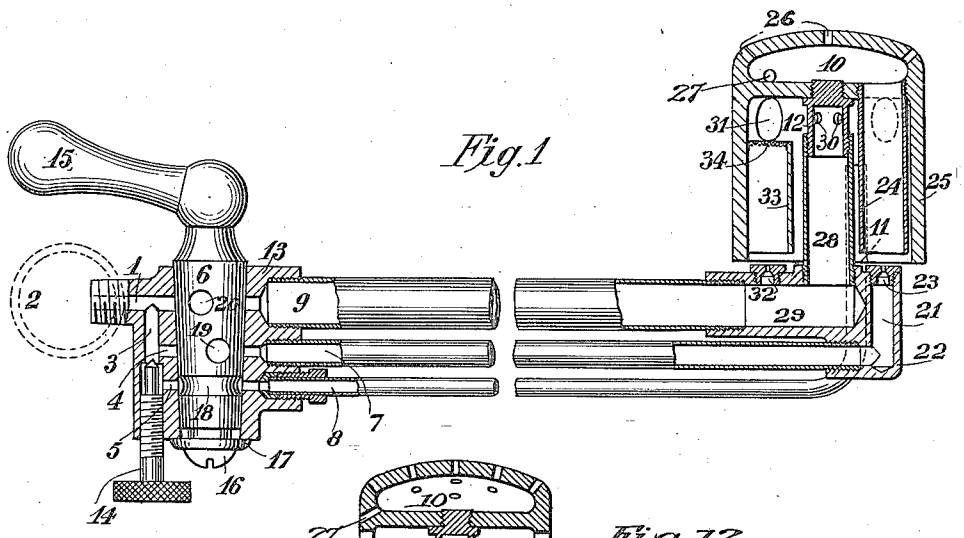


Fig. 1

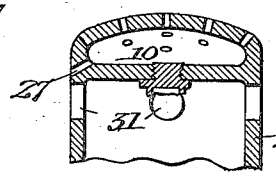


Fig. 12

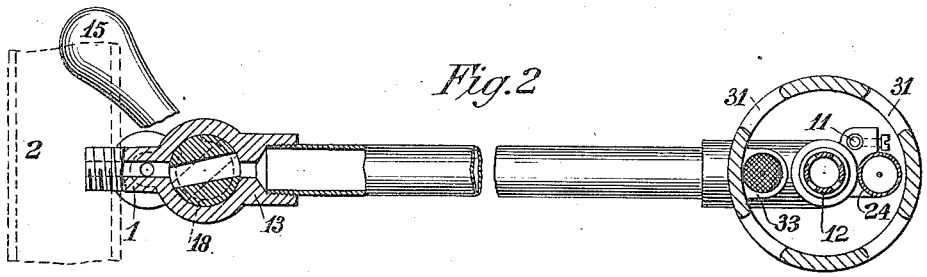


Fig. 2

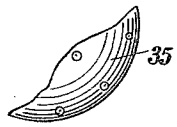


Fig. 3

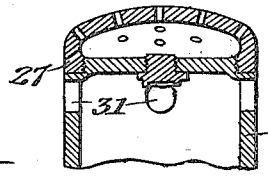


Fig. 13.

Witnesses:
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3 SHEETS—SHEET 2.

