(No Model.)

A. P. KNOWLES.

COOK STOVE THERMOMETER.

No. 523,794. Patented July 31, 1894.

Fig. 1.

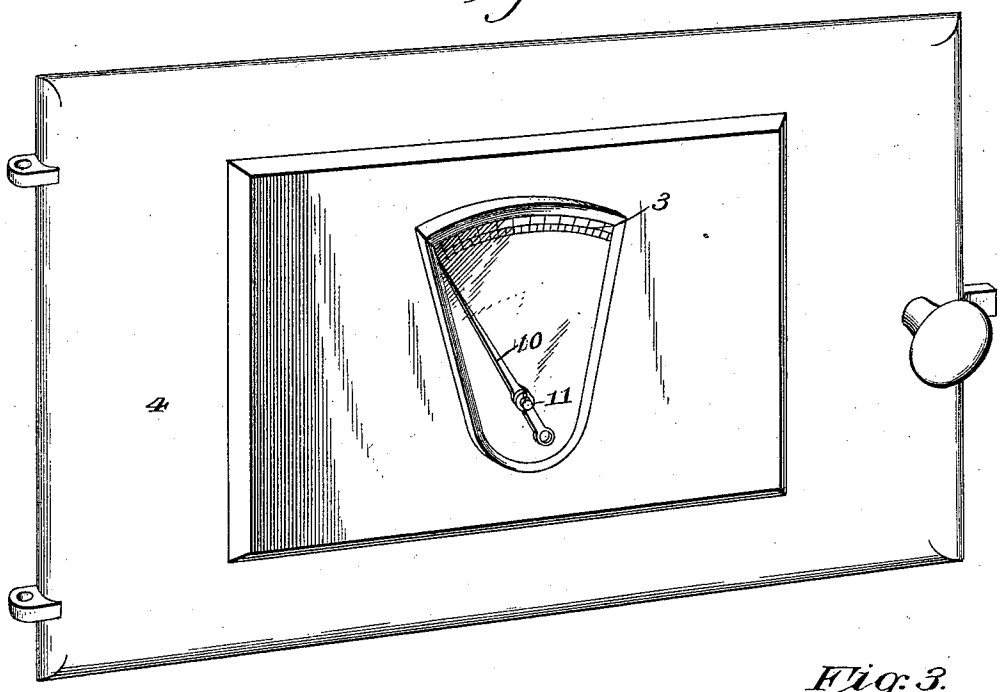


Fig. 2

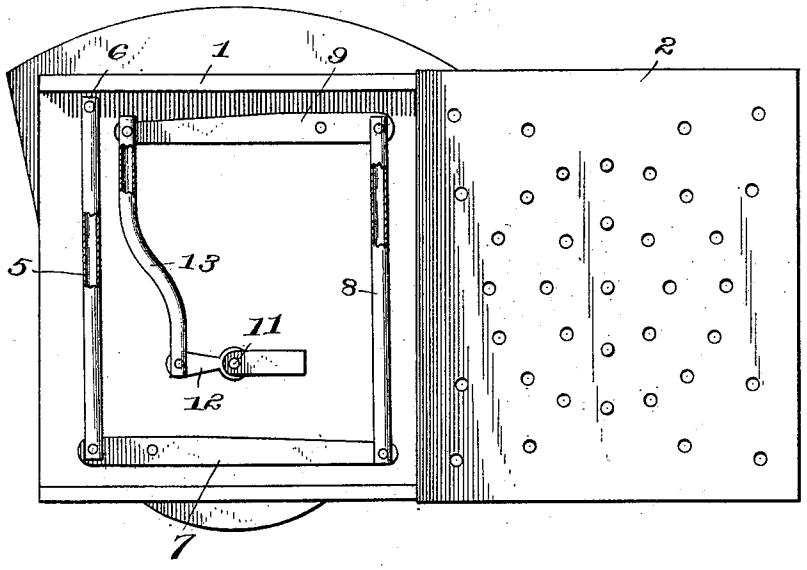
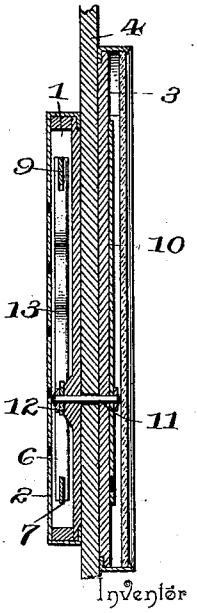


Fig. 3.



Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

ARBIE PORTER KNOWLES, OF ST. FRANCIS, ARKANSAS.

COOK-STOVE THERMOMETER.

SPECIFICATION forming part of Letters Patent No. 523,794, dated July 31, 1894.

Application filed November 17, 1893. Serial No. 491,245. (No model.)

To all whom it may concern:

Be it known that I, ARBIE PORTER KNOWLES, a citizen of the United States, residing at St. Francis, in the county of Clay and State of Arkansas, have invented a new and useful Thermometer for Cook-Stoves, of which the following is a specification.

My invention relates to an oven thermometer for cook-stoves, and it has for its object to provide a simple, inexpensive, and efficient apparatus adapted to be applied to the oven door.

A further object of my invention is to provide a device of the class named in which the connections between the co-operating parts are positive and do not depend upon gearing, springs, weights, and other analogous features which are affected by the position of the apparatus, or are liable to disarrangement or injury through excessive heat or after extended use.

Further objects and advantages of this invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a perspective view of a pyrometer embodying my invention, applied in the operative position to an oven door. Fig. 2 is a view of the device with the rear plate of the casing removed to show the construction of the mechanism. Fig. 3 is a vertical section of the apparatus.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the casing of the pyrometer, which is provided with a removable rear plate 2, slidably fitted thereto and perforated to allow free communication between the oven and the interior of the casing; and 3 represents the dial, which is located on the outside of the oven door, the latter being shown at 4. This dial is provided with graduations indicating degrees, and is preferably made segment-shaped as shown.

Within the casing, and parallel with and adjacent to one side thereof, is arranged an expansible metallic tube 5, which is firmly secured at one end to the casing by means of a rivet 6. The free end of this expansible tube is pivotally connected to the short arm of a flat lever 7, and to the long arm of said lever is pivotally connected one end of an expansible tube 8. The other end of the tube 8 is pivotally connected to the short arm of a lever 9, which is located opposite to the lever 7. 10 represents a pointer, which is carried by a spindle 11, mounted in the casing, and to the inner end of this spindle is fixed a crank-arm 12, the free end of which is connected, by means of an expansible tube 13, to the extremity of the long arm of the lever 9. It will be seen that the connections between the expansible tubes and the levers, and the connection between the tube 13 and the crank-arm 12, are pivotal, whereby displacement of the parts during operation is prevented.

I preferably employ brass in the construction of the expansible tubes, as being particularly sensitive to the action of heat, and it will be observed that, by the relative arrangement of the parts, the longitudinal expansion of the tubes is magnified by means of the levers to cause a perceptible variation of the pointer for each degree more or less of heat.

It will be understood that the use of tubes or tubular rods 5, 8 and 13, as the expansible members of the structure, is advantageous for the reason that this construction of rod provides the necessary transverse strength, and at the same time presents the maximum surface with the minimum cross section of material for the action of the heat, thereby rendering the device more sensitive to the action of the heat.

By avoiding the use of connections which depend wholly or partly upon the relative positions of the parts, I am enabled to place the pyrometer in any desired position without affecting the operation thereof.

Having described my invention, what I claim is—

1. The combination with a casing, a dial, and a pointer traversing said dial, of a crank-arm fixed to the spindle of the pointer, an expansible tube 5 permanently fixed at one end to the casing, a lever 7 having its shorter arm pivotally connected to the free end of the tube 5, a similar lever 9, an expansible tube 13 connecting the extremity of the longer arm of the lever 9 with the extremity of said crank-

arm, and an expansible tube 8 connecting the longer arm of the lever 7 with the shorter arm of the lever 9, the connection between the crank-arm and levers and the expansible tubes 8 and 13 being pivotal, substantially as specified.

2. The combination of a casing, a dial, a pointer traversing said dial, and a series of expansible tubes and connecting levers arranged within the casing and operatively connected to the spindle of said pointer, the casing being provided with a removable perforated rear plate which is slidably fitted upon the edges of the casing, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ARBIE PORTER KNOWLES.

Witnesses:
W. S. LIDDELL,
CHARLES THOMANSON.