

(No Model.)

2 Sheets—Sheet 1.

W. H. TAPLEY.
THERMOTIC CIRCUIT CLOSER.

No. 477,315.

Patented June 21, 1892.

Fig. 1.

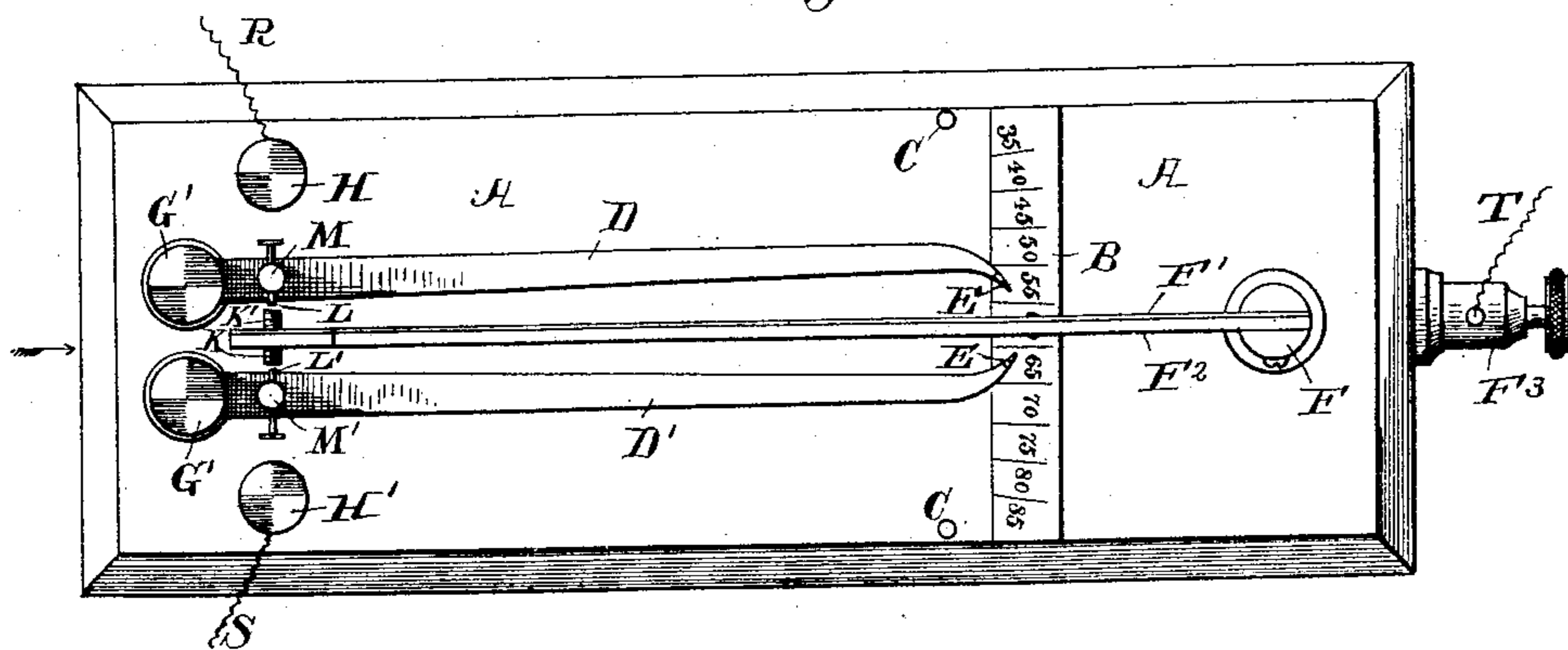


Fig. 2.

