

D. G. COOPER.
OVEN THERMOMETER.

No. 547,139.

Patented Oct. 1, 1895.

Fig. 1.

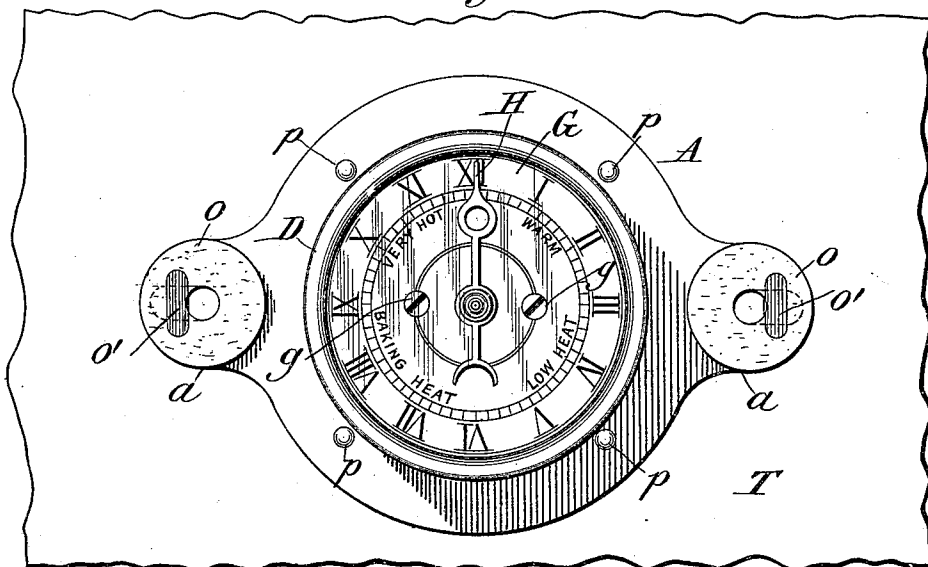


Fig. 2.

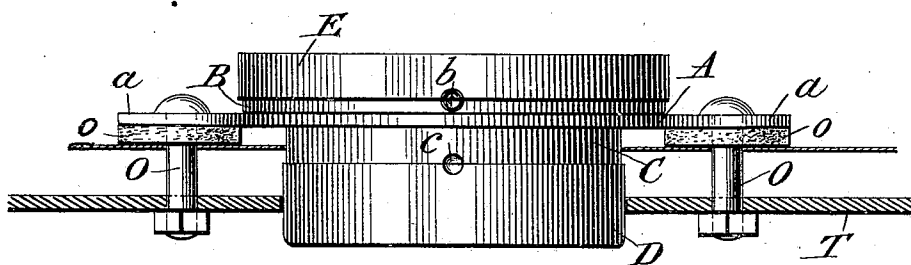
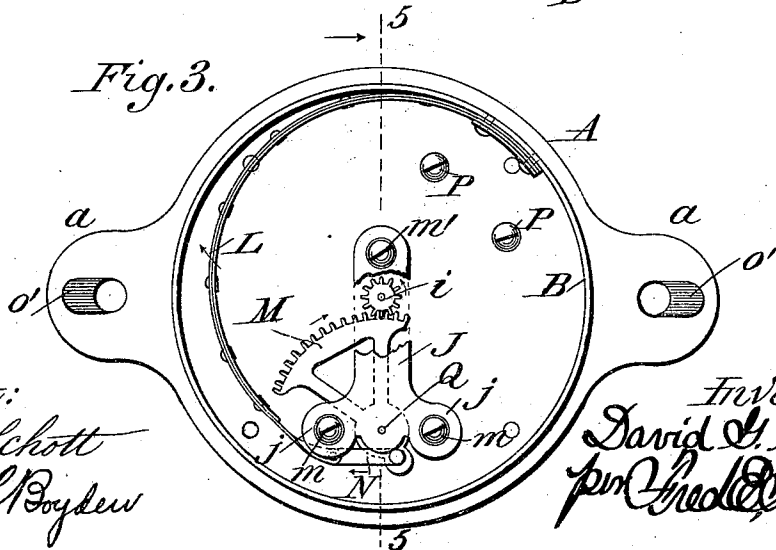


