

R. L. GUION.
ELECTRIC THERMOSTAT.

No. 362,213.

Patented May 3, 1887.

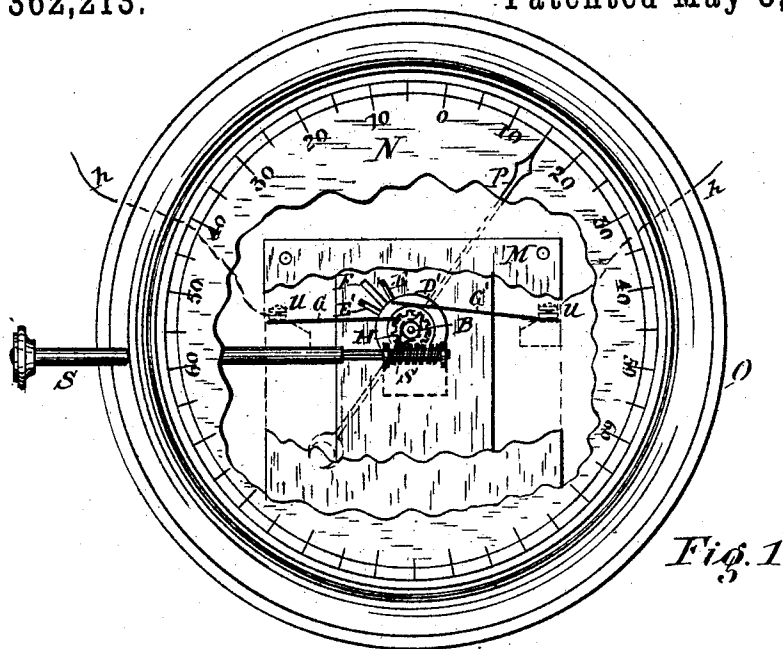


Fig. 1

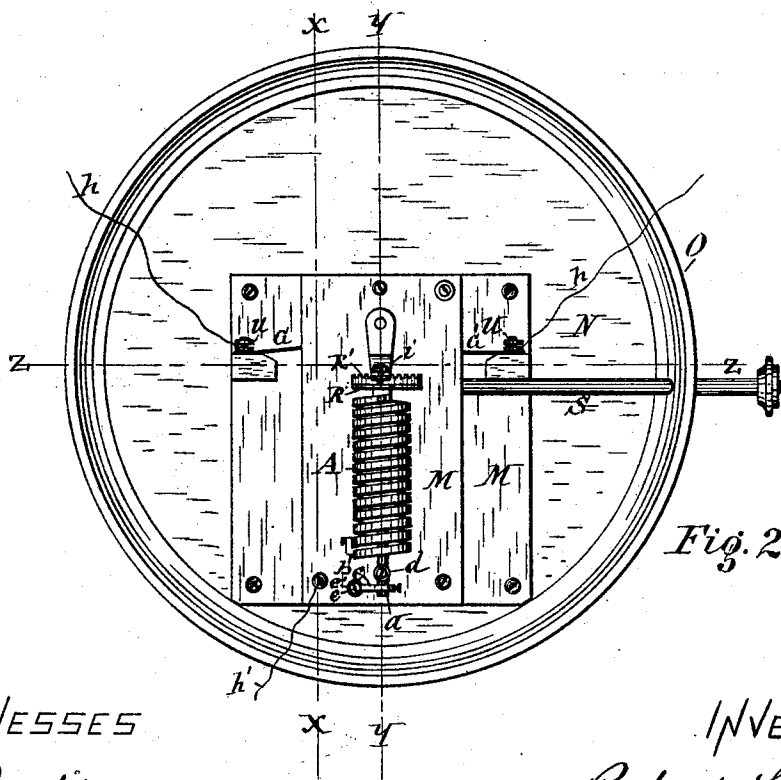


Fig. 2

WITNESSES

C. Bendixson
A. F. Walz

INVENTOR

Richard L. Guion
per Hull, Laessle & Hays
his Attys.

