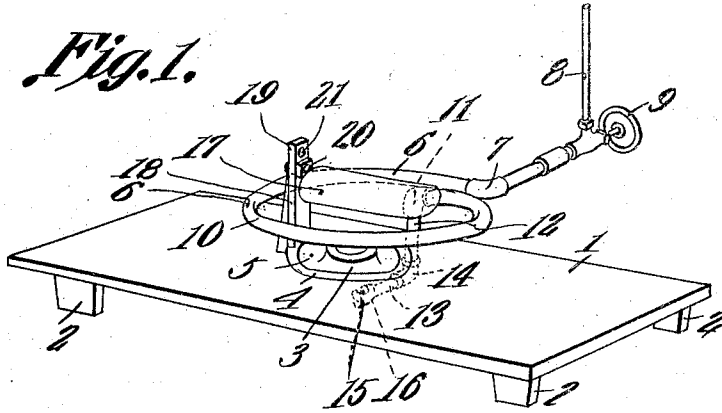


M. GROSS.  
LIQUID FUEL BURNER.  
APPLICATION FILED JULY 21, 1911.

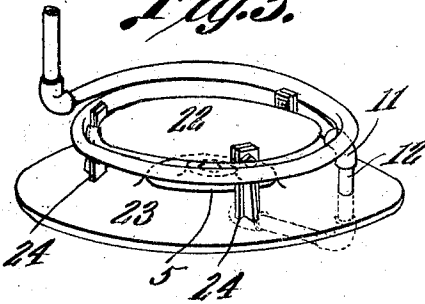
1,019,247.

Patented Mar. 5, 1912.

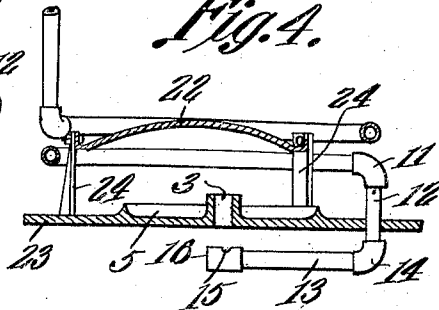
*Fig. 1.*



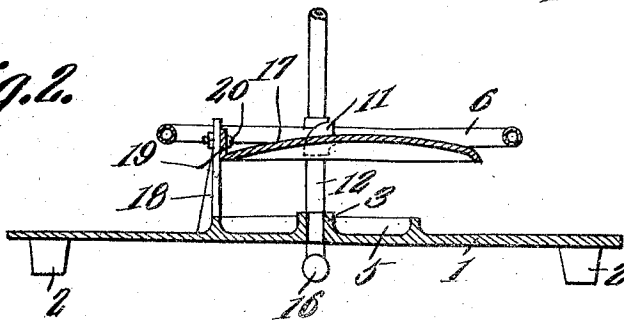
*Fig. 3.*



*Fig. 4.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

MANNIN GROSS, OF COUNCIL GROVE, KANSAS.

## LIQUID-FUEL BURNER.

1,019,247.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed July 21, 1911. Serial No. 639,813.

*To all whom it may concern:*

Be it known that I, MANNIN GROSS, a citizen of the United States, residing at Council Grove, in the county of Morris and State of Kansas, have invented a new and useful Liquid-Fuel Burner, of which the following is a specification.

This invention relates to improvements in what may be termed liquid fuel burners.

The invention has for its object to provide for readily and economically generating the gas.

A further object is to provide for effecting the gas generating action or process resulting in producing an extended or broad white flame.

A still further object is to effect the mixing of the air and oil or hydro-carbon elements or ingredients, and delivering the commingled ingredients or elements from below and upwardly and deflecting these ignited into a broad or extended sheet of flame.

A still further object is to carry out the aforesaid ends in a simple, expeditious, inexpensive and effective manner.

The invention consists of certain instrumentalities and features substantially as hereinafter fully disclosed and defined by the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention, wherein it will be understood that various changes and modifications may be made as relates to the detailed construction and arrangement of the parts therein without departing from the spirit of my invention, Figure 1 is a perspective view of the device, the same being shown as adapted for use in connection with a range or cook-stove. Fig. 2 is a sectional elevation thereof. Fig. 3 is a perspective view of a modification of the device for use in connection with a heating stove. Fig. 4 is a sectional elevation thereof.

In carrying out my invention, I suitably provide a base member or plate 1, preferably oblong or rectangular in general outline and having depending from its underside at the corners stub or short legs 2 for the support thereof, within the combustion or fire chamber of a range or cook-stove, in a slightly elevated position upon the grate. Said plate or base member has about centrally therein an upraised or boss like tubular member or extension 3, the bore or orifice of which opens through the bottom of

said plate, which tubular member or part may be termed the mixer for the commingling of the hydro-carbon and air, as will presently fully appear. Said plate or base member has upstanding from, and integral with its upper face an annulus 4 which has the tubular member 3 centrally thereof, and which forms a shallow pan like receptacle 5 to contain a quantity of oil or alcohol for effecting the pre-heating action as well understood.