Fig. 3.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

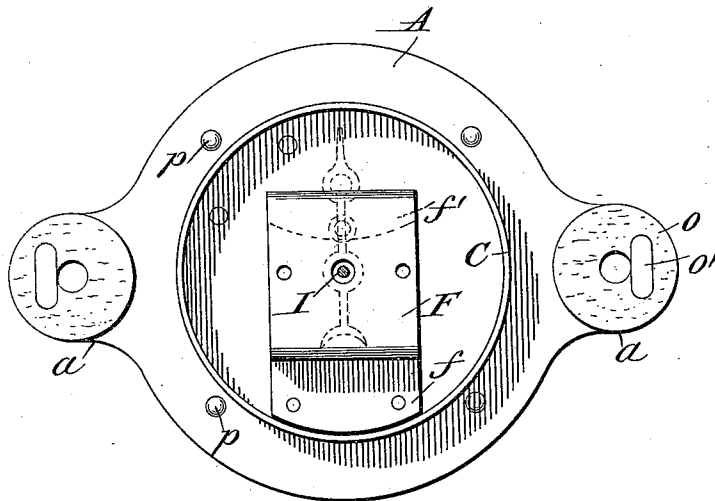


Fig. 6.

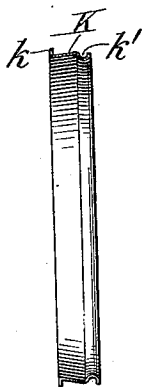


Fig. 5.

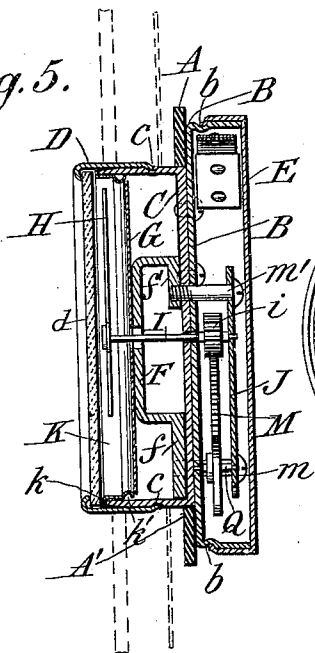
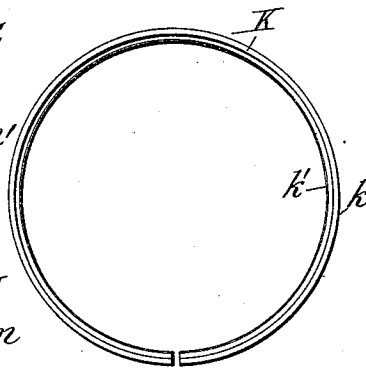


Fig. 7.



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UNITED STATES PATENT OFFICE.

DAVID G. COOPER, OF PEQUABUCK, CONNECTICUT.

OVEN-THERMOMETER.

SPECIFICATION forming part of Letters Patent No. 547,139, dated October 1, 1895.

Application filed October 29, 1894. Serial No. 527,287. (No model.)

To all whom it may concern:

Be it known that I, DAVID G. COOPER, a citizen of the United States, residing at Pequabuck, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Oven-Thermometers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has reference to certain improvements in oven-thermometers or devices designed for application to stoves, ranges, and other heaters for the purpose of indicating the temperature of the hot-air chamber thereof.

The main object of the invention is to simplify and perfect the construction of thermometers of this class, and more especially to improve upon the thermometer shown and described in my former Letters Patent, No. 447,129, dated February 24, 1891; and the invention therefore consists, essentially, in the construction, arrangement, and combination of parts and in certain details thereof, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a front elevation of my improved oven-thermometer represented as practically applied to an oven, a portion of the door of which is likewise shown. Fig. 2 is an edge elevation of the thermometer, the oven-door being shown in section. Fig. 3 is a rear elevation of the same with the cover-plate of the movement-case removed to show the arrangement of the interior mechanism. Fig. 4 is a front elevation of the thermometer with the bezel-ring and dial-plate removed. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 3, the index and index-shaft being shown in section. Fig. 6 is a sectional elevational view of the ornamental ring which encircles the dial within the dial-case. Fig. 7 is an edge view of the same.