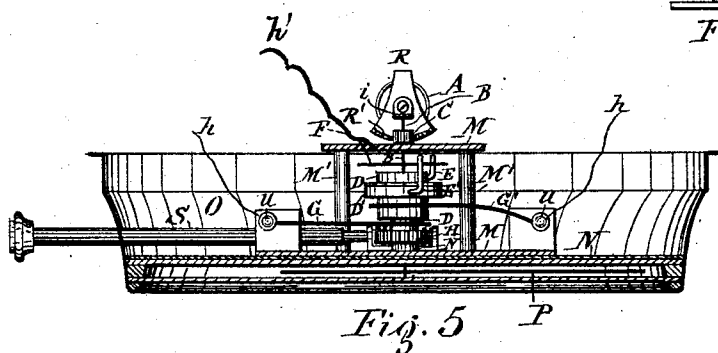
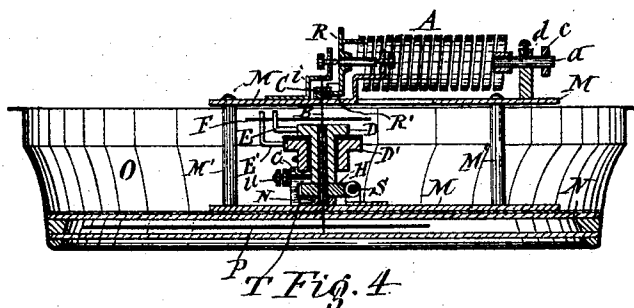
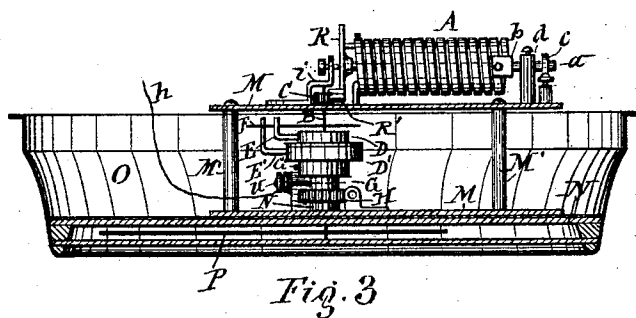
(No Model.)

2 Sheets—Sheet 2.

R. L. GUION.
ELECTRIC THERMOSTAT.

No. 362,213.

Patented May 3, 1887.



WITNESSES:

C. Bondixon
A. F. Walz

INVENTOR:

Richard L. Guion
per Hull, Lassar & Hy
Attys

UNITED STATES PATENT OFFICE.

RICHARD L. GUION, OF ELMIRA, NEW YORK.

ELECTRIC THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 362,213, dated May 3, 1887.

Application filed November 20, 1886. Serial No. 219,450. (No model.)

To all whom it may concern:

Be it known that I, RICHARD L. GUION, of Elmira, in the county of Chemung, in the State of New York, have invented new and useful Improvements in Electric Thermostats, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists, first, in the combination, with a spiral thermostatic bar, of a pivoted rack connected with said bar to partake motion therefrom, a pivoted shaft carrying a fixed pinion meshing in the rack, a switch-arm projecting from said shaft, and electrodes at opposite sides of the free end of said switch-arm, said combination constituting an apparatus by means of which an electric circuit is broken and closed by the action of the thermostat under the influences of the changes of temperature.

The invention also consists in the combination, with the aforesaid apparatus, of devices for adjusting the tension of the spiral thermostatic bar, and thus regulate to the desired degree of sensitiveness its action under the influences of the changes of temperature; and the invention also consists in the combination, with the aforesaid electric thermostat, of means for adjusting the electrodes in their position in relation to the switch-arm, so as to allow the thermostat to move freely without closing the circuit until the temperature has reached the desired limit, all as hereinafter more fully described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is a front view of an apparatus embodying my invention, a portion of the dial and of the plate immediately back of it being broken away to better illustrate the invention. Fig. 2 is a rear view of the same with the back of the case removed. Figs. 3 and 4 are vertical transverse sections, respectively, on lines X X and Y Y, Fig. 2. Fig. 5 is a horizontal transverse section on line Z Z, Fig. 2, looking downward; and Fig. 6 is a detached view of the device for adjusting the tension of the thermostat.

Similar letters of reference indicate corresponding parts.

M represents a metallic frame, on which the chief elements of my invention are mounted,

said frame consisting of two parallel plates sustained a proper distance apart by interposed posts M', and secured by one of said plates to the back of a dial, N, which latter constitutes the front of an annular case, O, which incloses the aforesaid frame, with the mechanisms attached thereto.

On the back of the rearmost plate of the frame M is arranged the spiral thermostatic bar A, which is supported at one end by a post, d, rigidly secured to the aforesaid plate, and having extended through it a mandrel, a, which is adapted to be turned therein. On this mandrel is rigidly secured a radial arm, b, the extremity of which is fastened to the adjacent end of the spiral thermostatic bar A. On the aforesaid mandrel is also clamped a radial arm, c, the extremity of which is notched, and with the notch thereof engages a collar or flange, e', on an adjusting-screw e, which is inserted in a screw-threaded socket, e'', fastened to the back plate of the frame M.

