

(No Model.)

E. R. WILDER & J. P. CLARK.

THERMOSTAT.

No. 308,120.

Patented Nov. 18, 1884.

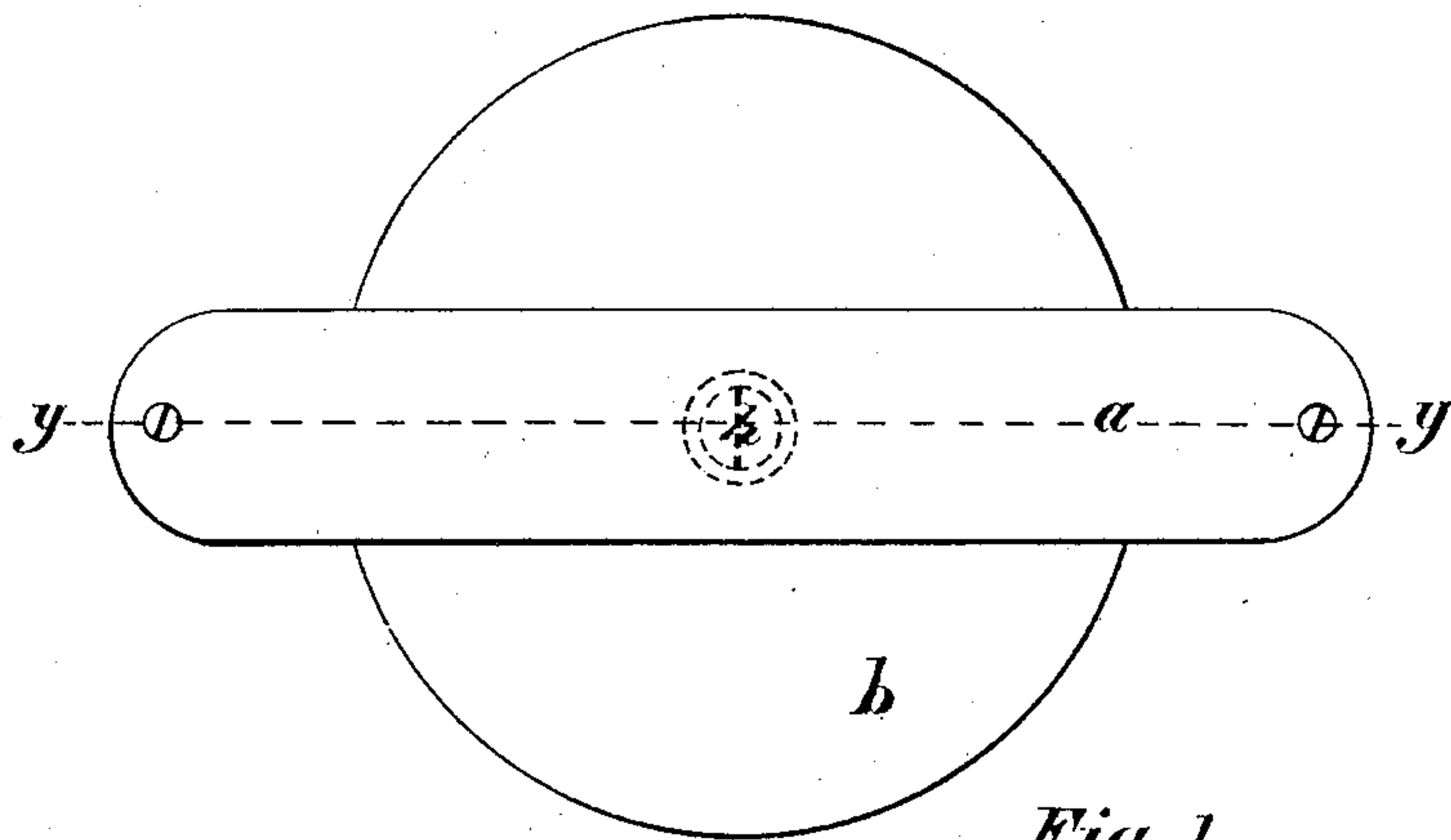


Fig. 1.

