(No Model.)

M. MARTIN.

ELECTRIC HEAT ALARM.

No. 272,893. Patented Feb. 27, 1883.

Fig. 1.

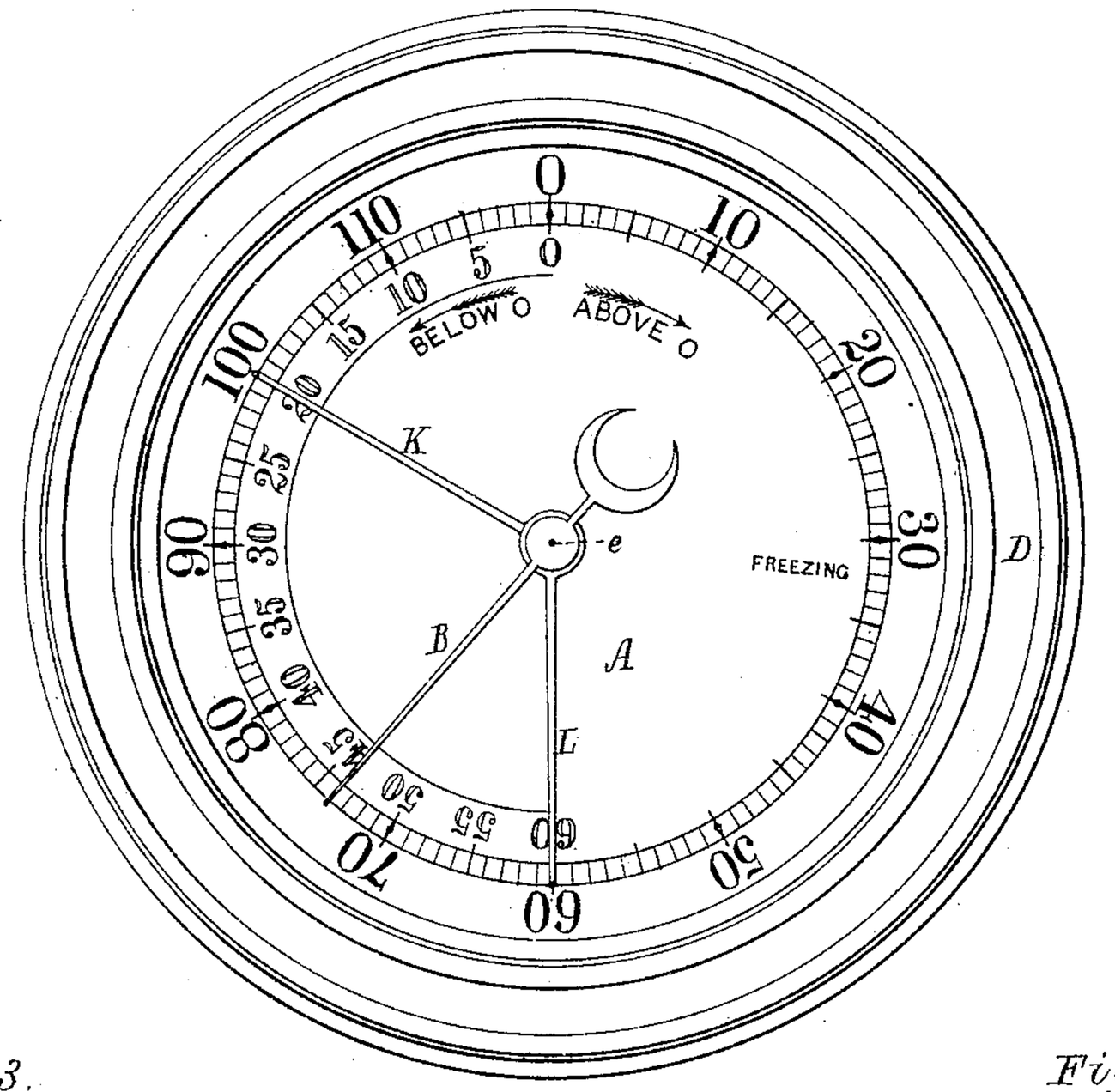


Fig. 3.

