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[54] **GAS BURNER**
 12 Claims, 5 Drawing Figs.

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 F24c 3/00

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 39 H, 39 N, 39 K, 41; 239/597

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ABSTRACT: A gas burner for grills and the like has a fuel supply conduit communicating with a fuel receiving chamber having an open top and a plurality of open top flow passages extending therefrom. A cap member is securely positioned in spaced relation immediately above and in covering relation with upwardly facing edges of wall portions defining the open top of the receiving chamber and the flow passages extending therefrom to define a substantially continuous fuel exit slot therebetween whereby gas flows outwardly in substantially continuous sheets from an exterior side of the chamber and opposite sides of the flow passages to form a large substantially continuous flame area when the gas sheets are ignited.

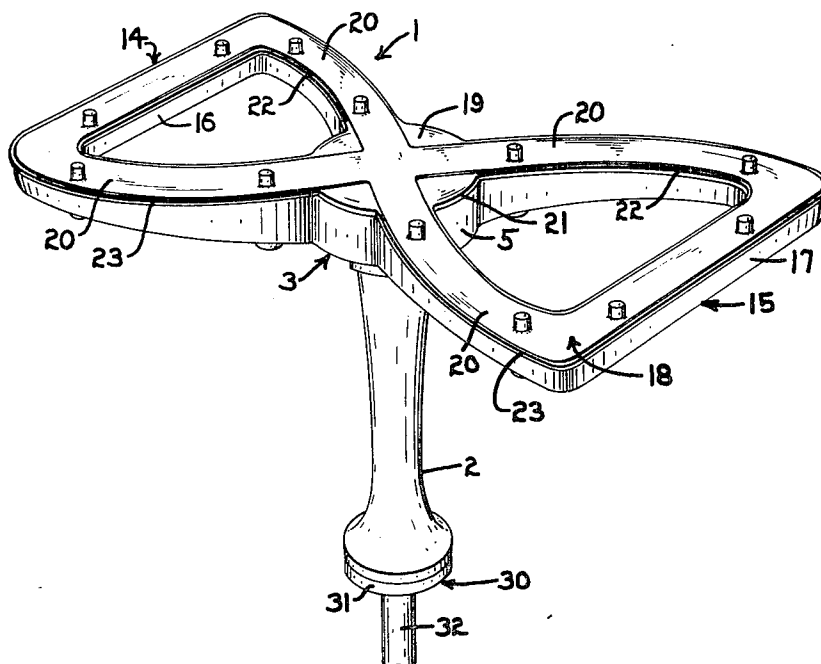


Fig. 1.

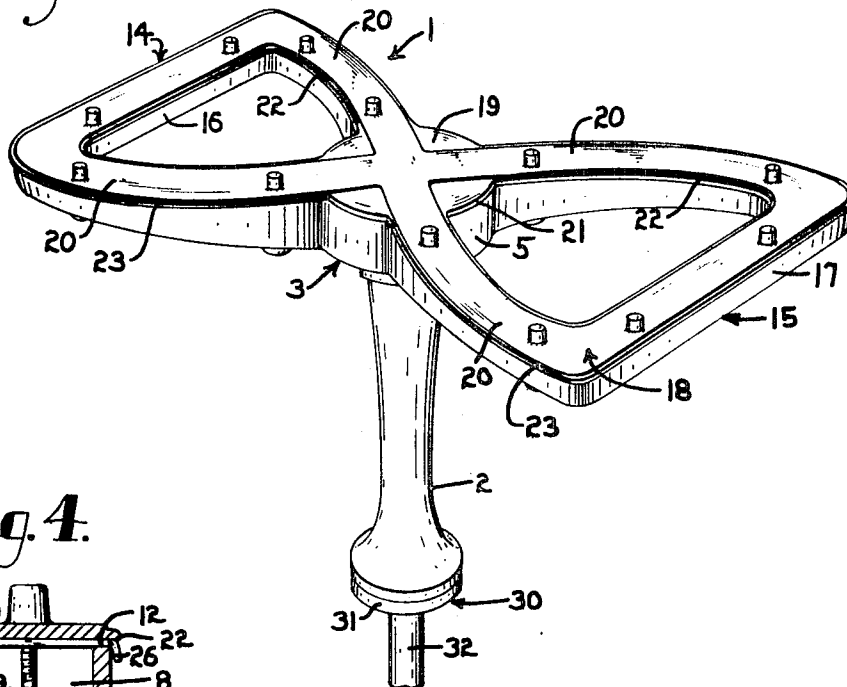


Fig. 4.

