

No. 887,949.

PATENTED MAY 19, 1908.

C. J. LETZING.

THERMOSTAT.

APPLICATION FILED FEB. 28, 1907.

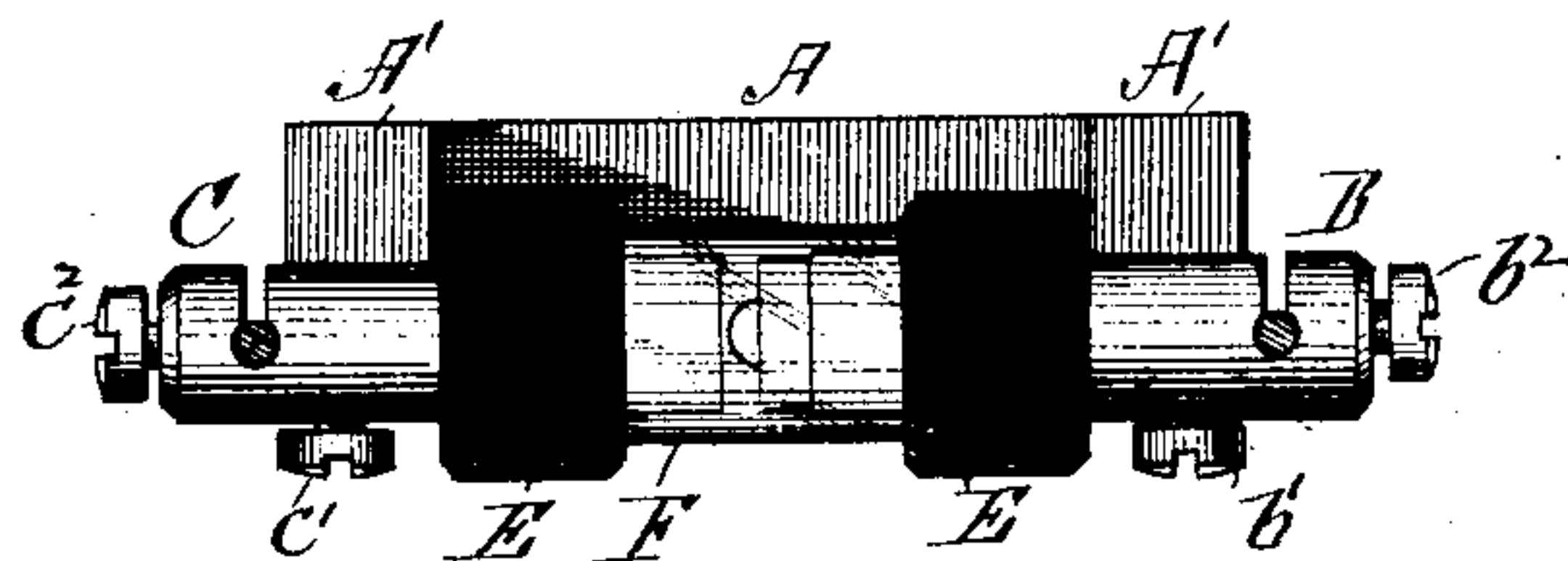


Fig. 1.

