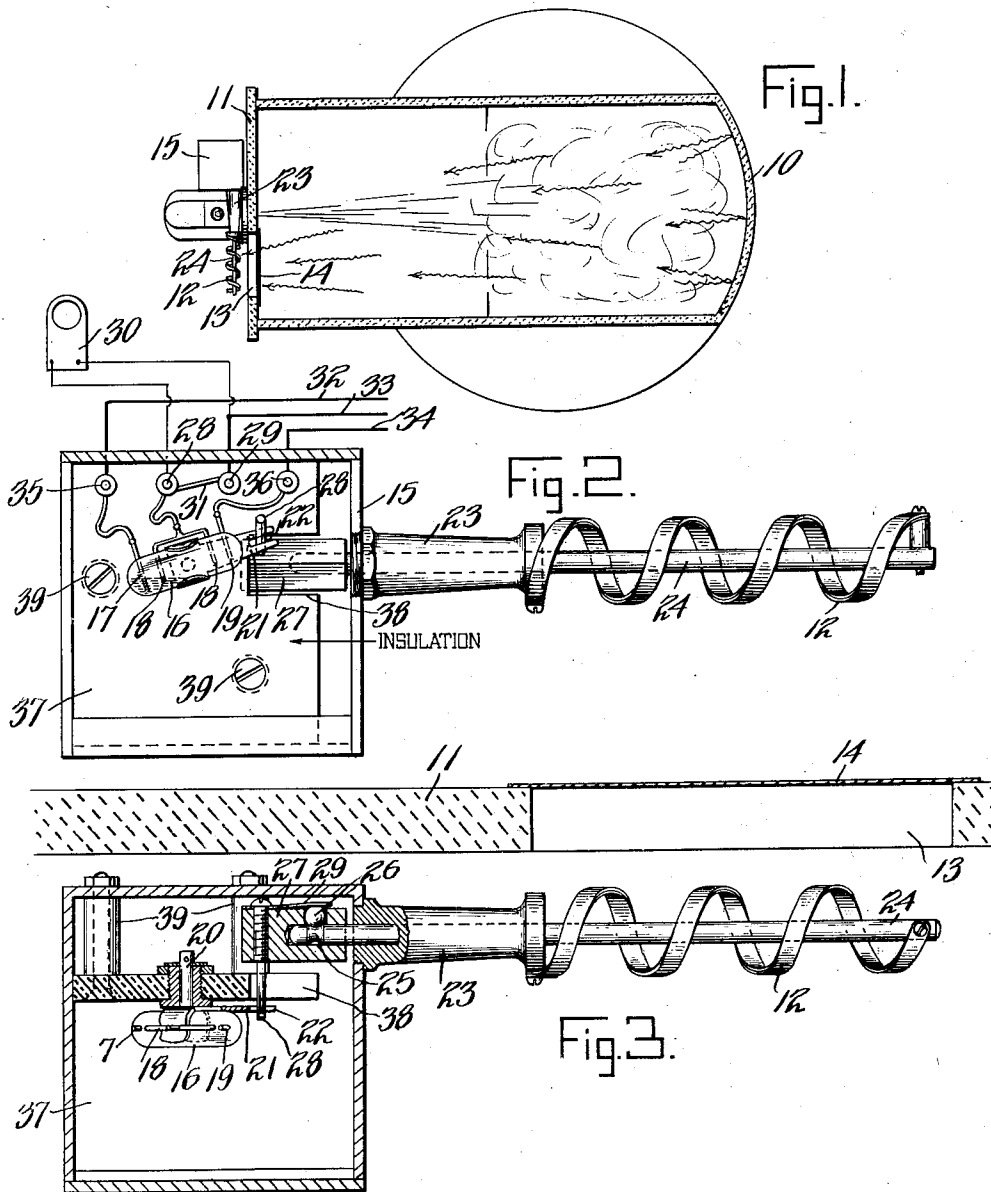


Aug. 16, 1927.

A. R. BAKER
THERMOSTAT CONTROL
Filed June 10, 1926

1,638,907



Inventor
Arthur R. Baker

By Wm. H. H. H. H. H. Attorney

UNITED STATES PATENT OFFICE.

ARTHUR R. BAKER, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO IRA T. SWARTZ, OF INDIANAPOLIS, INDIANA.

THERMOSTAT CONTROL.

Application filed June 10, 1926. Serial No. 115,120.

My said invention relates to safety controlling means for an oil burning equipment.

It is an object of the invention to install the safety controls on the outside of the furnace and preclude injury as a result of direct action of the furnace gases all as will be hereinafter more fully described and claimed.

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

Figure 1 is a horizontal section through the upper portion of a refractory furnace lining showing the application of my invention thereto,

Figure 2, a front elevation of my invention,

Figure 3, a section through the plate upon which the device is mounted, and

Figure 4, a top plan view partly in section.

In the drawings reference character 10 indicates a refractory lining or combustion chamber, 11 a cover plate of fire-proof composition, and 12 a thermostat on said cover plate. The refractory lining or combustion chamber 10 may be formed within the fire pot of a furnace said refractory lining being preferably elongated or substantially rectangular in shape adjacent its upper tapered portion for housing the flame from a burner not shown and having openings not shown adjacent its lower edge for the escape of the products of combustion. It has been customary in controlling the operation of a heating device to mount a thermostat within the furnace or in the smoke pipe. However, a thermostat so mounted was subjected to direct heat within a limited or restricted area and resulted in rapid impairment of the thermostat.

