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BURNER FOR LIQUID

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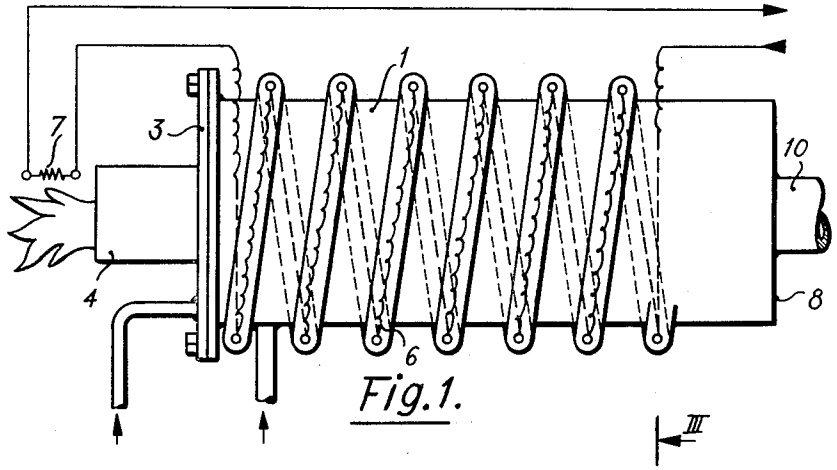


Fig. 1.

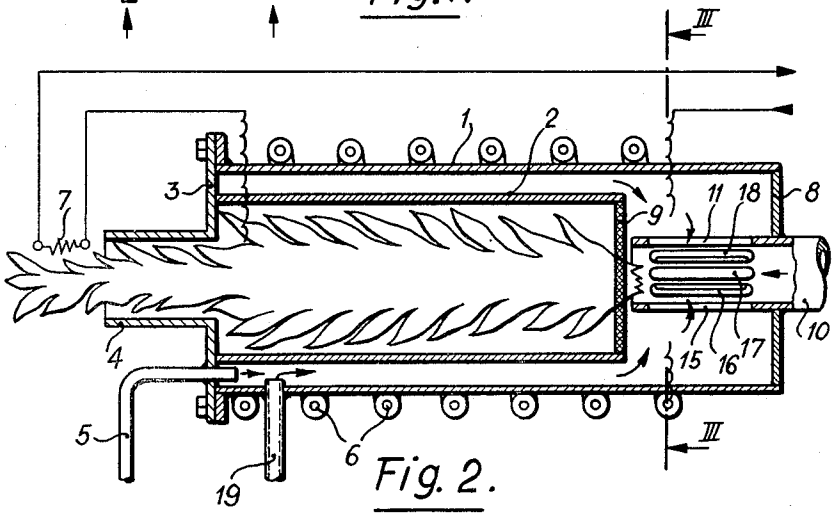


Fig. 2.

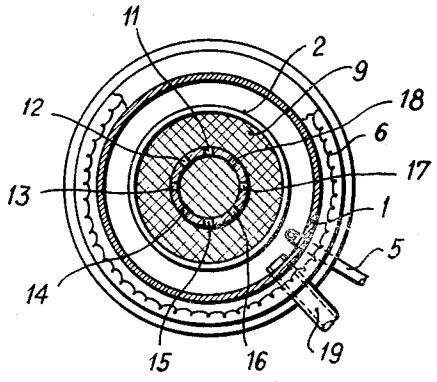


Fig. 3.

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BURNER FOR LIQUID

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4 Claims. (Cl. 158—53)

The object of my invention is a burner for liquid fuel including a combustion chamber communicating with a second chamber inside which the liquid fuel is transformed into a gas under the action of at least one source of heat, said combustion chamber being provided with an outlet opening for the flames and with an admission pipe for the combustive material entering the combustion chamber and adapted to carry along with it through suction the fuel vaporized in the second chamber.

Accompanying drawing illustrates by way of example a preferred embodiment of a burner according to my invention. In said drawing:

Fig. 1 is an outer view of the burner;

Fig. 2 is a longitudinal cross-section thereof;

Fig. 3 is a cross-section through line III—III of Fig. 2.

The burner illustrated includes an outer tubular casing **1** inside which is arranged coaxially a second tubular casing **2**. These two casings are closed at their front ends by a common wall **3** provided centrally with an opening extending into a channel **4** through which the flame passes out of the second casing forming the combustion chamber. In the lower part of the wall **3** is provided a pipe **5** opening into the annular chamber formed between the casings **1** and **2**, said pipe feeding liquid fuel into the annular chamber through mere gravity while a pipe **19** opening into said annular chamber feeds the air intended for combustion. Outside the outer casing **1** is wound helically a sheathed electric resistance **6** connected electrically with a second electric resistance **7** which is brought to red hot temperature so as to ignite the gases passing out of the channel **4**. Lastly, the rear end of the outer casing **1** is closed by a solid partition **8** while the inner casing **2** defining the combustion chamber is closed at its rear end by an open-work partition **9**. The partition **8** is centrally perforated so as to form an opening through which is fitted a pipe **10** admitting combustion-supporting gas into the combustion chamber, said pipe **10** being coaxially arranged with reference to and in alignment with the exhaust channel **4**. Between the partitions **8** and **9**, the pipe **10** is also provided with eight slots or openings **11–12–13–14–15–16–17–18** through which and through the openwork partition **9** the combustible gases pass so as to be admixed with the combustion-supporting gas fed through the pipe **10** before they are urged into the combustion chamber.

