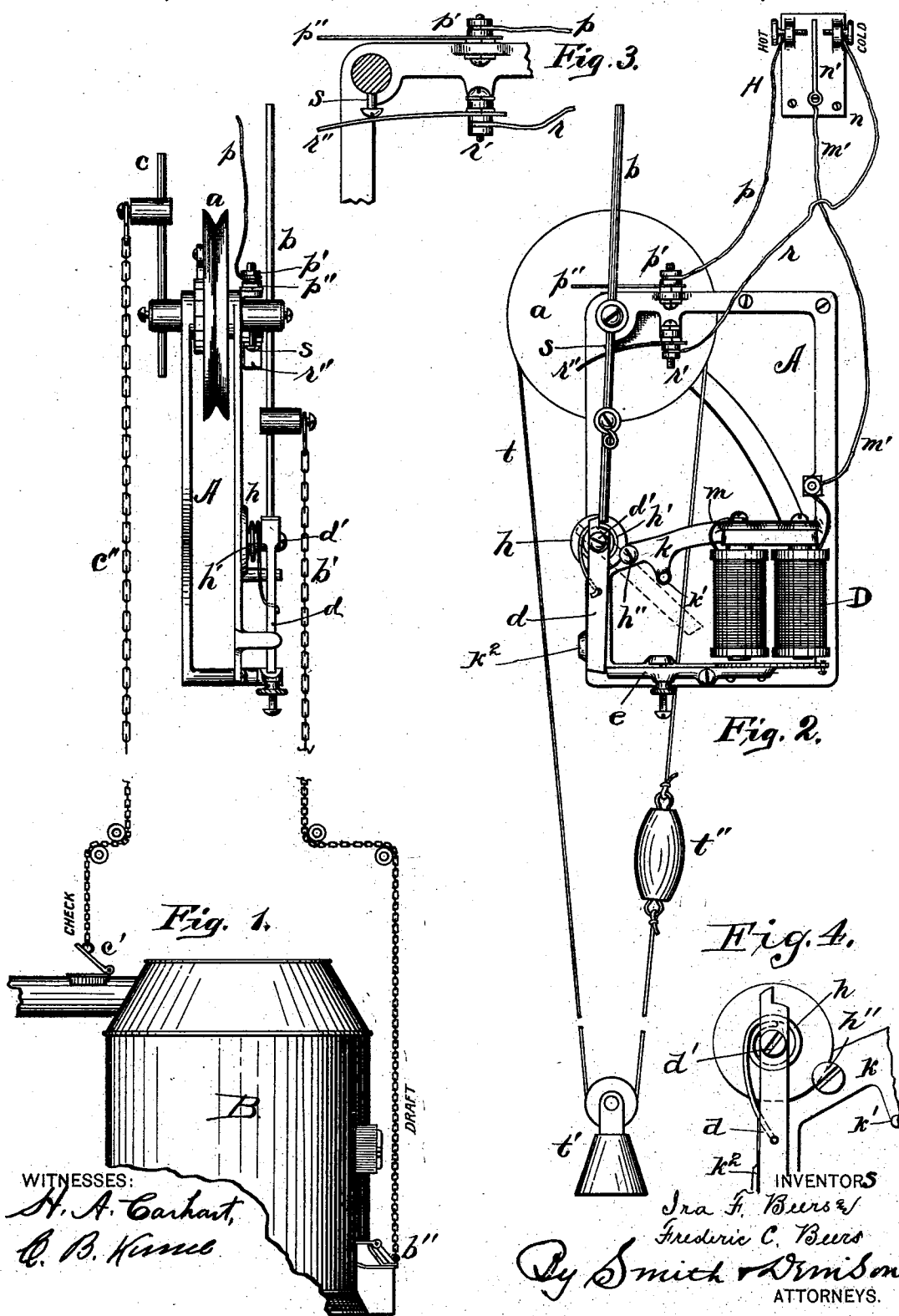


(No Model.)

I. F. & F. C. BEERS.  
THERMOSTATIC DAMPER REGULATOR.

No. 509,348.

Patented Nov. 21, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

IRA F. BEERS AND FREDERIC C. BEERS, OF ELMIRA, NEW YORK.

## THERMOSTATIC DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 509,348, dated November 21, 1893.

Application filed September 29, 1892. Serial No. 447,292. (No model.)

*To all whom it may concern:*

Be it known that we, IRA F. BEERS and FREDERIC C. BEERS, of Elmira, in the county of Chemung, in the State of New York, have invented new and useful Improvements in Thermostatic Damper-Regulators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Our invention relates to thermostats adapted to operate automatically to regulate the temperature of a room or building.

