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Patented June 18, 1901.

P. H. CARNEY & R. G. HENDERSON.
THERMOSTATIC DRAFT REGULATOR.

(Application filed May 1, 1900.)

(No Model.)

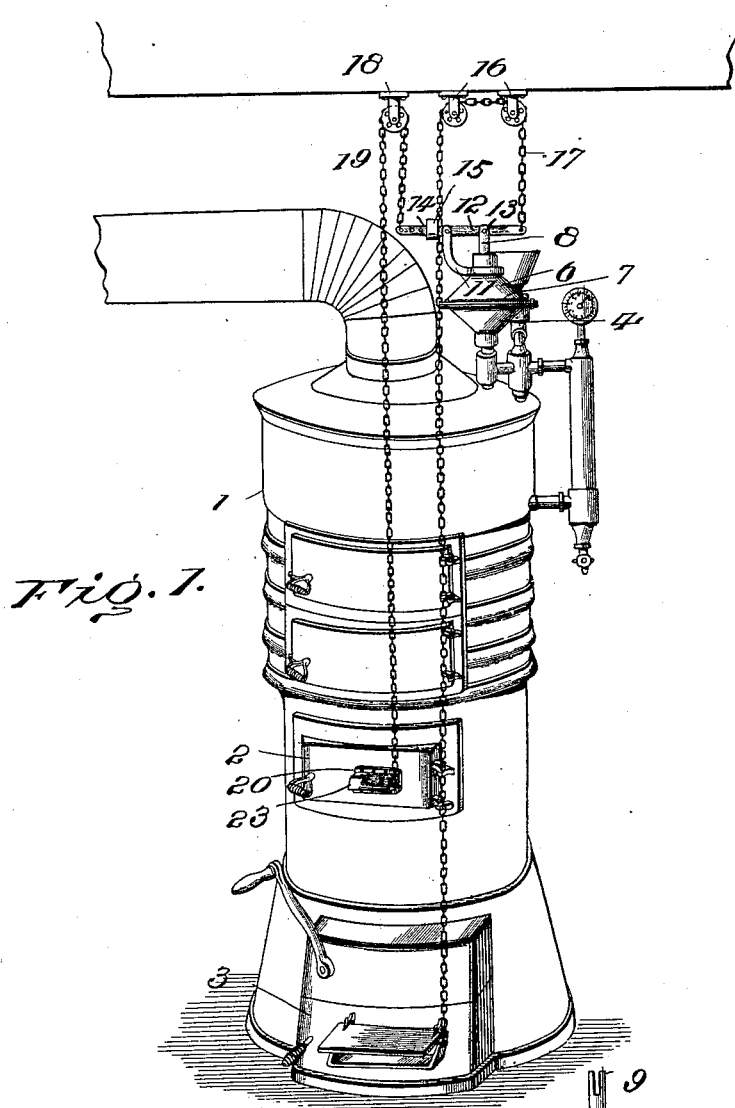


Fig. 1.

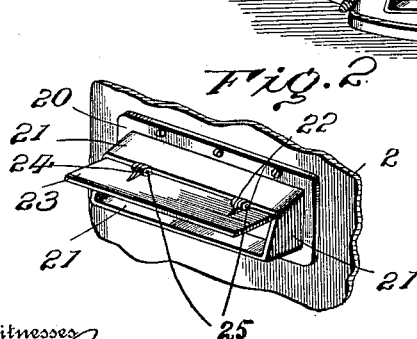


Fig. 2.

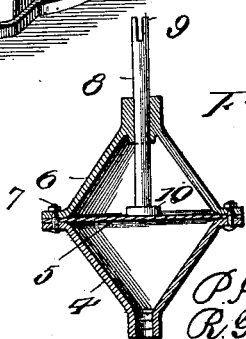


Fig. 3.

Witnesses
J. A. Knight
P. H. Carney

By

Inventors
P. H. Carney
R. G. Henderson
By Knight & Co.
Attorneys

UNITED STATES PATENT OFFICE.

PATRICK H. CARNEY AND ROBERT G. HENDERSON, OF PAWTUCKET,
RHODE ISLAND.

THERMOSTATIC DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 676,459, dated June 18, 1901.

Application filed May 1, 1900. Serial No. 15,150. (No model.)

To all whom it may concern:

Be it known that we, PATRICK H. CARNEY and ROBERT G. HENDERSON, citizens of the United States, and residents of Pawtucket, Rhode Island, have invented certain new and useful Improvements in Thermostatic Draft-Regulators, of which the following is a specification.

Our invention relates to draft-regulators for low-pressure steam or hot-water boilers.

