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IGNITION DEVICE FOR GAS BURNERS

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This invention relates to ignition devices for gas stoves.

An object of the invention is to provide an improved ignition device for use in connection with gas stoves comprising a housing designed and adapted to enclose a constantly burning pilot light jet and having tubes opening and extending from the housing to positions to receive gas passing through and from the usual gas burners and to conduct the gas to the pilot light housing for ignition and to conduct the pressure wave of ignition to the gas burners, in combination with means in the pilot light housing for protecting the flame of the constantly burning pilot light jet from being extinguished by the explosive ignition of gas or otherwise in a more satisfactory manner than has heretofore been accomplished.

Another object of the invention is to provide a pilot light housing for use on gas stoves comprising a housing adapted to encase a constantly burning pilot light jet and having laterally extended tubes opening therefrom for the purpose hereinafter indicated, in combination with a pair of annular discs arranged and supported within the housing in a novel relationship to the jet and to the openings to the tubes in order to protect the flame of the jet from being extinguished, and to baffle the gas entering the housing in such a way that the gas will be effectively ignited, and to cooperate with the remaining elements in such a way as to discharge the obnoxious fumes of burnt gas from the housing.

Other objects will appear from the following description, reference being made to the accompanying drawing, in which—

Fig. 1 is a plan view of one form of the invention in a gas stove.

Fig. 2 is an enlarged vertical sectional view of the device.

Fig. 3 is a vertical sectional view on a plane angularly intersecting the plane of the section of Fig. 2 approximately at the center of the pilot light housing.

Fig. 4 is an enlarged sectional view on the same line as the section of Fig. 3 showing the pilot light housing without the baffle discs therein.

Fig. 5 is a perspective view of the two baffle discs removed from the pilot light housing.

The invention is designed and adapted for embodiment in a gas stove including a cluster of gas burners and an oven burner located in an oven and at a distance from the cluster of gas burners. The present invention resides specially in the construction of the pilot light device for

igniting gas at the gas burners and at the oven burner.

As shown in the drawing, the gas manifold 1 is supported adjacent to the burner box 2 within which there is a cluster of gas burners, such as the gas burner 3. The gas burners 3 are supplied with gas from the manifold 1 through pipes 4 controlled by valves 5, so that the burners 3 may be selectively supplied with gas, as is familiar.

Side walls 6 of the oven are toward the burner box frame. A gas burner 7 is supported within the oven and is supplied with gas through a communication 8 from the manifold 1. The communication 8 is controlled by a valve 9.

The housing 10 is designed and adapted to enclose the jet 11 of a pilot light burner device to which gas is constantly supplied through a pipe 12 from the manifold 1 controlled by a normally open valve 13. The jet 11 is centered in the lower portion of the housing 10 by spaced lugs 14 integral with the lower end of the wall of the housing and projecting inwardly. These lugs 14 are spaced so as to provide openings through which air may freely enter the lower end of the pilot light housing in order to supply the air necessary to prevent the pilot light jet flame 15 from being extinguished.

The housing 10 opens into a number of tubes 16 which project toward the respective burners 3 and have flanges 18 on the under side of their outer ends arranged to seat upon projections 19 from the respective burners 3. Fingers 20 at the outer ends of the respective tubes 16 embrace the adjacent projections 19 between them. In this way, the pilot light housing is supported in cooperative relation to the burners 3, so that gas passing from said burners through the laterally disposed gas outlets 21 will necessarily enter the respective tubes 16 and pass therethrough into the housing. This is because the openings 21 are opposite the open ends of the tubes 16, so that gas passing from said openings 21 must necessarily enter the tubes. These holes 21 are provided specially and in addition to the holes 22 in the upper walls of the burners 3. It is necessary only to provide one of the special holes 21 in each burner.

