

(No Model.)

H. L. TYLER.
AUTOMATIC DRAFT REGULATOR.

No. 506,569.

Patented Oct. 10, 1893.

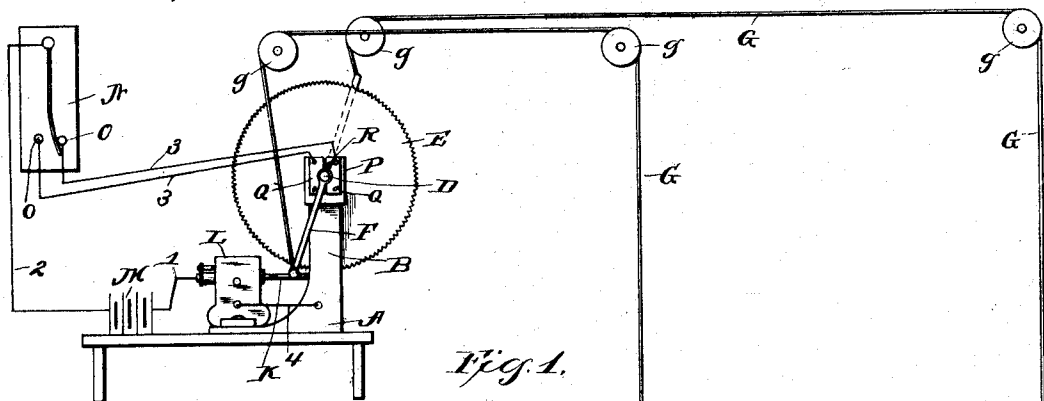


Fig. 1.

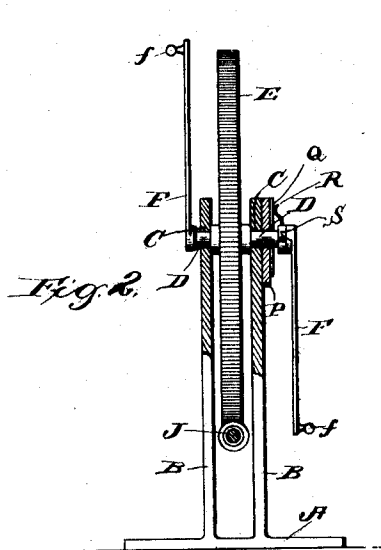
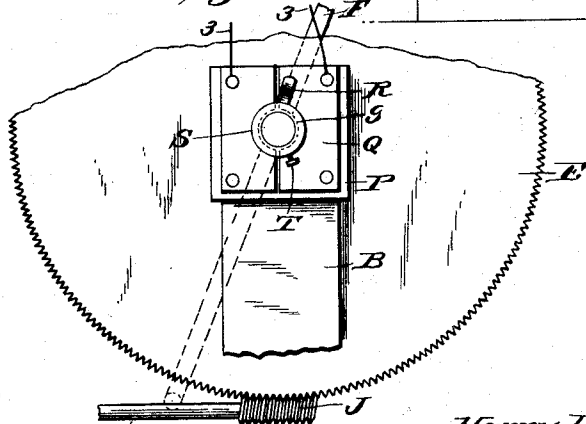


Fig. 2.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY L. TYLER, OF CORNING, NEW YORK.

AUTOMATIC DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 506,569, dated October 10, 1893.

Application filed March 25, 1893. Serial No. 467,556. (No model.)

To all whom it may concern:

Be it known that I, HARRY L. TYLER, a citizen of the United States, residing at Corning, in the county of Steuben and State of New York, have invented a new and useful Automatic Draft-Regulator, of which the following is a specification.

This invention relates to automatic draft regulators; and it has for its object to provide an automatic electrically controlled draft regulating device, which is adapted to be used in connection with valves or dampers for regulating the drafts in stoves, furnaces, pipes, &c.

To this end the main and primary object of this invention is to provide an automatic draft regulator which will avoid the many disadvantages of the ordinary clock-work regulators, which necessitate the continual winding of the power springs, and are very noisy in operation, whereas by my invention an apparatus is provided which is always ready for use and is efficient in operation, the same being rapid in its operation the moment the circuits are closed and opened.

With these and other objects in view which fall within the scope of the present invention the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation and diagram of an automatic draft regulator constructed in accordance with the present invention. Fig. 2 is an enlarged transverse sectional view of the gear wheel and its bearings. Fig. 3 is an enlarged detail elevation showing more clearly the construction of the circuit breaker.

Referring to the accompanying drawings, A represents a casting adapted to be secured to a shelf or any other suitable or convenient point of support out of the way, and is provided with the parallel upright bearing arms B, terminating at their upper ends in the bearings C, in which bearings is journaled the transverse shaft D, on which shaft is securely mounted the large gear wheel E, which is adapted to be driven automatically in one direction, in order to properly regulate the draft of the devices in connection with which the regulator is employed.

