

(No Model.)

F. H. PRENTISS & J. A. TILDEN.

ELECTRIC THERMOSTAT.

No. 313,523.

Patented Mar. 10, 1885.

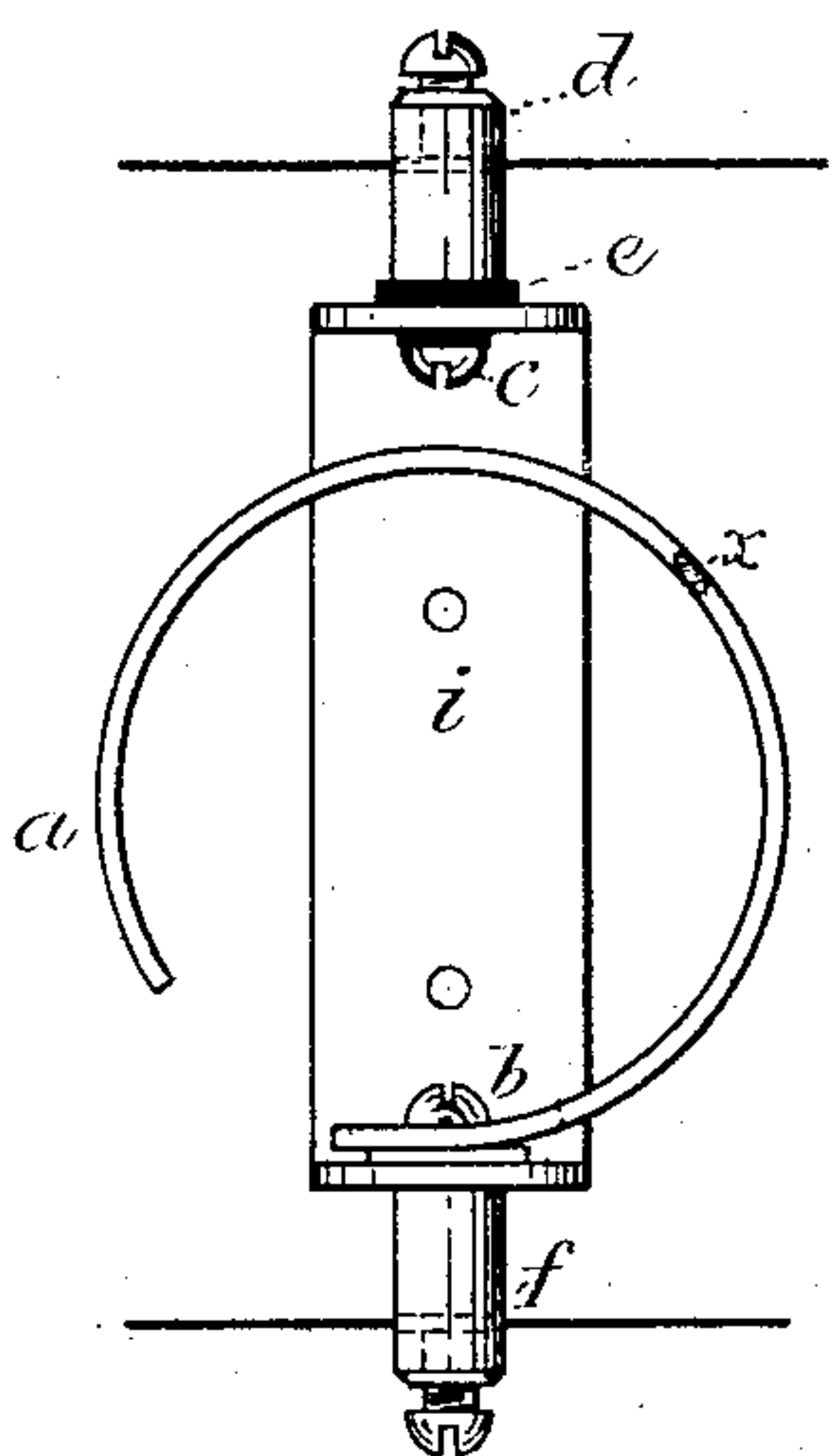


Fig. 1.