The housing 10 is formed with an internal shoulder 23 immediately below the openings into the tubes 16. The annular disc 24 is mounted in the housing 10 on the shoulder 23 and the opening 25 through said disc 24 is surrounded by an upwardly extended flange 26 that tapers upwardly. The jet 14 is below the plate 24 and

the constantly burning flame 15 extends through the opening 25 to a height above the flange 26. This disc 24 located on the shoulder 23 below the openings to the tubes 16 prevents the gas entering the housing 10 from the tubes 16 from passing downwardly, and the flange 26 shields and guards and protects the flame 15 from the effects of the ignition waves or gusts created as an incident to ignition of gas entering the housing 10 through any of the tubes 16.

The housing 10 has an internal shoulder 27 above the shoulder 23. The shoulder 27 intersects the tubes 16 approximately at the axis of said tubes, it being apparent that in the embodiment shown the openings to all of the tubes 16 are approximately in the same horizontal plane. A flaring annular plate 28 is mounted on the shoulder 27, the opening 29 through said plate being in vertical axial alignment with the opening 25 and surrounded by an upwardly tapered flange 30. The opening 29 is of larger diameter than the opening 25 and the flange 30 is of greater length than the flange 26. It is unnecessary that the constantly burning flame 15 extend normally above the upper edge of the flange 30 in order to maintain the device in successful operation.

A tubular extension 31 opening from one side of the housing 10 is provided on its end with a bell 32 designed and adapted to receive one end of the tube 33 having its opposite end opening into a burner housing 34 having communication through a pipe 35 with the pipe 8 and with the burner 7 through a tube 36. Thus, gas may be conducted into the housing 10 through the tube 33 and the connections for supplying gas to said tube.

The housing 10 may be formed with a number of vent openings 37 intersecting the disc 28 in order to supply enough air to meet any requirements.

A cover plate 38 telescopes upon the upper end of the housing 10 and is provided with a large central opening 39 and an annular series of openings 40 to permit free escape of burnt gases and products of combustion in order to maintain the device in perfect operation.

This device is designed and adapted to be mounted in cooperative relation to a cluster of gas burners 3, with a constant supply of gas to the jet 11, which has a constantly burning flame 15, to consume constantly the small amount of gas passing from the jet.

When gas is admitted to any one of the burners 3, a certain amount of the gas will pass from said burner 3 through the opening 21 and enter the adjacent tube 16. The gas will pass through the tube 16 into the pilot light housing 10 above the baffle plate 24. A part of the gas entering the housing 10 will pass below the baffle plate 28. The gas coming into contact with or in proximity to the flame 15 within the pilot light housing 10 will be ignited and the pressure wave of ignition will be deflected outwardly through the gas filled pipe 16 by the curved lower surface of the baffle plate 28. The pressure wave of ignition is directed above the upper wall of the burner 3 into contact with the gas emerging from the holes 22 with the result that the gas emerging from all of said holes 22 is ignited. Also, the gas emerging from the hole 21 is ignited.

The jet flame 15 is guarded and shielded and protected by the baffle plate 24 and the upwardly curved flange 26. The jet flame 15 is thereby thoroughly shielded and guarded and protected

from any subsequent inrush of air, so that said flame 15 is not extinguished.

Since the edges of the plate 28 intersect the openings to all of the pipes 16 as well as to the tube 31 and also the vent openings 37, said baffle plate 28 does not cause any of the obnoxious gases resulting from the combustion of the gas to be retained in the housing 10; but, on the contrary, said baffle plate 28 causes all of the obnoxious gases to be discharged. This is because fresh air may enter the housing 10 above and below the baffle plate 28 so as to carry all burnt gases and products of combustion from the housing 10.

It is now clear that my invention obtains all of its intended objects and purposes in a most efficient and satisfactory manner. The construction, arrangement and relationship of the parts may be varied within the scope of equivalent limits without departure from the nature and principle of the invention.

I claim:—

1. In a device of the character described, a housing having a lateral opening, a jet within said housing below the plane of the bottom of said opening, and a horizontal baffle plate intersecting said opening and having a central opening above said jet and above the normal height of the flame of the jet.