The large gear wheel E, works between the bearing arms B, while secured to the opposite extremities of the shaft D, outside of the bearing arms B, are the oppositely disposed crank arms F, at the extremities of which are located the pins *f*, to which are attached one extremity of the regulating cords G, which pass over suitably arranged guide pulleys *g*, and are connected at their other extremities to the dampers H, of an ordinary furnace I. It will of course be understood that the regulating cords may be attached to any draft regulating damper or valve, and as is usual in devices of this character, the disposition of the cords G, is such that while the wheel E, is rotating, one of the dampers will be closing while the other is opening, and the opposite disposition of the crank arms F, provides for this opposite movement of the dampers, inasmuch as when one crank arm is drawing one regulating cord G out, so as to open one damper, the other crank arm is allowing the other regulating cord to loosen or to run back with the closing of the other damper.

The gear wheel E, is rotated by means of the worm J, arranged thereunder between the bearing arms B, and driven by the armature shaft K, of an ordinary electric motor L, of any suitable pattern and of a size adapting it for conveniently turning the gear wheel E. The motor L, is preferably of a size so as to be placed on the casting A, adjacent to the gear wheel, and one of the circuit wires 1, of the motor L, is connected to the battery M, the other wire 2, from the battery leading to an ordinary thermostat N. The thermostat N, is of any preferred construction and preferably of the thermostatic bar type, as clearly illustrated in Fig. 1 of the drawings, in which the thermostatic bar plays between two contact pins O, so as to close the circuit with either of said pins, according as the temperature rises or lowers in the room or other compartment where the thermostat is arranged. Circuit wires 3, lead from each of the contact pins O, to the circuit breaking devices which I shall now proceed to describe.

Secured to one of the upright bearings B, at the upper end thereof so that the shaft D will project therethrough, is the circuit breaker board P, to which are attached the elongated

contact plates Q. The elongated contact plates Q, are arranged so as to have their inner adjacent edges in close proximity to, but out of contact with, each other, so that there
5 will be no electrical connection between the two plates, and the same are also centrally notched as at g, so as to surround but be out of contact with one end of the shaft D. The wires 3, leading from the contact pins O, are
10 connected to each of the circuit breaker contact plates Q, and the circuit with said plates is adapted to be completed through the traveling spring contact brush R. The spring contact brush R, is secured to the adjustable
15 metallic collar S, adjustably held on the shaft D, by the set screw T, so that the brush can be axially adjusted on the shaft D, to be set at a proper angle. By means of the metallic collar S, the brush is placed in connection
20 with the shaft D, which is uninsulated from the bearing arms B, so that such bearing arms can complete the electric circuit over the wire 4, to the electric motor L, as clearly illustrated in the drawings.
25 Now from the foregoing it is thought that the construction and operation of the herein described automatic draft regulator will be readily apparent to those skilled in the art. Assuming the apparatus to be in the position
30 illustrated in Fig. 1 of the drawings, it will be seen that the thermostat bar is contacting with one of the pins O. The circuit is therefore closed with the circuit breaker contact plate which the brush R, is touching.
35 By reference to this figure it will be seen that from the brush R, the current passes into the casting A, over the wire 4, through the motor L, and back to the battery M, from which the current is led over the wire 2, to the thermostat N. In this position the motor L, will
40 be set in motion so as to turn the gear wheel E, and carry the crank arms F, in a direction which will reverse the position of the dampers. The wheel E, will continue to turn until the brush R, has left the contact plate
45 which is in the circuit, and has passed onto the other plate which is not in the circuit. The motor therefore stops at once, so as to leave the dampers in their changed positions.
50 It will now be observed that the regulator

will not be put in motion again, until the thermostatic bar has closed the circuit with the other one of the circuit breaker plates Q, onto which the brush R, has passed after leaving that plate which was described to have
55 been in the circuit as shown in Fig. 1.

It will of course be understood by those skilled in the art that while the general combination and details herein specified are to be observed, nevertheless changes in the form,
50 proportion and the minor details of construction as embraced within the scope of the appended claim, may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.
65

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

In an automatic draft regulator, a metal casting having parallel upright bearing arms,
70 a single shaft journaled in said bearing arms and uninsulated therefrom, a single large toothed gear wheel mounted on the shaft between said bearing arms, oppositely disposed
75 crank arms attached to the opposite extremities of said shaft and connected with regulating cords, an attachment board secured to one of the bearing arms at its upper end, circuit breaker plates arranged out of contact
80 with each other on both sides of one end of said shaft and attached to said board, a traveling contact brush axially adjustable on one of the shaft ends and adapted to travel in contact with said circuit breaker plates, an
85 electric motor in circuit with a battery and said metallic bearing arms, the armature of the motor carrying a worm meshing with the lower portion of said gear wheel, a thermostat in circuit with the battery, and separate
90 circuit wires leading from the thermostat to each of the circuit breaker plates, respectively, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HARRY L. TYLER.

Witnesses:

JOHN H. SIGGERS,
B. A. WOOD.