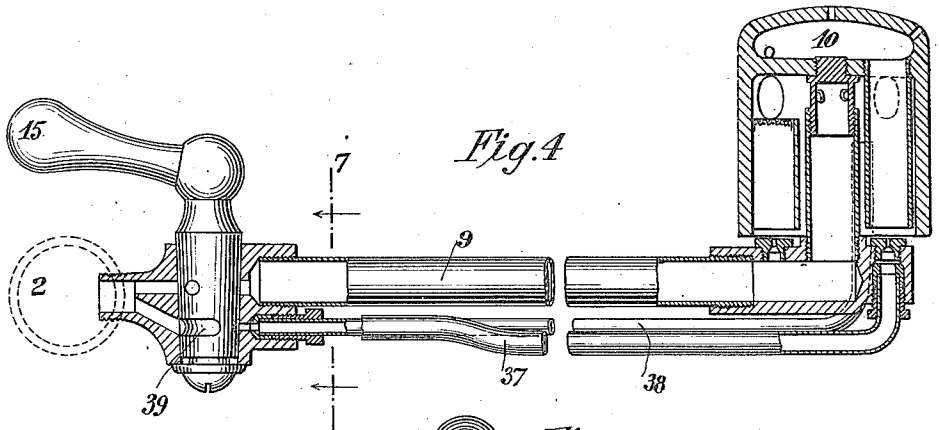


Fig. 4

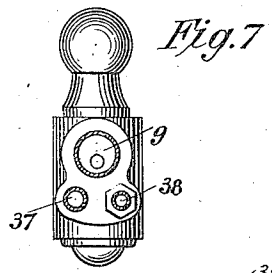


Fig. 7

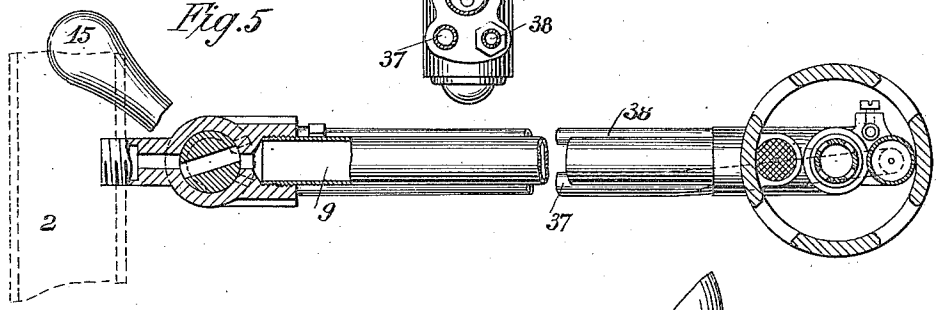


Fig. 5

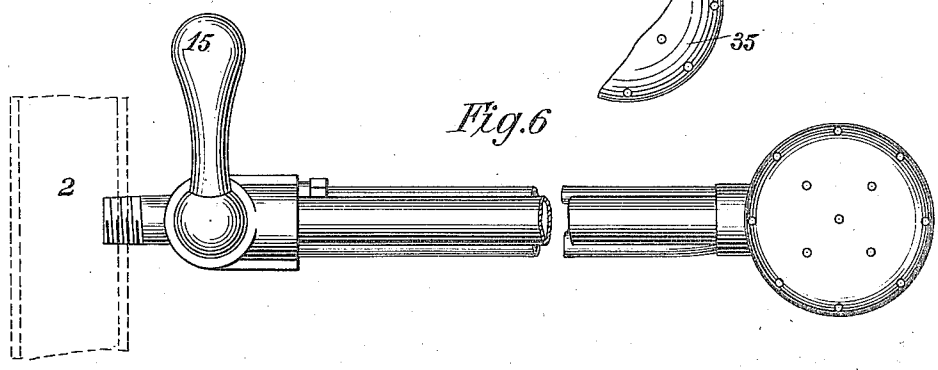


Fig. 6

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3 SHEETS—SHEET 3.

