April 19, 1932. H. C. LORD 1,854,749

BURNER

Filed March 22, 1926

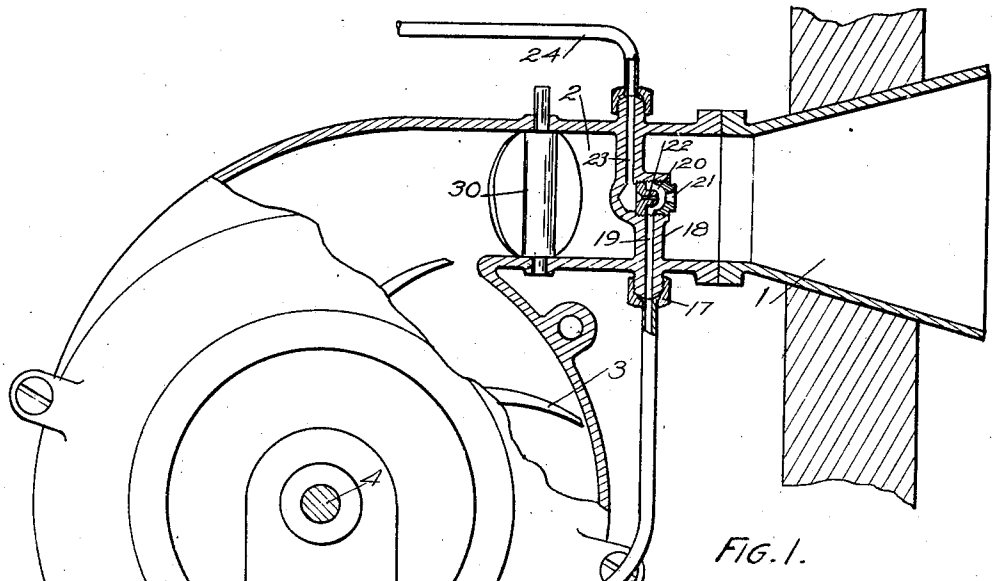

FIG. 1.

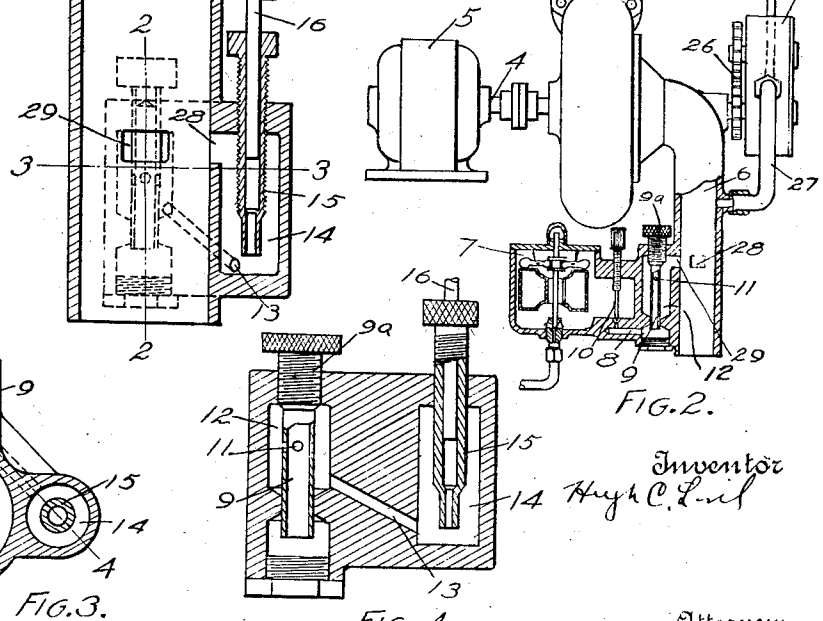

FIG. 2.

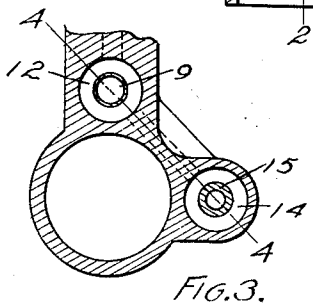

FIG. 3.

FIG. 4.

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UNITED STATES PATENT OFFICE

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BURNER

Application filed March 22, 1926. Serial No. 96,423.

