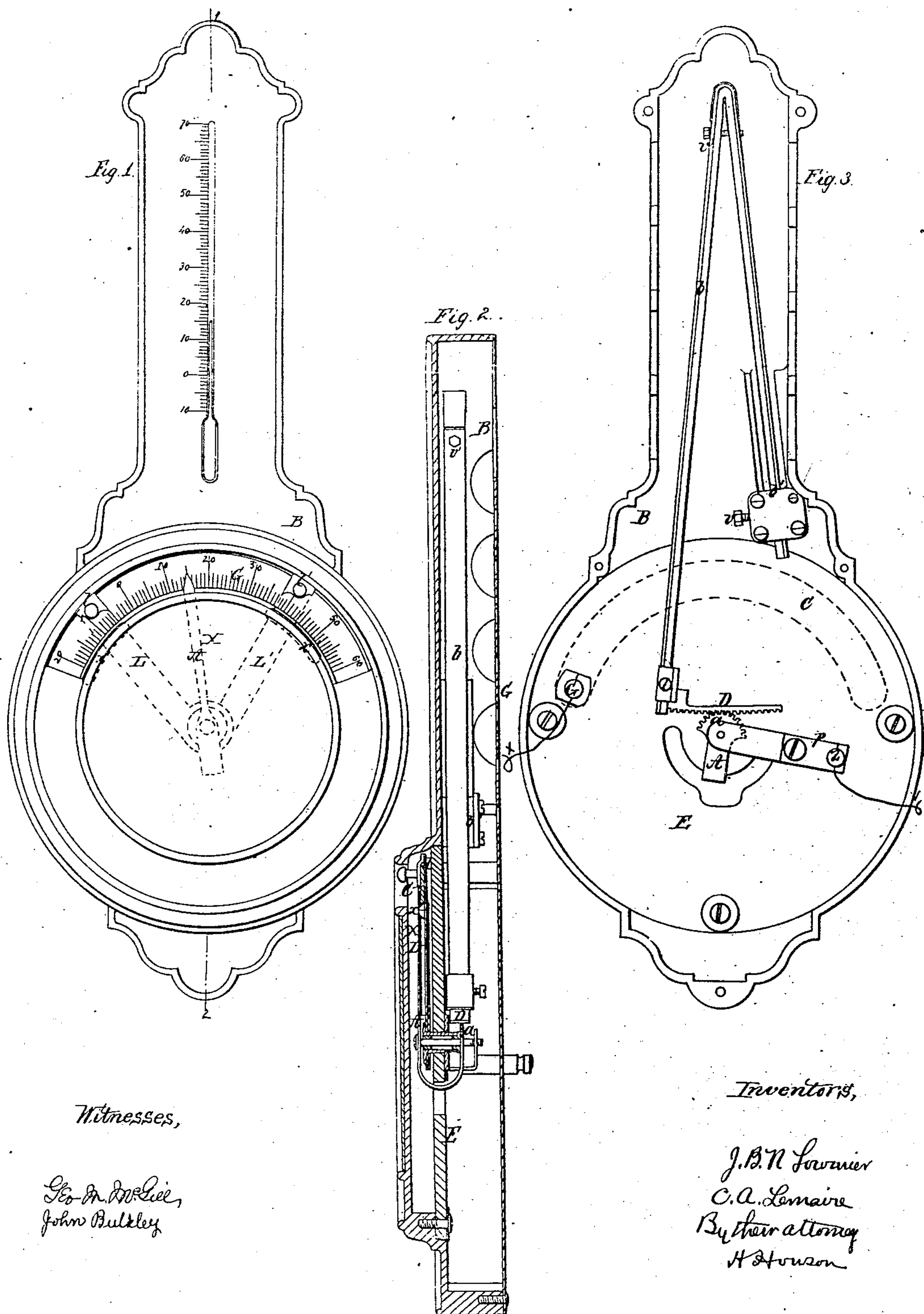


Fournier & Lemaire.
Electro-Magnetic Thermometer.

N^o 89,757.

Patented May 4, 1869.



Witnesses,

*Geo. M. McKee,
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Inventors,

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 By their attorney
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United States Patent Office.

