C. D. BOLIN & L. E. MORE.

OVEN THERMOMETER.

APPLICATION FILED AUG. 27, 1913.

1,141,926.

Patented June 8, 1915.

Fig. 1.

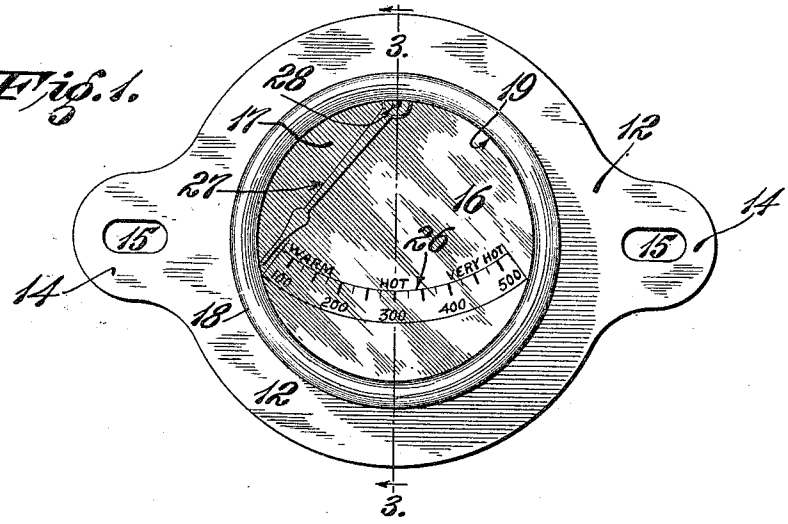


Fig. 2.

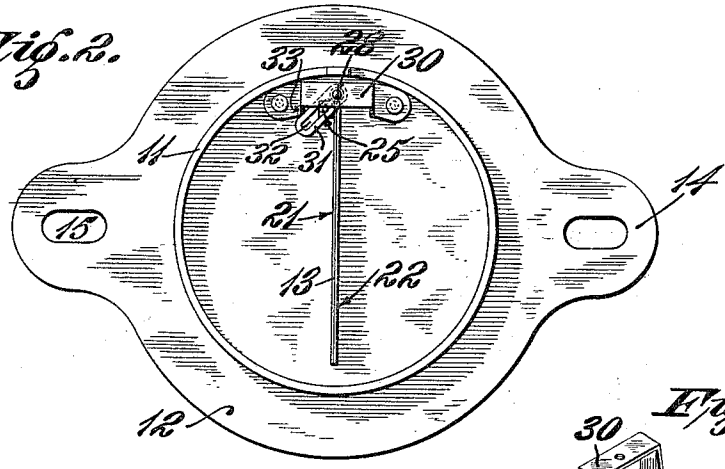


Fig. 5.

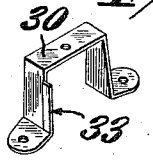
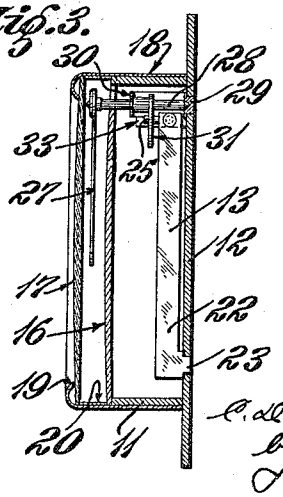


Fig. 3.



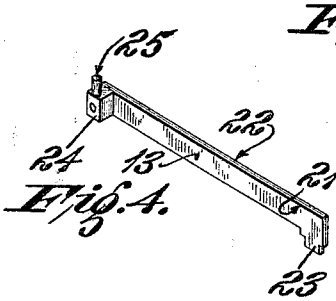


Fig. 4.

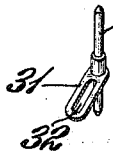


Fig. 6.



Fig. 7.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES D. BOLIN AND LUCIUS E. MORE, OF ST. LOUIS, MISSOURI, ASSIGNORS TO NATIONAL THERMO COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

OVEN-THERMOMETER.

1,141,926. Specification of Letters Patent. Patented June 8, 1915.

Application filed August 27, 1913. Serial No. 786,850.

To all whom it may concern:

Be it known that we, CHARLES D. BOLIN and LUCIUS E. MORE, citizens of the United States, and residents of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Oven-Thermometers, of which the following is a specification.

Our invention relates to thermometers of the type wherein a bimetallic spring forms the heat sensitive element, the distortion of which measures the degree of heat to which the device is exposed, indicating mechanism actuated by the spring through multiplying levers being provided to show the amount of distortion and temperature corresponding thereto.

The object of this invention is an improved thermometer of the bimetallic spring type inclosed in a case which is adapted to be secured within an oven door with its back wall exposed to the full heat of the oven and its front wall comprising a dial which is exposed to view.

