

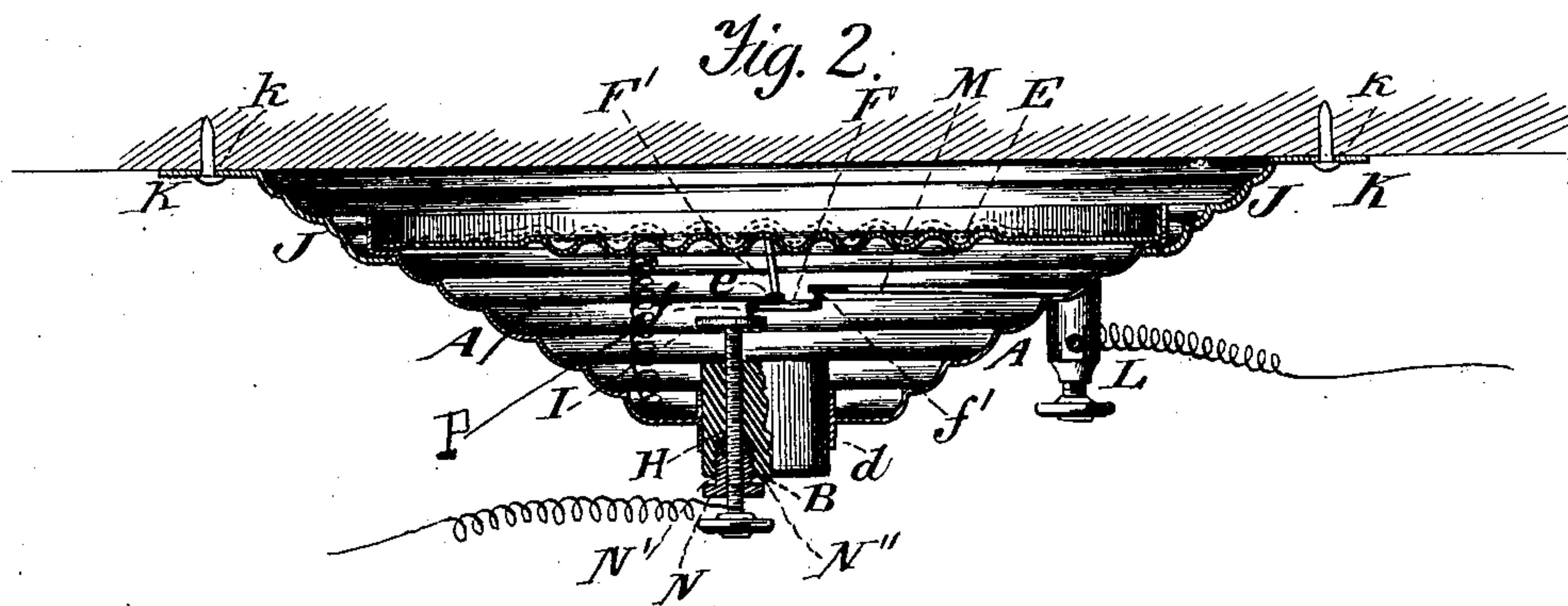
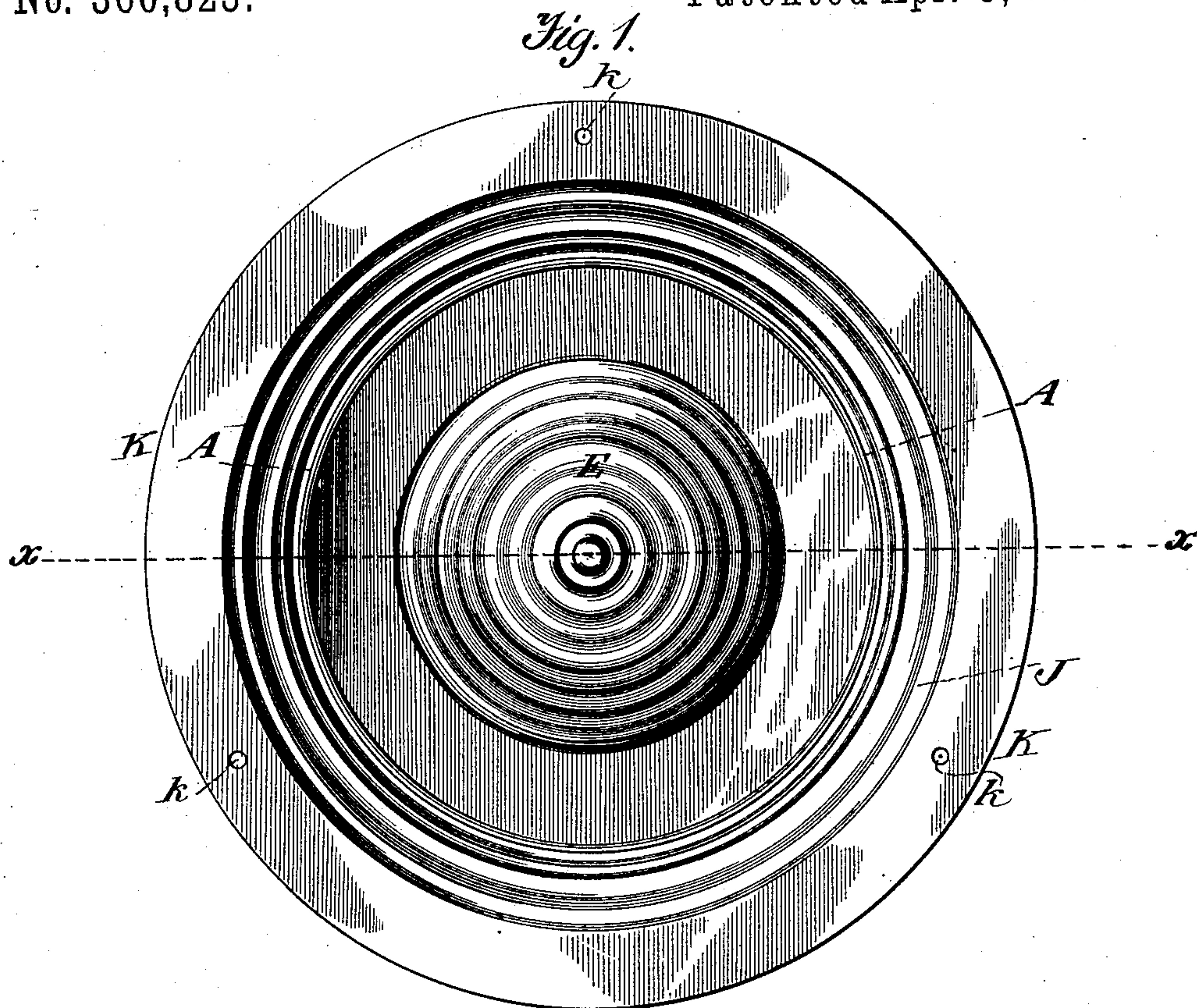
(No Model.)