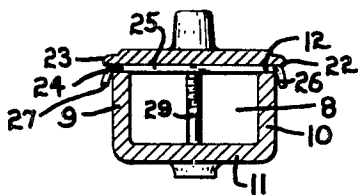
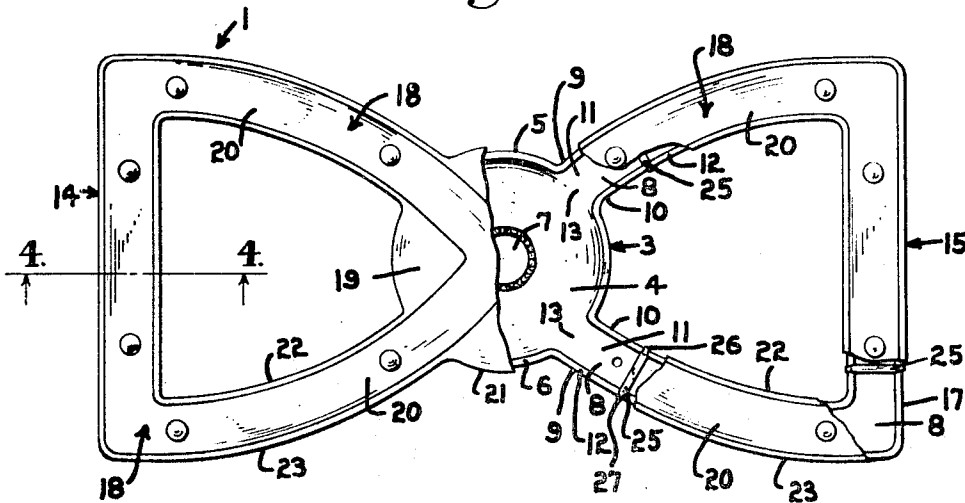


Fig. 2.



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Fig. 3.

