

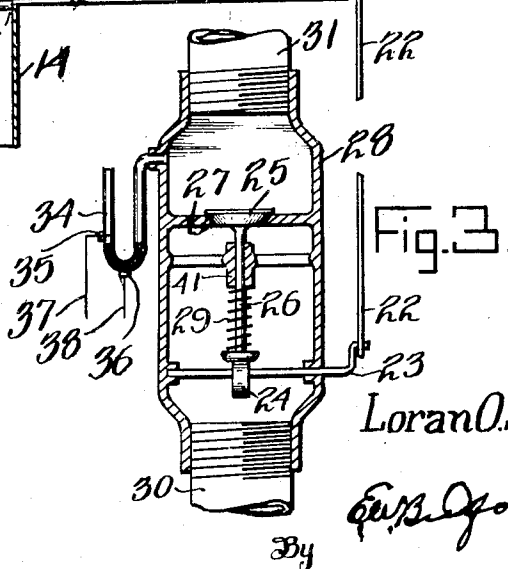
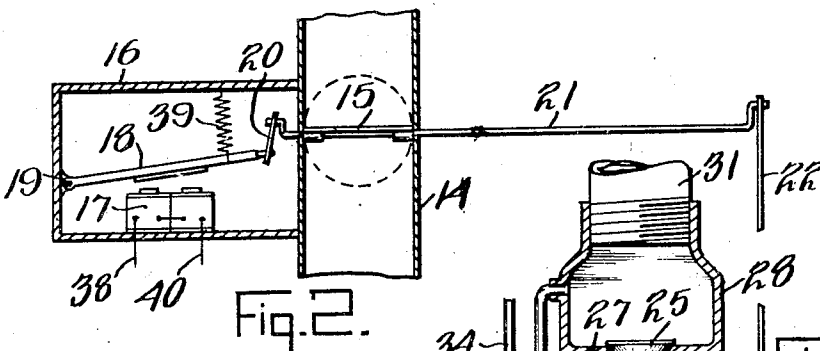
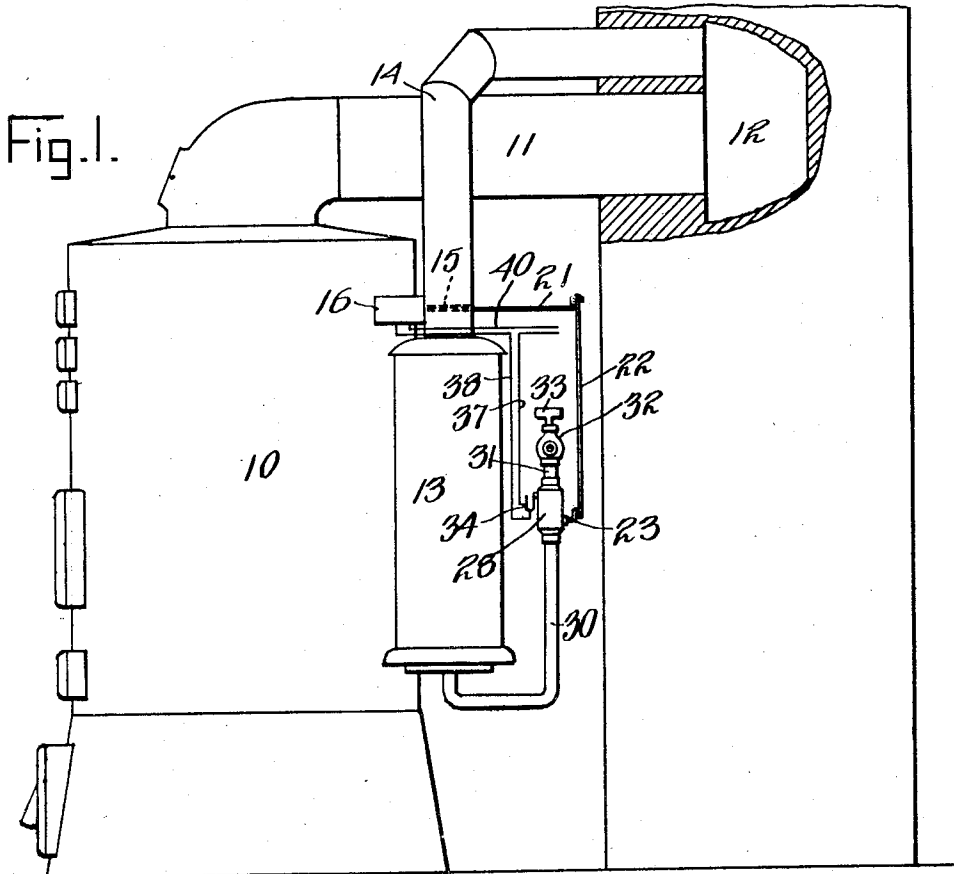
May 22, 1934.

L. O. STINSON

1,959,970

AUTOMATIC DAMPER FOR GAS HOT WATER HEATERS

Filed Feb. 2, 1932



Inventor  
Loran O. Stinson

By *E. B. Ford*

Attorney

# UNITED STATES PATENT OFFICE

1,959,970

## AUTOMATIC DAMPER FOR GAS HOT WATER HEATERS

Loran O. Stinson, Indianapolis, Ind.