W. F. SINGER.

ELECTRIC THERMOSTAT OR FIRE ALARM.

No. 360,823.

Patented Apr. 5, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM F. SINGER, OF CARTHAGE, ASSIGNOR OF ONE-HALF TO HENRY C. ANTHONY, OF WATERTOWN, NEW YORK.

ELECTRIC THERMOSTAT OR FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 360,823, dated April 5, 1887.

Application filed July 26, 1886. Serial No. 209,071. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. SINGER, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Thermostats or Automatic Fire-Alarms; 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, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan, and Fig. 2 is a vertical section upon the line xx of Fig. 1, showing the construction of my thermostat and its connections.

My invention relates to thermostats, and is more especially adapted for use as a fire-alarm; and it consists in the peculiar combinations and the novel construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and particularly pointed out in the claims.

Referring by letter to the drawings, A represents a gas or air chamber formed of thin metal. In the present instance this chamber is shown as corrugated, whereby the exposed surface is increased and the chamber materially strengthened; but I do not wish to confine myself in this application to a corrugated chamber, as it is evident that the essential of my invention will not be materially affected by the omission of the corrugations.

B is a hard-rubber plug inserted into the mouth of said chamber and retained in place by the tube d , formed integral therewith. The top of this chamber is formed by a flexible diaphragm, E, preferably corrugated, as shown.

F is a spring-metal contact-maker, preferably of German silver or brass, secured in any suitable way to the post F' , which is attached to the diaphragm E and provided with the insulating-strip e , in any well-known way. The ends ff' of the contact-points of this contact-maker are made of platinum, as shown.