2. In a device of the character described, a housing, a pipe opening into said housing for conducting gas into said housing and for conducting the pressure wave of ignition of said gas from said housing, a jet within said housing, a baffle plate in said housing intersecting the opening to said pipe and having a central opening above said jet and above the normal height of the flame of said jet, and a baffle device in said housing below the opening to said pipe and having an upwardly extended central portion guarding and shielding said jet.

3. In a device of the character described, a housing, a pipe opening into said housing for conducting gas into said housing and for conducting from said housing the pressure wave of ignition of said gas, a jet within the lower end of said housing, a plate in said housing below the opening to said pipe and having a central opening above said jet, an upwardly extended flange integral with said plate around said opening therethrough extending above the bottom wall of the opening to said pipe, an annular plate supported in said housing and intersecting the opening to said pipe, and an upwardly extended flange around the opening in said annular plate extending upwardly above the plane of the top of the opening to said pipe.

4. A device of the character described comprising a housing, a jet within the lower end of said housing, means holding said housing and said jet in properly spaced relationship and forming openings admitting air into the lower end of the housing, a pipe opening from said housing, a baffle plate in said housing below the opening to said pipe and having a central opening above said jet, an upwardly tapered flange surrounding said opening in said baffle plate and extending above the lower side of the opening to said pipe, an annular baffle plate supported in said housing and intersecting the opening to said pipe, and an upwardly tapered flange surrounding the opening through said annular baffle plate.

5. A device of the character described comprising a housing having an air inlet opening thereto, a pipe opening laterally from said hous-

ing, a jet in the lower portion of said housing, an annular baffle plate in said housing below the opening to said pipe and below said air inlet opening, an upwardly tapered flange surrounding the opening through said annular baffle plate, a second annular baffle plate in said housing intersecting the opening to said pipe and said air inlet opening, and an upwardly tapered flange surrounding the opening through said second baffle plate.

6. In a device of the character described comprising an open top pilot light housing having one or more flash-back tubes extending from the sides thereof, and a pilot light enclosed by the housing whereby to ignite gas conducted into the housing through said tubes, a baffle in said housing having an opening provided therein for projection therethrough of the flame of the pilot light, the baffle having the opening therein defined by an upwardly projecting annular flange so disposed with relation to the flame of the pilot light as to leave only the tip of the flame exposed above the same in the housing, whereby to protect the main portion of the flame from concussion produced in the tubes.

7. In a device of the character described comprising an open top pilot light housing having one or more flash-back tubes extending from the sides thereof, and a pilot light enclosed by the housing whereby to ignite gas conducted into the housing through said tubes, a baffle in said housing having an opening provided therein for projection therethrough of the flame of the pilot light, the baffle having the opening therein defined by an upwardly projecting annular flange so disposed with relation to the flame of the pilot light as to leave only the tip of the flame exposed

above the same in the housing, whereby to protect the main portion of the flame from concussion produced in the tubes, and said baffle being furthermore so disposed so that the flame of the pilot light projects substantially centrally through the flanged opening whereby to produce a nozzle effect to draw in secondary air for the flame to support combustion.

8. In a device of the character described, an ignition means including a housing having an opening through its top wall, a jet within said housing, a horizontal baffle plate below said top opening and having an opening above the normal height of the flame of said jet, and a horizontal baffle plate below the other plate situated in the normal path of the flame of the jet and having an opening above the jet and below the normal height of the flame of said jet.

9. In a device of the character described, ignition means for igniting a gas stream including a fixed jet for supporting a gas pilot flame, and a member having an opening provided therein for projection therethrough of the flame of said jet, said member having the opening thereof defined by an upwardly and inwardly projecting annular flange so disposed with relation to the flame of said jet as to leave only the tip of the flame exposed above the same, whereby to protect the main portion of the flame from concussion produced by the ignition of the gas stream, said member being so disposed that the pilot flame projects substantially centrally through said opening whereby to produce a nozzle effect to draw in secondary air for the flame to support combustion.

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