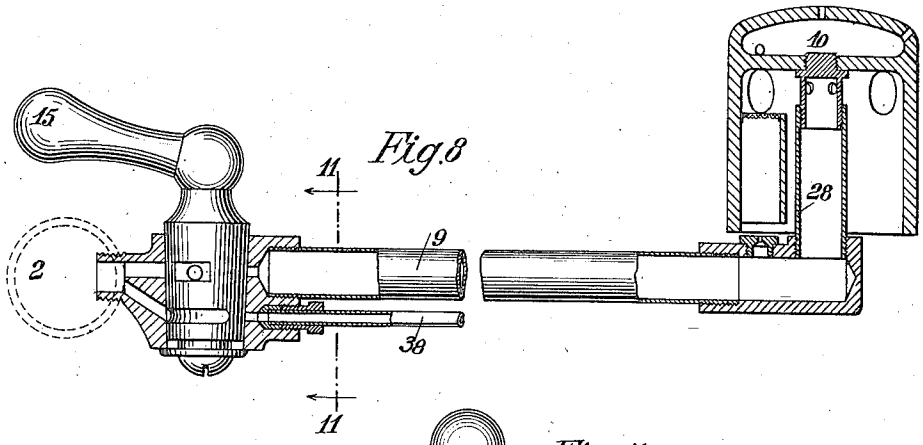


Fig. 8

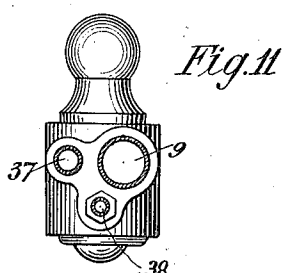


Fig. 11

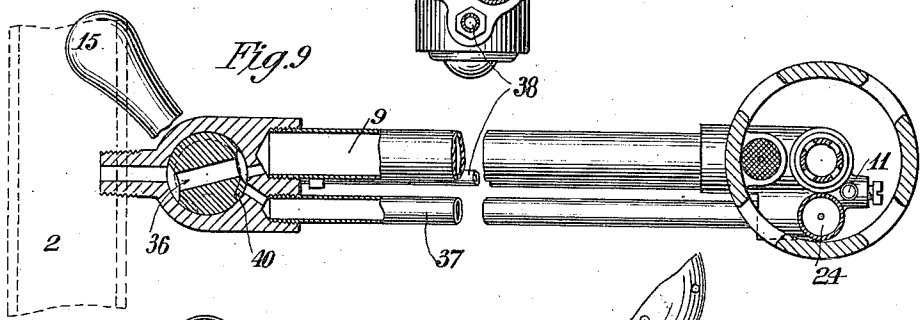


Fig. 9

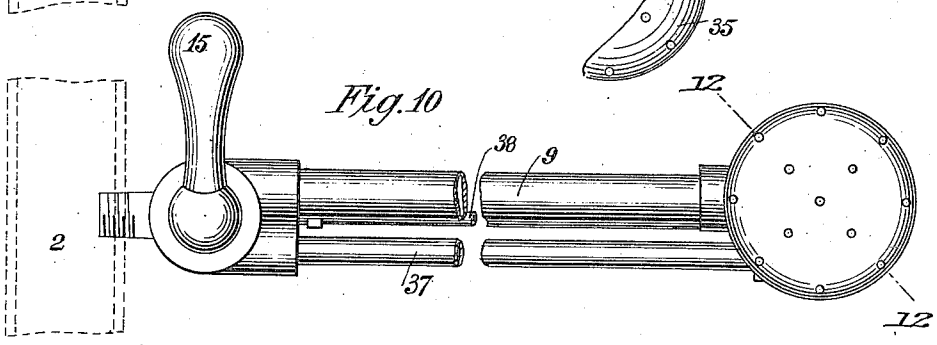


Fig. 10

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UNITED STATES PATENT OFFICE.

LEWIS T. WILCOX, OF PEEKSKILL, NEW YORK.

GAS-BURNER.

1,216,529. Specification of Letters Patent. Patented Feb. 20, 1917.

Application filed August 18, 1914. Serial No. 857,310.

To all whom it may concern:

Be it known that I, LEWIS T. WILCOX, a citizen of the United States, and a resident of Peekskill, in the county of Westchester, State of New York, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

The invention relates to burners adapted to use gaseous fuel, and its objects are, among others, to provide simple and effective means for controlling the flow of the fuel to a burner for lighting the burners simultaneously or successively from a common pilot light, and for producing and controlling a low "simmering" flame, and for protecting the parts against impairment by the accumulation of carbon; and to provide means for guarding against various undesirable results which sometimes follow from the careless use of such burners.