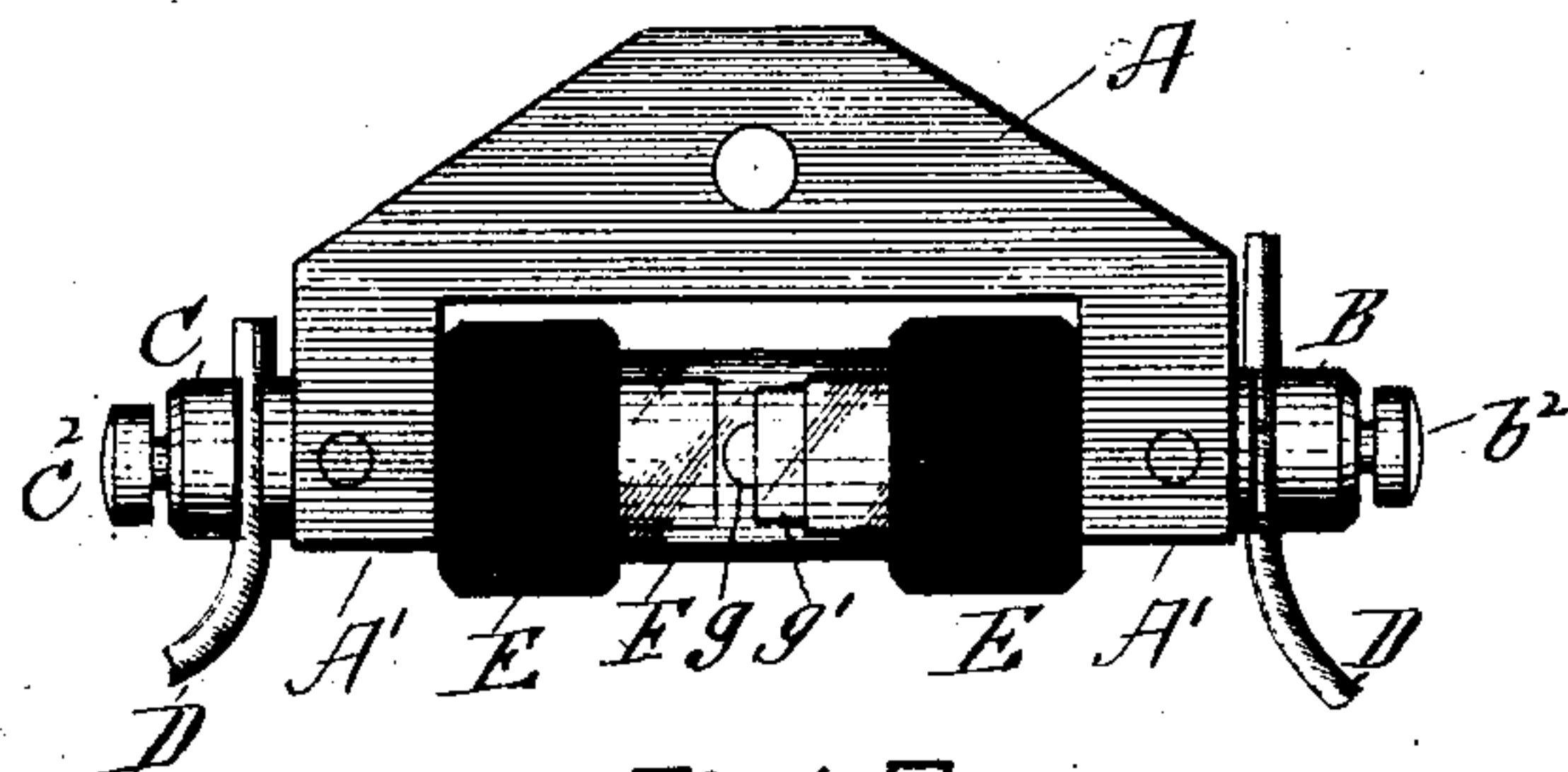


Fig. 2.

