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F. W. POWERS

DAMPER REGULATOR FOR LIQUID FUEL BURNERS

Filed March 6, 1922

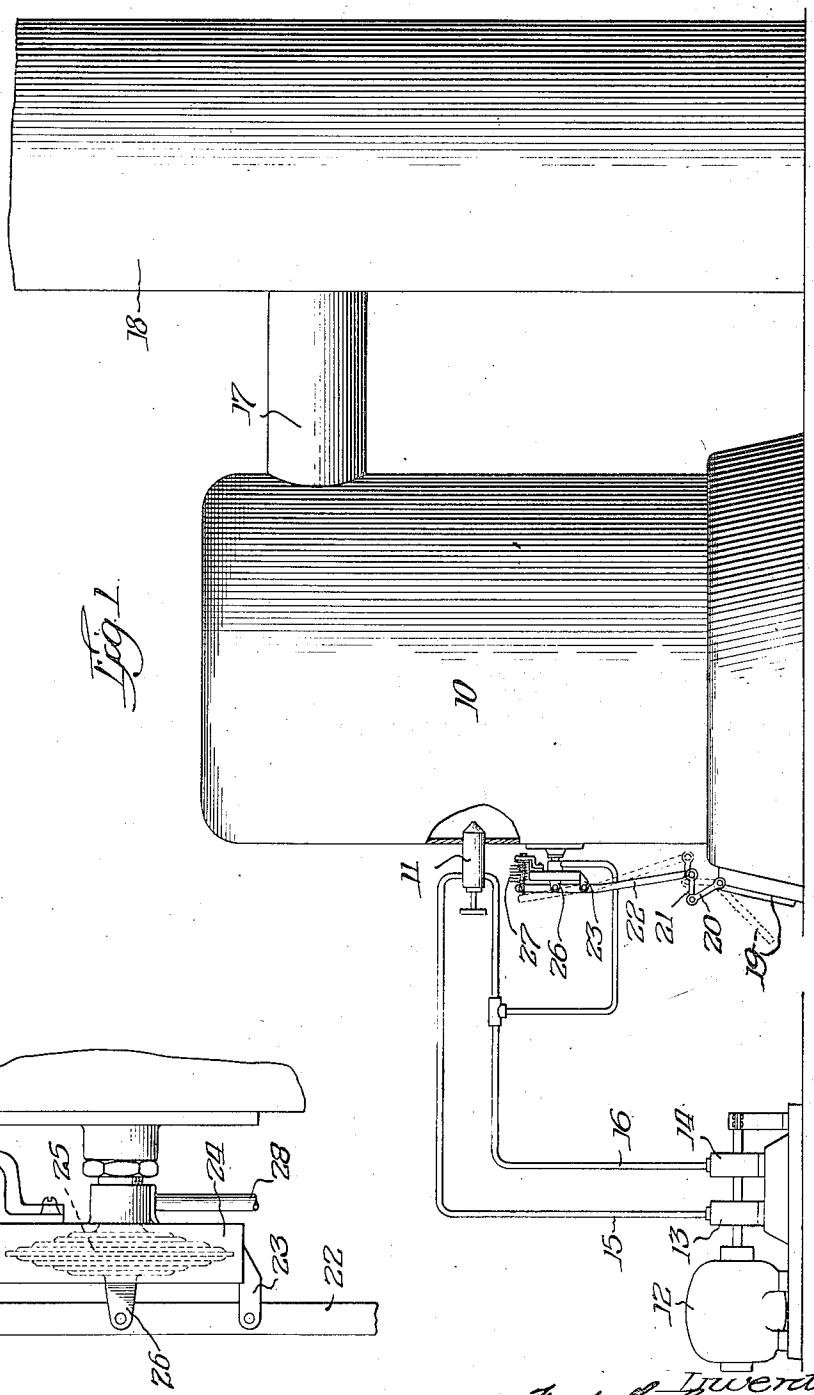


Fig. 1.

Fig. 2.

Witness:
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UNITED STATES PATENT OFFICE.

