

H. C. FERBRACHE.
OVEN THERMOMETER AND VENTILATOR.
(APPLICATION FILED NOV. 30, 1909.)

995,854.

Patented June 20, 1911.

2 SHEETS—SHEET 1.

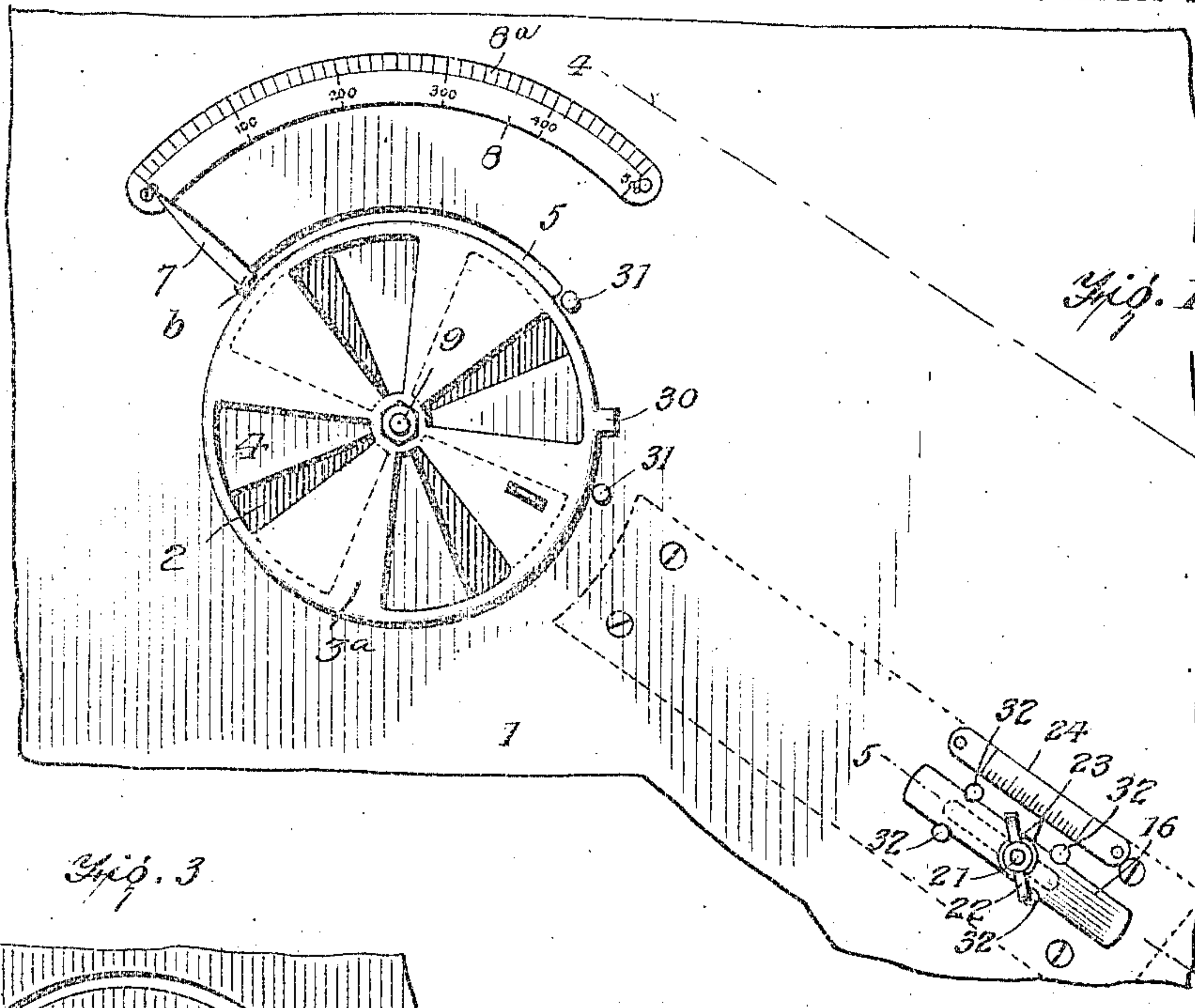


Fig. 3.