Similar letters of reference designate corresponding parts in all the different figures of the drawings.

A designates a main plate or frame which is employed to support the several parts of the thermometer. It has a general circular

form and is preferably furnished with oppositely-projecting lugs *a a*, that are perforated, as shown, to permit the passage through them of the bolts *O*, whereby the plate *A* is secured to the door *T* of an oven or other heating-chamber, and the complete device consequently supported in such a position as to be able to fulfill its proper function. The lugs *a a* are preferably provided with non-conducting washers *o*, of asbestos or some other suitable non-conducting material, which are held in place by means of the clips *o'*. The plate *A* is formed with a large central circular opening, as shown at *A'*, Fig. 5, in which the dial-case *C* is seated. Hence plate *A* is essentially a ring-plate, serving as the main frame of the device.

The dial-case *C* is of circular form, being equal in diameter to the diameter of the circular opening *A'* in which it is seated, and its circular rim is integral with its bottom or inner wall, said bottom being aligned with the plate *A*, as shown. This dial-case *C* receives upon its outside a bezel-ring *D*, which is turned over to form a bead at its front edge, so that when slipped or crowded upon the dial-case and over the dial-glass *d* (see Fig. 5) it will hold said glass firmly between the bead and the front edge of the dial-case *C*. In the external surface of the rim of the dial-case is a number of countersunk holes or depressions *c*. These are situated at the rear edge of the bezel-ring when the latter is in place, and portions of the rear edge of said ring are indented and pressed into said countersunk holes. (See Figs. 2 and 5.) Within the dial-case *C* are the dial-plate *G* and the dial-bridge *F*, to which said dial is attached. The bridge *F* consists of a metallic strip bent into a substantially rectangular form, as shown, and having the lower extension *f* below the rectangular part, and the upper inturned edge *f'* within the rectangular part or turned upward above said part, these portions *f* and *f'* being secured by screws, rivets, or other suitable means to the inner or bottom wall of the dial-case, as shown in Figs. 4 and 5. The dial-face *G* is attached by screws *g g* to the bridge *F*, so as to occupy a vertical position behind the glass *d*, the pointer *H* operating between glass *d* and dial *G*. (See Figs. 1 and 5.) Likewise within the dial-case *C*

is a close-fitting ornamental ring K, made preferably of brass or some similar suitable and attractive material. It surrounds the dial G and lines the rim of the case C between the glass *d* and the dial. Rim K is preferably a split ring, as shown in Fig. 7, to facilitate its insertion in position. Being of light thin brass it can easily be struck up in some ornamental form—as, for example, that shown in Figs. 5 and 6, where the ring is shown as having the outer flange *k*, which fits over the outer edge of the dial-case, and the inner bead *k'*, which is closely contiguous to the periphery of the dial-plate G. The provision of this ring K is one of the useful features of my present invention. As it is made of bright metal and in an ornamental style it serves to embellish the appearance of the thermometer; also, it enables me to avoid certain disadvantages pertaining to other styles of finishing for the interior of the dial-case. In the manufacture of thermometers under my former Letters Patent, No. 447,129, already hereinabove referred to, I have customarily painted the interior of the dial-case so as to provide a neat appearance for the same. This painting has been found, however, to be highly objectionable, because when the thermometer was put into practical use an evaporation took place from the oil and varnish in the paint which condensed upon the glass and blurred the same. This inconvenience is entirely avoided by the use of the gilt strip. The strip also looks much better than a painted surface.