The burner, described hereinabove, operates as follows: At the start, electric current is fed into the sheathed heating resistance **6** in order to heat the chamber in which the gases are formed and which is bounded by the casings **1** and **2** and the liquid fuel is fed through the pipe **5** so as to flow into the lower portion of said gas-forming chamber. Under the action of the heat produced by the resistance **6**, the liquid fuel is vaporized and forms a gasiform body with the primary air passing through the pipe **19**. The gases are then sucked through the ports **11, 12, 13, 14, 15, 16, 17, 18** as provided by the passage of compressed air through the pipe **10** and they are then admixed

with said compressed air and finally delivered inside the combustion chamber bounded by the casing **2**.

The mixture thus formed is fed into the furnace through the channel **4** and is inflamed by the red hot resistance **7** located adjacent the outer end of said channel **4**. This resistance is heated by the passage of current from the resistance **6** with which it is electrically connected. The pressure of air inside the pipe **10** is furthermore adjusted to a suitable value with a view to obtaining stability of the flame at the end of said channel. This arrangement allows maintaining inside the gas-forming chamber a sufficient amount of heat for it to be possible to cut out the heat produced by the resistance **6**, which latter is then disconnected as soon as the burner has begun operating normally.

The burner described and illustrated forms an actual improvement over all burners known to this day and it is possible, by means of said burner, to obtain a perfect combustion of the fuel that has been previously transformed so as to pass from its liquid state into a gasiform state. The simplicity of operation of this burner for domestic and industrial purposes and for all power levels, allows using under the best conditions of efficiency all liquid fuels, without their degree of viscosity being taken into account.

What I claim is:

1. A burner for liquid fuel comprising a combustion chamber including a front exhaust pipe and a rear openwork wall, a gas-forming chamber surrounding coaxially the combustion chamber through at least part of its length, extending behind the rear wall of the combustion chamber and adapted to be heated by the heat produced in the latter, means for feeding fuel and air into the lower part of the second chamber, a tubular member feeding compressed air into the said second chamber and including a terminal section extending axially through the rear of said second chamber into register with the openwork rear wall of the combustion chamber and provided with a plurality of perforations in its sidewall, the suction of the compressed air passing through said terminal section of the tubular member drawing along with it, through said perforations and into the combustion chamber, the stream of air and vaporized fuel formed in the second chamber and auxiliary means for heating the second chamber for vaporizing the fuel at the starting of the burner.

2. A burner for liquid fuel comprising a combustion chamber including a front exhaust pipe and a rear openwork wall, a gas-forming chamber surrounding coaxially the combustion chamber through at least part of its length, extending behind the rear wall of the combustion chamber and adapted to be heated by the heat produced in the latter, means for feeding fuel and air into the lower part of the second chamber, a tubular member feeding compressed air into the said second chamber and including a terminal section extending axially through the rear of said second chamber into register with the openwork rear wall of the combustion chamber and provided with a plurality of perforations in its sidewall, the suction of the compressed air passing through said terminal section of the tubular member drawing along with it through said perforations and into the combustion chamber the stream of air and vaporized fuel formed in the second chamber, an electric circuit including two resistances of which one surrounds coaxially the second chamber for vaporizing the fuel therein and the other is located adjacent the exhaust pipe of the first chamber for inflaming the gases passing out of the latter, and means for deenergizing the resistances when desired.

3. A burner for liquid fuel, comprising a combustion chamber including a front exhaust pipe and a rear openwork wall, a gas-forming chamber in heat-conducting relationship with the combustion chamber, said chamber ex-

tending immediately behind the rear wall of the combustion chamber, means for feeding fuel and a combustion-supporting gas into said gas-forming chamber, and a separate casing fed with compressed air and having its output end facing the open-work rear wall of the combustion chamber to urge through said wall and into the said combustion chamber a stream of compressed air, said casing being provided with lateral perforations through which combustion-supporting gas and vaporized fuel are sucked out of the gas-forming chamber by the stream of compressed air through the casing into the combustion chamber.

4. A burner for liquid fuel, comprising a combustion chamber including a front exhaust pipe and a rear open-work wall, a gas-forming chamber in heat-conducting relationship with the combustion chamber, said chamber extending immediately behind the rear wall of the combustion chamber, means for feeding fuel and a combustion-supporting gas into said gas-forming chamber, a separate casing fed with compressed air and having its output end facing the open-work rear wall

of the combustion chamber to urge through said wall and into the said combustion chamber a stream of compressed air, said casing being provided with lateral perforations through which combustion-supporting gas and vaporized fuel are sucked out of the gas-forming chamber by the stream of compressed air through the casing into the combustion chamber, and an electrically heated resistance located on the outside of the front exhaust pipe and in close proximity therewith.

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