Application February 2, 1932, Serial No. 590,466

2 Claims. (Cl. 126—351)

This invention relates to mechanism for controlling the damper of a gas water heater.

An object of the invention is to provide a damper which is automatically opened and closed depending on the pressure of the fuel supplied to the heater.

Another object is to provide a device whereby the flue pipe of the heater is closed when the heater is not being used or when the pressure falls below a fixed point and when closed will prevent any interference with the draft on a furnace or other heating unit using the same flue.

Referring to the accompanying drawing, which is made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a view in elevation showing the device applied to a heater using the same flue with a furnace,

Figure 2, a sectional view of the damper and a portion of its control mechanism, and

Figure 3, a sectional view of the fuel control valve with a mercury switch connected to it.

In the drawing numeral 10 indicates a furnace provided with a flue pipe 11 connected to a flue 12. Numeral 13 indicates a hot water heater of any conventional design provided with a flue pipe 14 also connected to the flue 12 and which is provided with a damper 15 therein. A housing 16 having a solenoid 17 located therein is mounted adjacent the flue pipe 14. A lever 18 is pivoted at one end to one side of the housing 16 at 19 and the other end is connected by a link 20 to a crank shaft 21 which in turn is fixed to the damper 15. A spring 39 normally holds the lever 18 out of contact with the solenoid when it is deenergized. A rod 22 is connected at one end to the crank shaft 21 and at its other end to a crank shaft 23 which carries an eccentric 24. A valve 25 is operated by the eccentric 24 through a rod 26, the valve 25 normally closing the opening 27 in the fuel control unit 28. The valve 25 is normally tensioned by a spring 29 positioned between a head on the stem and a guide 41. Fuel is supplied to the water heater through pipe 30 connected to one side of the unit 28 and through a pipe 31 which is controlled by a main valve 32 provided with an operating handle 33. On the inlet side of the unit 28 is a mercury switch in the form of a U-tube 34 having contacts 35 and 36 which are connected by means of wires 37, 38 and 40 to the solenoid 17 and to any suitable source of electrical energy.

The operation of the automatic damper is as follows, the damper in the flue pipe of the heater is closed as shown in Figures 1 and 2, the main

fuel valve to the heater is opened and the fuel under pressure enters the mercury switch forcing the mercury to make contact between the points 35 and 36 which completes the circuit and energizes the solenoid causing it to attract and pull the lever 18 downward. As the lever 18 moves downward the link 20 actuates the shaft 21 moving the damper 15 to open position, as shown in the dotted line position on Figure 2. At the same time the rod 22 moves the crank shaft 23 and eccentric 24 and causes the valve 25 in the fuel control unit to open and remain in open position as long as the pressure of the supplied fuel is held at a constant pressure. Upon reduction of the fuel pressure from any causes such as leaks or cutting off the main supply, to cause the pressure in the mercury switch tube to be reduced, the circuit to the solenoid will be broken. The lever 18 is then pulled upward by the spring 39 and through the link 20 the damper is closed and at the same time through the connecting mechanism described above the valve 25 is closed. It may be clearly seen from the above described mechanism that the damper in the flue from the heater is open only when the heater is being used and is automatically cut off when the fuel supply is shut off or reduced in pressure thereby preventing any interference which might be set up by the suction or back draft which might be created by the heater if the damper were left open, therefore the efficiency of operation of the furnace or other heating unit which is connected to the same flue is only affected when the gas water heater is actually being used. This not only causes the system to be very efficient but aids in combustion of fuels in the heating unit.

It will be obvious to those skilled in the art that various changes may be made in my device without departing from the spirit of the invention and therefore I do not limit myself to what is shown in the drawing and described in the specification, but only as indicated by the appended claims.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with a gas water heater provided with an outlet flue pipe and a gas supply pipe of an electrically operated damper in said flue pipe, said damper having an operating shaft, a control mechanism for the gas supply pipe comprising a casing in said pipe, said casing being divided into intake and exhaust chambers, an electric pressure actuated switch in communication with said intake chamber and in circuit

with said electrically operated damper, a valve biased to remain in closed position between said chambers, a stem on said valve, a shaft positioned in said exhaust chamber, an eccentric on  
 5 said shaft adapted to engage said valve stem, and a connection between the shaft of said damper and said eccentric shaft for operating said valve to open same when said damper is opened, substantially as set forth.

10 2. The combination with a gas water heater, a flue pipe leading therefrom, a damper in the pipe, a burner, a pipe for feeding gas to said burner and a manually controlled valve in said pipe of electrical mechanism for operating said damper,  
 15 a gas control positioned in said pipe adjacent the exhaust side of said manually controlled valve comprising a casing, a partition dividing said casing into an upper gas intake chamber and a lower gas exhaust chamber, said partition having an opening therethrough, an electric pressure actuated switch communicating with said intake  
 80 chamber and in circuit with said electrical mechanism, a valve for closing said opening in said partition, a guide for said valve, a shaft below said guide, an eccentric on said shaft adapted to co-act with said valve to open same, a spring  
 85 on said valve to close same, a crank on the end of the shaft of the said damper, a crank on the end of the said first-named shaft and a connecting rod connecting said cranks, substantially as set forth.

LORAN O. STINSON. 90

20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150