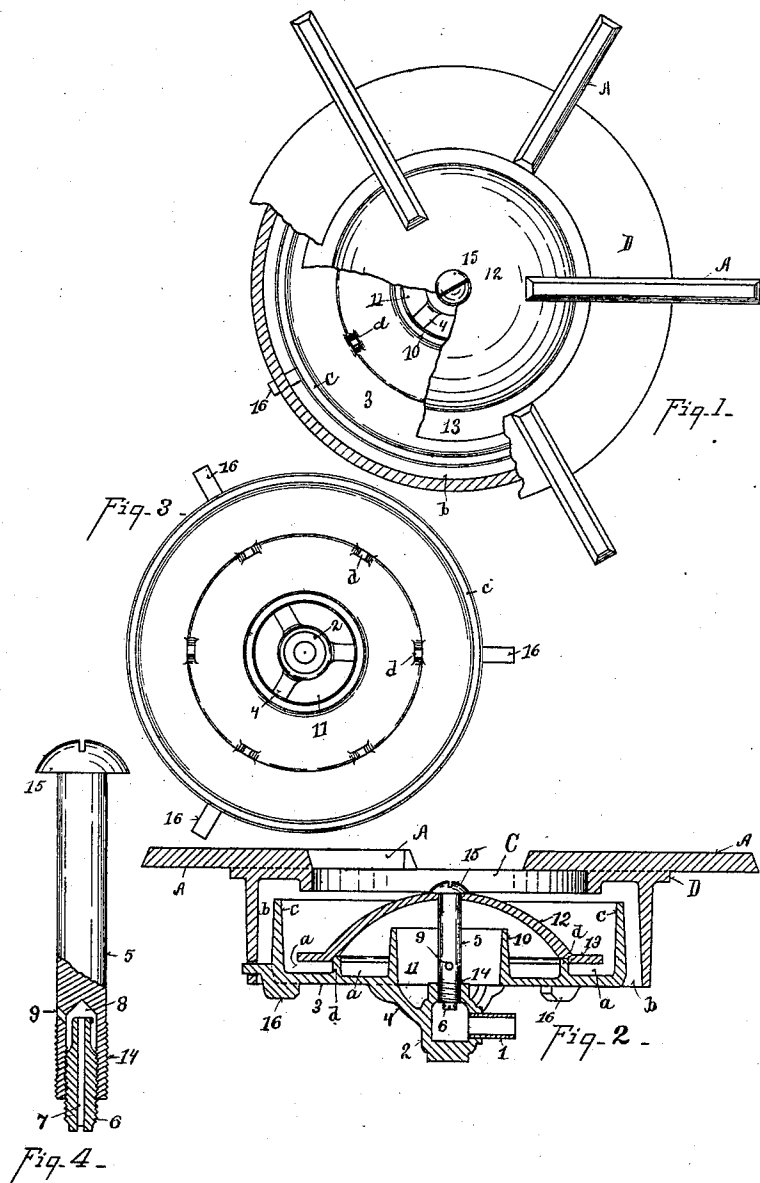


(No Model.)

B. MCGREGOR.
GAS BURNER.

No. 472,385.

Patented Apr. 5, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

BRADFORD MCGREGOR, OF COVINGTON, KENTUCKY, ASSIGNOR OF ONE-THIRD TO WOOD & BOYD, OF CINCINNATI, OHIO.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 472,385, dated April 5, 1892.

Application filed October 10, 1891. Serial No. 408,301. (No model.)

To all whom it may concern:

Be it known that I, BRADFORD MCGREGOR, a citizen of the United States, and a resident of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

My invention relates to the construction of a burner adapted to heating and cooking purposes. It may be used with any kind of radiator or cooking appurtenance.

The object of my invention is to thoroughly burn various kinds of gases and hydrocarbons used for fuel.

The various features of my invention are fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top plan view of my improvement. Fig. 2 is a central vertical section showing the tube in elevation. Fig. 3 is a top plan view of the bottom plate. Fig. 4 is an elevation, partly in section, of the gas-tube.

In the construction shown in Fig. 1 the burner-case is shown as supported by arms A, projecting from the top plate B; but any form of constructing and supporting the case may be used in lieu thereof. These arms A are adapted to be employed in a cooking-stove to place the utensil upon.

1 represents the gas-pipe for feeding the same to the burner, and it taps into the hollow stem 2, which is connected to the bottom plate 3 by a bracket 4.

5 represents the gas-tube for supplying gas to the burner. It is constructed, preferably, with the core-plug 6, which is provided with gas-passage 7. This core or plug is screw threaded and tapped into the tube 5.

