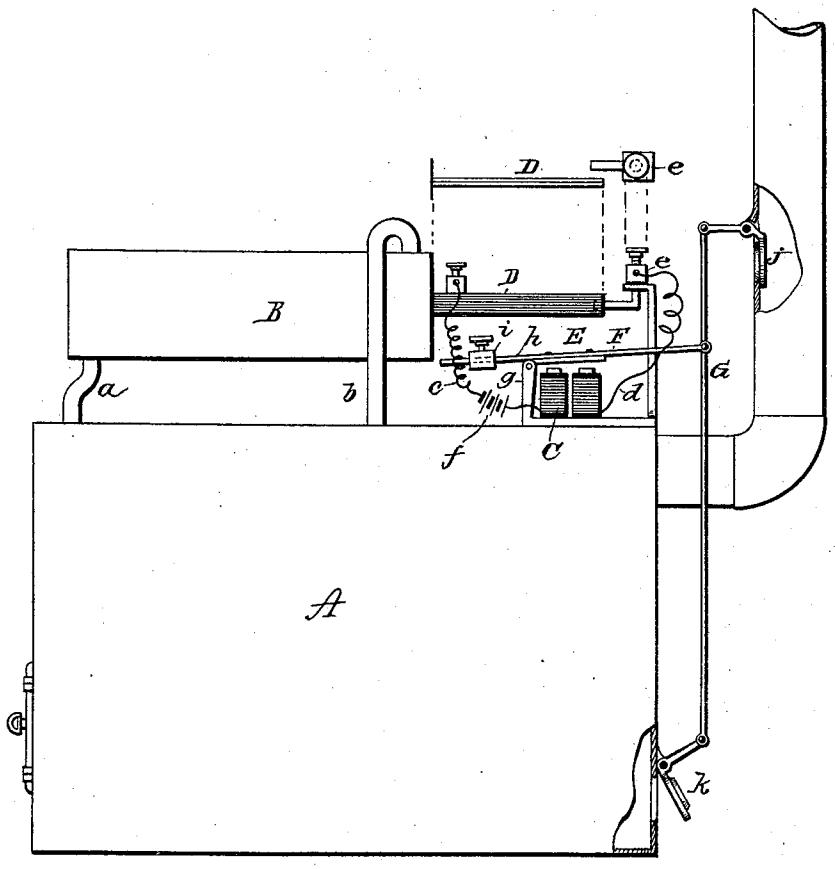
(No Model.)

W. H. KILBOURN.

TEMPERATURE REGULATOR.

No. 479,761. Patented July 26, 1892.



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UNITED STATES PATENT OFFICE.

WASHINGTON H. KILBOURN, OF GREENFIELD, MASSACHUSETTS, ASSIGNOR TO ALBERT J. SMART AND J. E. HUBBARD, OF SAME PLACE.

TEMPERATURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 479,761, dated July 26, 1892.

Application filed May 13, 1891. Renewed June 30, 1892. Serial No. 438,635. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON H. KILBOURN, a resident of Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Temperature-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in devices for automatically regulating the temperature, and more particularly to devices for regulating the heat produced by hot-water heaters, the object of the invention being to provide means whereby when a tank or radiator containing hot water becomes too hot the draft to the furnace and the damper in the flue leading from said furnace may be automatically and simultaneously operated to close the former and open the latter.

A further object is to produce a system of devices and electric circuits for the purpose stated which shall be simple in construction and effectual in the performance of their functions.

With these objects in view the invention consists in a thermostat-bar connected with a hot-water radiator, electrical devices connected with said thermostat, and rods connected with said electrical devices for operating valves or dampers.

It further consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawing is represented a boiler-furnace having a water-tank or radiator connected thereto and my improved devices for regulating the temperature of the tank or radiator.

A represents a steam-boiler furnace of any preferred construction, and B a water-tank or radiator connected thereto by means of pipes *a b*, whereby a circulation of water will be kept up between the boiler of the furnace and the water-tank B. Located in the tank B and projecting from the end thereof is a thermostat-bar D of any preferred form of construction, to which one end of a conducting-wire *c* is attached, the other end of said wire being connected to one end of the helix of an electro-magnet C. The other end of the helix of the electro-magnet C is connected by a wire *d* with a contact-post *e*, located in proximity to the free end of the thermostat-bar D. A battery *f* may be included in the circuit of the wire *c*, or, if desired, the battery may be included in the circuit of the wire *d*. Pivotally supported over the poles of the magnet C by means of a suitable upright *g* is an armature E for said magnet, and extending across said armature and secured to it is a rod or bar F, the rearward extension *h* of the rod being provided with a weight *i*, whereby to counterbalance the armature. The rod F extends forwardly from the armature and is pivotally connected at its forward end to a vertical rod or bar G. The upper end of the vertical rod or bar G is connected to a normally-closed valve or damper in the pipe or stack *j* of the furnace, while the lower end of said rod or bar G is connected to a normally-open door or damper *k* in the furnace, said door or damper being so located as to control the draft to the fire in the furnace. It is evident that the water tank or radiator may be located at any desired distance from the furnace, the difference being only in the lengths of the pipes *a b* and conducting-wires *c d*.

Now with the device thus constructed, if the tank or radiator should become too hot, such excessive heat will act upon the thermostat-bar D and cause it to make contact with the contact-post *e*, and thus close the electric circuit (which is normally open) and thereby energize the magnets C to attract their amature E. As the armature E turns on its pivotal connection with the upright *g* the forward end of the rod or bar F will be lowered, carrying with it the vertical rod G. This movement of the vertical bar, it will be seen, opens the damper in the pipe or stack *j* and closes the door or damper *k* of the furnace, thereby causing the temperature of said furnace to be reduced, and consequently causing a reduction of the temperature of the tanks or radiators.

It is evident that the device may be worked on a normally-closed circuit, instead of an open circuit, with slight variations in some of the mechanical details.

Slight changes might be made in the details of construction of my invention without

departing from the spirit thereof or limiting its scope. Hence I do not wish to limit myself to the precise details of construction above set forth; but,

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

1. The combination, with a water-heater and a tank or radiator connected therewith, of a thermostat-bar extending into and projecting beyond the tank or radiator, an electro-magnet, an electric circuit including the thermostat-bar, the electro-magnets and a contact, and dampers connected with the armature of said electro-magnet, so that when the electric circuit is opened or closed by the thermostat-bar one of said dampers will be open and the other closed, substantially as set forth.

2. The combination, with a water-heater and a tank or radiator connected therewith, of a thermostat-bar extending into and beyond the tank or radiator, an electro-magnet, an electric circuit including said electro-magnet, a contact, and the thermostat-bar, a rod or bar secured to the armature of said electro-magnet, a rod connected at a point between its ends to the end of the said rod or bar, and dampers connected to the ends of said rod, substantially as set forth.

3. The combination, with a furnace, a water-tank or radiator, a smoke-pipe, and doors or dampers in the smoke-pipe and furnace, of a thermostat-bar extending into and beyond the tank or radiator, an electro-magnet, an electric circuit including said electro-magnet, a contact, and the thermostat-bar, a rod or bar secured to the armature of the electro-magnet, and a rod connected at a point between its ends to the end of said rod or bar, said rod being connected at one end to the damper of the furnace and at the other end to the damper in the smoke-pipe, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WASHINGTON H. KILBOURN.

Witnesses:

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