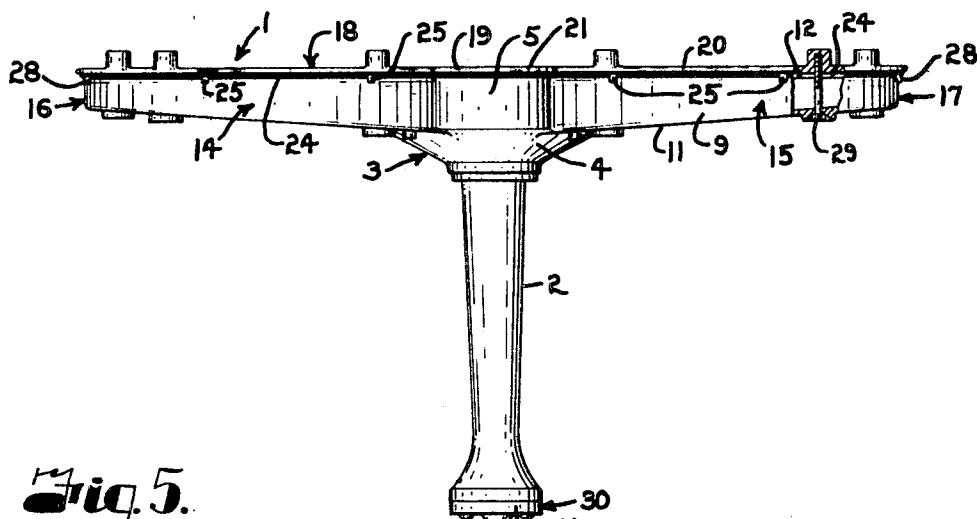
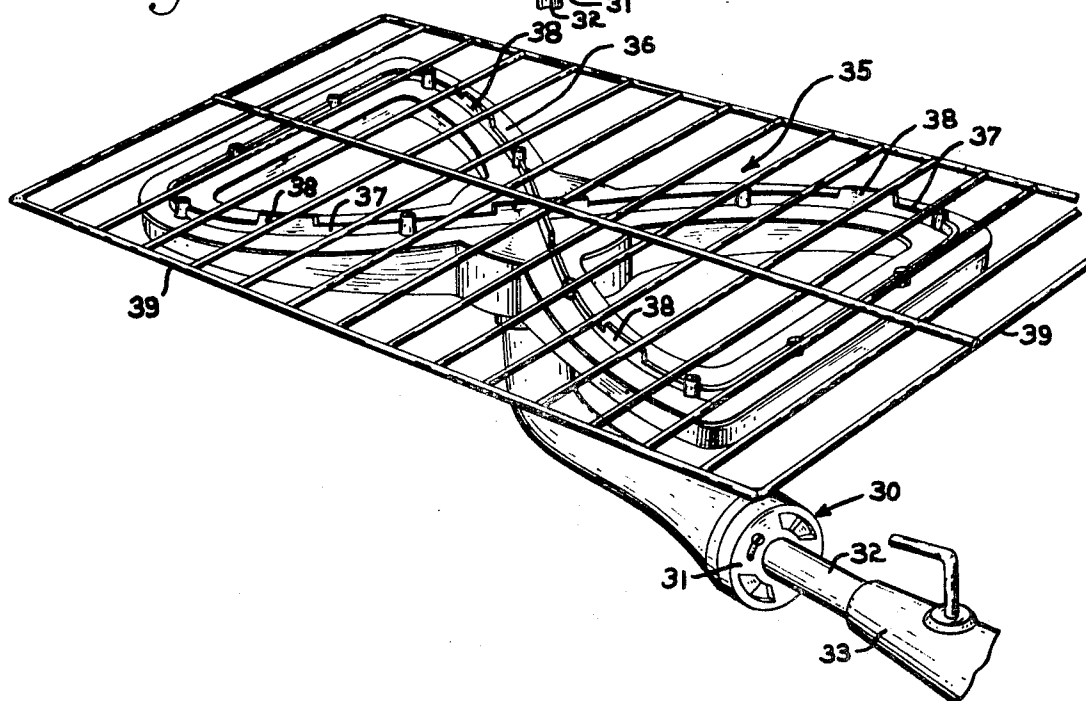


Fig. 5.



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GAS BURNER

The present invention relates to gas burners and more particularly to a gas burner having flow passages covered by a cap member to produce substantially continuous sheets of flame from each side of each of the flow passages.

The principal objects of the present invention are: to provide a gas burner for producing substantially continuous sheets of flame extending from each side of a plurality of flow passages; to provide such a gas burner having the flow passages arranged in opposed pairs of loops extending from opposite sides of a gas or fuel receiving chamber to form a figure-eight shaped gas burner; to provide such a figure-eight shaped gas burner adapted for use in outdoor grills, barbecue cookers, and the like; and to provide such a gas burner which is economical to manufacture, sturdy and durable in construction, simple in operation, and particularly well adapted for the proposed use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a gas burner embodying features of the present invention.

FIG. 2 is a plan view of the gas burner with portions broken away to better illustrate the component parts.

FIG. 3 is a side elevational view of the gas burner with portions broken away to show means for positioning a cap member above flow passages.

FIG. 4 is an enlarged transverse sectional view through the gas burner, taken on line 4-4, FIG. 2.

FIG. 5 is a perspective view of a modified gas burner adapted for supporting a grill thereabove.

Referring more in detail to the drawings:

The reference numeral 1 generally designates a gas burner for use in outdoor grills, barbecue cookers, or the like (not shown). A fuel supply conduit 2 communicates with the gas burner 1 for delivery of a suitable fuel, such as a mixture of gas and air under pressure to the gas burner 1, as later described. The fuel supply conduit 2 communicates with a fuel receiving chamber 3 which is generally cylindrical and is defined by a wall member having a bottom wall portion 4 and a peripheral side wall portion 5 extending upwardly from the bottom wall portion 5 and having an upwardly facing upper edge 6 to define an open top of the fuel receiving chamber 3. In the illustrated structure, the bottom wall portion 4 of the chamber 3 has an aperture 7 therein and the conduit 2 is suitably connected to the bottom wall portion 4 at the aperture 7 to provide communication of the conduit 2 with the chamber 3.