The invention comprises a valve controlling a plurality of ways and a burner which may act as a lighter for a plurality of other burners, and may or may not be used independently for heating purposes, and suitable connections for facilitating the results above mentioned.

The improvements consist in the construction, combination and arrangement of parts hereinafter described and claimed, and illustrated in the accompanying drawings.

In the said drawings, Figure 1 is a side elevation of a burner and its connections, partly in vertical medial cross-section, embodying the improvements. Fig. 2 is a plan of the same with the valve and burner in horizontal cross-section. Fig. 3 is a plan of the said parts with a broken off portion of a second burner adjacent thereto, the distance between the burners being shortened for convenience in drawing. Figs. 4, 5 and 6 are views similar to Figs. 1, 2 and 3 of a modified form. Fig. 7 is a view of parts of the burner shown in Fig. 4 taken on the cross-section line 7—7 of Fig. 4, and looking in the direction indicated by the arrows. Figs 8, 9, and 10 are views similar to Figs. 1, 2 and 3 of another modification, Fig. 11 is a view of some of the parts shown in Fig. 8, taken on the cross-section line 11—11 in that figure looking in the direction indicated by the arrows.

Fig. 12 is a vertical section of the burner 10 on the line 12—12 of Fig. 10.

Fig. 13 is a similar view to Fig. 12 of a modified construction in which the burner and adjacent parts are screw-threaded to the hood below them.

Referring to the preferred form illustrated in Figs. 1 to 3 inclusive, fuel is supplied to the burner through the branch passageway 1 communicating with a gas supply pipe 2 shown in dotted lines. This branch passageway has a by-pass 3 provided with branch ways 4 and 5 which communicate through the ways of the valve plug 6 with the tubes 7 and 8, respectively, and tube 7 supplying gas to the burner 10 and the tube 8 to the pilot light 11. The branch 1 also communicates directly through a way in the valve plug with the pipe 9 which supplies fuel to the flash lighting burner 12. The ways controlled by the valve plug are preferably formed in the valve body 13, which consists of a single casting provided with a central vertical aperture for the valve plug, and also a small aperture in which is threaded the needle valve 14 for independently regulating and shutting off the supply of gas to the pilot light. The valve plug is provided with a suitable handle 15 by which it may be turned, and is held in the valve body by a screw bolt 16 and washer 17.

The ways of the valve 18, 19, and 20 communicate with the supply pipes 8, 7 and 9 respectively, the way 18 consisting of a groove extending more than half way around the plug, and the ways 19 and 20 consisting of bores through the plug having their outer ends out of vertical line but overlapping slightly, and their inner ends also out of line. In this manner means are provided for supplying fuel to the pilot light constantly while the supply to the burner and flash lighter is manipulated, and also means for supplying fuel to the two latter simultaneously or alternately. When the valve is turned to the position shown in Fig. 2 the lighter is supplied with fuel and caused to be ignited from the pilot light and to flash for the purpose of igniting adjacent burners, while the burner 10 remains cut off. If the valve be turned a few degrees farther both the burner 10 and the lighter are supplied with fuel simultaneously, and if the valve be turned farther the lighter is cut off while the burner 10 remains in communication with its fuel supply, and if the valve be turned still farther both are cut off. During these movements of the valve the supply to the pilot light through the channel 18 is

maintained. If now it is desired to cut this off also the valve may be turned still farther in the same direction until the end of the said channel passes its supply conduit 5, when all three tubes leading to the burner will be closed. This may also be done by turning the valve back—in counter clockwise direction—beyond its original position until the opposite end of the groove or channel 18 passes the way 5. It will be understood that the valve may be provided with a suitable indicator to show the operator when it is in the various positions just described, and that in connection with this indicator a spring or other check may be provided to indicate to the operator when the valve is in one or more of the positions described, without requiring him to consult the visual indicator. Such means, however, are not a necessary part of the present improvements.

