(No Model.)

J. F. McELROY.

TEMPERATURE REGULATOR.

No. 473,636. Patented Apr. 26, 1892.

Fig. 1.

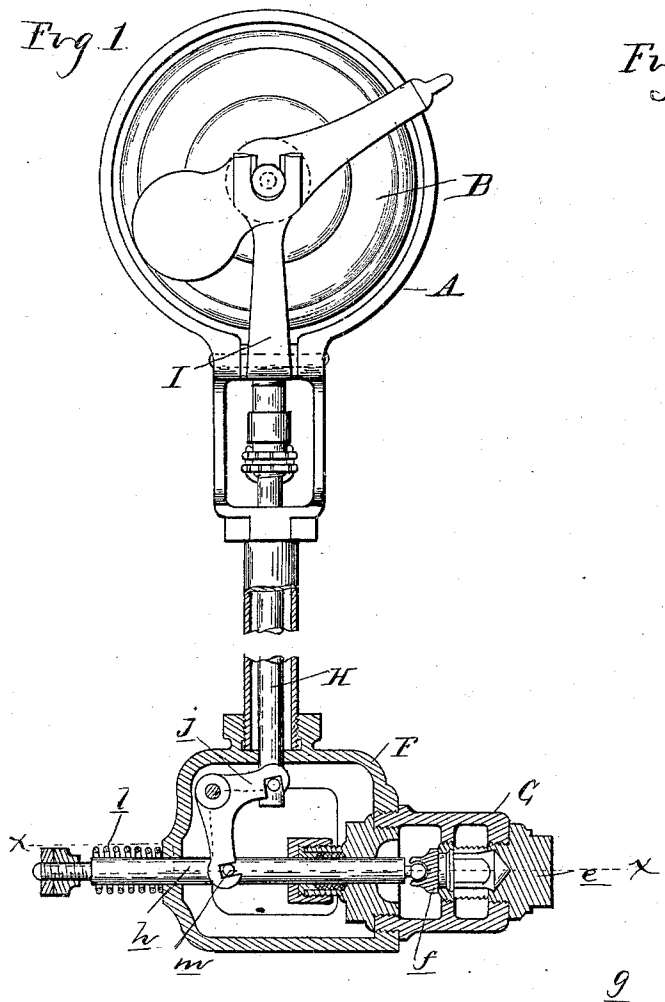


Fig. 2.

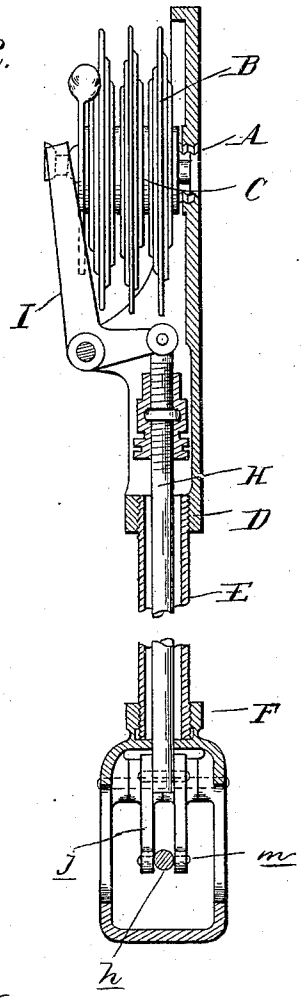
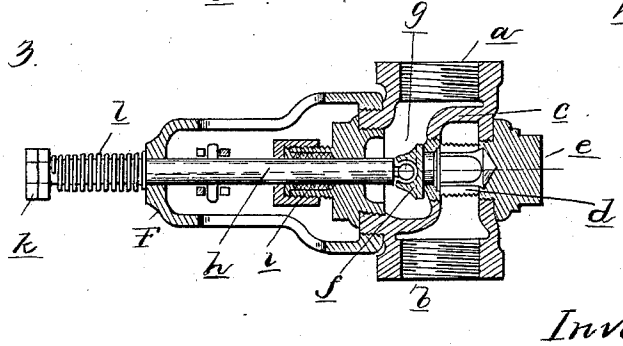


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

TEMPERATURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 473,636, dated April 26, 1892.

Application filed September 18, 1891. Serial No. 406,107. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Temperature-Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in temperature-regulators; and the invention consists in the peculiar construction, arrangement, and combination of the various parts of the thermostat, controlling-valve, and connecting mechanism, whereby I produce an efficient and economical device, all as more fully hereinafter described.