Burners which are arranged for delivering varying degrees of heat have, in a large measure been heretofore controlled by completely shutting down the burner at intervals so that the mean out-put of the burner was of the amount desired. The present invention is designed to improve such burners by providing a burner in which the capacity may be varied to suit the requirements with a continuous operation of the burner and is in many respects an improvement over the application filed by me, Feb. 15th, 1926, Serial Number 88,481, means for forming explosive mixtures and carburetor therefor. The present invention simply adapts the broader invention of that application to the ordinary motor-driven burner. Features and details of the invention will appear from the specification and claim.

The invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a side elevation of a burner, partly in section.

Fig. 2 an end view of the burner, partly in section, on the line 2—2 in Fig. 1.

Fig. 3 a section on the line 3—3 in Fig. 1.

Fig. 4 a section on the line 4—4 in Fig. 3.

1 marks the burner nozzle, 2 an air passage leading to the nozzle, 3 a fan delivering air for combustion, 4 a shaft on which the fan is mounted, 5 an electric motor driving the fan, and 6 an inlet passage to the fan.

A constant level float chamber 7 is connected by a fuel passage 8 with a nozzle tube 9. The passage 8 is controlled by a needle valve 10. The nozzle tube 9 has discharge openings 11. These nozzle openings discharge into a well 12 and may be adjusted as to height by a screw 9*a*. The fuel passes from the well 12 by a passage 13 to a well 14. A tube 15 is adjustably arranged in the well 14 and is extended by means of a tube 16. The tube 16 is connected by a coupling 17 with the end of a bridge 18 arranged on the passage 2. The bridge has an opening 19 in continuation of the opening of the tube 16 leading to an atomizing chamber 20 having a nozzle 21 directed into the burner nozzle 1. An air nozzle 22 is directed opposite the atomizing nozzle 21 in the usual manner of atomizers breaking up and atomizing the fuel and at the same time through the aspirating effect exhausting whatever fuel may be supplied to the well 14. It is connected by a passage 23 extending through the bridge with a pipe 24. The pipe 24 leads from a rotary pump 25 having gear connections for the rotating elements of the pump and is driven from the shaft 4. It receives its air through a pipe 27 leading from the intake passage 6.

The well 14 is connected with the intake passage by an opening 28 and the well 12 is connected with the passage by an opening 29.

The openings 28 and 29 are sufficient to maintain the wells under approximately the same pressure as the intake passage 6 so that the suction effort induced by the fan is communicated to the nozzle well 12 to induce a flow of fuel in proportion to the flow of air induced by the same suction effort, and the passage 28 leading to the well 14 prevents a disturbance as to the action of the well 12 due to any suction effort over and above what is necessary to elevate the fuel through the pipe 16, it being understood that the aspirating effect of the atomizer is sufficient to discharge the maximum amount of fuel that may be fed to the well 14 through the suction effort on the nozzle 11. Ordinarily, therefore, there will be some air drawn through the pipe 16, but the opening 28 is of such size that the quantity drawn through the pipe 16 will not disturb the pressure balance in the well 14 sufficiently to effect a pressure disturbance in the well 12. This forms a measuring means for the fuel which assures a delivery of fuel proportioned to the flow of air.

The capacity of the burner may be controlled either by controlling the speed of the pump, or by an ordinary throttle 30. If the throttle is closed the delivery of air by the fan is reduced and consequently the suction effort is reduced in the passage 6 and the fuel supply reduced in proportion to the supply of air. As the throttle is opened and a greater supply of air is delivered a greater suction is induced and in consequence a proportionate amount of fuel is supplied. It will be noted that any air drawn through the

pipe 24 by the pump 25 is simply bypassed from the inlet passage 6 and, therefore, adds to the extent of the air withdrawn through the suction effort in that bypass so that the fuel delivered responds to the total air drawn through the suction passage by way of the fan, or the pump.

What I claim as new is:—

In a burner, the combination of a burner nozzle; a passage leading to the nozzle; an aspirating atomizer discharging to the passage; means comprising a fan in the passage, said means inducing a varying flow of air through the passage with varying pressure in the passage; a fuel connection leading to the atomizer; and fuel measuring means responding to the varying pressures of the passage comprising a constant level fuel chamber containing fuel under atmospheric pressure and having a fuel discharge therefrom opening at a point adjacent to such constant level subjected to the pressures of the passage for varying the fuel flow to correspond to the air flow and means also subjected to the passage pressure delivering the fuel discharge by the measuring means to the fuel connection.

In testimony whereof I have hereunto set my hand.

HUGH C. LORD.