B denotes the movement-case, it being the boxing to contain the operating mechanism of the thermometer. This case B is situated on the rear of main plate A. It is similar in form to the dial-case C, but is generally of larger diameter and less width. It is, however, constructed in the same manner, its rim or side wall being integral with its bottom wall, while over its outer edge fits a cover-plate E. Both the movement-case and the dial-case are preferably made of brass. This is an advantage for the movement-case, as brass is a much better conductor of heat than iron, and hence the operating mechanism will be more sensitive. It will be observed that the inner or bottom walls of the two casings B and C are in contact with each other, and the casings are thus placed back to back, as it were, with the ring-frame A surrounding the smaller of them and supporting both. (See Fig. 5.) The movement-case B is rigidly fastened to the back of the plate A by means of screws or rivets *p p*, (see Figs. 1 and 4,) which pass through from the front of plate A into the bottom wall of the movement-case. The dial-case is secured to the movement-case by means of screws or rivets—as, for example, the screws *P P*, (see Fig. 3,) which pass from the interior of the movement-case through the bottom of the latter into the dial-case. Of course it is necessary that the dial-case should be thus secured to the movement-

case, as the mere seating of the former in the circular opening A' in the plate A would be insufficient to sustain it in place. Although I have herein shown and described the movement-case as the larger of the two cases, yet it is conceivable that it might be made the smaller, and I reserve the liberty of so making it, if I desire. The external surface of the rim of the movement-case B is provided with countersunk holes *b*, and portions of the edge of the cover E are indented and pressed into the said countersinks for the purpose of securely fastening the cover in place. The plan of construction which I have just detailed, whereby two casings are provided which are entirely distinct and non-communicating and the bottoms of which are integral with the sides, is considered superior to the arrangement found in my former Letters Patent, inasmuch as gases, &c., are entirely prevented from passing from the movement-case into the dial-case.

I will now briefly explain the operating mechanism of expansion and contraction which is employed in my present thermometer, although it is quite similar in its essentials to that embraced in my former Letters Patent above referred to. J denotes a T-shaped movement-plate. It is supported by the screw-posts *m m m'*, (see Figs. 3 and 5,) or studs, as in my former patent, which screws are riveted into the bottom wall of the movement-case B and pass not only through it, but also through the bottom wall of the dial-case C and through the flanges *f f'* of the dial-bridge F, so that the screw posts or studs not only support the plate J at the proper interval from the bottom of the movement-case, but they also assist in holding the two cases B and C together and in fastening the dial-bridge G to the dial-case. The index-shaft I is supported in the casings B and C and in the plate J. It is provided with a pinion *i*, which is engaged by the teeth of a segment-rack M, that is carried by the shaft Q. This shaft Q is arranged centrally between the two screw-posts *mm*, thereby making said posts serve as stops to limit the movement of the rack M and prevent it from ever being turned in either direction far enough to disengage its teeth from the pinion *i*. To the inner walls of the movement case or rim B, I secure a semicircular bimetal strip L, the free end of which is connected, by means of the link N, to the free arm of the segmental rack M. A bimetal strip, rack, and pinion in a thermometer are of course not new and are hereby disclaimed.

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

1. In an oven thermometer, the combination of the frame plate provided with a central opening and having lateral lugs, the dial case consisting of an integralside and bottom seated in said opening, the similarly-constructed movement case located on the oppo-

site side of said frame plate, the dial bridge
having an out-turned and in-turned flange,
and supporting the dial face, means for secur-
ing said parts together, the ornamental split
5 ring between said dial face and the edge of
the case, the pointer and means for actuating
the same, substantially as and for the purpose
herein set forth and described.

2. In an oven thermometer, the combina-
10 tion of the frame plate provided with a cen-
tral opening and lateral lugs, the integrally
formed dial case seated in said central open-
ing, the similarly-constructed movement case
located on the opposite side of said frame

plate, the dial bridge supporting the dial face 15
and having an out-turned and in-turned
flange, the screw posts supporting the move-
ment plate and securing the dial case to the
movement case and the dial bridge thereto,
whereby the several parts are securely held 20
together, substantially as and for the purpose
herein set forth and described.

In testimony whereof I affix my signature
in presence of two witnesses.

DAVID G. COOPER.

Witnesses:

GEORGE A. SCOTT,
ARTHUR BROWE.