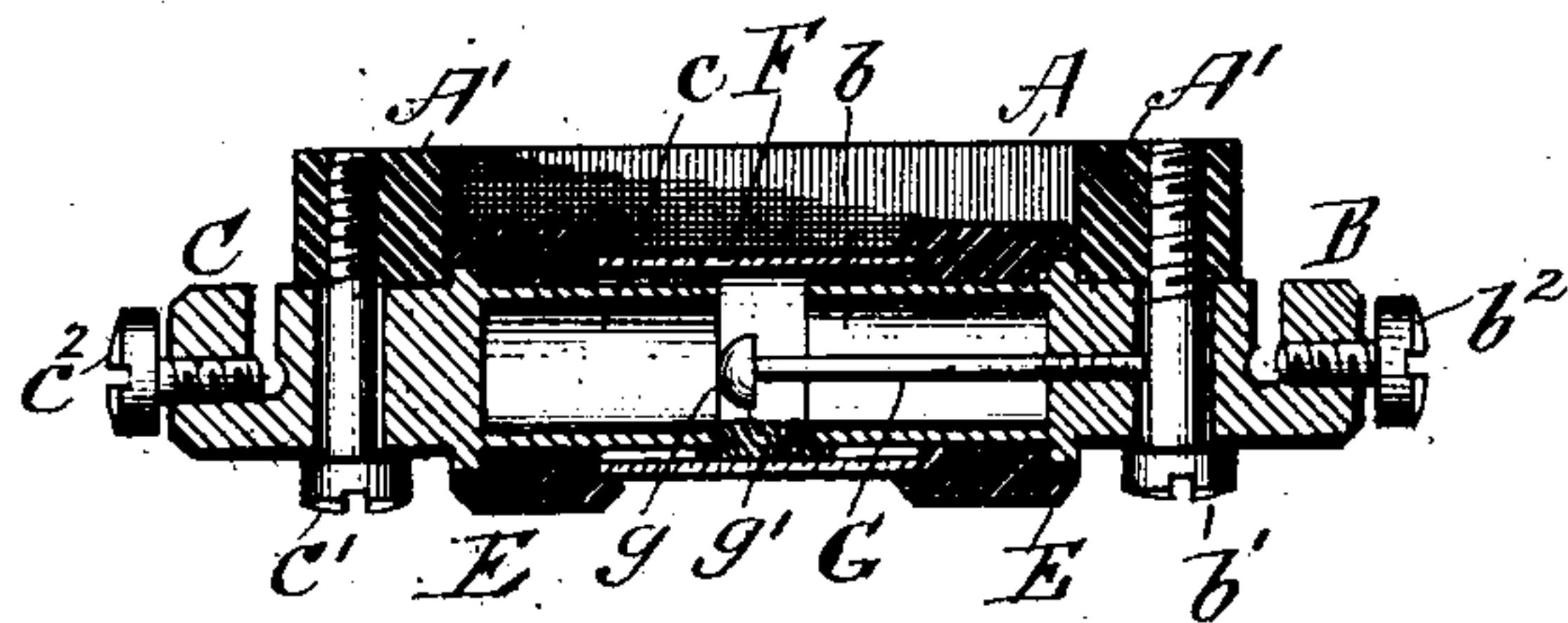


Fig. 3.

