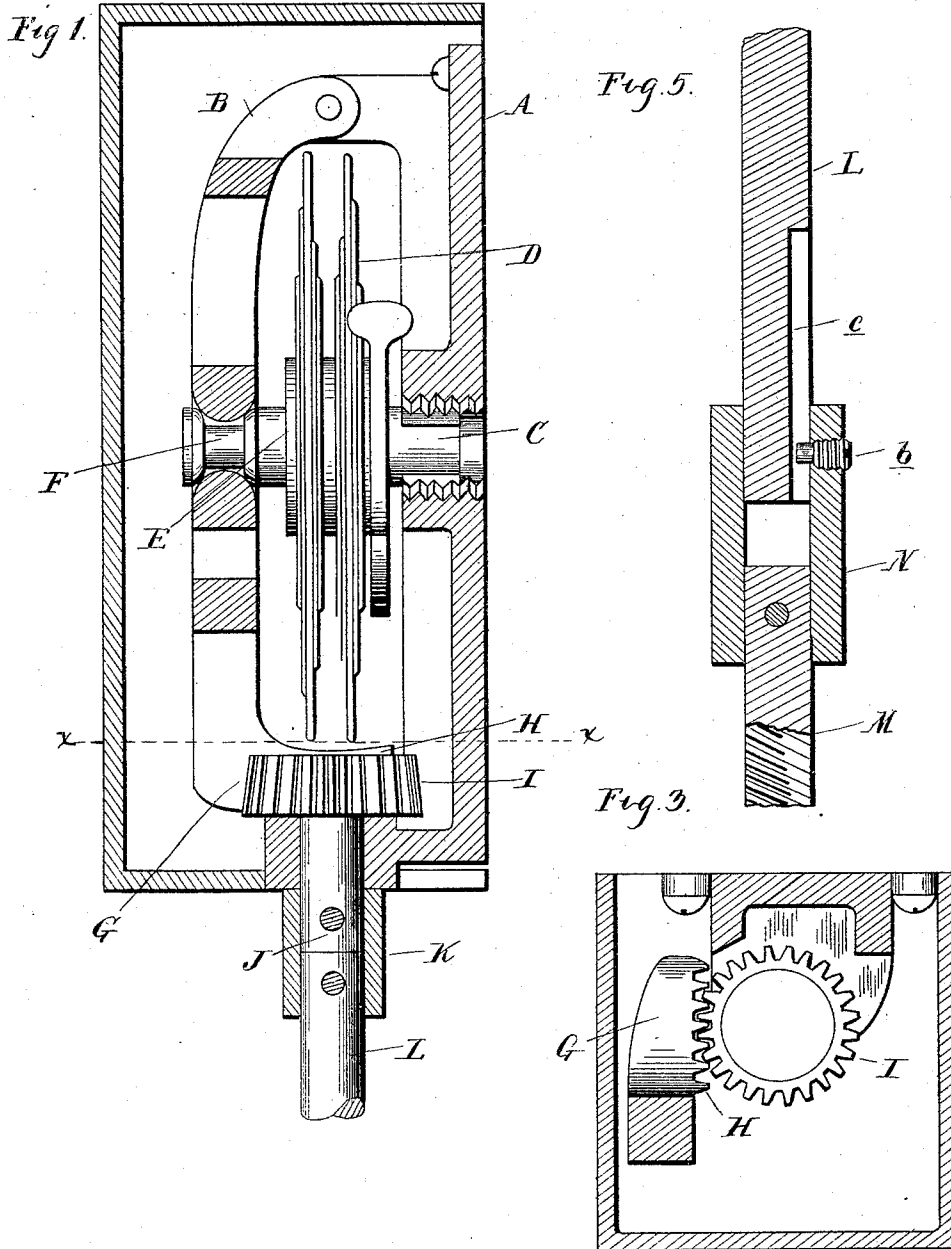


J. F. McELROY.
TEMPERATURE REGULATOR.

No. 469,526.

Patented Feb. 23, 1892.



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Fig. 2.