The tube 7 communicates through the passage way 21, in the casting 22, and the jet nozzle 23 with the flue 24, air being admitted for admixture with the gas at the lower edge of the burner hood and shield 25, and the mixture burning as it issues from the vents 26 of the top plate or cover of the burner proper 10. A downward vent 27 extends from the interior chamber of the burner 10 to approximately the level of one of the openings 31 in the upper part of the hood 25 and in proximity to the upper edge of said opening, so that the burner may be ignited from the flash lighter although isolated by its bottom partition from the space within the hood 25.

The tube 9 supplying fuel to the flash light communicates with the passage 29 in the casting 22 and through it with the tube 28, which is closed at its upper end by the burner 12 except for the side vents 30 opposite the orifices 31. The fuel, therefore, passes out through these vents, is ignited and passes laterally through the openings 31 in the process of combustion.

A jet nozzle 32 passes a small portion of the gas into the mixing chamber 33, which is supplied with air entering beneath the lower edge of the hood 25. From this chamber it issues through the screen 34 to the interior of the hood where it will be ignited by the pilot light 11 and in turn cause the flash burner 12 to light. The filling of the space around the burner 12 with the mixture prevents the formation of carbon on the parts which would take place if the gas were ignited without the intervention of this mixture, and the screen 34 will prevent back fire.

An important function is also performed by the arrangement which provides for the mixture adjacent to the point of combustion, as the friction of the tube, when the mixture is made near the valve or at another point distant from the burner, tends to overcome the reduced pressure. This is particularly true with the burner formed by the mixing chamber 33 and screen 34 ignited by the pilot light, which involves the use of a tube of relatively small diameter. The presence of the mixture in the hood and surrounding the lighter also insures the lighting of all the vents of the flash burner and the consequent lighting of the other burners of the stove.

The pilot light tube 8 terminates in the upper part of the hood 25 and serves the purpose of igniting the flash burner 12 whenever desired, and through it the burners 10 and the adjacent burners of the stove, such as 35.

It will be seen from the foregoing description that in order to light the burner 10 while the pilot light is burning it is only necessary to turn the valve to open communication between the burner and the gas supply, through the way 19, and this movement simultaneously supplies the flash burner with fuel to ignite it. If it is desired to use the adjacent burners and extinguish the burner 10 the movement of the valve handle is continued in the same direction until first the flash burner and then the burner 10 has been cut off, or it may be turned in the opposite direction. If it is desired merely to ignite the adjacent burners without igniting the burner 10 the valve is turned far enough only to ignite the flash and then turned back to its original position, which is the position shown in Fig. 1, or it may be turned on quickly past the point at which communication is established with the said burner.

The number of burners to be lighted from the flash burner will determine the number of orifices 31. The construction shown is adapted to be used with a four burner stove and therefore has four of said orifices. These burners may be controlled in the ordinary way by means of a valve on the gas supply pipe, and one or more may be ignited and used in connection with the lighting apparatus as desired.

The burner 10, as shown, is constructed to be used as a low flame or "simmering" burner, but it may be replaced by a burner of the same construction as the others; in order that it may be converted into a burner of different character the upper portion may be screw threaded to the hood 25 (see Fig. 13) and the burner cap which is to replace it provided with corresponding threads, or the conversion may be provided for in other manner.

In the modification of Figs. 4 to 7 inclusive, the burners are arranged in substantially the same manner as in the preferred form, but the tubes 37 and 38 through which fuel is supplied to the burner 10 and pilot light respectively communicate with

the gas supply through a common groove or channel 39, in the valve plug, their ports being in one horizontal plane and below the flash light tube and the groove being so arranged that when the valve is in its closed position with respect to the other tube the tube 38 is in communication with the supply. When the valve plug is turned toward its open position it opens the tube 9 and then brings the end of the groove 39 opposite the port of tube 37. This provides for the performance of the same functions as that described with reference to the preferred form.