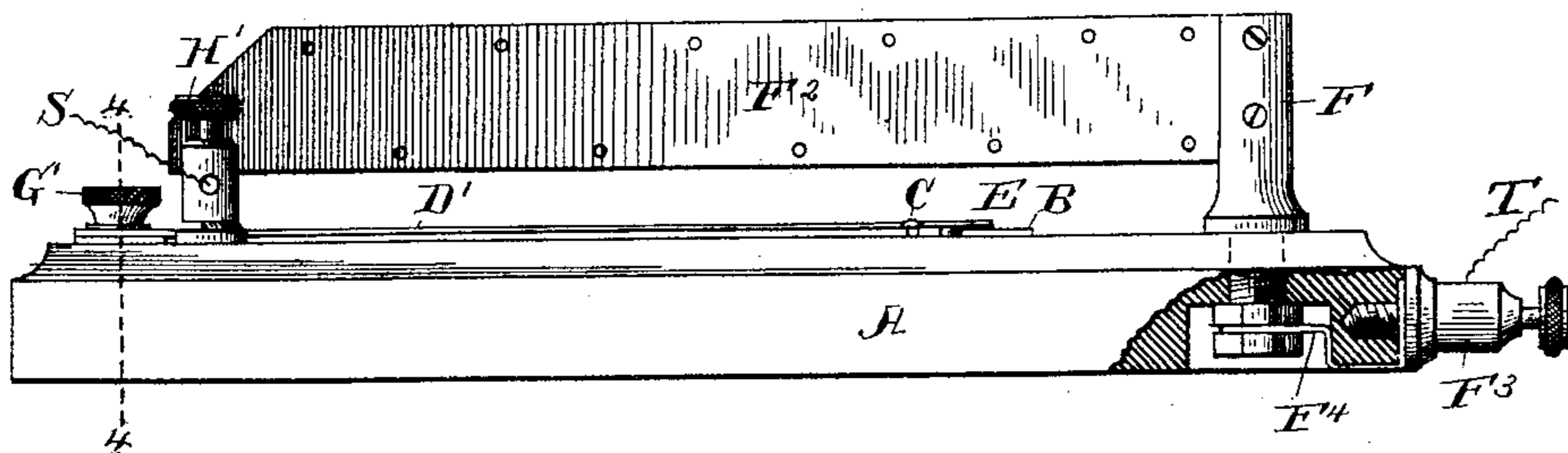


Fig. 3.