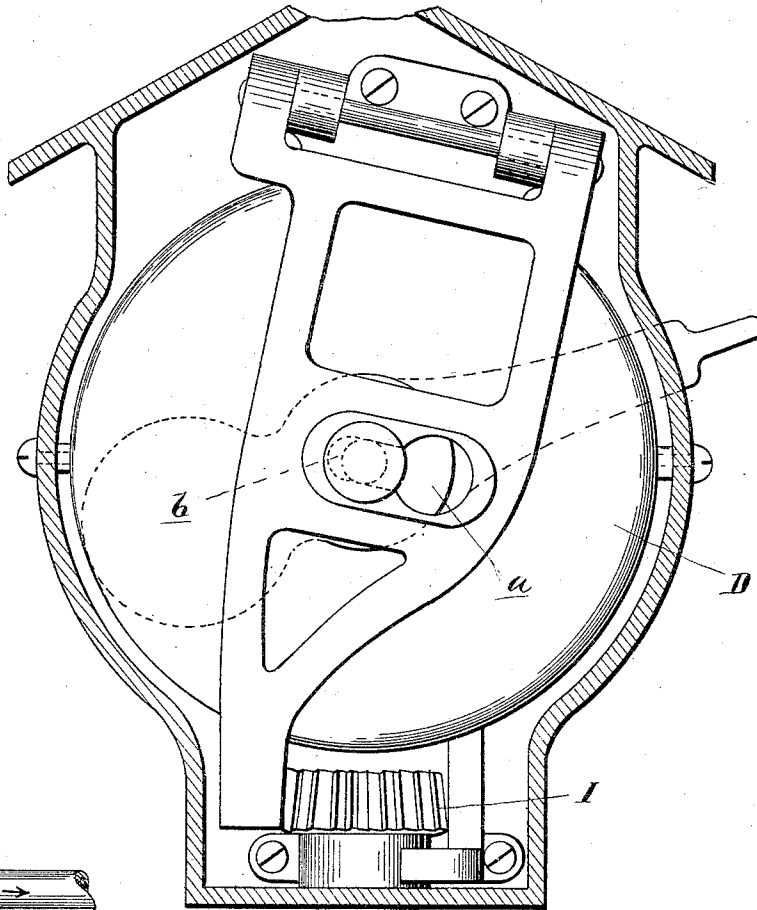
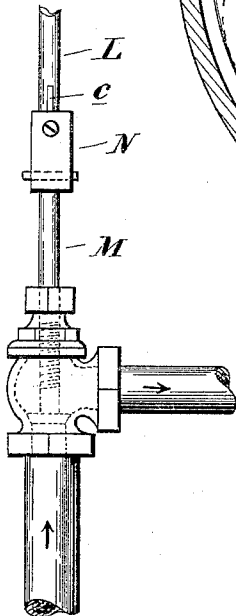


Fig. 4.



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TEMPERATURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 469,526, dated February 23, 1892.

Application filed May 14, 1891. Serial No. 392,748. (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 it consists in the peculiar construction of the actuating mechanism between the thermostat and the valve or damper to be operated.

The invention particularly consists in the means employed for transferring the expansive force of a thermic cell into a rotary motion and in utilizing that motion to actuate the valve or damper, and, further, in the peculiar construction, arrangement and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a vertical central section through my improved device. Fig. 2 is a front elevation thereof. Fig. 3 is a cross-section on line *x x* in Fig. 1. Fig. 4 is a side elevation of the valve and connections. Fig. 5 is a section through the shaft-coupling.

A is the frame. B is a lever pivoted at the top and extending vertically to near the bottom. This frame is provided with a central aperture, in which the hub C is adjustably engaged, preferably by means of a screw-threaded engagement. This hub carries on its outer face the expansion-chambers or thermic cells D, of which there may be one or more. These cells are connected by means of the stem E and neck F centrally with the lever B, preferably by forming in said lever an entering-aperture *a* and the locking-slot *b*, as plainly shown in Fig. 2. This lever is provided at its lower end with a lateral offset or arm G, which is provided on its inner face with a rack H, adapted to engage with a pinion I, secured to the upper end of the shaft J, which is secured in a suitable vertical bearing in the frame.

K is a coupling connecting the shaft J with the connecting shaft or rod L. This shaft L is provided at its lower end with any suitable means of transferring the motion to the valve or damper to be operated. In Figs. 1, 4, and 5 I have shown it as applied directly to the valve-stem M, to the upper end of which is applied a coupling N, into which the shaft L slidingly engages, a keyway *c* being formed in the shaft and the screw *b* entering said keyway through the coupling, all so arranged that the rotation of the shaft L will turn the stem M through the coupling N, allowing a sliding movement of the coupling upon the shaft L. This stem I provide with a rapidly-retreating thread, so that when turned in one direction the valve will quickly close and when turned in the opposite direction the valve will quickly open, the raising and lowering movement of the stem being provided for in the construction described. Where it is desired to carry the motion in a horizontal direction, I use the bearing O, having vertical and horizontal journals for the shafts L and P, respectively, motion being transmitted through one to the other by means of the beveled gear-wheels Q and Q'. This construction allows me to dispense with a rigid frame connecting the thermostat and valve casing, as it is not necessary with the shafts and gearing to have the parts so exactly placed. The expansion and contraction is easily taken up in the gears, as is any slight displacement.

What I claim as my invention is—

1. In a temperature-regulator, the combination of a frame, a thermostat, an actuating-lever, a rack on said lever, a connecting-shaft, and a pinion on said shaft with which the rack engages, substantially as described.

2. In a temperature-regulator, the combination of a frame, a thermostat, a lever, a lateral rack-bar on said lever, a pinion with which said rack-bar engages, a shaft rotated by said pinion, and a valve-stem rotated by said shaft, substantially as described.

3. In a temperature-regulator, the combi-

nation, with the thermostat acting to rotate a shaft, a valve having a rapidly-retreating thread, and a coupling having a sliding engagement with the shaft or stem, substantially as described.

5 4. In a temperature-regulator, the combination of the frame, the thermic cell, the actuating-lever B, a rack on the lever engaging a pinion for moving the valve, the stem E, neck

F, entering-aperture *a*, and locking-slot *b*, is substantially as described.

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

JAMES F. McELROY.

Witnesses:

ALMON C. BROWN,
H. J. NODINE.