H is an adjusting-screw engaging a female thread formed in the rubber plug B, and I is a contact point or plate carried by said screw and arranged in proximity to the inner end of the contact-maker F. The under side of this

plate is covered with platinum. J is a rim or band extending around and secured to the periphery of the chamber A, and extending in an outwardly-extended flange, K, provided with holes k , to receive the securing screws, nails, or other fastening devices. The swivel on the screw H forms one binding-post and the post L in Fig. 2 the other binding-post, through which suitable connections are made with the battery and call-box.

M is a spring-metal strip, preferably of either German silver or brass, secured at one end in any suitable way to the inner wall of the chamber, and having its free end covered with platinum, as shown. Said free end of the metal strip M is directly above, and normally it barely touches the upwardly-projecting platinum point f' of the contact-maker F.

N is a gland fitted within the screw-threaded aperture N' in the outer end of the hard-rubber plug B, and is used for securing in place about the screw H packing material N'' , which may be composed of candle-wicking or other substance adapted for the purpose. The object of this packing is to prevent leakage of the gas.

In practice the thermostat is secured to the ceiling, as shown in Fig. 2, the chamber having previously been filled, under pressure, with gas or air, so as to partially distend the top, as shown in dotted lines in Fig. 2. In case of fire in the apartment, causing a rise in the temperature, the gas or air within the chamber is quickly expanded, forcing upward the diaphragm E, and through the medium of the arm F' draws the contact-maker F away from the contact-plate I, thus breaking the circuit and causing the release of the escape-ment of a suitable mechanism in a signal call-box (not shown) located at any desired point.

In order that notice may be given automatically of any injury which may be done, either by accident or design, to the thermostat, which might cause a release or escape of the air or gas, and thus render the instrument inoperative, the chamber A is filled with gas or air under a pressure sufficient to slightly distend the diaphragm E, to which is secured the post F' , the opposite end of which is attached to the contact-maker F. In case of leakage or loss of gas or other expanding agent, the dia-

phragm instantly assumes its normal position, which causes the post F' to push away the contact-maker F from its contact with M at f', thus breaking the circuit and transmitting an alarm to the central office and other points.

The office of the adjusting-screw is to regulate the tension of the spring M, so as to adjust the instrument to a higher or lower degree of temperature.

P is a coiled spring attached to the inner wall of the thermostat, and connecting the same with the diaphragm E, and insures the return of the same to its normal position after the escape of its distending agent.

While I have described the thermostat as filled with air or gas, I do not desire to confine myself to the use of any particular expansive agent, as any liquid, gaseous, or other expansible substance which is capable of producing the results desired may be used.

It will be observed that by the construction above described I provide a thermostat that is rendered operative either by the increase or decrease of volume caused by the expansion or shrinkage of the agent within the thermostat.

Having thus described my invention in its preferable form and set forth its merits, without limiting myself to the exact construction and arrangement of parts shown or to any particular kind of gas, what I claim is—

1. A thermostat comprising, essentially, a thin metallic vessel having a flexible diaphragm, a contact-maker connected with said diaphragm, an adjustable contact-point, I, within said vessel upon one side of said contact-maker, and a spring-metal strip, as M, connected at one end to the inner wall of the vessel A, and its free end arranged to normally contact with the contact-maker con-

nected with the diaphragm on the side opposite that contact acting with the contact-point I, substantially as and for the purpose specified.

2. The combination, with the vessel A, having a flexible diaphragm, of a contact-maker connected with said diaphragm and constructed to be operated by either the expansion or loss of volume of the gas within said vessel, and a spring, P, attached at one end to said diaphragm and at its other end to the inner wall of the vessel A, substantially as and for the purpose specified.

3. The combination, with the chamber A, having flexible diaphragm, of the post F', attached to said diaphragm, the contact-maker F, attached to but insulated from said post and having oppositely-extended ends f f', the adjusting-screw H, contact-point I, carried by said screw, and the spring-metal strip M, secured at one end to the inner wall of the chamber, with its free end normally in contact with the end f' of the contact-maker F, substantially as described, and for the purpose specified.

4. The combination, with a single-chambered thermostat, of a flexible diaphragm forming one wall of said chamber, a contact-maker connected with but insulated from said diaphragm and provided with contact-points extending in opposite directions, and provisions, as I M, substantially as described, whereby the circuit is broken by either the expansion or contraction of the air or gas within said chamber, substantially as described.

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

WILLIAM F. SINGER.

Witnesses:

H. J. WELCH,
A. Y. STEWART.