A plurality of flow passages 8 communicate with the fuel receiving chamber 3 and extend therefrom. The flow passages 8 are each defined by a wall member having opposed side wall portions 9 and 10 extending upwardly from opposite edges of a bottom wall portion 11 thereby defining an open top flow passage.

Each of the side wall portions 9 and 10 terminate in an upwardly facing edge 12 which is aligned with and in a common plane with the upper edge 6 of the chamber side wall portion 5. The chamber side wall portion 5 has a plurality of passages 13 therethrough each having an open top flow passage 8 communicating therewith.

In the illustrated structure, the flow passages 8 are arranged in an opposed pair of loops 14 and 15 each extending from opposite sides of the fuel receiving chamber 3 to form a figure-eight shaped gas burner. The flow loops 14 and 15 each have straight end portions 16 and 17 respectively, with the end portions 16 and 17 being generally parallel, whereby the gas burner 1 may be received within a generally rectangular container or housing of an outdoor grill, barbecue cooker, or the like (not shown).

A cap member 18 is positioned in covering relation with the fuel receiving chamber 3 and the flow passages 8. The cap member 18 is a planar member having a generally circular center portion 19 sized to cover the open top of the fuel

receiving chamber 3 and a plurality of arm portions 20 each sized and positioned to cover its respective flow passage 8. The center portion 19 has a peripheral edge 21 substantially aligned in registry with the exterior surface of the side wall portion 5 of the fuel receiving chamber 3 and each of the arm portions 20 has opposite edges 22 and 23 alignable in registry with exterior side surfaces of the side wall portions 9 and 10 respectively of the flow passage 8 covered thereby. A lower surface of the peripheral edge 21 of the center portion 19 of the cap member 18 is coplanar with a lower surface of the opposite edges 22 and 23 of the arm portions 20 thereof.

It is desirable to provide means to position the cap member 18 in spaced relation immediately above and in covering relation with the open top of the fuel receiving chamber 3 and the open top of each of the flow passages 8 extending therefrom to define a substantially continuous narrow fuel exit slot 24 between adjacent edges of the wall portions of the chamber 3 and the cap member 18 and between the adjacent edges of the wall portions 9 and 10 of the flow passages 8 and the cap member 18 whereby fuel flows outwardly in sheets through the narrow fuel exit slot 24 between the cap member 18 and the side wall portion 5 of the fuel receiving chamber 3 and between the cap member 18 and the side wall portions 9 and 10 of the respective flow passages 8 to thereby form a large substantially continuous flame area which is evenly distributed over the gas burner 1 when the fuel sheets are ignited.

The means illustrated for positioning the cap member 18 to form the fuel exit slot 24 is a plurality of clips 25 positioned at the open top of each of the flow passages 8 and longitudinally spaced there along for engagement by a lower surface of the cap member 18. Each of the clips 25 is an elongate planar member having depending end flanges 26 and 27 positioned for engaging exterior side surfaces of the side wall portions 9 and 10 respectively of the flow passages 8.

It is desirable to securely position the cap member 18 in the position defining the fuel exit slot 24 and having the edges thereof in registry with the edges of the fuel receiving chamber 3 and each of the flow passages 8 extending therefrom, therefore, a plurality of suitable fastening members, such as screws 29, extend through the flow passages 8 and are secured to the cap member 18. In the illustrated structure, the screws 29 extending upwardly through the bottom wall portion 11 of each of the flow passages 8 and having the free end thereof received within suitable threaded recesses in the lower surface of the cap member 18.

The fuel supply conduit 2 has an air-mixer portion 30 and a cap 31 is adjustably mounted thereon to selectively vary the amount of air mixed with a suitable fuel, such as gas under pressure, delivered to the air-mixer portion 30 by a gas conduit 32 having a suitable flow control valve 33 therein.