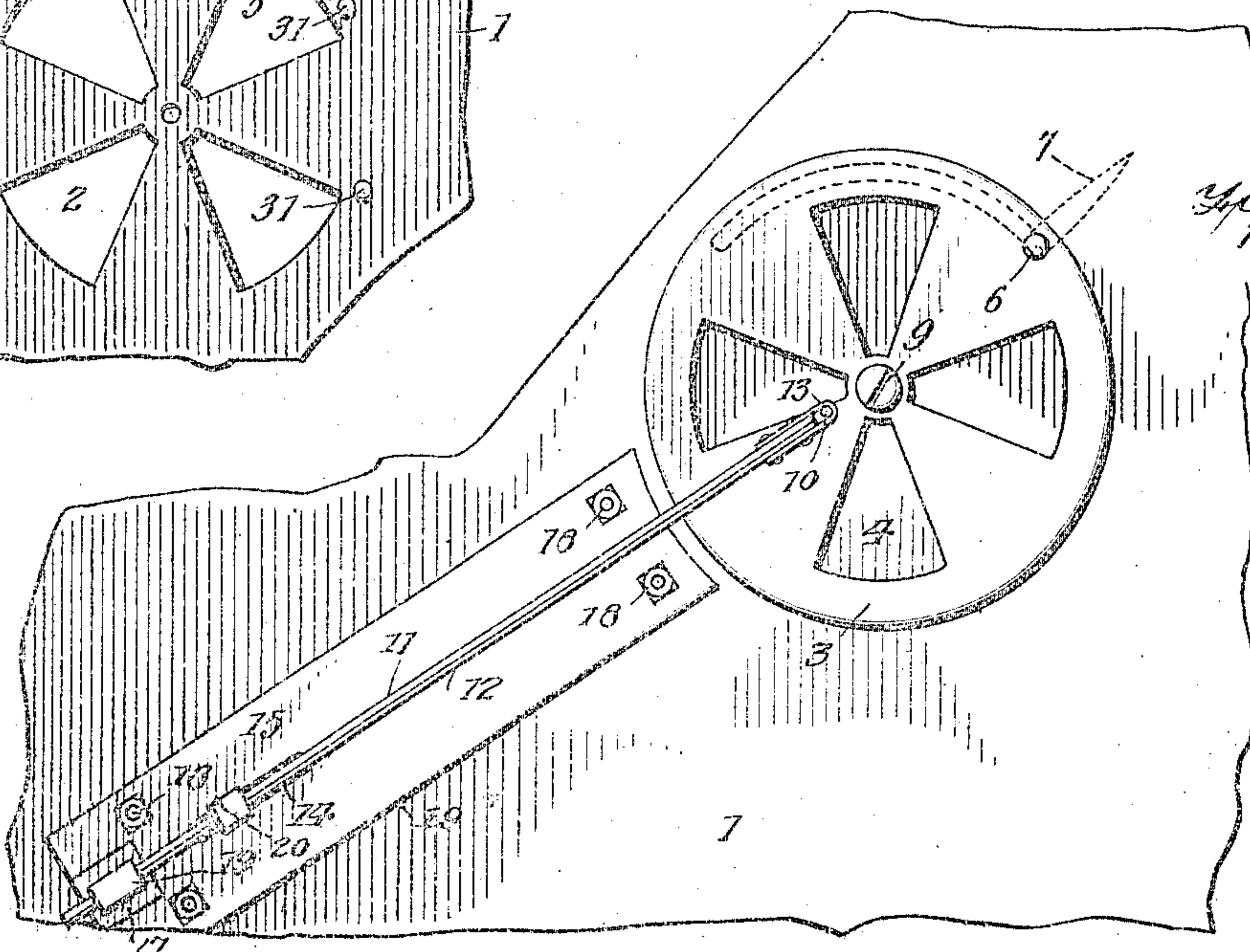