In the drawings, Figure 1 is a front elevation of my improved device, showing the valve in section. Fig. 2 is a side elevation thereof, with the valve connections in section. Fig. 3 is a horizontal longitudinal section taken centrally through the frame on the valve-casing.

A is a plate forming a supporting-frame for my thermostat, which consists of the cells B, secured together upon the hub C. This hub is screw-threaded and enters a screw-threaded aperture in the frame, whereby the cells may be adjusted to or from the frame. This frame is secured to the wall of a room or a railway-car in proper relation to the valve which the thermostat is to control.

At the lower end of the frame A is provided an apertured screw-threaded lug D, into which is secured the upper end of the tubular frame E, preferably a pipe, and forming a rigid connection between the frame A and the frame F, secured to the valve-casing G. The valve is located in the steam-supply pipe and controls the supply of steam to the apartment or car the temperature of which is designed to be controlled, or it may be a damper or ventilator instead of a steam-valve.

In the valve-casing *a* is the inlet-opening; *b*, the outlet-opening; *c*, a partition separating the openings, centrally apertured to receive the upper end of the apertured plug *d*, having a nut *e* on the outside of the casing, by means of which it may be adjusted.

f is the valve-disk, connected by means of a ball-and-socket joint *g* with the valve-stem *h*, which passes through the usual stuffing-box *i* and through the bearing in the frame F, secured to the top of the valve-casing, provided at its outer end with a nut *k*. *l* is a spring clamped between this nut and the top of the frame F for the purpose of normally holding the valve open.

H is a rod connected at its upper end with a bell-crank lever I, pivoted to the plate A and connected at its upper end centrally with the thermostat. At its lower end this rod connects with one arm of the bell-crank lever *j*, pivoted in the frame F. The other arm of this lever is connected to the valve-stem *h*, preferably by means of pins *m*, formed on the sides thereof.

The parts being thus constructed, the temperature being below the point at which it is desired to be maintained, the spring *l* will lift the valve *f* from its seat, allowing the steam to pass through the valve into the heating system. As soon as the temperature in the apartment has risen above the temperature desired to be maintained the expansion of the thermostat-cells will rock the bell-crank lever I, drawing up upon the connecting-rod H, rocking the bell-crank lever *j*, compressing the spring *l*, and closing the valve, shutting off the steam.

In previous constructions of temperature-regulators the thermostat has acted upon the connecting-rod with a compression force, which tends to bend or spring the rod out of alignment, causing a binding at points and also shortening the rod, so as to prevent its effective working.

By utilizing the bell-crank lever I or a similar lever to cause the connecting-rod to pull the valve to its closed position I subject this rod to a tensile strain, which obviates all the trouble arising from using it under compression.

What I claim as my invention is—

1. In a temperature-regulator, the combination, with a frame, a thermostat, and a connecting-rod, of a valve, a stem having a flexible connection with the valve and arranged at right angles to the connecting-rod, a spring on the stem normally holding the valve open, and a bell-crank lever engaging with its respective

ends the connecting-rod and the valve-stem at a point between the spring and valve, substantially as described.

2. In a temperature-regulator, the combination, with a supporting-frame, a thermostat thereon, a bell-crank actuated by the thermostat, and a connecting-rod on the bell-crank, of a valve having a stem extending out at right angles to the connecting-rod, a spring on the stem normally holding the valve open, and a bell-crank actuated by the connecting-rod to force the valve to its seat against the tension of the spring, substantially as described.

3. In a temperature-regulator, the combination, with a supporting-frame, a thermostat thereon, a connecting-rod actuated by the thermostat, a tubular connection through which the connecting-rod passes, and a valve-casing, of a frame between the valve-casing and tube, a valve in the valve-casing, a stem on the valve arranged at right angles to the connecting-rod and passing through the frame on the valve-casing, a spring on the stem normally holding the valve open, and a bell-crank pivoted to the frame on the valve-casing at a point between the outer end of the stem and the connecting-rod, its ends arranged to engage, respectively, with the connecting-rod and the valve-stem, substantially as described.

4. In a temperature-regulator, the combination, with a supporting-frame, a thermostat, and a connecting-rod actuated by the thermostat, of a valve having a stem arranged at an angle to the connecting-rod, a spring for normally holding the valve from its seat, and a bell-crank arranged between the ends of the stem and engaging, respectively, the lower end of the connecting-rod and the valve-stem, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. McELROY.

Witnesses:
EDWIN A. SMITH,
JOHN B. BRAIDWOOD.