FIG. 5 illustrates a modified gas burner 35 having a modified cap member 36 mounted thereon and having a rib 37 extending upwardly from an upper surface thereof. The rib 37 has upstanding members or portions 38 for supporting a grill 39 above the cap member 36 of the burner whereby the grill 39 receives and supports the food to be cooked by the modified gas burner 35.

It is to be understood that while I have illustrated and described certain forms of my invention, it is not to be limited to these specific forms or arrangement of parts herein described and shown.

I claim:

1. A gas burner comprising:

- a. a fuel supply conduit;
- b. a wall member having portions defining an open top flow passage communicating with said fuel supply conduit, said wall member portions having upwardly facing edges terminating in a common plane;
- c. a cap member having portions covering the open top of said flow passage, said cap member portions having edges overlying respective edges of said wall member portions;
- d. means positioning said cap member in spaced relation immediately above and in covering relation with the open

- top of said flow passage to define a substantially continuous narrow fuel exit slot between respective adjacent edges of said wall member portions and said cap member whereby fuel flows outwardly in sheets through said fuel exit slots at each side of said flow passage to form a large substantially continuous flame area when the fuel sheets are ignited;
- e. a second wall member having portions defining a fuel receiving chamber;
 - f. an aperture in said chamber wall and means connecting an end of said fuel supply conduit to said chamber wall to effect communication of said conduit with said fuel receiving chamber through said aperture; and
 - g. a plurality of passages through said chamber wall each having an open top flow passage communicating therewith.
2. The gas burner as set forth in claim 1 wherein:
- a. said flow passages are each arranged to form a flow loop extending from said fuel receiving chamber; and
 - b. said flow loops are arranged in an opposed pair extending from opposite sides of said fuel receiving chamber to form a figure-eight shaped gas burner.
3. The gas burner as set forth in claim 1 wherein:
- a. said chamber wall has a portion with an upwardly facing edge terminating in the common plane with the edges of said flow passage wall portions thereby defining an open top chamber; and
 - b. said cap member has a portion covering the open top of said flow receiving chamber and overlying said edge of said chamber wall and coplanar with said cap member portions overlying edges of respective flow passages whereby fuel flows outwardly in a sheet form an exterior side of said chamber and combines with the fuel sheets flowing from said flow passages.
4. The gas burner as set forth in claim 1 wherein:
- a. said cap member positioning means is a plurality of clips positioned at the open top of said flow passage and longitudinally spaced therealong for engagement by a lower surface of said cap member portions; and
 - b. each of said clips is an elongate planar member having depending end flanges for engaging side surfaces of said wall portions defining said flow passage.
5. A gas burner comprising:
- a. a fuel supply conduit;
 - b. a wall member having portions defining a fuel receiving chamber, said fuel receiving chamber wall having an upwardly facing edge defining an open top;
 - c. a plurality of wall members each having portions defining an open top passage communicating with said fuel receiving chamber, each of said wall member portions having upwardly facing edges terminating in a common plane with the upwardly facing edge of said chamber wall;
 - d. a cap member having portions covering the open top of said chamber and each of said flow passages, said cap member portions each having edges overlying respective edges of said wall member portions of said chamber and flow passages; and
 - e. means positioning said cap member portions in spaced relation immediately above and in covering relation with the open top of said flow passages and said chamber to define a substantially continuous narrow fuel exit slot between respective adjacent edges of said flow passage wall portions and said chamber wall portions and said cap member portions whereby fuel flows outwardly in sheets through said fuel slots at each side of said flow passages and at the exterior side of said chamber to form a large substantially continuous flame area when the fuel sheets are ignited.
6. The gas burner as set forth in claim 5 wherein:
- a. said cap member portions each have exterior edges thereof substantially in registry with respective exterior side surfaces of said respective wall portions of said chamber and said flow passages;
 - b. said fuel receiving chamber is generally cylindrical; and