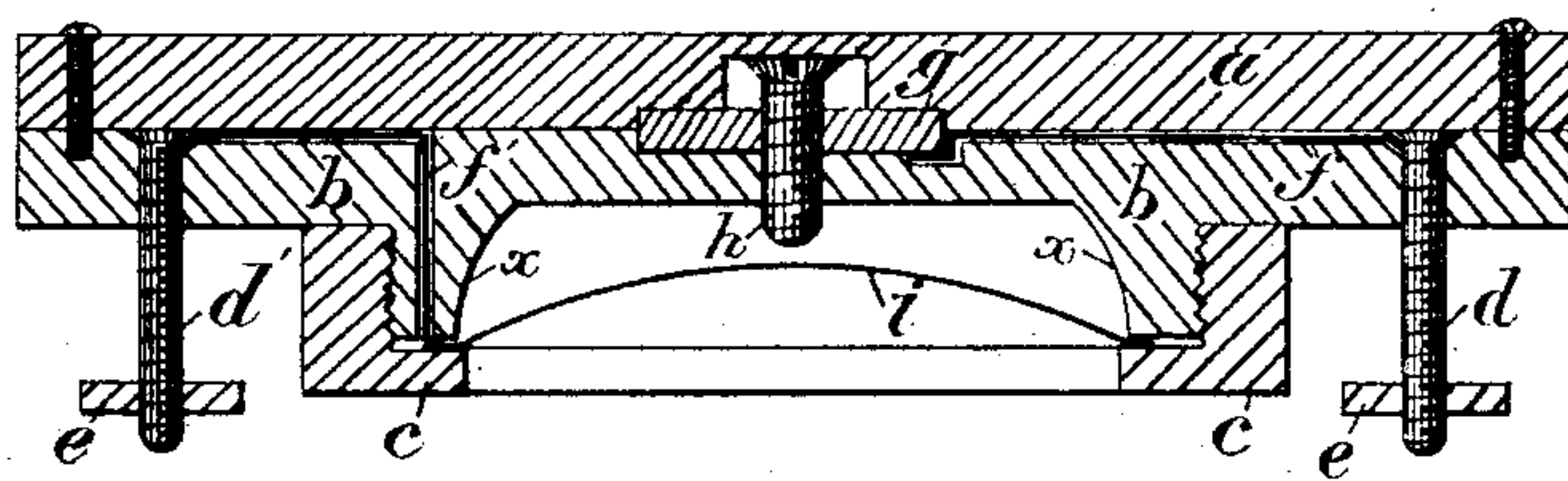


Fig. 2.

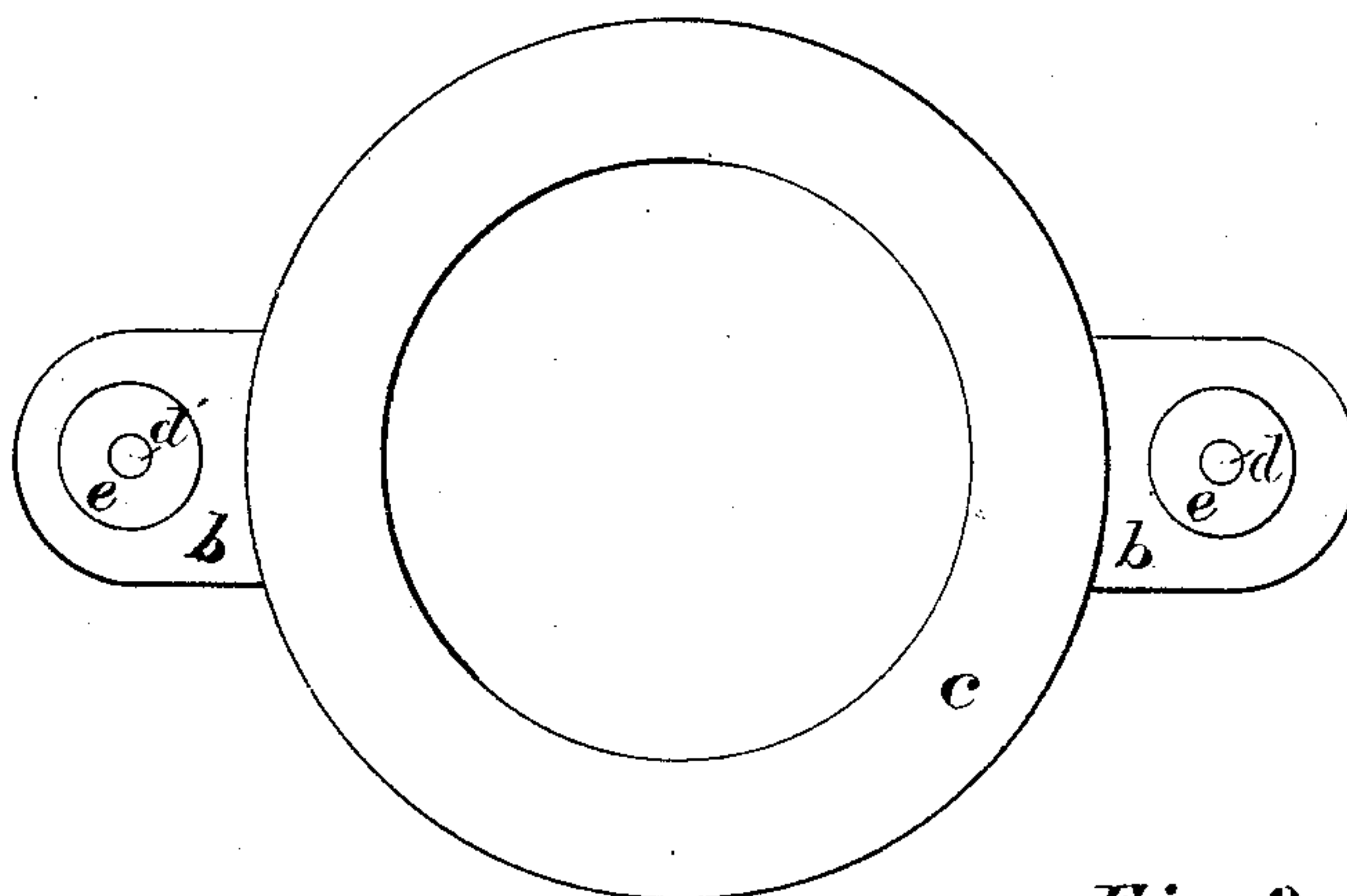


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

EDMUND R. WILDER AND JOSIAH P. CLARK, OF PORTLAND, MAINE.

THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 308,120, dated November 18, 1884.

Application filed May 27, 1884. (No model.)

To all whom it may concern:

Be it known that we, EDMUND R. WILDER and JOSIAH P. CLARK, both of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Thermostats; and we do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan; Fig. 2, a vertical cross-section through the line *yy* of Fig. 1, and Fig. 3 a view from the under side.

Our invention relates to thermostats or heat-detectors to be used in connection with fire-alarms and for kindred purposes.

It consists of a concaved diaphragm of metal inclosed within unyielding walls of some non-conducting substance, one pole of an electric battery being constantly in connection with the diaphragm, while the wire of the other pole is so located with reference to the diaphragm that expansion of the diaphragm will cause the convex side of the same to come into connection with such other pole.

The various parts of this invention may be arranged and used in various ways.

The following is a description of a device in which the parts may be embodied and used. *b* is a circular piece of non-conducting material having ears and the central annular projection, *x x*, which may be provided on the outside with screw-threads. Upon this projection may be screwed or otherwise fastened the ring *c*, (see Fig. 2,) the diaphragm *i* of this metal being firmly held between the projection *x* and the ring *c*, as shown in Fig. 2. The convexity of the diaphragm should be toward the piece *b*, and one side of it should be in continual contact with the wire *f'*, which extends upward from the diaphragm through the projection *x* to the stud or screw *d'*, which is inserted into one of the ears of the piece *b*. A similar stud or screw is located in the opposite ear, and connected by wire *f* with the metal plate *g*, which is placed above the center of the piece *b*. The wires *f' f* and plate *g*, as well as the head of the screw *h*, (of metal,) are covered by the piece or bar *a*, Figs. 1 and

2. The screw *h* passes downward to a point slightly above the diaphragm *i*. The wires and connections of all the metal parts are thus covered and protected from contact with dirt, water, &c. It is not intended that the diaphragm, the ring *c*, plate *b*, and bar *a* shall be so closely united as to form between these parts an air-tight space. This may be further guarded against by use of a slight air-vent through the ring or plate *b*.

The purpose of the invention being to indicate when a substance, apartment, or locality has reached a certain degree of heat, the screw *h* is so set that the curvature or expansion of the diaphragm corresponding to such degree of heat will bring it in contact with the screw *h*. By this means, when the apartment, &c., has reached the degree of heat in question, the circuit will be closed, the wire from the positive pole of the battery (for example) being connected with the screw *d'*, and the wire from the negative pole with the screw *d*, and the requisite alarm given or registered.

This thermostat is not dependent for its operation upon the expansion of a confined body of gas or fluid, whereby motion of the diaphragm is obtained. The diaphragm is expanded and its concavity increased by the direct action of the increased temperature of the surrounding air, and the use of a confined body of air or fluid is not necessary nor contemplated.

What we claim as our invention is—

1. An automatic thermostat for the purpose of giving an alarm when a certain degree of temperature is reached, consisting of a concave metallic diaphragm rigidly and closely surrounded by a non-conducting substance, and the conducting-wire *f'* and the adjustable screw or pin *h*, having electrical connections, whereby the direct action of the surrounding atmosphere at a certain degree of temperature will, by expanding the diaphragm, establish an electrical circuit through said wire and pin, substantially as described.

2. In a thermostat, the combination of the concave metallic diaphragm *i*, operated directly by an increase in the degree of heat of the surrounding atmosphere, and without the interposition of a confined body of air or fluid, said diaphragm being rigidly surrounded by

a ring of non-conducting material, the wire f' , the adjustable pin or screw h , and wire f , substantially as described.

3. The combination, in a thermostat, of the
5 concave metallic diaphragm i , operated directly by an increase in the degree of heat of the surrounding atmosphere, and without the interposition of a confined body of air or fluid, said diaphragm being rigidly surrounded by
10 the ring c , of non-conducting material, the plate b , the wires $f'f$, and screw h , substantially as described.

4. The combination, in a thermostat, of the diaphragm i , plate b , ring c , bar a , wires $f'f$, plate g , pin h , and screws $d'd$, substantially 15 as described, for the purposes set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 15th day of May, 1884.

EDMUND R. WILDER.
JOSIAH P. CLARK.

Witnesses:

J. C. CLAY,
G. E. BIRD.