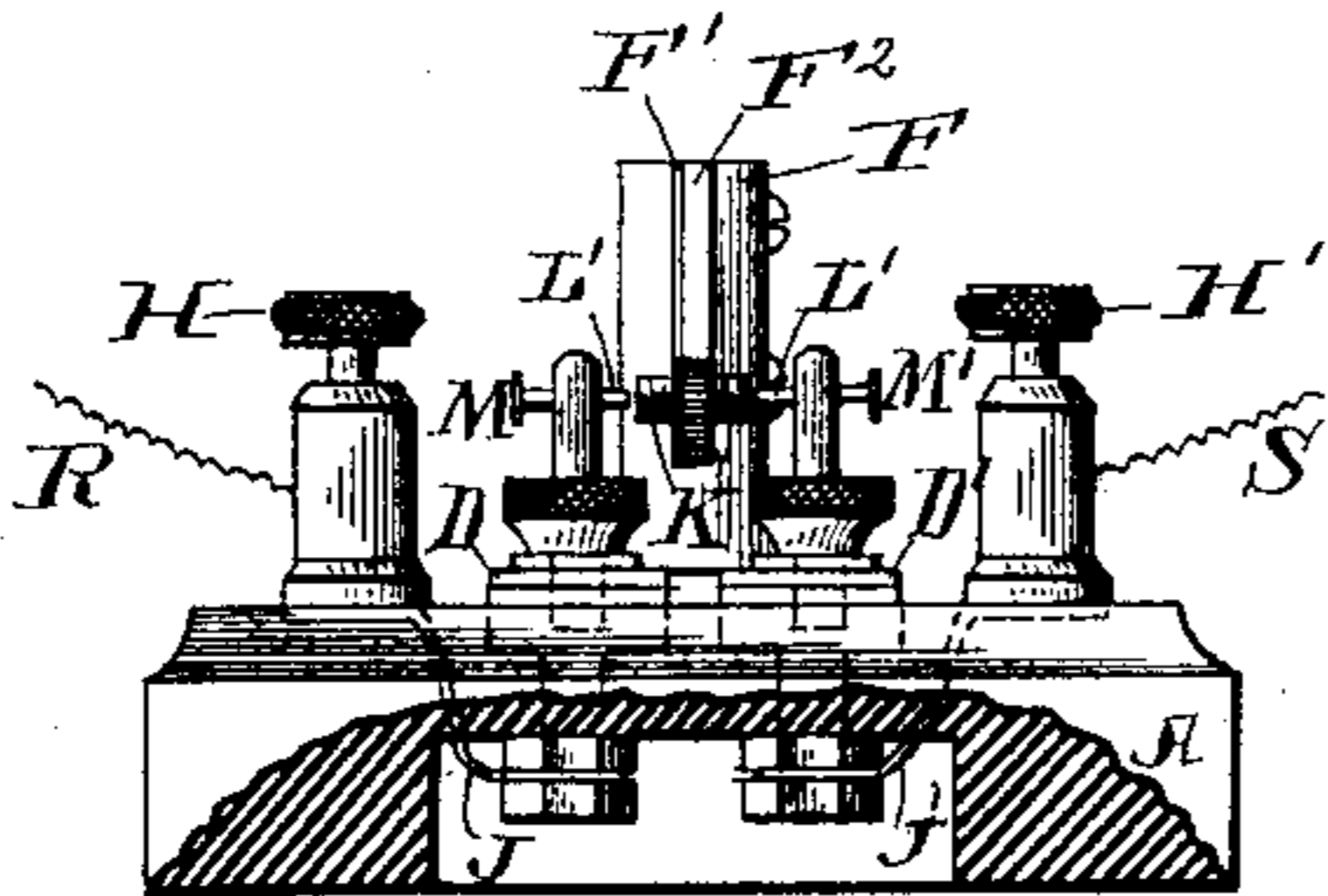