J. B. N. FOURNIER AND C. A. LEMAIRE, OF PARIS, FRANCE.

Letters Patent No. 89,757, dated May 4, 1869.

IMPROVEMENT IN ELECTRO-MAGNETIC TEMPERATURE ALARMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, J. B. N. FOURNIER and C. A. LEMAIRE, of Paris, France, have invented an improvement in Thermometers; and we do hereby declare the following to be a full, clear, and exact description of the same.

Our invention consists of the combination with a thermometer of certain plates, or ribs adjustable on the scale of the thermometer, and connected to a wire leading to one pole of a galvanic battery, and certain alarm-mechanism arranged between the battery and the pointer of the thermometer, which pointer is connected to the opposite pole of said battery, all as fully described hereafter, so that a galvanic circuit is established, and an alarm given whenever a variation of temperature occurs beyond a limit previously determined upon.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a face view of our improved thermometer;

Figure 2, a vertical section on the line 1-2, fig. 1, and

Figure 3, a rear view, the back of the case being removed.

The case of the instrument, in the present instance, consists of a cylindrical portion, A, and an elongated portion, B, an ordinary spirit, or mercury-thermometer being secured to the outside of the latter.

Within the case is a compound metallic bar, *b*, such as is employed in metallic thermometers, and to the lower end of this bar is secured a curved ratchet, D, the teeth of which are adapted to those of a pinion on a shaft, *a*, extending through an opening in the centre of a circular plate, E, of slate or other non-conductor of electricity.

In the face of the circular portion A of the instrument is a curved opening, through which may be seen a curved graduated plate, C, and over the latter moves a pointer, X, secured to the shaft *a*.

To a sleeve surrounding, but insulated from the shaft *a*, are hung two adjustable arms, L L', which extend beneath, and are bent down over the face of the plate C, the ends of the arms being formed into fingers *t t'*, and on each arm, beneath the plate C, is a curved rib, or projection *x*, or *x'*, for a purpose described hereafter.

On one of the arms, L L', is a stud, G, to which is connected a wire leading to a pole of a galvanic battery, and to an arm, P, in which turns the inner end of the spindle *a*, is connected a wire, leading to the

other pole of the battery, suitable alarm-mechanism being placed in connection with one of the wires, so as to be operated when a galvanic circuit is established.

The arms L L' may be adjusted so as to occupy any desired position on the plate C, and the pointer *x*, so long as its vibration is limited to the space between these two arms, operates in the ordinary manner. If, however, on an unusual increase or diminution of temperature, the pointer should be brought into contact with one of the ribs or projections *x x'*, a continuous metallic connection will be established between the two wires, through the medium of the shaft *a*, pointer *x*, arm L or L', and its rib, the electric circuit being thus completed, so as to set in operation the alarm-mechanism before alluded to.

By adjusting the arms L L' in close proximity, an alarm will be sounded in case of but a slight variation of temperature, while, as the distance between the arms is increased, the extent to which the pointer can move without sounding an alarm is enlarged.

The instrument may be employed for various purposes, as for indicating any variation from the proper temperature in hot-houses, hospitals, public halls, storerooms, &c., or in coal magazines, or hay-ricks, to indicate danger of fire from a sudden or too great increase of temperature.

It will be seen that the ribs or projections *x x'*, although so placed that the pointer may come in contact with them, do not interfere with the free movement of the pointer beyond the points where the alarm must be given, the straining or breaking of the mechanism being thus prevented.

Without claiming broadly the combination of a battery and alarm, with a pointer connected to the battery, and moving over a graduated arc, provided with projections also connected to the battery,

We claim as our invention, and desire to secure by Letters Patent—

The within-described combination of the compound metallic bar *b*, a pointer, *x*, operated by the bar, a graduated arc, *c*, and adjustable ribs, or blocks *x x'*, so constructed as to permit the pointer to pass over, but in contact with the same, when the said pointer and blocks are connected to the wires of a battery, as set forth.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

FOURNIER.
LEMAIRE.

Witnesses:

F. OLCOTT,
G. RICHARD.