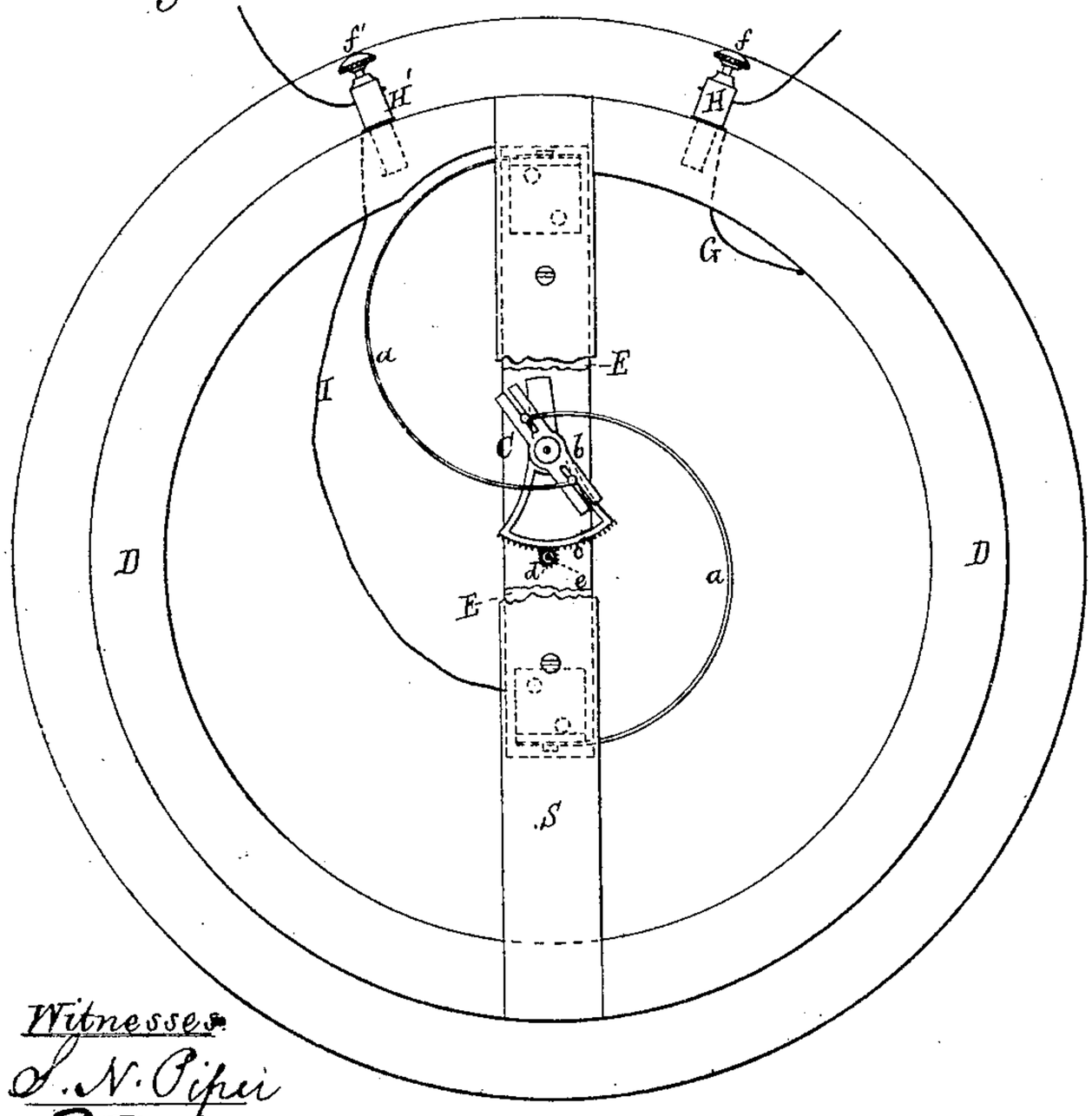
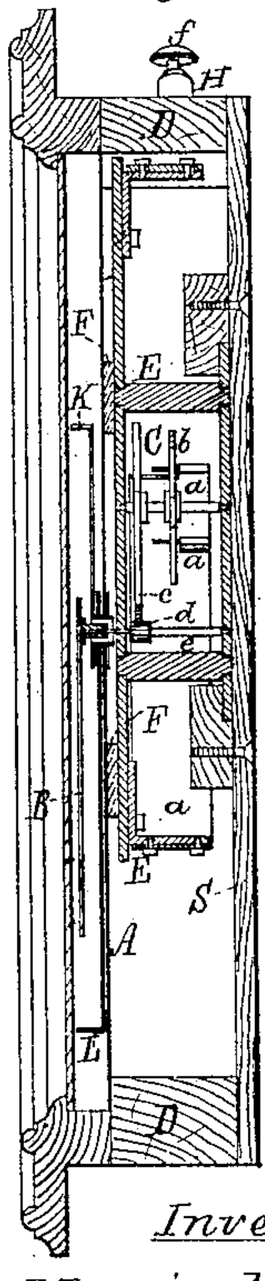


Fig. 2.



Witnesses.
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E. B. Pratt.

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UNITED STATES PATENT OFFICE.

MORRIS MARTIN, OF MALDEN, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO EDWIN A. JEFFERY AND FREDERICK O. JEFFERY, BOTH OF BOSTON, MASSACHUSETTS.

ELECTRIC HEAT-ALARM.