Our invention consists of a thermostatic connection with the boiler, a lever attached thereto, and damper-boxes attached to ordinary draft-openings of the fire or ash doors of a furnace and connected, respectively, to the respective ends of said lever by means of suitable chains, the object of the invention being to regulate the draft and effect a saving in fuel and labor in keeping the fire at the proper heat; and with these objects in view our invention consists, further, of the parts and combination of parts, as will be hereinafter more fully pointed out and specifically claimed.

In the drawings, Figure 1 is a perspective view of a furnace and low-pressure boiler with our invention attached. Fig. 2 is a detail perspective view of the damper-box, and Fig. 3 is a detail sectional view of part of the thermostat.

1 represents the combined boiler and furnace, 2 the fire-door thereof, and 3 the ash-door, all of approved construction. The thermostat is connected by a suitable pipe on the opposite side of the boiler from the water-outlet in a direct line and may be straight or bent, according to the construction of the boiler, as it runs to the top of the boiler on the outside. On the top of this pipe is a double conical chamber having an inverted conical-shaped member 4 of suitable dimensions and secured thereto by the usual means. Across the top of the conical member 4 is secured a diaphragm 5, preferably rubber, over which is placed a second conical member 6, which is secured to the conical member 4 by means of bolts 7, passing through the flanges of the respective members, thereby holding the diaphragm very tightly across the chamber thus formed. In the top of the member 6 is formed a bearing in which the plunger 8

is adapted to reciprocate, said plunger having a bifurcated end 9, while the other end within the chamber formed of the conical members is provided with a head 10, adapted to rest upon the diaphragm 5.

11 is a bracket secured around the top of the conical member 6 and extending upward from one side thereof.

12 is a lever pivoted at one side of the center to the angular bracket 11. The longer arm of the lever having pivotal connection at 13 with the plunger 8, the lever being pivoted in the bifurcated end 9 of said plunger, said lever being provided with a series of perforations 14 on its shorter arm and a weight 15 also on its shorter arm.

16 represents pulleys suitably secured to the ceiling of the room in which the apparatus is located, over which is hung a chain 17, one end of which is connected to the long arm of the lever 12, while the other end is connected to the damper attached to the ash-door of the furnace, as seen in Fig. 1.

18 is another pulley secured to the ceiling, over which is run a chain 19, one of which is secured in one of the series of perforations 14 on the shorter arm of the lever 12, while the other end is secured to the damper in the fire-door 2.

The damper comprises a base-plate 20, having suitable bolt-openings, from which extend forwardly flanges 21, forming walls around the opening in the base 20, the lower wall 2 being wider than the upper wall, while the side walls are sloped backwardly from the lower wall to the upper wall.

22 represents lugs integral with the upper wall 21, and 23 is a door or flap provided with lugs 24, which are adapted to be secured between the lugs 22 by means of a bolt 25, thereby forming a hinge connection between the wall 21 and said door 23.

The operation of our invention is as follows: When the water in the boiler starts to boil, steam will pass up through the connections and press upon the diaphragm 5, thereby extending the same upwardly, which will cause the plunger 8 to be elevated, thereby removing the pull on the chain 17 and permit the same to run slack, whereupon the damper in the ash-door will immediately close.

During the operation just described the short arm of the lever will be depressed from the horizontal position, thereby drawing down upon the chain 19, which by reason of its
5 connection with the door 23 of the damper in the fire-door will pull said door 23 open. When the fire dies down by reason of the position of the dampers just described, the diaphragm 5 will contract, whereupon the plunger
10 8 will slide down in its bearing within the upper conical member to the normal position, (shown in Fig. 1,) thereby tightening the chain 17 over the pulleys 16 and again opening the damper in the ash-door 3 and simultaneously
15 by reason of the movement of the lever 12 close the damper in the fire-door 2.

What we claim, and desire to secure by Letters Patent, is—

The combination with a boiler having damper-boxes provided with hinged doors and secured to the fire-door and ash-door respectively, of the boiler-pipe, the double conical chamber having an inverted conical member secured to the boiler-pipe, an upper conical

member, a diaphragm secured between the 25 conical members, a plunger having a head at its lower end resting on the diaphragm and a bifurcated upper end, an angular bracket secured around the upper conical member and extending upward from one side thereof, a 30 lever having a series of perforations in its short arm and pivoted at one side of the center to the bracket and having its long arm pivoted to the bifurcated upper end of the plunger, chain-pulleys, a weight on the short 35 arm of the lever, a chain extending from the long arm of the lever over two of the chain-pulleys and down to the door of the box on the ash-door, and a chain extending from one of the perforations in the short arm of the 40 lever over a chain-pulley and down to the door of the box on the fire-door.

PATRICK H. CARNEY.
ROBERT G. HENDERSON.

Witnesses:

THOMAS F. VANCE,
S. H. LAWTON.