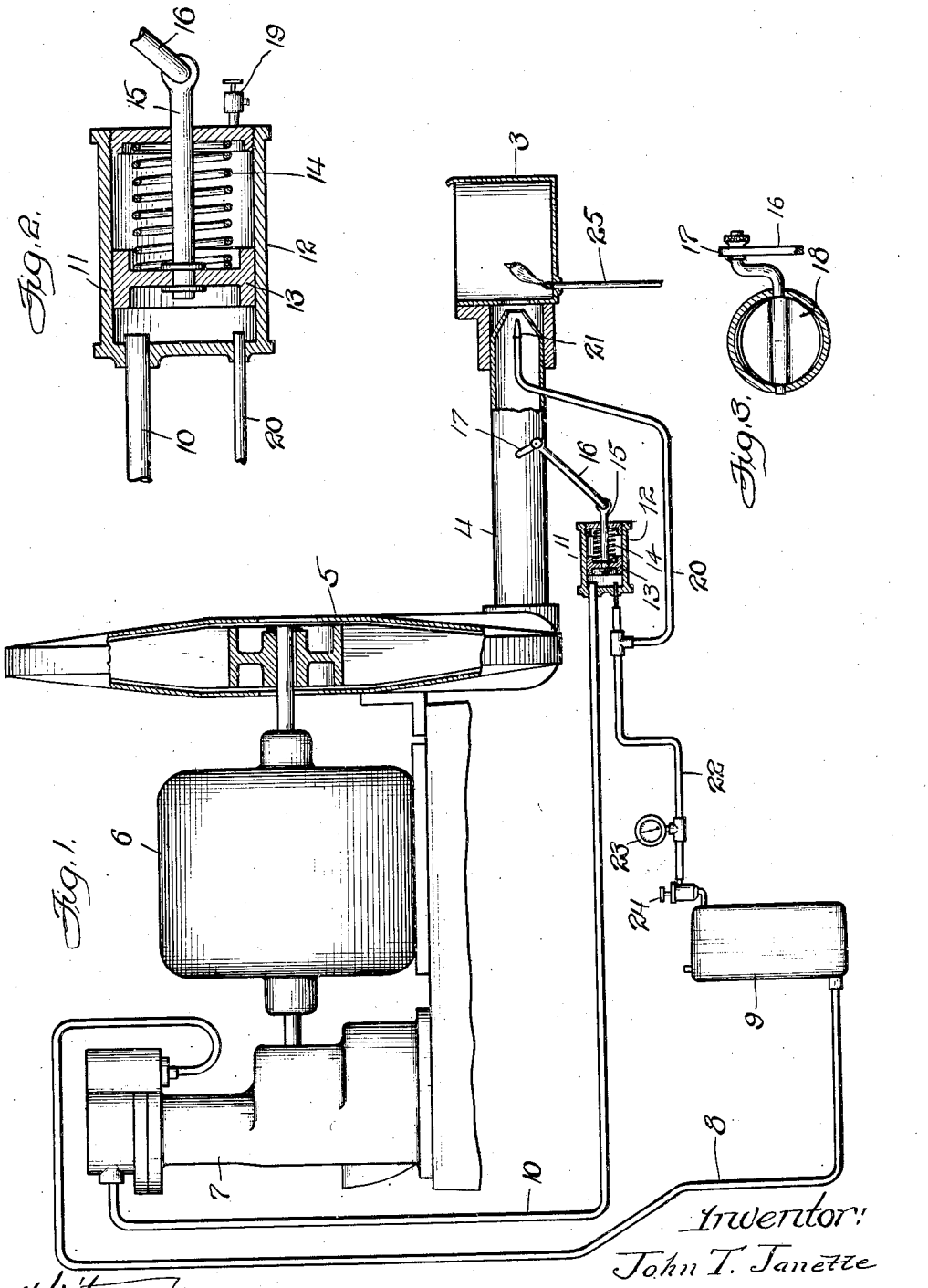
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J. T. JANETTE

HEATING APPARATUS

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UNITED STATES PATENT OFFICE.

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HEATING APPARATUS.