In the present invention the usual fire door is covered with a fire-proof plate 11 and said door is provided with a window or opening 13 which is preferably covered with a non-combustible transparent material, e. g., a sheet of mica 14 through which heat may be reflected and in front of which window the thermostat 12 is mounted. The switch box or casing 15 is mounted upon a bracket on the closure plate 11 and encloses a mercury tube switch 16 having a pair of contacts 17 and 18 at one end and a pair of contacts 18 and 19 at its opposite end adapted to be bridged when the tube of the

switch is in depressed position. The tube 16 of the thermostat is mounted on a shaft 20 supported in a panel 37 of insulating material having a slot 38 therein, said panel being held by means of supports 39 in said box 15. A lever 21 having a bifurcated free end 22 is also mounted on said shaft. A bearing element 23 is mounted on one side of the box 15 and forms a support for a rod 24 adapted to be rotated by the coiled bi-metal element or thermostat 12, one end of which is attached to the outer end of the rod and the other end of which is attached to the bearing element 12. One end of the rod 24 extends into the box 15 and is provided with an annular groove 25 adapted for co-operation with a spring-pressed ball 26 carried in a supporting element 27 for a lever 28 engaging the bifurcated end of the lever 21. The lever 28 works in the slot 38 of the panel 37 and comprises a screw having a non-threaded end, a spring 29 being attached beneath the head of said screw for forcing the ball 26 inwardly against the rod 24. The bi-metal element or thermostat 12 when heated will tend to straighten out or uncoil and since one end is fixed to the support 23 the end which is secured to the rod 24 will impart a rotatory motion to the rod due to the uncoiling of the bi-metal element 12, and on account of the friction between said rod and said support 27 the support will also be oscillated carrying with it the lever 28 which oscillates the lever 21 and the mercury switch 16 carried thereby. Continued rotation of the rod 24 in either direction after the switch and support 27 have reached their limit of movement is permitted on account of the frictional connection between said rod and the support 27.

The box 15 is provided with a terminal 29 to which an intermediate lead-in wire 33 from the power line connects and a second terminal 28 is provided in slightly spaced relation to the terminal 29, said terminal 28 being connected to the intermediate poles 18 of the mercury switch 16. Terminals 28 and 29 are connected through a thermostat 30 controllable by the steam pressure or temperature of the water in heating plants of this nature. In hot air heating plants the thermostat 30 may be dispensed with and a bridge-piece 31 may be used for bridging the connection between the terminals 28 and 29. Other lead-in wires 32 and 34 are pro-

vided and have their inner ends respectively connected with terminals 35 and 36 which are in turn connected with the end poles 17 and 19 of the mercury tube switch.

- 5 By mounting the thermostat 12 in front of the window 13 heat will be reflected by the refractory lining 10 through said window and expand the bi-metal element of the thermostat and tilt the mercury switch.
- 10 The action of the heat upon the thermostat will not destroy it as quickly as if the same were located within the furnace on account of the heat being less intensive and air being permitted to circulate around the thermostat.

15 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 drawings and described in the specification but only as indicated in the appended claims.

20 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 refractory furnace lining, a door for said refractory lining, a closure for the door, a window for said closure, and a thermostat mounted in front of said window, substantially as set forth.

2. The combination of a combustion chamber, an opening at one side of the combustion chamber, a thermostat mounted without said combustion chamber and adapted to be acted upon by the heat within the chamber reflected through said opening, substantially as set forth.

3. The combination of a furnace having a combustion chamber, an opening at one side of the combustion chamber, a thermostat mounted without said combustion chamber and adapted to be acted upon by the heat within the chamber reflected through said opening, means operable by said thermostat

for controlling the operation of the furnace, and a slip connection between said thermostat and said last-mentioned means, substantially as set forth.

4. The combination of a furnace, means for controlling the operation of said furnace, a thermostat for operating said controlling means comprising a support, a rod mounted in said support, a bi-metal element coiled about said rod and having one end connected thereto and its other end connected to said support whereby the rod will be rotated by the coiling and uncoiling of said bi-metal element, and a slip joint between said rod and said controlling means for actuating the controlling means upon the rotation of the rod but permitting the rod to continue its rotation after the controlling means has reached its limit of operation, substantially as set forth.

5. The combination of a furnace, means for controlling the operation of said furnace, a thermostat for operating said controlling means comprising a support, a rod mounted in said support, a bi-metal element coiled about said rod and having one end connected thereto and its other end connected to said support whereby the rod will be rotated by the coiling and uncoiling of said bi-metal element, and a slip joint between said rod and said controlling means for actuating the same upon the rotation of the rod but permitting the rod to continue its rotation after the controlling means has reached its limit of operation, said slip joint comprising a body having a recess in which the end of said rod is mounted, and a spring pressed ball mounted in said body and engaging said rod to cause the rod and body to rotate in unison, substantially as set forth.

In witness whereof, I have hereunto set my hand at Washington, District of Columbia, this 28th day of May, A. D. 1926.

ARTHUR R. BAKER.