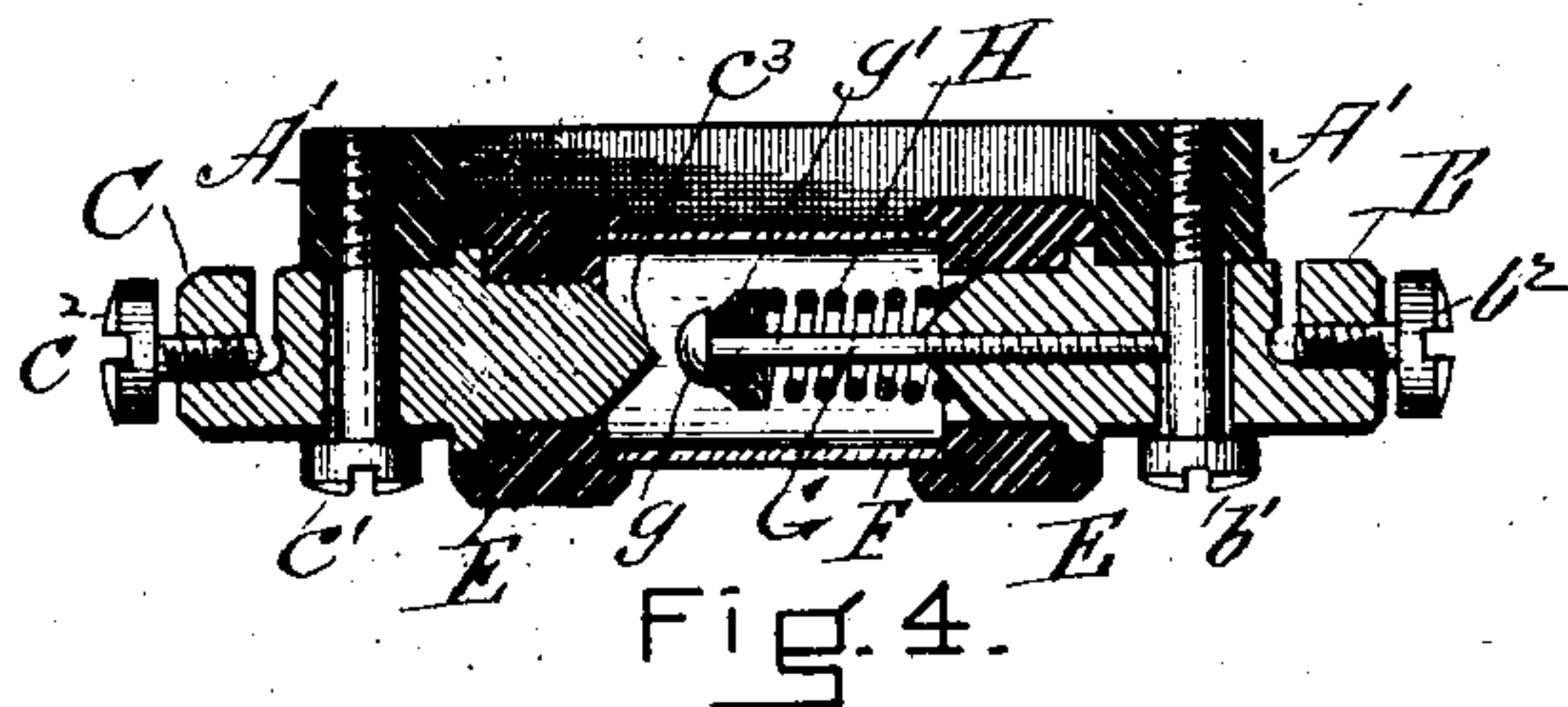


Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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THERMOSTAT.

No. 887,949.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed February 28, 1907. Serial No. 359,810.

To all whom it may concern:

Be it known that I, CHRISTIAN J. LETZING, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Thermostats, of which the following is a specification.

My invention relates to that class of thermostats which are used in factories and other places as part of an automatic fire alarm system, and it consists in a thermostat which is protected from corrosion, dust and the other incidentals of a factory or other place where thermostats are used which render the thermostat imperfect and uncertain in its working so that full reliance cannot be placed upon it as a circuit closer to close a circuit only at the time needed.

My invention will be understood by reference to the drawings, in which—

Figure 1 is a front elevation, and Fig. 2 a plan of a thermostat embodying my invention. Fig. 3 is a longitudinal vertical section thereof. Fig. 4 shows a modification.

In each of these forms A is a yoke-shaped support or bracket of insulating material which carries the terminals and which is adapted to be attached to the ceiling of a room. It has two arms A^1 , A^1 , each carrying a binding post which are thus arranged opposite each other, their opposing ends forming the terminals of a circuit.

B and C are the binding posts which in the form shown in Figs. 1, 2 and 3 are bored out at their opposing ends forming chambers as shown at b and c . Each binding post is attached to its arm A^1 by means of a screw b^1 and c^1 which passes through it and the arm A^1 to which it is attached so that it will not be moved when the binding screw is screwed to hold the circuit wire in place. It has the usual binding screw b^2 and c^2 by means of which the wires D forming part of the circuit are attached to the thermostat. Each binding post carries an annulus E preferably of insulating material, for example,—hard rubber, which fits over the inner end of the binding post, the diameter of the opening in its outer end being enlarged sufficiently to receive and hold a casing F preferably made of glass, which is thus held permanently in place. The shape of the casing in cross section is immaterial so long as the lower inner surface of the chamber formed thereby will co-act with the fusible

metal to cause it to close the circuit when melted.