By turning this screw it is caused to project a greater or less distance from the socket e'', and by its collar e' carries with it the extremity of the arm c, and thereby partially turns the mandrel a, and the turning of the latter increases or diminishes the tension of the spiral bar a, according to the direction in which the mandrel is turned. The opposite end of the thermostatic bar A is supported by a plate, R, which is pivoted on a bracket, i, secured to the back plate of the frame M, and is formed at one side of its pivot with a segmental rack, R', and is at the opposite side of its pivot attached to the adjacent end of the spiral bar A. In the said rack meshes a pinion, C, secured to a shaft, B, which is at right angles to the axis of the rack R, and is extended through the frame M and through the dial-plate N, and has an indicator or pointer, P, attached to its protruding end. Around the shaft B, between the two plates of the frame M, is a hub, D, which is insulated from the said shaft. The end of the said hub adjacent to the dial-plate N is stepped in a socket, T, attached to the frame M, and from the opposite end of the hub D projects radially an arm, E, the end of which is bent toward the back plate of the frame. Around the aforesaid hub is another hub, D', which is firmly held thereon, but insulated from it, and from this latter hub pro-

jects an arm, E', similar to the arm E, and standing a short distance from the side thereof. Said arms E E' constitute electrodes, between which lies the free end of the switch-arm F, which is firmly attached to and projects radially from the shaft B.

On suitable binding-posts U U, secured to the frame M, are fastened two metallic arms, G G', or other suitable electric conductors, one of which is held in contact with the hub D, and the other is held in contact with the hub D', and to the aforesaid binding-posts are also connected the wires h h of the two electric circuits, and a wire, k', is extended from the metallic frame M to the ground.

The operation of the devices thus far described is as follows: When the temperature rises, the spiral bar A expands, and thereby turns the rack R on its pivot. This movement of the rack imparts rotary motion to the shaft B by means of the pinion C, and the movement of said shaft brings the switch arm F in contact with the electrode E, and thereby closes the circuit, the electric current passing from one electric conductor, G, through the hub D, arms E F, frame M, and ground wire k'. When the temperature falls below a certain degree, the resultant contraction of the thermostatic bar A reverses the rotation of the rack R and shaft B, and thereby brings the switch-arm F in contact with the electrode E', the electric circuit then passing from the conductor G' through the hub D', electrode E', switch-arm F, frame M, and ground-wire k'.

On the end of the hub D, adjacent to the front plate of the frame M, I secure a pinion, H, which is either composed of hard rubber or otherwise insulated, and at the side of said pinion is an adjusting-screw, S, of the form of a worm-shaft, which engages the pinion and has a manipulating stem projecting through the side of the case O. By turning said adjusting-screw the two hubs D D', which hug each other closely, can be turned in either direction, so that the electrodes are swung into such positions in relation to the switch-arm F as to require a greater or less movement of the latter to make contact with one of the electrodes, and consequently the apparatus can be adjusted to close the circuit at the desired degree of temperature. The dial and indicator or pointer serve to show the degree of temperature at which the thermostat closes the electric circuit.

Having described my invention, what I claim

as new, and desire to secure by Letters Patent, is—

1. The combination, with the spiral thermostatic bar A, pivoted rack R', connected with the said bar to partake motion therefrom, pivoted shaft B, and pinion C on said shaft meshing in the rack, of the hubs D D', fastened together and loosely surrounding the shaft B, and insulated from each other and from said shaft, the arms E E', projecting, respectively, from said hubs, the switch-arm F, projecting from the shaft B, and having its free end between the free ends of the arms E E', and electric conductors G G' in contact with the hubs D D', substantially as described and shown.

2. The combination, with the spiral thermostatic bar A, pivoted rack R', arranged to be actuated by said bar, pivoted shaft B, and pinion C meshing in the rack R', of the hubs D D', fastened together and loosely surrounding the shaft B, and insulated from each other and from said shaft, the arms E E', projecting, respectively, from said hubs, the switch-arm F, projecting from the shaft B, and having its free end between the free ends of the arms E E', electric conductors G G' in contact with the hubs D D', the insulated pinion H, attached to the said hubs, and the adjusting-screw S, engaging said pinion, substantially as described and shown.

3. The combination, with the spiral thermostatic bar A, pivoted rack R', arranged to be actuated by said bar, pivoted shaft B, and pinion C on said shaft engaging the rack, of the insulated hubs D D', arms E E', projecting from said hubs, the arm F, projecting from the shaft B, and having its free end between the free ends of the arms E E', the electric conductors G G' in contact with the hubs D D', the insulated pinion H, attached to said hubs, the adjusting-screw S, engaging said pinion, the dial I, having the end of the shaft B protruding through it, and the indicator L, attached to said shaft, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Elmira, in the county of Chemung, in the State of New York, this 22d day of April, 1886.

RICHARD L. GUION. [L. S.]

Witnesses:

THEO. G. SMITH,

C. BENDIXON.