Our object is to produce a thermostat which is provided with an appliance or appliances, device or devices, mechanism or mechanisms by which the counterbalance is adjusted, by varying the resistance against it; and also provided with means whereby the strain upon the electrical battery is reduced.

Our invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a side elevation of our apparatus connected to the draft and check of a furnace (omitting the counterbalance weight and electro-magnet). Fig. 2 is a front elevation of the same, showing the counterbalance and electro-magnet and omitting the furnace and the connections to the drafts. Fig. 3 is a detail of the spring friction stop mechanism engaging with the shaft of the balance wheel which is rotated intermittently by the counter-balance. Fig. 4 is an enlarged view in detail of the device for varying the tension of the spring.

A—, is a frame in which the shaft which carries the balance wheel —a— is journaled. Upon this shaft the draft scape —b— is secured, and to this scape the cord or chain —b'— is connected, its other end being connected to the main draft damper or door —b''— of the furnace —B—. The check scape —c— is also secured to this shaft and connected to the check damper or door —c'— by the cord or chain —c''—. These scape connections are set opposite to each other. The lower end of the scape —b— engages with the catch —d— which latter is pivotally mounted upon a stud —d'— and has a limited

movement between two stops —k' k<sup>2</sup>— upon the frame, and the lower end of this catch engages with the end of the pivotally mounted armature —e— of the electro-magnet —D—. A washer or disk —h— is mounted upon the stud —d'— and adapted to be rotated thereon, and one end of the coiled spring —h'— is connected thereto, while the other end is connected to the catch —d—, so that the tension of the spring upon said catch can be varied by rotating said disk or button, and it can be set at any degree of tension by means of the set screw —h''— the head of which bears upon said disk, when it is screwed into the cross bar —k— of the frame. The electro-magnet —D— is supported by the cross-bar —k— in proper relation to the armature, and the wire —m— connects one pole of said magnet to the frame, while the wire —m'— connects its other pole to the thermostat —H—, consisting of a plate —n—, a thermostatic bar —n'— secured thereto, and composed of metals of different expansible properties so that its free end is adapted to be brought into contact with one or the other of the contact points shown and marked hot and cold, respectively, the wire —p— connecting the former to the binding post —p'— and spring finger —p''—, and the wire —r— connecting the latter to the binding post —r'— and the spring finger —r''—, each of which fingers is adapted to make contact with the screw —s— in the shaft of the balance wheel alternately with the half rotation of said wheel, when the thermostat makes a connection with either one of its contact points. A suitable cord, chain or belt —t— is passed around the balance wheel and provided with the counterbalance weights —t'— and —t''—. Then when the thermostatic bar makes contact with "cold" a circuit is made through the wires —m'—, —r—, the frame, the finger —r''— and the wire —m— energizing the magnet. Then the rocking of the armature releases the catch and this releases the draft scape. The weights rotate the balance wheel half way, which closes the check and opens the draft. As soon as one arm of the scape —b— is moved past the catch —d—, the spring —h'— throws the catch back to its normal position so that the other scape arm strikes the catch, and the latter again engages with the armature, and

as soon as it meets said armature the circuit is broken and the apparatus is set at "cold." It will be seen that the spring —*h*'— operates to shorten the time the circuit is closed, and consequently relieves the battery (not shown) from draft upon its energy to that extent.

What we claim as our invention, and desire to secure by Letters Patent, is—

10 1. In a draft regulator, the combination with the armature and the scape, of an intermediate catch engaging with both said armature and scape, a spring connected to said catch and means for varying its tension upon  
15 said catch.

2. In a draft regulator, the combination with the balance wheel and the counter-balance weight, the scape connected to said wheel, and the armature of an electro-magnet, of a catch between and with which said  
20 scape and armature engage, a spring connected to said catch and means for varying its tension upon said catch.

3. In a draft regulator, the combination with the thermostatic bar suitably mounted  
25 and adapted, by its deflection, to complete a circuit, the armature and scape, of an intermediate catch engaging with both said armature and scape, a spring connected to said catch and means to vary its tension upon  
30 said catch.

4. In a draft-regulator, the combination with an armature and a rotatable scape, of an interposed pivoted catch engaging the armature and scape and stops limiting the movement of the catch, a retractible spring connected with the catch, and means for varying  
35 the tension of said spring, as specified.

In witness whereof we have hereunto set our hands this 24th day of September, 1892.  
40

IRA F. BEERS.  
FREDERIC C. BEERS.

In presence of—

IRA S. BEERS,  
MARY F. BEERS.