SPECIFICATION forming part of Letters Patent No. 272,893, dated February 27, 1883.

Application filed September 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, MORRIS MARTIN, of Malden, in the county of Middlesex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Electric Heat-Alarms; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, and Fig. 2 a transverse and central section, of a metallic dial thermometer provided with my invention, the nature of which is defined in the claims hereinafter presented. Fig. 3 is a rear view of the thermometer with the back of its case removed.

The object of the invention is to cause the circuit of an electrical alarm to be closed at any desirable temperature indicated by the main hand of the dial of the aforesaid thermometer, the closing of the circuit causing the alarm mechanism to be thrown into operation so as to sound an alarm.

Electrical circuit-wires to lead from the thermometer or its connection-posts to a battery and an alarm apparatus do not constitute any part of my invention, and may be of any well-known kind, the two circuit-wires being simply shown in part in Fig. 2 of the drawings in their application to the connection-posts of the wires of the metallic thermometer. This thermometer, in its general construction, is essentially like that as made by the Auburndale Watch Company, and known by the name of the "metallic thermometer," it having a dial, A, an indicator-hand, B, and mechanism C to move the said hand around on the dial, such mechanism, properly sustained by a bar, S, extending across the case, being put in operation by expansion or contraction of parts of it—viz., two metallic bows—such expansion and contraction being induced by changes in temperature. These bows are shown at *a a*. Each of them is stationary at the outer end of it, and they have their inner ends properly adapted to two arms of a lever, *b*, to cause such lever to be turned one way by them while they may be expanding, and turned the other way while they may be contracting. This lever carries a toothed sector, *c*, that engages with a pinion, *d*, fixed on the arbor *e* of the indicator-hand B. The dial A, being a metallic plate fitted in a wooden annulus or case, D, is to be electrically insulated from the metallic frame E, that supports the mechanism for operating the hand B, the insulators being shown at F F as pieces of vulcanized india-rubber interposed between such dial and frame. A wire, G, leads from the dial to a circuit-wire binding-post, H, provided with a clamp-screw, *f*, such post being extended from the wooden case D. Another such binding-post, H′, provided with a clamp-screw, *f′*, also projects from the case D, and has a wire, I, extending from it to the metallic frame E. There are pivoted to the dial, so as to be in electric connection with it, concentrically with the arbor of the hand B, but wholly out of contact with such arbor, two other auxiliary hands, K L, each being adapted so as to be capable of being swung around the divided circle of the dial from one division to another thereof. Each of the hands K L has its outer end bent upward at a right angle into or above the plane of rotation of the hand B.

The operation of the apparatus may be thus described: If we suppose it to have applied to its binding-posts the circuit-wires of a galvanic battery and an electrical alarm apparatus, and the dial auxiliary hands K L be set upon any two divisions of the dial, it will be seen that whenever the main hand may be moved against the turned-up portion of either of the said auxiliary hands the electrical circuit will be closed, and as a consequence the alarm apparatus will be put in operation. The upturned ends of the hands K L prevent the pointer from passing beyond, and hence as soon as the limit is reached the alarm is sounded and continues. While the main hand may be out of contact with either of the auxiliary hands the electrical circuit will be open. From this it will be seen that should we desire to have the circuit closed at any degree of temperature, we have only to move one of the auxiliary hands to that degree on the dial, and on the main hand being moved up to the auxiliary hand by the increase or decrease of the temperature the circuit will be closed. With the two auxiliary hands the circuit may be closed at either of two degrees of temperature between which the main hand may be on the dial, and to which the two auxiliary hands

may be set. Thus, if the alarm is to be sounded when the temperature is 100° and also when it may fall to 60°, we should move one auxiliary hand to the division indicative of 100° and the other to the division indicative of 60°. Should the temperature rise to 100° or fall to 60°, the circuit will be closed.

I am aware that an electric heat-alarm has been devised in which a thermometer having insulated portions is used. I lay no broad claim thereto; but

I claim—

1. The dial-thermometer having its metallic dial electrically insulated from its indicator-hand and the operative mechanism thereof, and provided with one or more auxiliary hands having upturned ends, as described, applied to it and disconnected with the main hand, in combination with the wires of an electric alarm, one wire being connected with the dial, the other with the indicator-hand, substantially as set forth.

2. The dial-thermometer provided with wires G I, the former connected to the dial-plate and the latter to the indicator-hand, and electrical circuit-wire binding-posts H H′, adapted to it as set forth, and having its metallic dial electrically insulated from its indicator-hand and the operative mechanism thereof, and provided with one or more auxiliary hands having upturned ends, as described, applied to it and disconnected with the main hand, in combination with the wires of an electric alarm, one wire being connected to the binding-post H and the other to the post H′, as set forth.

MORRIS MARTIN.

Witnesses:

HENRY W. WILLIAMS,

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