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This invention relates more particularly to apparatus adapted to burn liquid fuel or such fuel as may be pumped or forced through pipes. Various types of liquid fuel burners or heaters have been proposed for use in connection with the heating systems for houses and the like and the present burner is intended as an improvement on such systems although of course it may be used whenever applicable. In these systems the air and fuel are usually pumped or forced to the burner by a single motor whereby the full quantity of air will be supplied at the time the motor is started and the fuel begins to flow. On this account there is apt to be an excess of air which will prevent the proper ignition and combustion of the fuel for a short time until the combustion chamber has become heated.

The principal object of this invention is to provide means for regulating the air in a system of this character whereby the air will be gradually supplied to the burner after the fuel has started flowing. Other objects and advantages will appear from the following description.

In the accompanying drawings illustrating one form of this invention;

Figure 1 is a side view of the apparatus, the parts being shown diagrammatically or shown in section for convenience in illustration;

Figure 2 is a detail of a controlling device for actuating the air regulating valve; and

Figure 3 is a cross section of the air supply pipe showing the controlling valve.

In the apparatus as shown in these drawings, 3 indicates a combustion box or chamber which is supplied with air under pressure through the supply pipe 4. Any suitable means may be used for supplying the air but in this instance it is forced into the pipe 4 by means of a fan 5 which is driven from the motor 6. This motor also drives a pump 7 for pumping the liquid fuel. The intake pipe 8 is connected with a supply tank 9. The outlet pipe 10 from the pump 7 leads to a controlling device or governor 11. This comprises a cylinder 12 with a piston 13 which is pressed in one direction by a spring 14. The piston rod 15 is connected by means of a link 16 with a crank arm 17 which carries a valve or damper 18 in the air supply pipe 4. While any suitable valve and connection may be utilized, this forms a convenient means of regulating the air by the movement of the piston rod. The cylinder 12 may be provided with a relief valve 19 to control the air passing into and out of the adjacent end of the cylinder. A second fuel pipe 20 leads from the opposite end of the cylinder to the burner jet or nozzle 21 which is arranged within the reduced end of the air supply pipe 4. A branch or overflow pipe 22 leads back to the supply tank 9 and is preferably provided with a gauge 23 and with an adjustable check valve 24. It is the intention to have the pump supply an excess of fuel at all times when it is running so that there will be a certain amount of fuel passing back to the tank through the overflow pipe 22. The combustion chamber 3 is provided with any suitable means for igniting the fuel oil such as a gas pilot light 25.

The motor 6 may be provided with any suitable automatic or manual controlling means (not shown) such means being no part of this invention. When the motor 6 is started, the pump begins to pump oil through the pipe 10 to the cylinder 12 and this oil begins to flow out through the pipe 20 to the jet 21. The pipe 20 or at least the outlet from the cylinder 12 is preferably smaller than the inlet so that a pressure will be created against the piston 13 which will force the piston against the spring and will cause the piston rod and connections to actuate the air regulating valve 18 so as to gradually open the same whereupon the supply of air to the combustion chamber will be gradually increased and the valve will be held in open or predetermined position as long as there is pressure in the cylinder. As soon as the motor is stopped, the pressure against the piston will be reduced and the spring 14 will return the piston to normal position and simultaneously close the valve 18. By means of this arrangement it will be seen that the fuel oil will have an opportunity to be supplied to the combustion chamber for a predetermined period and will be thoroughly ignited before the complete supply of air is admitted to the chamber. This also prevents the excessive air from blowing out the pilot flame or weakening the flame so that it will not properly ignite the fuel. While I have shown the air controlling valve in the exhaust pipe of the fan, it will be noted that this valve may be posi-

tioned at any suitable place in the air supply as for instance in the fan intake and it will also be noted that various changes may be made in the arrangement of the parts and details of construction without departing from the scope of this invention.

What I claim and desire to secure by Letters Patent is:

An apparatus of the character set forth comprising a burner, a motor, a fan driven by said motor, a pipe from the same to the burner, a valve in said pipe, a pump driven by said motor, a connection from said pump to a fuel supply tank, a cylinder having a piston therein, a pipe from said pump to one end of the cylinder, a pipe leading from the corresponding end of the cylinder to the burner, an overflow pipe connecting with said last named pipe and leading to the tank, connections from the piston to the valve whereby the valve will be opened by the pressure of the fuel in the cylinder and a spring for returning the piston to normal position.

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