A generator or pipe coil 6 is arranged in an elevated position with respect to and directly above the plate 1, said pipe coil or generator having suitable connection 7 with the supply pipe 8 of a hydro-carbon containing tank (not shown), said pipe connection 7 being equipped with a needle-valve 9 for suitably controlling the supply of the hydro-carbon or liquid fuel to the generator pipe coil 6. The pipe coil or generator is suitably upheld or supported in its elevated position through a vertically and downwardly curved or angular elbow 11 connecting with a pipe section 12 extending vertically through, and fixed in the plate 1, this of course, being only subsidiary or incidental to the function of such elbow and fixed pipe section, as will be appreciated.

A horizontal pipe section 13, having also a curved or angular elbow connection 14 with the fixed pipe section 12, extends to a point about in vertical alinement with the mixer or tubular member 3, for the delivery of the hydro-carbon or liquid fuel thereinto, said pipe 13 having a jet or delivery opening 15 in the cap or closure 16 thereof for that purpose.

A deflector or spreader 17, comprising a preferably concavo-convex or arched plate which, in this instance, is preferably oblong in general outline is arranged suitably with respect to the plane of the generator coil 6, as seen in Figs. 1 and 2. Said plate, spreader or deflector is so disposed, i. e., in vertical alinement with the mixer or tubular member 3, as to allow of shooting or ejecting the ignited fuel or flame against the underside of said plate or spreader and thus provide for laterally deflecting or spreading said flame, the same resulting in a broad white sheet unattended by smoke, formation of soot, or emission of other non-consumed combustion products. This promotes cleanliness and other sanitary conditions, as well as fully utilizes the action of combustion, while it minimizes the consumption of the

fuel, all of which, it is believed, are clearly apparent. The deflector, spreader or plate 17 is suitably supported in position, preferably adjustably as disclosed also by Figs. 1 and 2 by means of a post or standard 18 which is preferably integral or cast with the base member 1; an upstanding stud 19 at the edge or margin of said spreader or plate, receiving or having inserted therethrough a nut equipped bolt 20 also inserted through any one of a number of vertically arranged apertures or holes 21 in the upper end of said post or standard, for that purpose and for the adjustment of said deflector or spreader, which will allow of varying the altitude of said spreader whenever the same may be desired.

It will be observed that, as previously stated, the pre-heating action having been effected, as well understood, by supplying a quantity of liquid fuel or oil to the pan like receptacle 5 and suitably igniting or firing the same, the generator coil, 6 will readily become suitably heated for the conversion of the hydro-carbon or liquid fuel delivered from its containing tank into said generator coil, into vapor or gas, the pre-heating action at this stage being discontinued. The vaporizing or conversion of the liquid, within the generator coil it is observed, will be so expedited by this operation as to result at a point about midway the generator pipe coil, the thus forming vapor gas then escaping or being ejected through the jet opening 15 in the delivery end 16 of the pipe arm 13 in jet form, up into the mixer or tubular member 3 commingled with the suitable amount of air for suitably aiding the combustion action. The ignited vapor or gas is now delivered or ejected as above stated, against the spreader and accordingly broadened out into a sheet with the effect before described, the sheet of flame spreading out and filling the combustion chamber of the stove within which the burner or device is placed and thus providing for effectively heating the stove for readily and properly effecting the cooking action.

In the modification as suggested by Figs. 3 and 4 is disclosed an embodiment of the same features or parts substantially as above described, the modified disclosure being considered preferable for adapting the device for use in connection with stoves only for heating as differentiated from cooking stoves, the exemplification of the device in connection with the latter type being as above detailed. In the modification, the salient feature of difference consists principally in slightly depressing or lowering the generator coil to bring it somewhat nearer the base member, and in displacing the form of spreader before described and substitut-

ing therefor a circular spreader member 22, the latter being enlarged to nearly the dimensions of a substituted correspondingly shaped base member 23. In this case the spreader member 22 is upheld or supported in position by means of a plurality of posts or standards 24, preferably three being employed for that purpose.

It is thought that the advantages and benefits of my invention, as herein disclosed, have been made fully apparent and that its merits will be fully appreciated, it being necessary however, to only state further that the device, it is obvious, is characterized for its extreme simplicity, involving the minimum number of parts, accordingly inexpensive of manufacture, and is readily applied for use and operated.

What is claimed is:—

1. A device of the type described, including a base, a mixer opening upwardly therethrough, an annular generator-coil superposed with respect to said base, an imperforate spreader spaced off from, and arranged in substantially the same horizontal plane with said generator-coil, and a jet-delivering pipe in continuation of said generator-coil and having its delivering end alining and spaced off from said mixer, said mixer having its upper end terminating below and delivering a flame upon the underside of said spreader, said generator coil, by virtue of its arrangement with respect to the latter, receiving the action of said flame at the perimeter of said spreader.

2. A device of the character described, including a base having a mixer-forming tubular member opening upwardly therethrough, said base also having its upper surface formed with an upstanding shallow receptacle, whose walls surround said mixer-forming tubular member, an annular generator coil superposed with respect to said base, an imperforate spreader spaced off from, and arranged in substantially the same horizontal plane with said generator-coil, and a jet-delivering pipe in continuation of said generator-coil and being dependable through said base and having its delivering end alining said mixer, said mixer having its upper end terminating below, and delivering a flame upon the underside of said spreader, said generator-coil by virtue of its arrangement with respect to the latter, receiving the action of said flame, at the perimeter of said spreader.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MANNIN GROSS.

Witnesses:

L. H. BRIGHAM,  
E. D. SCOTT.