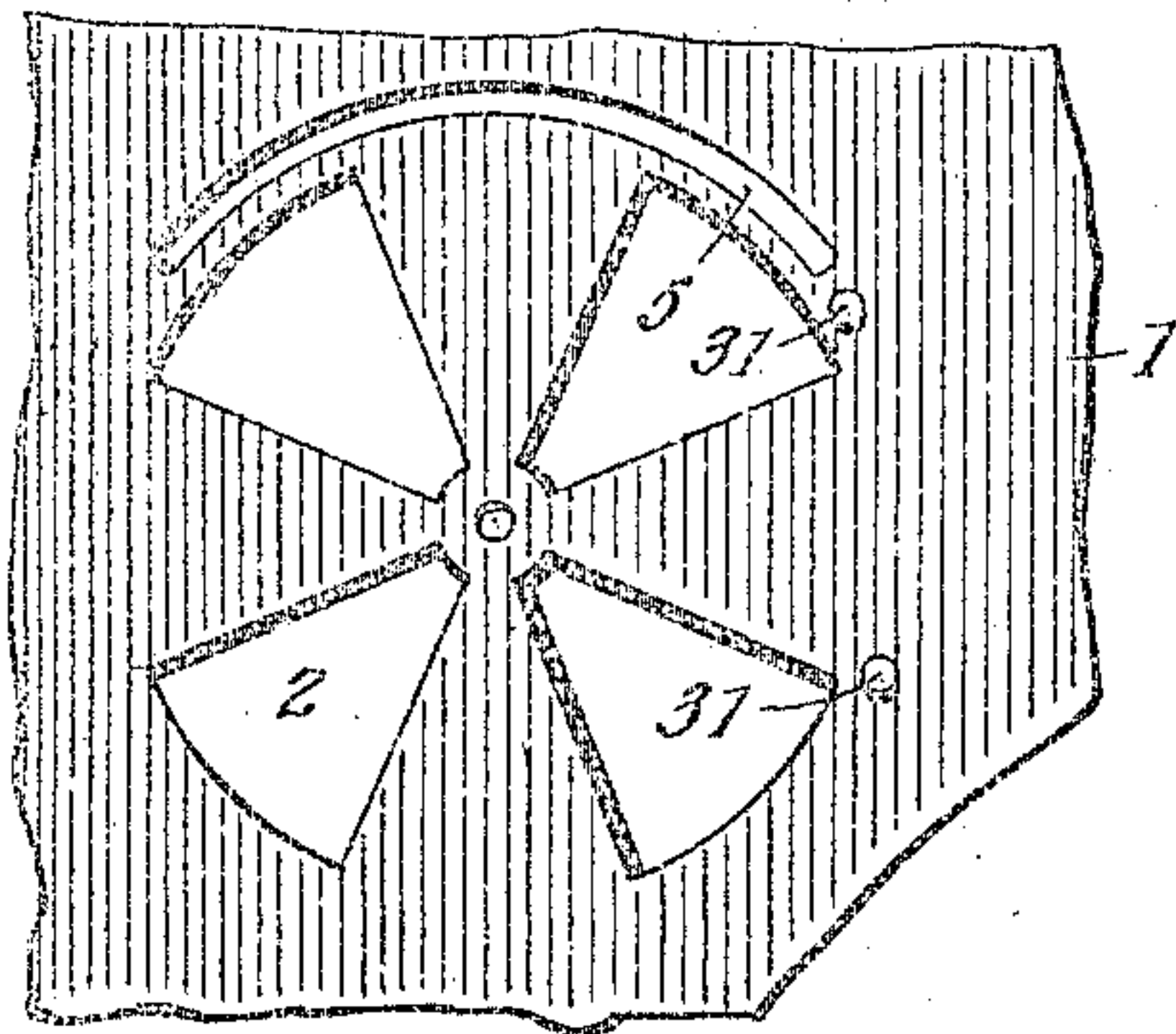


