Sept. 14, 1926. 1,600,175

P. C. HUGHES

GAS BURNER

Filed April 2, 1926

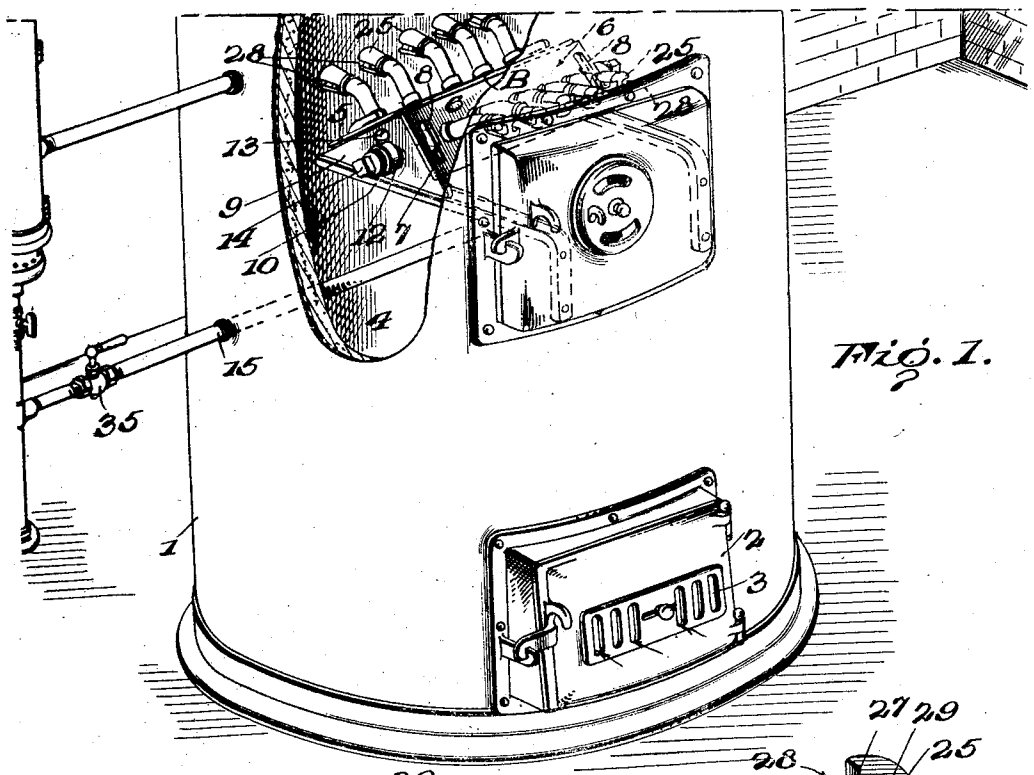


Fig. 1.

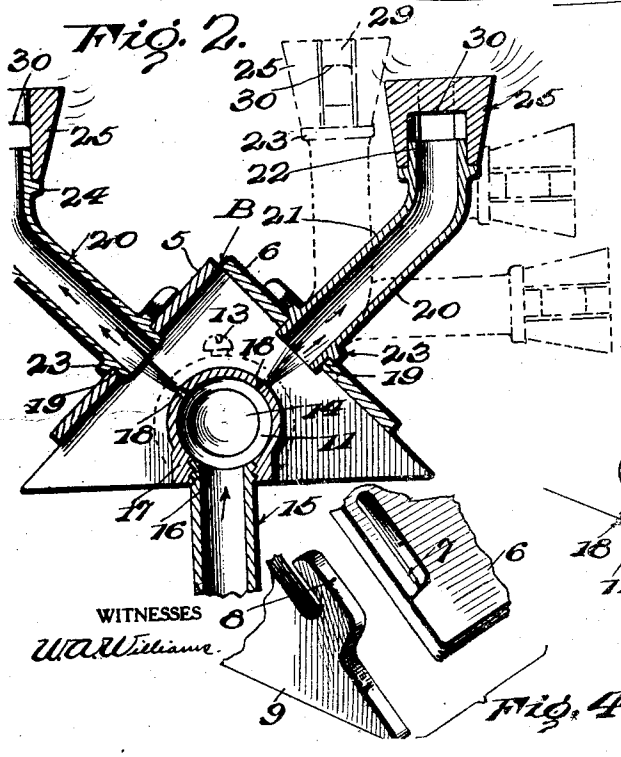


Fig. 2.

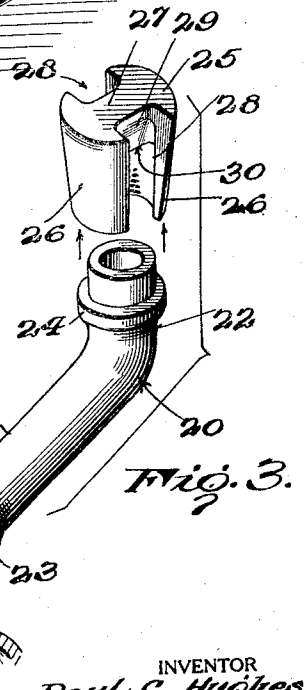


Fig. 3.

Fig. 4.

WITNESSES

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Patented Sept. 14, 1926.

1,600,175

UNITED STATES PATENT OFFICE.

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GAS BURNER.

Application filed April 2, 1926. Serial No. 99,392.

This invention relates to an improvement in gas burners, and has for its object to provide a burner wherein the formation of carbon is prevented and a high degree of heat is efficiently generated.

A further object of the invention is to provide a burner embodying a plurality of reversible and adjustable burner tubes whereby the action of the flame and heat generated may be effectively controlled.

