

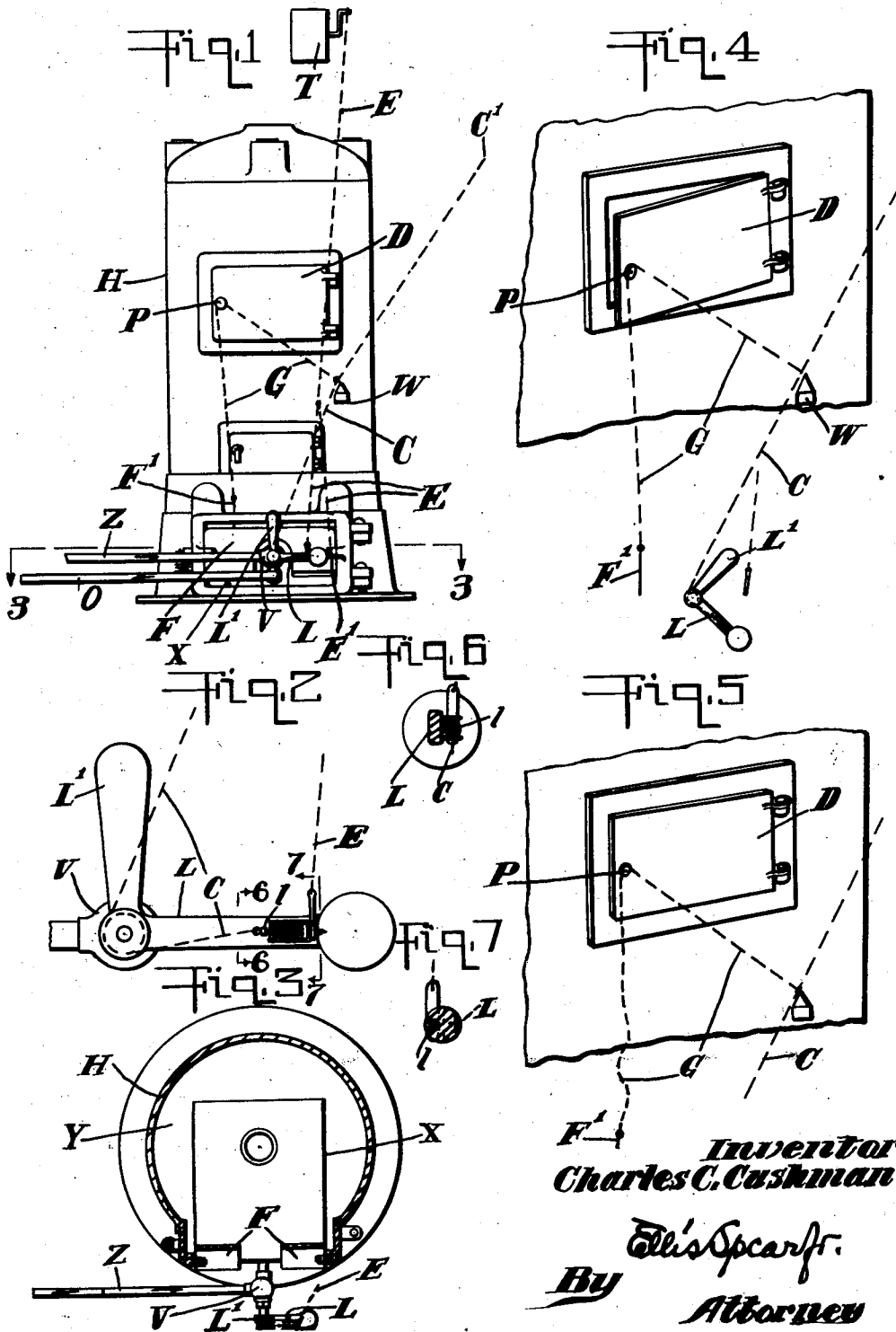
Jan. 5, 1926.

1,568,588

C. C. CUSHMAN

FUEL BURNER CONTROL

Filed April 11, 1925



Inventor
Charles C. Cushman

Ellis Sparf.

By **Attorney**

Patented Jan. 5, 1926.

1,568,588

UNITED STATES PATENT OFFICE.

CHARLES C. CUSHMAN, OF AUBURN, MAINE.

FUEL-BURNER CONTROL.

Application filed April 11, 1925. Serial No. 22,301.

To all whom it may concern:

Be it known that I, CHARLES C. CUSHMAN, a citizen of the United States, residing at Auburn, county of Androscoggin, State of Maine, have invented certain new and useful Improvements in Fuel-Burner Controls, of which the following is a specification.

My present invention has to do with thermal regulation, as for example, in the fuel and draft controls of heaters and the like.

In such, where there is a source of liquid fuel or gas, it is of the utmost importance, under certain conditions, to actuate with great positiveness, a valve or other control.