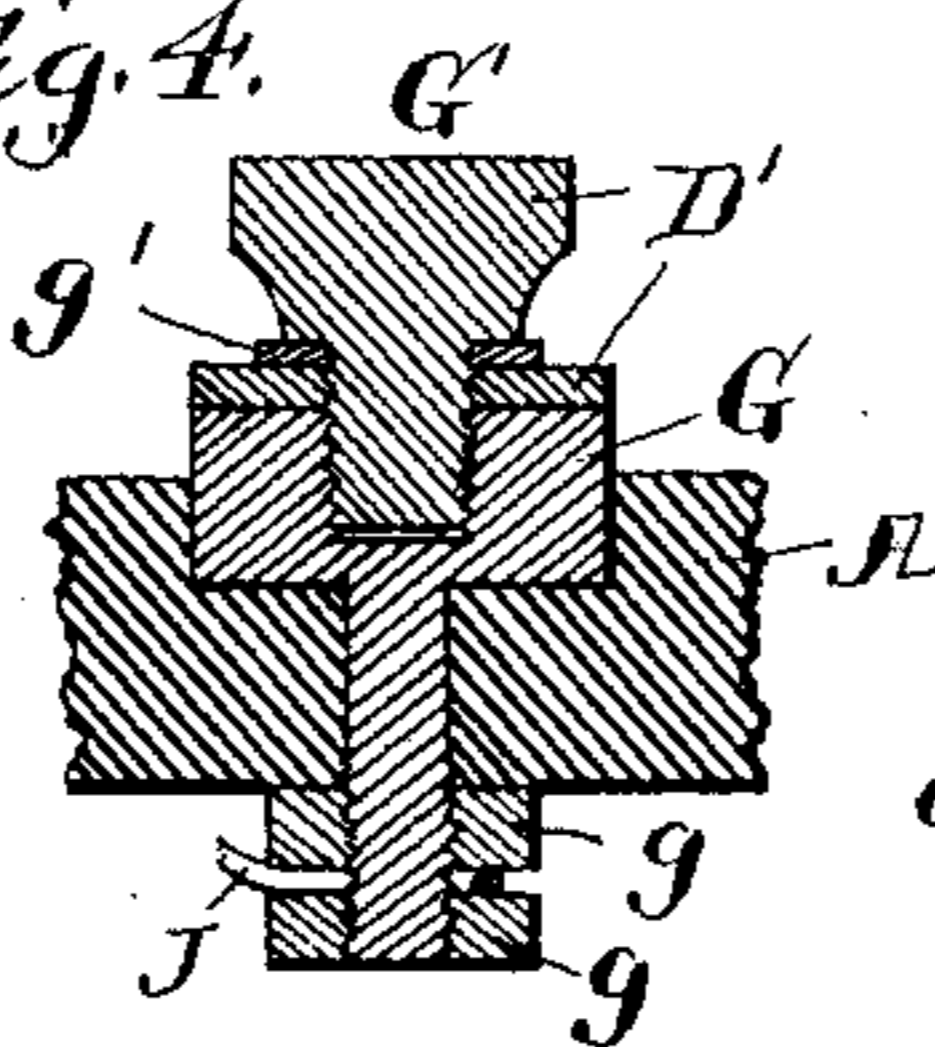