The binding post B also carries a pin G headed at its outer end as at g and carrying a washer g^1 of fusible metal. The kind of metal of which this washer is made is immaterial so long as it is in itself a conductor of electricity and fusible at a predetermined degree of temperature. This pin G and the washer g^1 it will be noted, although they project from the binding post B, do not engage with the binding post C so as to form an electrical contact therewith, but the washer contains sufficient metal so that when melted it will run into the bottom of the chamber formed by the tube F and will spread over what might be termed the floor of the chamber formed by this tube and consequently will make electric contact with the terminals of the binding posts thus closing the circuit through them. By this means the circuit is closed when the heat in the room has reached the danger point and the necessary alarm is given at the central station.

I have found that this construction is exceedingly valuable because the various working parts, the terminals, fusible metal, etc., of the apparatus, being inclosed within this chamber, are protected from the various conditions, atmospheric and otherwise, which cause apparatus of this kind to corrode and lose their efficiency in time. Thus in my construction the terminals of the posts are maintained in a far better condition, brighter and cleaner, than they would be in a damp room, and the apparatus will not collect the dust or lint with which the air in some mills is apt to be filled. Moreover where a glass tube is used as a casing to form the chamber the condition of the thermostat may be examined from time to time without taking it apart. The tube should be of insulating material or at least should be insulated from the binding posts and at the same time should be of such character as to transmit heat easily through its walls.

In Fig. 4 I have shown a modification of this construction in which the parts are inclosed in the chamber as above described, but in this case the fusible metal washer g^1 instead of forming a part of the electrical connection itself serves with the head g of the pin G to restrain a spring H which forms the terminal of the post B. In this case I

prefer that the terminal of the post C shall be pointed as shown at c^3 . When the washer g^1 melts the spring H is released so that it expands and engages or wraps itself around the point c^3 of the post C, thus forming a good contact and closing the circuit. For a thermostat of this character, that is one in which the spring construction is used, I find that the inclosing of the parts in a protecting chamber is of especial importance as when exposed to the air, especially in a damp room, the surface of such a spring as is shown in Fig. 4 becomes more or less corroded and so cannot be expected to make such a perfect electrical contact as when it is fresh and clean. It is evident that this application of a chamber to thermostatic use is of considerable value and that it may be used to inclose other automatic circuit closers than that shown. The shape in which I use the fusible metal and the way in which I support it are simple and very effective and these elements combine to make a thermostat of great practical value. Moreover another advantage of the form of thermostat which I have shown in Figs. 1, 2 and 3 is that when the fusible metal of the thermostat has once been melted the thermostat thereafter may be taken down, the metal remelted over a lamp and the thermostat being held in a vertical position the melted metal will run down into the chamber in the binding post B and the thermostat will then be in condition to use again for when the thermostat is again put in place and submitted to a high degree of temperature sufficient to melt the metal it will run out from the chamber and make contact as before. While it is convenient when the thermostat is first constructed to apply the fusible metal in a form of a washer to the pin, this is by no means necessary to accomplish

the result which I desire as the main purpose of my invention when embodied in this form is that the metal when fused shall run down between the terminals and form a connection.

What I claim as my invention is:—

1. A thermostat comprising two terminals located in substantially the same horizontal line, one of said terminals carrying a fusible washer adapted when fused to cause the closing of the circuit between said terminals, as described.

2. A thermostat comprising two terminals located in substantially the same horizontal line, one of said terminals carrying a fusible washer, a casing surrounding said terminals whereby they may be protected from corrosion, said casing also serving when said washer has been melted to hold the metal thereof in electrical connection with both terminals.

3. A thermostat comprising two terminals, a pin projecting from one terminal, a washer of fusible material located on the said pin, and means adapted to cause the closing of the circuit between said terminals upon the fusing of said material, as set forth.

4. In a thermostat, in combination, a casing, two binding posts forming terminals located in said casing, one of said binding posts having a hollow terminal end, a fusible circuit closer located between said terminals in said chamber and adapted when melted to form a contact with said terminals and thereafter when again melted to break contact and be received into the said hollow terminal end as described.

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Witnesses:

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