In the modification of Figs. 8 to 11 inclusive the burner is of substantially the same construction as that shown in the other figures, except that the tube 24 is at the side of the tube 28 and the pilot light located at one side of and partly between the two. In this modification the tubes 9 and 37 which supply gas to the lighter and the burner 10 respectively are in horizontal plane, and the tube 38 supplying the pilot light below them. This provides for the use of a groove 40 for the pilot light alone and a single way 36 for the other two. The ends of this way are flared so that it may be in communication with both conduits 9 and 37 at the same time, but may be moved so as to open the former without opening the latter and close the former without closing the latter after both have been opened.

What I claim is:

1. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, said burner comprising a frame or casing having orifices therein, communicating with said tubes.

2. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, a mixer, one of said other tubes having an additional vent for the discharge of gas into the said mixer, and the said mixer having a discharge opening for supplying mixed gas and air in the vicinity of the orifices of said other tubes.

3. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, said valve having other means located and arranged to maintain communication between one tube and the gas supply conduit while communication with the other tubes is closed and also while each and both of them are open.

4. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, and a shield adjacent to the orifices of the said other tubes having openings therein to permit the lateral egress of flame therefrom and in close proximity to the said burner.

5. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, and a plurality of other burners located adjacent to the first named burner, one of the said other tubes having vents located and arranged to discharge gas in the direction of the said burners.

6. A device of the character described, comprising a gas supply conduit, a burner plate provided with upwardly discharging orifices in communication with said conduit, a partition below said orifices, a lighting device beneath said partition and isolated from the orifices, said burner plate having a vent located and arranged to discharge gas exterior thereto, and a shield surrounding said lighting device provided with openings adjacent to the said vent, whereby the flame of the lighting device passing through

said openings comes in contact with fluid issuing from the vent.

7. A device of the character described, comprising a gas supply conduit, a burner plate provided with upwardly discharging orifices in communication with said conduit, a partition below said orifices, a lighting device beneath said partition and isolated from the orifices, said burner plate having a vent located and arranged to discharge gas exterior thereto, and a shield surrounding said lighting device provided with openings adjacent to the said vent, whereby the flame of the lighting device passing through said openings comes in contact with fluid issuing from the vent, and a mixing chamber adjacent to said lighting device and within the said shield.

8. A device of the character described, comprising a burner plate, having vents therein for the upward discharge of gaseous fuel, a supply conduit leading to said burner, a valve on said conduit at a point removed from said burner, a second conduit communicating with said supply conduit through the valve, a mixing chamber adjacent thereto into which said second conduit discharges, said mixing chamber constructed and arranged to discharge mixed air and gas exterior to the said burner, but in proximity thereto.

9. The combination of a pilot light, a lighting burner adjacent thereto, conduits for supplying gas to the said pilot light and lighting burner, a mixing device adjacent to the lighting burner, and a valve controlling the flow of gas to both pilot light and lighting burner, said valve constructed and arranged to supply gas to them simultaneously and successively.

10. The combination of a pilot light, a lighting burner adjacent thereto, conduits for supplying gas to the said pilot light and lighting burner, and a valve controlling the flow of gas to both pilot light and lighting burner, said valve constructed and arranged to supply gas to them simultaneously and successively, and a mixing chamber in communication with the lighting burner conduit and located adjacent to the said lighting burner and having an orifice for the discharge of mixed air and gas.

11. In a device of the character described, the combination of a gas supply conduit, a burner in communication therewith, a pilot light adjacent to said burner, a lighting burner, said pilot light and lighting burner also communicating with said gas supply conduit, and a valve controlling the supply of gas to the burner, pilot light and lighting burner, said valve being provided with means whereby the burner and the lighting burner may be supplied with fuel separately or simultaneously while the pilot light is also supplied with fuel, and whereby either or both of said burners may be shut off from the supply without shutting off the supply to the pilot light.