Fig. 4.



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Fig. 5.

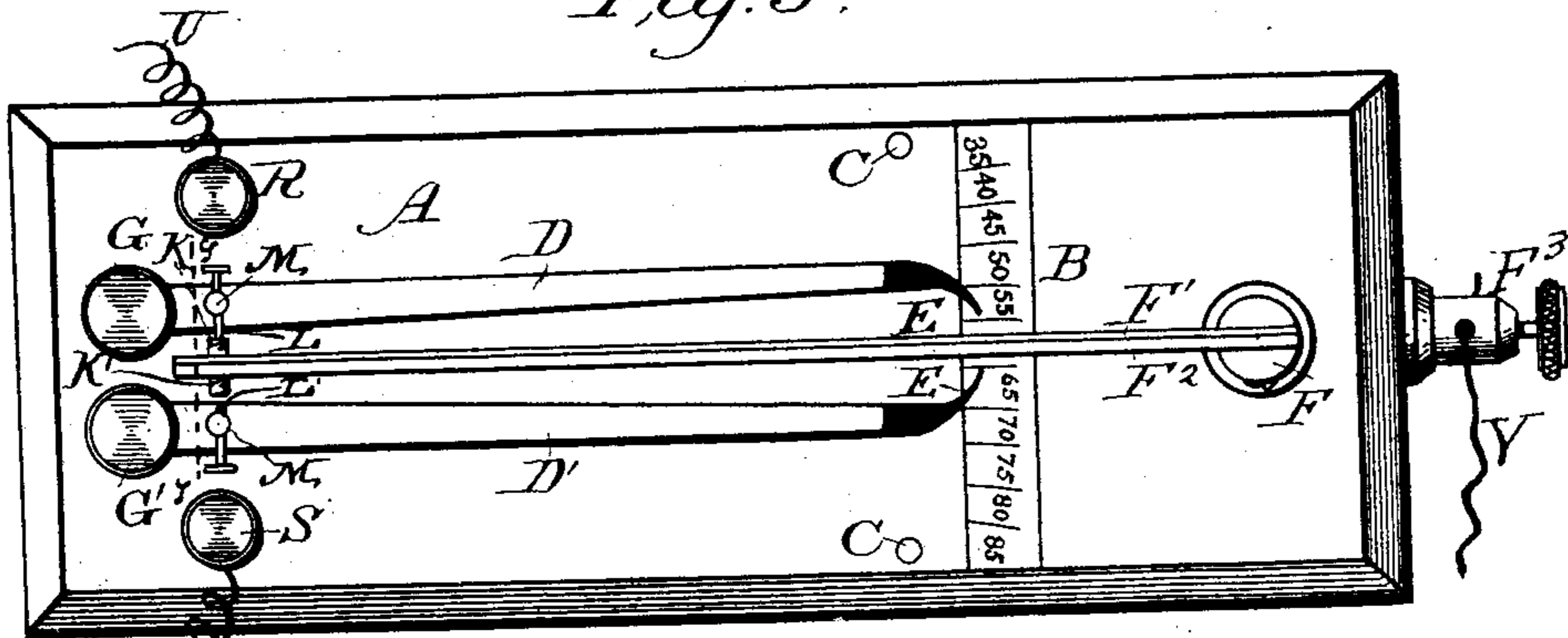