- c. said flow passages are arranged in an opposed pair of loops extending from opposite sides of said chamber to form a figure-eight shaped gas burner.
7. The gas burner as set forth in claim 6 wherein:
- a. said cap positioning means is a plurality of clips positioned at the open top of the flow passages and longitudinally spaced along same for engagement by a lower surface of said cap member; and
 - b. each of said clips is an elongate planar member having depending end flanges for engaging side surfaces of said flow passages.
8. A gas burner comprising:
- a. a fuel supply conduit;
 - b. a wall member having portions defining an open top flow passage communicating with said fuel supply conduit, said wall member portions having upwardly facing edges terminating in a common plane;
 - c. a cap member having portions covering the open top of said flow passage, said cap member portions having edges overlying respective edges of said wall member portions;
 - d. means positioning said cap member in spaced relation immediately above and in covering relation with the open top of said flow passage to define a substantially continuous narrow fuel exit slot between respective adjacent edges of said wall member portions and said cap member whereby fuel flows outwardly in sheets through said fuel exit slots at each side of said flow passage to form a large substantially continuous flame area when the fuel sheets are ignited;
 - e. a plurality of upstanding members on said cap member; and
 - f. a grill supported on said upstanding members in spaced relation above said cap member.
9. A gas burner comprising:
- a. a fuel supply conduit;
 - b. a wall member having portions defining an open top flow passage communicating with said fuel supply conduit, said wall member portions having upwardly facing edges terminating in a common plane;
 - c. a cap member having portions covering the open top of said flow passage, said cap member portions having edges overlying respective edges of said wall member portions;
 - d. means positioning said cap member in spaced relation immediately above and in covering relation with the open top of said flow passage to define a substantially continuous narrow fuel exit slot between respective adjacent edges of said wall member portions and said cap member whereby fuel flows outwardly in sheets through said fuel exit slots at each side of said flow passage to form a large substantially continuous flame area when the fuel sheets are ignited;
 - e. a second wall member having portions defining a fuel receiving chamber, said chamber wall having a portion with an upwardly facing edge terminating in the common plane with the edges of said flow passage wall portions thereby defining an open top chamber;
 - f. an aperture in said chamber wall and means connecting an end of said fuel supply conduit to said chamber wall to effect communication of said conduit with said fuel receiving chamber through said aperture; and
 - g. a plurality of passages through said chamber wall each having an open top flow passage communicating therewith, said cap member having a portion covering the open top of said flow receiving chamber and overlying said edge of said chamber wall and coplanar with said cap member portions overlying edges of respective flow passages whereby fuel flows outwardly in a sheet from an exterior side of said chamber and combines with the fuel sheets flowing from said flow passages.
10. A gas burner comprising:
- a. wall members having portions defining open top flow passages, said wall member portions having upwardly facing edges terminating in a common plane;
 - b. said flow passages each having a common point of origin;

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- c. said flow passages being arranged to form flow loops extending from said common point of origin;
 - d. a fuel supply conduit;
 - e. means connecting an end of said fuel supply conduit to said common point of the flow passages for communication of said fuel supply conduit with each of said flow passages;
 - f. cap member portions covering the open top of said flow passages, said cap member portions having edges overlying respective edges of said wall member portions of said flow passages; and
 - g. means positioning said cap member portions in spaced relation with the open tops of said flow passages to define substantially continuous narrow fuel exit slot between respective adjacent edges of said passage wall member portions and said cap member portions whereby fuel flows outwardly in sheets through said fuel exit slots to form a large substantially continuous flame area when the fuel sheets are ignited.
11. A gas burner comprising:
- a. a fuel supply conduit;
 - b. a wall member having portions defining a fuel receiving chamber;
 - c. means connecting an end of said fuel supply conduit to

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- said chamber wall, said conduit communicating with said fuel receiving chamber;
 - d. said wall member having portions defining an open top flow passage, said wall member portions having upwardly facing edges terminating in a common plane;
 - e. a passage through said chamber wall and communicating with said open top flow passage;
 - f. a cap member having portions covering the open top of said flow passage, said cap member portions having edges overlying respective edges of said passage wall member portions; and
 - g. means positioning said cap member in spaced relation immediately above and in covering relation with the open top of said flow passage to define a substantially continuous narrow fuel exit slot between respective adjacent edges of said passage wall member portions and said cap member whereby fuel flows outwardly in sheets through said fuel exit slots to form a large substantially continuous flame area when the fuel sheets are ignited.
12. A gas burner as set forth in claim 11 wherein said flow passage is arranged to form a flow loop extending to and from said fuel receiving chamber.

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