8 represents an annular space above the core. 9 represents orifices pierced in the tube 5. I preferably employ three.

The amount of gas supplied is regulated by raising and lowering the core 6, so as to increase or decrease the size of the chamber 8 and throttle off more or less of the gas supplied to the burner.

The burner is composed of two plates—the bottom plate 3 and the top plate 12. Between these plates is formed the air and gas heating and mixing chamber. The lower plate has

a flange turned up at its outer edge to form a combustion-chamber.

In the operation of the burner there are two steps—first, admitting a portion of the air, mingling it with the gas and heating it, and then making a secondary admission of air in the combustion-chamber. The primary admission and mixture of air are accomplished by the following devices: 10 represents an annular ring surrounding the tube 5, into which the gas is projected. Air is supplied to this ring through the orifices 11 around the stem 2, and the air and gas are mixed within this ring 10 around the tube 5. Above the ring 10 is a heating-plate 12. The air and gas coming in contact with said plate are heated, and they pass out between the flange 13 of plate 12 and the bottom of plate 3, a representing the annular space where combustion commences. Air to support combustion is supplied by the annular space b and passes up over the flange c of the bottom plate 3 to the combustion-chamber, which is above plate 12. The plate 12 rests upon a series of ledges d, so as to allow a free escape of the air and gas mingled under the heater-plate 12. The preferred form of constructing the heater 12 is concave, as it tends to draw the flame to the center and furnishes a larger chamber for heating and mingling air and gas underneath the same. The products of combustion pass out the central opening C in the top plate D and are utilized in cooking or heating, as desired. When the burner-case is constructed with bars A, it may be suspended within a cooking-stove upon said bars. If it is desired for other uses, the bars may be omitted, and it may be put into any desired form of radiator-case, either of the open or closed form.

14 represents screw-threads in the bracket 2, engaged by a screw 15, the head of which holds the heater-plate 12 down upon the lugs d, thereby securing the burner firmly in position. The bottom plate 3 is secured to plate D by the brackets 16 or in any appropriate manner.

Mode of operation: The gas or hydrocarbon is admitted into the tube 5, passing up through the hollow core 6, and mingles with the air passing up through the openings 11. This intermingled gas and air passes out

through the heating-chamber, out under the annular flange 13, into the combustion-chamber. It is ignited at point *a*. As the flame plays against the top of plate 12 it soon becomes heated, the air supplying the combustion passing up into said combustion-chamber through the annular space *b*. A much more perfect combustion is obtained by means of this heating-chamber, where a part of the air utilized in supporting combustion is mixed with the gas and both are heated together before arriving at the point of combustion. I have found by experiment that if the vertical depth between the flanges or plates 3 and 13 is, say, one-eighth of an inch the flange 13 should be about twice as long in order to prevent back-lighting.

I have shown the heater 12 provided with the horizontal flange 13 and parallel with the plate 3 underneath the same. These flanges form an annular air or gas passage leading from the heating-chamber to the combustion-chamber. These plates might be inclined instead of horizontal and a very good effect produced.

Having described my invention, what I claim is—

1. A gas-burner consisting of a bracket 2, having air-inlet orifices 11 and a vertical gas-tube 5, a bottom plate 3, having an annular vertical flange *c* and an annular ring 10, the top plate 12, arranged over the ring and terminating at its periphery in juxtaposition to the vertical flange, and the annular air-space *b*, extending round the vertical flange for the

flow of air to the upper edge thereof, substantially as described.

2. A gas-burner consisting of a bracket 2, having air-inlet orifices 11, a gas-inlet tube 1, and a vertical gas-tube 5, a bottom plate 3, having the outer vertical flange *c* and the inner vertical ring 10, the arched top plate 12, arranged over the inner ring and having a laterally-projecting peripheral flange 13 terminating in proximity to the outer flange and separated from the bottom plate to provide a passage for the flow of gas and air, and the annular air-space *b*, extending round the outer flange for the flow of air to the upper edge thereof, substantially as described.

3. A gas-burner consisting of a bracket 2, having air-inlet orifices 11, gas-inlet 1, and a vertical gas-tube 5, a bottom plate 3, having the annular vertical flange *c*, the annular ring 10, and upwardly-projecting ledges *d* between the ring and flange, the arched top plate 12, supported by the ledges and having a lateral peripheral flange 13 terminating in proximity to the vertical flange and separated from the bottom plate to provide a passage for the flow of gas and air, and the annular air-space *b*, extending round the vertical flange for the flow of air to the upper edge thereof, substantially as described.

In testimony whereof I have hereunto set my hand.

BRADFORD MCGREGOR.

Witnesses:

T. SIMMONS,
C. W. MILES.