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DAMPER REGULATOR FOR LIQUID-FUEL BURNERS.

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To all whom it may concern:

Be it known that I, FRED W. POWERS, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Damper Regulator for Liquid-Fuel Burners, of which the following is a specification.

My invention relates to devices for use in connection with heaters equipped with liquid fuel burners and particularly to a novel arrangement by which fuel is conserved.

It is customary in the operation of liquid fuel burners in heaters to provide for free escape of the waste gases through a stack and to utilize an opening such as that commonly controlled by the ash pit damper for supplying the requisite air for proper combustion of the liquid fuel. It is also customary to provide for intermittent operation of the burner under the control of a thermostat. Consequently during the period when the burner is not in operation there is a constant flow of cold air through the heater where heat is absorbed and lost.

An object of this invention is to provide means adapted to prevent any such loss of heat and to accomplish the desired result by the use of simple mechanism and without interfering with the normal operation of the burner.

The invention will be more readily understood by reference to the accompanying drawings, in which:

Figure 1 is a view partly diagrammatic in character illustrating an exemplification of my invention, and

Figure 2 is an enlarged elevation of a detail of the damper controlling apparatus.

In the drawings a heater of conventional form is indicated at 10, a liquid fuel burner 11 projecting thereinto. A motor 12 serves to operate two pumps 13, 14, the former delivering fuel and the latter air under pressure to the burner by means of pipes 15, 16, respectively.

The heater is provided with the usual smoke pipe or waste gas outlet 17, which communicates with a stack 18 and an ash pit damper 19. An arm 20, connected to the damper, is engaged by a link 21, and an arm 22, for the purpose of swinging the damper to an open or closed position. The arm 22, as best shown in Fig. 2, is fulcrumed at 23 on a bracket formed as a part of a casing 24, rigidly secured in a desired location adjacent to the damper. Within the casing is a bellows 25, the movable wall of which engages the arm 22 by means of a projection 26. A spring 27 tends to resist the expansion of the bellows and serves to move the arm to a retracted position when the force exerted by the bellows is reduced. The interior of the bellows is in communication with the air pressure developed by the pump 13, by means of a pipe 28, connected by a T to the pipe 16.

The operation is as follows;

When the motor 12 is in operation, fuel and air under pressure are being delivered to the burner, the air pressure is exerted on the bellows 25, causing the arm 22 to oscillate and to swing the damper into the dotted line position of Fig. 1. When, however, the motor is stopped, by thermostatic action or otherwise, and no more fuel is being fed to the burner, the pressure within the bellows will be reduced, thereby permitting the spring to return the arm to the full line position in which position the damper occupies the full line position of Fig. 1. Thus upon interruption of the burner, the flow of air through the heater is stopped and no heat will be carried out through the stack.

While I have shown the damper-operating bellows as connected to the air-pressure pipe, it is obvious that a similar result might be secured by connecting it to the fuel supply pipe. Also that the damper employed for securing the desired result might be placed in the smoke pipe instead of the ash pit. These and other modifications are contemplated in the appended claims.

I claim:

1. In a heater, the combination of a fuel oil burner, a motor, means operable by the motor for supplying liquid fuel and air under pressure to said burner, a pit damper in said heater, means operable by the combustible mixture feeding pressure for moving the damper to fully open position and maintaining it in this position while the burner is in operation, and means for fully closing said damper when the operation of the motor is interrupted and the burner discontinues operations.

2. In a device of the class described, the combination of a heater, a liquid fuel burner, means for developing pressure for use in burning the fuel in said burner, a damper

for controlling the entrance of air to said heater, means for maintaining said damper normally in closed position, and means operable by said pressure for maintaining the damper in open position.

3. In a device of the class described, the combination of a domestic heater, a fuel oil burner, means for supplying liquid fuel and air under pressure to said burner, an ash pit damper in said heater, means for maintaining said damper normally in closed position, and means operable by the combustible mixture-feeding pressure for maintaining the damper in open position whenever fuel is being supplied to the burner.

Signed at Chicago, Illinois, this 28th day of February, 1922.

FRED W. POWERS.