Fig. 2.

WITNESSES

L. H. Schmidt
O. E. Evans

INVENTOR

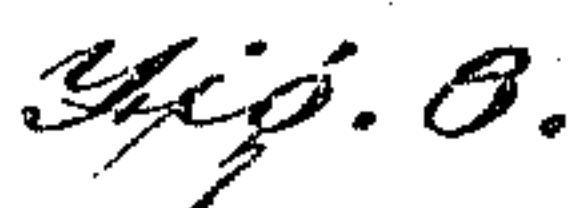
HENRY C. FERBRACHE
BY *Mumford & Co.*

ATTORNEYS

995,854.

Patented June 20, 1911.

2 SHEETS—SHEET 2.



INVENTOR
HENRY C. FERBRACHE
BY *Munn & Co.*

ATTORNEYS



UNITED STATES PATENT OFFICE.

HENRY C. FERBRACHE, OF BONNERS FERRY, IDAHO.

OVEN THERMOMETER AND VENTILATOR

995,854.

Specification of Letters Patent. Patented June 20, 1911.

Application filed November 20, 1909. Serial No. 530,555.

To all whom it may concern:

Be it known that I, HENRY C. FERBRACHE, a citizen of the United States, and a resident of Bonners Ferry, in the county of Bonners and State of Idaho, have invented certain new and useful Improvements in Oven Thermometers and Ventilators, of which the following is a specification.

My invention is an improvement in oven thermometers and ventilators, and consists in certain novel constructions, and combinations of parts, hereinafter described and claimed.

The object of the invention is to provide a device of the character specified, which will automatically regulate the draft of an oven, whereby to maintain a predetermined temperature, and which will indicate the temperature, and which may be regulated to operate at different temperatures.

Referring to the drawings forming a part hereof:—Figure 1 is a front view of a portion of the oven, with the improvement in place. Fig. 2 is a rear view of Fig. 1. Fig. 3 is a front view of the damper openings. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section on the line of the composite bar. Fig. 6 is a transverse section through the bar on the line of the movable bearing sleeve. Fig. 7 is a view similar to Fig. 2, showing a modified method of connecting the composite bar to the damper, and Fig. 8 is a perspective view of the bar shown in Fig. 7.

In the embodiment of the invention shown in the drawings, the oven casing 1 is provided with a damper opening consisting preferably of a plurality of segmental slots or openings 2, and a circular plate 3 is pivoted to the casing of the oven at the center of the openings, the plate being provided with segmental slots or openings 4 adapted to register with the slots or openings 2, when the plate is in a certain position. The plate is pivoted on the inside of the oven casing, the said oven casing being provided with an arc-shaped slot 5, near the periphery of the plate, through which extends a pin 6 projecting laterally from the plate, and a pointer or indicator 7 is secured to the pin. An arc-shaped plate 8 is secured to the outer face of the oven casing above the slot, and the face of the plate is provided with a scale 8^a with which the pointer coöperates.

The scale is designed to indicate the temperature of the oven by the extent of move-

ment of the pointer when acted upon by mechanism to be presently described. The plate is rotatable on the pivot pin 9, and a wrist pin 10 is rigid with the plate, and the operating mechanism above mentioned is connected with the pin. The said mechanism consists of a composite bar composed of superposed strips 11 and 12 of metals having different coefficients of expansion, as for instance brass and metal, riveted or otherwise secured together, and one end of the said bar is pivoted to the wrist pin, as at 13.

The casing of the oven is provided with a slot 14, radial to the pivot pin of the plate, and the plate is reinforced adjacent to the slot, on both its inner and outer faces, as at 15 and 16. A plate 17 is secured to the inner face of the reinforcing plate 15, by means of screws 18, and the said plate is provided with a bearing sleeve 19. The composite bar passes through the sleeve 19, and is secured thereto by a rivet 27 (Fig. 5). A second bearing sleeve 20 is slidable on the bar, and the sleeve is provided with a threaded stem 21, which extends through the slot 14, and is engaged outside of the oven casing by a nut 22, whereby the bearing sleeve may be clamped to the oven wall.