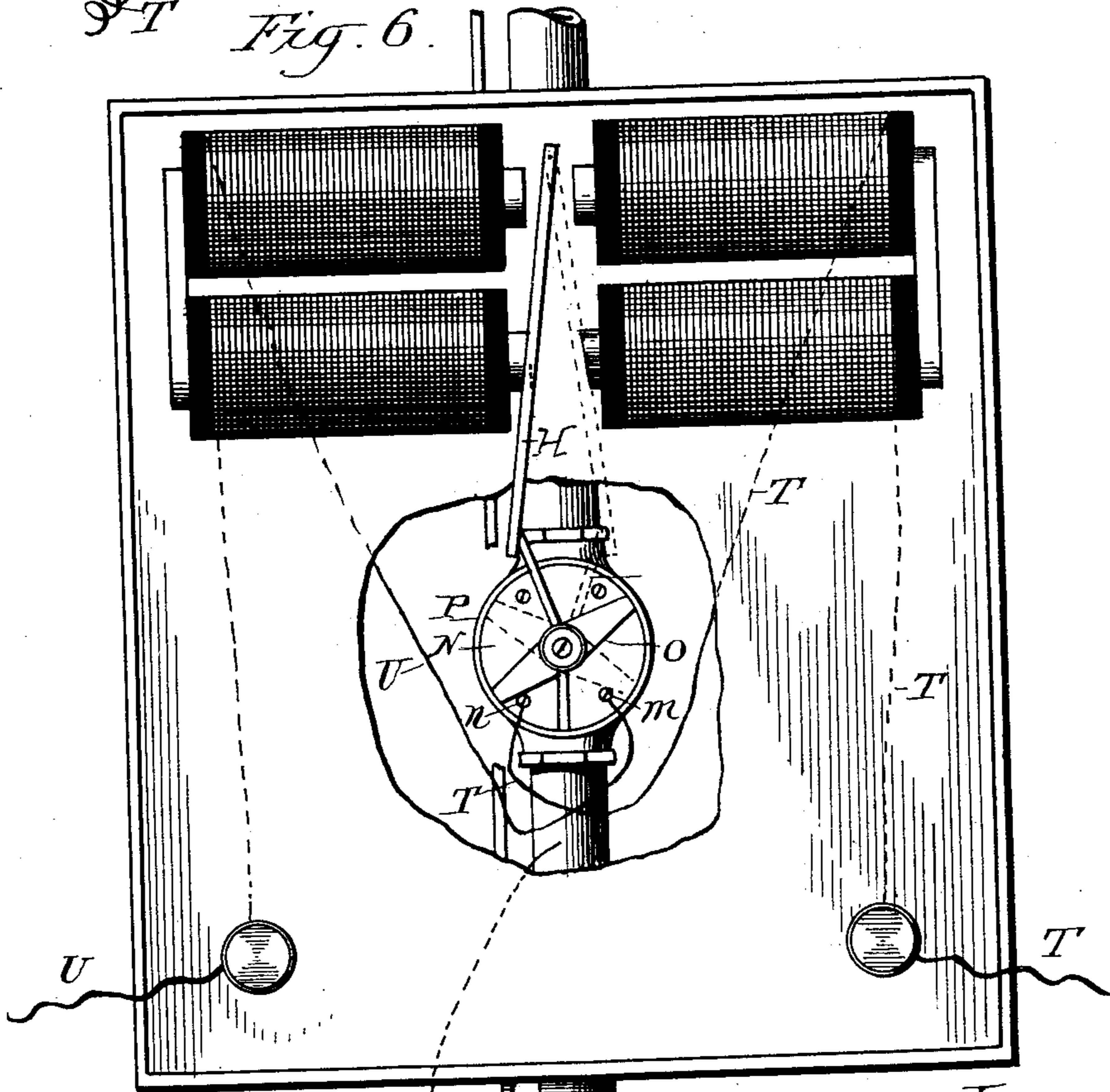
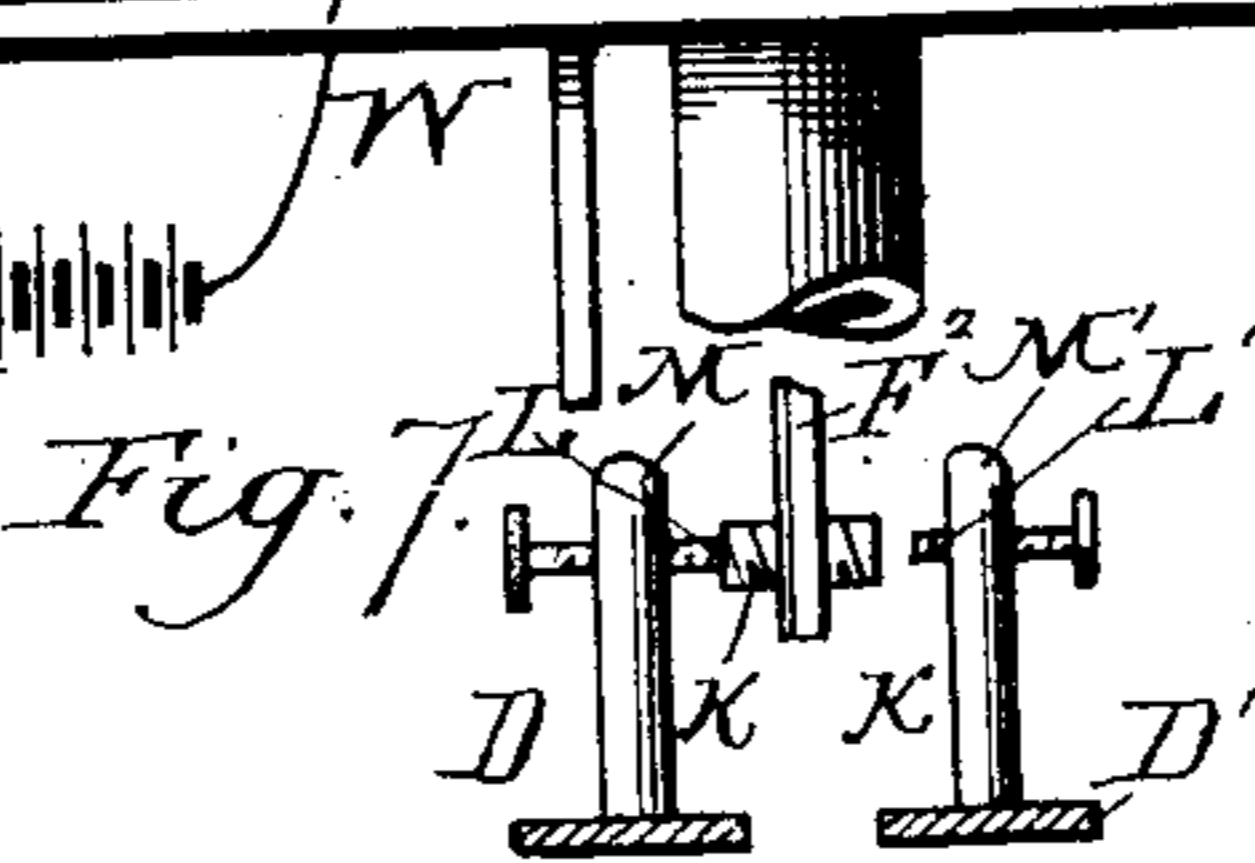