12. In a device of the character described, the combination of a gas supply conduit, a burner in communication therewith, a pilot light adjacent to said burner, a lighting burner, said pilot light and lighting burner also communicating with said gas supply conduit, a valve controlling the supply of gas to the burner, and lighting burner, said valve being provided with means whereby the burner and the lighting burner may be supplied with fuel separately or simultaneously while the pilot light is also supplied with fuel, and whereby either or both of said burners may be shut off from the supply without shutting off the supply to the pilot light, and a mixing chamber adjacent to said lighting burner and in proximity to the pilot light, and distant from the said valve.

13. In a device of the character described, the combination of a burner provided with upwardly directing orifices for the discharge of fluid and laterally directing orifices for the discharge of the same, a lighting device beneath said burner constructed and arranged to discharge fluid laterally away from said burner, and a pilot light separated from the burner and located in the line of said lateral discharge of the lighting device, the construction and arrangement being such that fluid discharged from the lighting device ignites the burner above the same.

14. The combination of a burner consisting of a plate with fluid vents therein and a conduit for supplying fluid to said vents, a lighting burner adjacent to the said first named burner and a conduit for supplying fluid thereto, and another burner spaced laterally from the said first named and lighting burners, a valve controlling the flow of fluid to the said conduits, and the said parts being constructed and arranged so that by operating the valve the lighting burner is caused to project a flame in proximity with the other burners and to ignite them.

15. In a device of the character described, the combination of a burner, a gas supply conduit, a tube communicating with said burner, a valve forming a communication between said tube and said conduit, a plurality of other tubes also communicating with the said conduit through the said valve and having orifices adjacent to the burner, and the said valve provided with means located and arranged to establish communication between the conduit and a plurality of said tubes separately and simultaneously, said burner comprising a frame or casing having orifices therein, communicating with said conduits, and also other orifices communicating with a plurality of said conduits.

16. The combination of a burner, a light-

ing device located adjacent thereto, separate conduits for supplying fluid to said burner and lighting device, a pilot light adjacent to said lighting device and adapted to ignite the same, and a valve controlling the flow of fluid to said burner and lighting device through the said conduits, the said parts so constructed and arranged that by manipulation of the valve fluid is supplied to the burner and also to the lighting device and the lighting device caused to ignite the burner and project a flame laterally beyond the same for the purpose of igniting other burners.

17. In a device of the character described, the combination of a burner frame or casing, a pilot burner therein, a mixing device provided with inlets for air and gas therein and provided with an outlet for mixed gas and air, a conduit in said burner casing provided with openings for the escape of gas, said casing being provided with openings opposite the openings of said conduit, a gas supply conduit, branch conduits communicating with said pilot burner, mixing device and conduit within the burner casing, and a valve mechanism between said branch conduits and the gas supply conduit, said valve mechanism constructed and arranged to establish communication between the gas supply conduit and the said mixing device and conduit in the burner casing and pilot burner simultaneously and to maintain communication with the pilot burner when communication with the other said devices is cut off, whereby a constant pilot light is maintained and the casing filled with mixed gas and air and ignited by a flame projected through the openings of the said casing from the conduit therein for the purpose of lighting adjacent burners.

18. In a gas stove the combination of a burner, comprising a hollow burner head and a casing below said head, said casing provided with openings, and said head provided with an opening adjacent thereto, a gas burning device within said casing having openings opposite the openings of the casing, an igniting device in said casing, gas conduits leading to said burner and igniting devices, and means for controlling the flow of gas thereto, and a second burner spaced laterally from the first named burner whereby when gas is supplied to the said burning device it will become ignited by the igniting device and be projected in a burning state from the holes of the igniting device through the holes of the casing to ignite the said first named burner and second burner.

Witness my hand this 6th day of August, 1914, at the city of New York, in the county and State of New York.

LEWIS T. WILCOX.

Witnesses:
MARY H. LEWIS,
HELENA SHINE.