The emergency that I particularly contemplate is that of excess heat as by spread of fire or explosion. In oil heaters the menace of such is very great and the importance of prompt and certain shut-off of fuel supply is imperative to safety. The use of fusible members as well as thermostatic control in all such devices is old and has been successfully practiced, so as to have become recognized bases for such control. The problem has been to provide a system involving such a factor which could be applied with the various forms of equipment and surroundings of the average heating installations with which such a system is generally needed.

My invention possesses a maximum utility by reason of its adaptability, which in turn is based on a simplicity, both of structure and operation.

As illustrative of my invention I have shown in the accompanying drawings a system of considerable general applicability and yet of simple and efficient construction. Throughout the specification and drawings, like reference characters are employed to indicate corresponding parts, and in the drawings:

Fig. 1 shows a somewhat diagrammatic view of a heater equipped with my invention.

Fig. 2 is an enlarged view of the control valve lever.

Fig. 3 is sectional plan view through the heater.

Figs. 4 and 5 are diagrammatic views of the weight control, and

Figs. 6 and 7 are sections on the lines 6—6 and 7—7 of Fig. 2 respectively.

In the drawings I have indicated at H a conventional heater of any type and for

the purposes of the present case, it may be understood as being equipped with an oil burner X located in a draft chamber Y in the fire box of the heater. The oil burner is fed by a supply pipe Z having main supply valve V controlled by a lever L and L'. It has an overflow O which may be connected to any gravity cut off, (not shown). The lever L carries a spring latch l to the end of which is attached a chain C which is anchored at some convenient point as C'. This point C' should be selected so that the lanyard C will normally tend to hang in somewhat slack position as indicated in dotted lines, Fig. 1. It should preferably lie substantially in the plane of throw of the lever L'. Attached to the lanyard C is a weight W intended to move the lever L when the weight is released.

In the form shown, the weight is so positioned on the lanyard C as to be just below the door D as that affords a convenient point of suspension of a pulley P. Over this pulley P is another flexible member G attached at one end to the weight W and at the other end to the fusible link F' which is anchored so as to lie opposite the greatest point of danger, as for example, opposite the fuel burner opening where it would be most quickly melted by any excess heat.

When so connected it will be seen that the weight W is supported by the link F' and the flexible member G and by the upper part of the lanyard C, so that it hangs without exerting any pull on the lever L. If the link F' is fused, the support of the weight is released on that side and the weight falls to the position shown in dotted lines in Fig. 5. In so falling it draws the catch l and permits the lever L to drop, thus turning off the fuel supply and preventing the spread of the fire.

By the location of the pulley P on the door D I provide for another emergency which, though fortunately unfrequent, is always liable to happen. In such burners there are frequently explosions due to accumulated gas or the mixing of fuel. In case of such an explosion, the door D is blown open usually without breaking the fusible link unless there has been a flash in the air chamber itself. In either case, the weight W falls, releasing the catch and closing the valve.

A chain E is connected to a thermostat T which operates the valve in the usual

manner to respond to the changes of temperature desired. The chain E may be connected by a branch E¹ to the draft door F so that the supply of air to the burner is regulated in proportion to the amount of fuel admitted to it.

My system is very readily adapted to almost any kind of a heating installation and while very simple in operation, is very positive and reliable. It is inexpensive to manufacture as the members C and G may be of light chain or flexible wire and the fusible link F' may be of any soft low fusing material having enough strength to support its share of the weight W.

Various modifications may be made in materials and in arrangement of parts, as will be apparent to those skilled in the art, all without departing from the spirit of my invention if within the limits of the appended claims.

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

1. In an oil burning system, a supply control valve lever, a flexible lanyard attached at one end to said lever and anchored at its other end, a weight between the ends of the lanyard, a flexible support attached adjacent the weight and adapted to support the weight raised above the valve lever and a fusible link in the weight support and disposed in a danger zone.

2. In an oil burning system, a gravity supply control valve lever, a connection normally supporting the same, a release for said

connection, a flexible lanyard attached at one end to said release and anchored at its other end, a weight between the ends of the lanyard, a flexible weight support to maintain the weight raised above the valve lever and a fusible link in the weight support and disposed in a danger zone.

3. In combination with a heater, an oil burning system therein, an oil supply, a control valve therefor, a lever on said valve, a flexible lanyard attached at one end to said lever and anchored at its other end, a weight attached between the ends of the lanyard above the plane of the valve lever, a pulley above the plane of the weight, a flexible weight support attached adjacent the weight and passed about said pulley and anchored adjacent the fire door to support the weight raised above the valve lever and a fusible link in the weight support and adjacent said door.

4. In a furnace having a door located in its upper part, an oil burning system, a control valve lever therefor, a flexible lanyard attached at one end to said lever and anchored at its other end so as to normally hang slack, a weight between the ends of said lanyard, a flexible weight support attached to said lanyard adjacent said weight and passed about a pulley on the furnace door to hold the weight against gravity and a fusible link in the weight support and disposed in a danger zone.

In testimony whereof I affix my signature.
CHARLES C. CUSHMAN.