A still further object resides in the provision of a burner which is of simple and durable construction, reliable and effective and economical in operation, and easy and comparatively inexpensive to manufacture.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:—

Figure 1 is a fragmentary perspective view showing a furnace or boiler equipped with a burner embodying the present invention,

Figure 2 is a view in transverse central vertical section through the burner shown in Figure 1,

Figure 3 is a detail perspective view of one of the burner pipes and its tip, and

Figure 4 is a fragmentary view in perspective showing the means for holding the side plates of the burner to the end plates thereof.

Referring to the drawings the numeral 1 designates a furnace or boiler structure having an ash pit door 2 provided with a damper 3 to regulate the supply of air to the firebox 4 of the furnace. In the firebox 4 the burner, designated generally at B and embodying the present invention, is provided. The burner B consists of a pair of side plates, designated at 5 and 6, and having slots 7 adjacent their ends which receive hooks 8 integrally formed with end plates 9, the hooks 8 extending through the slots 7 and engaging the plates 5 and 6 to interlock the end plates 9 with the side plates 5 and 6. The end plates 9 may be conveniently supported on bracket arms 10 secured to the furnace structure. A gas pipe 11 extends between the end plates 9 and the end portions of the gas pipe are received in flanged openings 12 provided in the end plates. Set screws 13 are threaded through the flanges 12 and engage the peripheries of the ends of the gas pipe to secure the gas pipe to the end plates. The open ends of the gas pipe are adapted for connection with a gas supply line, but in the present embodiment these open ends are closed by plugs 14 and the gas supply pipe 15 is threadedly connected, as at 16, with a downwardly extending inwardly threaded boss 17 integrally formed with the gas pipe 11.

A gas pipe 11 is provided with two rows of laterally and upwardly inclined jet openings 18, the jet openings 18 underlying openings 19 provided in the side plates 5 and 6 so that the jets of gas which issue from the openings 18 are directed to and flow toward the openings 19.

In the openings 19 of the side plates 5 and 6 burner pipes, designated generally at 20 are mounted. Each burner pipe 20 has a relatively long section 21 and a relatively short section 22, the sections 21 and 22 being angularly disposed with respect to each other. The sections 21 and 22 have flanges 23 and 24, respectively. The portions of the sections 21 and 22 outwardly of the flanges are designed to be received in the openings 19 or to receive burner tips, designated generally at 25. In other words the burner pipes are reversible, either the short or the long section being mounted on the side plate. As shown in full lines in Fig. 2 when the long sections 21 are mounted on the side plates the flanges 23 engage the margins of the openings 19. The tips 25 consist of shell-like structures having a body portion made up of sections 26, the sections 26 having the form of sections of a hollow cylinder and being connected at their upper ends by a connecting and head portion 27. Between the sections 26 openings 28 are provided and from these openings the combustible mixture issues. The casing and head portion 27 is provided with inclined walls terminating in a lower edge 30 and serving as a flame spreader.

The burner pipes may be reversed as indicated; that is, either the long or the short section may be mounted on the side plates and in either of such arrangements the burner pipe may be adjusted so that the tips occupy a vertical or a horizontal position and are located at different distances from the burner proper.

In operation the gas is supplied under

the control of the valve 35 through the gas supply line or pipe 15 and the gas from the supply line or pipe 15 enters the gas pipe 11 and issues from the openings 18 thereof in the form of jets. The jets of gas entrain the air which is supplied up through the lower open end of the burner through the damper controlled openings of the ash pit door 2 and the entrained air and gas commingle in the burner pipe to form a combustible mixture which is ignited at the openings 28 of the tips in such an effective and efficient manner as to preclude the formation of carbon and yet generate a high degree of heat with economy in the consumption of gas.

I claim:

1. A burner including a body having an inclined portion, a plurality of burner pipes, each burner pipe having both ends adapted to be rotatably mounted on said inclined portion, each burner pipe including sections of unequal length extending angularly with respect to each other, and a tip selectively mounted on either end of each burner pipe.

2. A burner having a body having an inclined portion and a plurality of burner pipes rotatably mounted on said inclined portion, each burner pipe including sections extending angularly with respect to each other, the burner pipes having tips at their outer ends whereby when the burner pipes are turned relative to the body of the burner the tips will be caused to occupy different positions with respect to the vertical and the horizontal.

3. A burner comprising a body having an open bottom and having inclined side plates, a gas pipe extending longitudinally through the burner and having laterally and upwardly inclined openings from which gas jets issue, the side plates having aligned openings, and open-ended burner pipes mounted in the openings of the side plates and provided with tips at their outer ends.

4. A burner having a body made up of triangular end plates and side plates having the end portions fitted against the inclined edges of the end plates, the end portions of the side plates having slots, the end plates having hooks extending through the slots of the side plates and engaged with portions thereof to interlock the side and end plates.

5. A burner having a body made up of triangular end plates and side plates having the end portions fitted against the inclined edges of the end plates, the end portions of the side plates having slots, the end plates having hooks extending through the slots of the side plates and engaged with portions thereof to interlock the side and end plates, and gas pipe extending between the end plates, and means for fastening the ends of the gas pipe to the end plates.

6. A burner having a body provided with openings and having a gas pipe within the body formed with jets aligned with the openings of the body, burner pipes having end portions selectively engageable with the openings and having flanges adjacent the end portions engageable with the body to support the pipes in position, the ends of the burner pipes being also adapted to receive tips.

7. A burner having a body provided with openings and having a gas pipe within the body formed with jets aligned with the openings of the body, burner pipes having end portions selectively engageable with the openings and having flanges adjacent the end portions engageable with the body to support the pipes in position, and tips selectively engageable with the ends of the burner pipes and including shell-like bodies having lengthwise openings, one of the shell-like bodies being open, the other end being closed by a head serving to connect the sections of the shell-like body and also serving as a flame spreader.

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