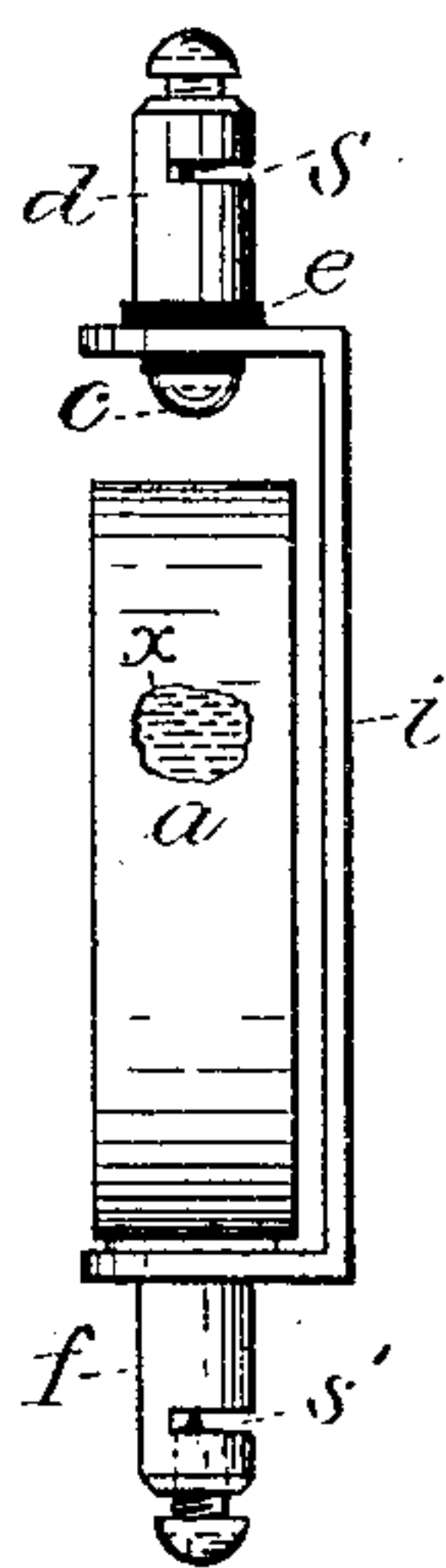


Fig. 2.

WITNESSES

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FREDERICK H. PRENTISS, OF CAMBRIDGE, AND JAMES A. TILDEN, OF HYDE PARK, ASSIGNORS TO THE AUTOMATIC FIRE ALARM ASSOCIATION, OF BOSTON, MASSACHUSETTS.

ELECTRIC THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 313,523, dated March 10, 1885.

Application filed May 18, 1883. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK H. PRENTISS and JAMES A. TILDEN, citizens of the United States, and residing, respectively, in
5 Cambridge, in the county of Middlesex and Commonwealth of Massachusetts, and Hyde Park, in the county of Norfolk and said Commonwealth, have invented a new and useful Improvement in Electric Thermostats, of
10 which the following is a specification.

Our invention relates to an electric thermostat which consists of a hollow flattened and bent spring forming a part of an electric circuit and of good conducting material,
15 made air-tight and sealed so that its contents cannot escape, containing one or more liquids or gases, or a combination of one or more liquids with one or more gases, so arranged that a movement of the spring will be caused by the
20 action of heat upon the contents of the spring so as to open or close an electric circuit between two electrodes, the object thereof being to automatically open or close an electric circuit whenever the temperature of the surrounding atmosphere or substance has reached
25 a predetermined point, and to automatically cease so to act when the temperature of the surrounding atmosphere or substance is reduced below the degree at which the electric
30 circuit was opened or closed.

Of the drawings, Figure 1 represents our invention in front elevation, in which *a* is a hollow and elastic spring, which contains one or more liquids or gases, or a combination of
35 one or more liquids with one or more gases, which will exert a pressure when exposed to the action of heat.

The spring shown in the drawings is of the well-known type of Bourdon spring, and is
40 sealed air tight, so that its contents cannot escape. The spring is firmly fastened at one point to a base or frame, *i*, and the electric binding-post *f* by the binding-screw *b*. The spring is broken away at *x*, showing the contents of the spring.

c is a binding-screw, which forms an electrode connecting with the binding-post *d*. The screw *c* and post *d* are insulated from the frame *i* by the insulator *e*.

50 Any of the long list of hydrocarbon liquids or illuminating-gas or ammonia are among the well-known commercial products that may be used in the Bourdon spring.

The particular use to which it may be desired to put this device will govern the user
55 in his selection of liquid or gas or combination of liquid and gas to be put into the tube. When the contents of the spring are acted upon by heat, a pressure within the spring will be exerted, which will force the spring
60 against the electrode *c*, and the electric circuit will thereby be opened or closed, according as may be desired, and when the action of heat upon the contents of the spring ceases the contact of the spring with the electrode *c*
65 will be broken.

Fig 2 shows a side view of Fig 1.

The spring should be of such strength that it will move readily whenever an internal pressure is exerted.

70 The degree of temperature of the surrounding atmosphere or substance at which the electric circuit will be opened or closed will depend upon the contents of the spring and the strength of the spring.

We claim—

A thermostat for making an electrical connection in an open circuit suddenly and not gradually, which consists of the following elements, viz: a sealed metallic Bourdon tube
80 containing an expansible fluid of the properties hereinafter set forth, the fixed end of which tube is in constant electric connection with one branch of the open circuit, an insulated electrode connected with the other
85 branch of the open circuit and placed and set in the path of the movement of said Bourdon tube as it straightens under internal pressure produced by the expansion of its contents, and a fluid contained in said Bourdon tube of
90 a character and in a condition to be converted if free at the temperature desired to be signaled by the passage of the current, and at no lower temperature, from a liquid to a gas, whereby the internal pressure on the tube is
95 greatly enhanced at this moment of increment, a greater range of motion is given to the tube, and the closing of the circuit is suddenly effected, substantially as described.

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Witnesses:

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