The outer reinforcing plate 16 is movable with the stem 21, and is provided with an indicator or pointer 23, which coöperates with a scale 24 on the casing. By loosening the nut 22, the sleeve may be adjusted toward and from the pivot pin of the plate, to lengthen or shorten the effective length of the composite bar.

If desired, the wrist pin may be replaced by a pinion 25 rigid with the pivot pin 9, as shown in Fig. 7, and a rack bar 26 may be secured to the end of the composite bar, the strips 11 and 12 having each an angular portion 11^a and 12^a to which the rack bar is secured, the construction being otherwise the same.

As is known, a bar constructed as described that is composed of a plurality of laminae whose coefficients of expansion are unequal, will be flexed or bent when exposed to heat or cold. In the above construction, the bar 11--12 and damper are so arranged that between certain predetermined temperatures the damper is not affected. When, however, the heat exceeds the predetermined high temperature, the damper is closed, the composite bar being flexed toward the lamina

having the lowest coefficient of expansion. As soon as the damper is closed, the temperature begins to rise, and the damper again gradually opens and is held open until
 5 the high temperature falls. When the damper is either open or closed, some little variation in temperature is permitted before the damper operating mechanism again comes into play.

10 The effective length of the composite bar is, as before stated, determined by the position of the movable bearing sleeve. It will be evident that the greater the length of the bar, the greater will be the arc of movement
 15 of the free end thereof when affected by the unequal expansion and contraction of the composite bar, and the more sensitive will the bar be to variations in temperature. The scale is so related to the bar that the
 20 pointer in connection with the movable bearing sleeve will indicate thereon the temperature at which the bar will be flexed with the bearing sleeve at such position. The scale on the casing is so arranged that the
 25 pointer on the damper plate will indicate the temperature by its movement.

The operating mechanism is preferably covered by a cover plate 27, which is secured to the casing of the oven by bolts 28, and
 30 the said plate is extended, as at 29, to form a bearing for the inner end of the pivot pin 9. A second damper plate 3^a is arranged on the outer face of the oven casing, and is pivoted on the pivot pin 9, and the
 35 said plate 3^a is provided with a radial lug 30, which moves between stops 31 on the oven wall to limit the movement of the damper plate. This damper is operated manually. The plate 16 is guided in its
 40 movement by pins 32 extending outwardly from the oven casing.

I claim:—

1. In a device of the character specified, the combination with the oven having a
 45 draft opening, and a damper plate covering the opening, of a composite bar composed

of superposed strips having different coefficients of expansion, a fixed bearing sleeve on the casing in which one end of the bar is secured, a connection between the damper
 50 plate and the other end of the bar for operating the plate, and means for varying the effective length of the composite bar, said means comprising a bearing sleeve slidable
 on the bar, a slot in the oven casing, a
 55 threaded stem on the sleeve extending through the slot, a nut on the stem, a scale adjacent to the slot, and an indicator on the sleeve for cooperating with the scale.

2. In a device of the character specified;
 60 the combination with the oven having a draft opening, and a damper plate covering the opening, of a composite bar composed of superposed strips having different coefficients of expansion, a fixed bearing sleeve
 65 on the casing in which one end of the bar is secured, a connection between the damper plate and the other end of the bar for operating the plate, and means for varying the effective length of the composite bar, said
 70 means comprising a bearing sleeve slidable on the bar, means for fixing said sleeve to the oven casing, a scale, and an indicator on the sleeve for cooperating with the scale.

3. In a device of the character specified;
 75 the combination with the oven having a draft opening, and a damper plate covering the opening, of a composite bar composed of superposed strips having different coefficients of expansion, a fixed bearing sleeve
 80 on the casing in which one end of the bar is secured, a connection between the damper plate and the other end of the bar for operating the plate, and means for varying the effective length of the composite bar, said
 85 means comprising a bearing sleeve slidable on the bar, and means for fixing said sleeve to the oven casing.

HENRY C. FERBRACHE.

Witnesses:

CHARLES O'CALLAGHAN,
 E. E. FRY.