In oven thermometers of the above type as heretofore made, the heat sensitive element has been curved in the attempt to secure sufficient sensitiveness and quick responsiveness to temperature changes. Such instruments are delicate, difficult to adjust, and frequently not uniform in their action, because bending the spring elements causes them to have internal strains which interfere with their responsiveness to heat changes. Moreover, instruments as heretofore made, when fully incased to protect the actuating parts from dirt and grease, are not quickly responsive to temperature changes.

Our invention overcomes the above objections to oven thermometers as heretofore made; and its indications more nearly correspond with the true temperatures as indicated by a mercury thermometer than do the indications of other oven thermometers of the same type, with which we are familiar.

Further objects and advantages of our invention appear in connection with the following description of the embodiment thereof illustrated in the accompanying drawing; and what the invention consists in is pointed out with particularity in the appended claims.

In the drawing, in which like parts are designated by the same reference characters wherever used in the several views,—Figure 1 is a front view of an oven thermometer made in accordance with our invention; Fig. 2 is a front view of the same with the front glass, dial and index pointer removed to show the parts within the case; Fig. 3 is a vertical cross section of the same on the line 3—3 in Fig. 1; and Figs. 4, 5, 6 and 7 are perspective views of the bimetallic heat sensitive spring, index-pointer pivot supporting bracket, index-pointer pivot, and index-pointer pivot bearing, respectively.

Referring to the drawings, our improved device comprises a cylindrical casing 11, having a back wall 12 which forms a support for the heat sensitive spring 13 and indicating mechanism. The back wall 12 has two diametrically opposed ears or lugs 14 provided with slots 15 through which the bolts or screws which secure the device to the door of an oven may be passed. The cylindrical casing 11 projects through the oven door, and a face or dial 16 covers its open front side. Over the dial is a glass 17, held by an outer casing ring 18 which surrounds the casing 11 and which has an inturned lip or flange 19 inclosing the glass. A separator ring 20 within the casing ring 18 between the glass and the dial holds the glass spaced away from the dial and in contact with the flange 19.

The heat sensitive spring 13 is flat, and is composed of two coextensive leaves 21, 22, secured together flatwise, these leaves being made of metals having different coefficients of expansion, such as German silver and steel. The effect of changes in temperature is to bend or bow the spring flatwise. The spring 13 is provided with an integral projection 23 from one side near its end, and this projecting portion is securely riveted through the back wall of the casing at a point near the lower side thereof. To the opposite end of the spring 13 is riveted a small block 24 having a pin 25 projecting from its side opposite to the projection 23.

The dial 16 is marked with a scale 26 reading from about 100 to about 500 degrees Fahrenheit, and an index-pointer 27, mounted on the outer end of a pivot 28, is arranged to swing over said scale. The pivot is journaled at its inner end in a pivot

bearing 29 which is riveted to the back wall 12 of the casing. A bracket 30, riveted to the back wall 12, forms a support for the pivot near its outer end. A slotted arm 31 is carried by and rigidly attached to the pivot, and the pin 25 carried by the block on the end of the sensitive spring engages the slot 32 in the arm and moves the latter when the spring is bowed by a change in temperature. The bracket 30 carries a lug 33 against which the arm 31 strikes near the end of its swing in the direction of the descending scale of degrees. This lug can be bent and thereby adjusted to stop the pointer at any desired minimum point on the scale, as at room temperature, for example.

It is evident that a device made as above described has comparatively few parts, which parts are simple in construction and easy to assemble. The heat sensitive spring is straight at ordinary room temperature, and consequently requires no bending or other adjustment, the stop 33 being adjustable to suit small variations in the setting of the spring. Moreover, as the end of the spring extends through the back wall of the casing, it is exposed directly to the heat of the oven, which greatly increases the sensitiveness of the device and the quickness with which it responds to changes in the temperature of the oven. Furthermore, the casing being completely closed on the back or oven side, no dirt, grease or smoke from the oven can get into it to gum up or corrode the moving parts, and therefore the device will not become sluggish or inaccurate in the course of a comparatively short time, as might be the case if it were not so protected.

Having described one embodiment of our invention in detail, we do not restrict ourselves thereto, but what we claim as our invention is as follows:

1. An oven thermometer comprising a casing carrying a one-piece bracket, an index-pointer pivot journaled in said bracket and casing, an arm carried by said pivot, a heat sensitive spring secured at one end to said casing and having at its other end means for connecting it to said arm, and said bracket having an adjustable stop formed integral therewith adapted to limit movement of said arm and spring in one direction.

2. An oven thermometer comprising a closed casing inclosing a bi-metallic heat sensitive spring, said spring having one end projecting through said casing whereby the heat of said oven is conducted directly through both metallic elements of said spring.

3. In an oven thermometer, a casing inclosing a bi-metallic heat sensitive spring, said spring having one end secured to and projecting through said casing whereby the heat of said oven is conducted directly to and through both metallic elements of said spring.

4. A bi-metallic spring for an oven thermometer, said spring having two elements each of which has as an integral part thereof a lateral projection from one edge mating with the like projection of the other and adapted to be secured to a supporting casing by passing through an opening in the wall thereof.

Signed at St. Louis, Missouri, this 25th day of August, 1913.

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LUCIUS E. MORE.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."