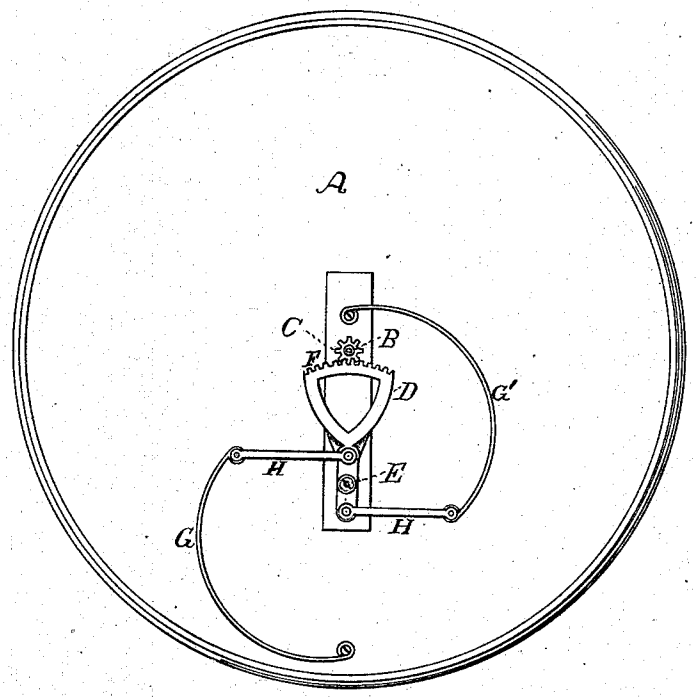
(No Model.)

# W. A. WALES.

## Metallic Thermometer.

No. 240,059. Patented April 12, 1881.

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# UNITED STATES PATENT OFFICE.

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## METALLIC THERMOMETER.

SPECIFICATION forming part of Letters Patent No. 240,059, dated April 12, 1881.

Application filed December 15, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. WALES, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Mechanical Thermometers, of which the following is a specification.

This invention relates to improvements in mechanical thermometers, and is designed to render them more practical in construction and accurate in operation.

By my manner of construction they can be produced with equal accuracy of any size from the small watch-charm to the turret clock-dial.

The general description and operation of this invention are as follows:

A plate of metal having thereon two bridges, in which is planted a rack and pinion for the purpose of multiplying the direct action of a strip composed of two metals fused together, unequally affected by temperature, and changing the same into a rotary motion. Secured to the plate at one end is the compound metal strip G, the other end of which is connected with the rack D by means of a connecting-link, thus communicating action to the rack, thence to the index-hand by means of a pinion, C. Thus far my description relates only to instruments already existing.

In many instruments of this class which have heretofore been made a hair-spring has been placed on the center arbor or attached to some part of the rack as a means of attaining steady action of the index-hand; but inasmuch as the turning of the hand and its pinion in either direction produces a constantly-increasing resistance, while the moving power remains the same, it is apparent that in extremes of temperature the index-hand would be more or less retarded from this resistance, and thus indicate the temperature incorrectly. This results from the lack of strength in the lateral draw of the lamina and is easily proved by the dropping which takes place in certain positions by the simple action of gravitation.

To obviate this error or defect in the correctness of mechanical thermometers is the object of my invention, and is produced as follows, reference being had to the drawing forming part of this specification, which is a view of the mechanism detached.

To the opposite end of the metal plate I attach another bimetallic strip, G′, precisely like the first mentioned and attached by the same method to a point opposite and equidistant from the acting center of the rack. In setting the two bimetallic strips, when putting the instrument together, they are so placed that there shall be a slight side draw on the pivot of the segment, which draw or tension is maintained evenly throughout its action in all extremes of temperature, thus securing an accurately graduated scale and perfectly steady hand, which, when properly made, shows no aberration in any position at a fixed temperature.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, in a mechanical thermometer, of two bimetallic strips attached to a lever-arm so as to act together in operating the indicating-hand, but so adjusted as to have a slight tension in respect to each other, substantially as shown and described.

WILLIAM ATHERTON WALES.

Witnesses:

RUFUS FOLSOM,

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