Fig. 6.



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UNITED STATES PATENT OFFICE.

WALTER H. TAPLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WARE
AUTOMATIC HEAT GENERATOR AND REGULATOR COMPANY, OF SAME
PLACE.

THERMOTIC CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 477,315, dated June 21, 1892.

Application filed August 14, 1889. Renewed October 24, 1891. Serial No. 409,654. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. TAPLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Thermostats, of which the following is a specification, reference being therein had to the accompanying drawings.

Figure 1 is a plan view. Fig. 2 is a side elevation, partly broken away. Fig. 3 is an end elevation looking in the direction of the arrow, Fig. 1, and partly broken away. Fig. 4 is a vertical section of one of the pivot-posts, taken on line 4 4, Fig. 2, and enlarged. Figs. 5 and 6 are plan views illustrating a preferred mode of carrying out my invention. Fig. 7 is a partial transverse section on line *y y*, Fig. 5.

The object of this invention is to facilitate accurate adjustments of the devices by which electrical connection is made with a thermostat; and it consists in certain novel features of construction and arrangement of parts, which will be hereinafter fully explained.

Like reference-letters indicate like parts in all the figures.

A is a base or board upon which the parts are mounted.

B is a scale graduated properly so that the distances between the numbered lines shall correspond properly to the deflection produced in the thermostat-strip by changes of temperature.

C C are stops to limit the outward swing of the pointers.

D D are the pointers, each provided with a tip of some suitable insulating material at E E.

F is a stationary post rising from the base and having rigidly attached thereto the thermostat-strip F' F² of any suitable or approved material. The post F is connected with the binding-post F³, preferably by a wire conductor F⁴. Each of the pointers is pivoted at its outer end to the base, preferably by devices which are shown in detail in Fig. 4, in which G is a circuit-pivot post, the shank of which passes through the bed-plate with one or more nuts *g g*. The upper end of this post is provided with a recess or socket, which is screw-threaded to receive a set-screw G',

which serves not only as a pivot for the pointer through which it passes, but also to clamp the pointer to the pivot-post, and thus hold it (the pointer) in place after it has been adjusted, there being usually a washer *g'* between the upper face of the pointer and the head of the set-screw.

R S are binding-posts electrically connected with the pointers D D', preferably by wires J J' and the circuit-pivot posts; but of course any other convenient connection may be used for this purpose.

It is obvious that the manipulation of the parts as regards loosening the set-screws G G', and the shifting of the pointers to the desired positions, as well as their removal when found advisable, are facilitated by the combination therewith of the binding-posts R S, which are electrically connected with the pivots, so that these latter constitute parts of their respective circuits, for which reason I prefer to designate them as "circuit-pivots."

K K' are contact-points carried by the thermostat-strip.

L L' are contact-points, preferably adjustably connected with the pointers through posts or studs M M', which project upward therefrom in such position that these points are in alignment with the contact-points carried by the thermostat-strip. By reason of the arrangement of the thermostat-strip and the pointers in practically parallel lines, so that they all vibrate in parallel planes, the swing of the strip being toward and from the pointers, it is practicable to arrange the contact-points in close proximity to the pivotal points of the pointers, whereby very accurate adjustment may be effected and without the use of any multiplying-lever or other appliance connected with and actuated by the thermostat-strip. Therefore, when I use herein the word "pointer" in connection with the word "thermostat-strip" I refer to a combination and arrangement of parts, such that whenever the free end of the thermostat-strip swings in the proper direction it will engage directly with a contact-point of the pointer, as contradistinguished from a construction in which there is a lever or other multiplying device interposed between the thermostat-strip and the pointer.

Although this thermostat is adapted for many of the uses where such appliances are employed, yet I believe it to be specially useful in connection with an invention set forth
 5 and described in Patent No. 411,311, September 17, 1889, granted to E. R. Ware, for a device for controlling fluid-supply, and in which there are two reversely-acting magnets, of which one is employed to diminish the supply of fuel, the other being used to increase
 10 such supply.

In Figs. 5 and 6 I have illustrated one mode of working my invention in connection with the apparatus shown in that Ware patent,
 15 wherein there is shown a pair of electro-magnets, the armature H of which is connected at its swinging end with the plug of a stop-cock in a fuel-supply pipe.

O P is a switch mounted upon the shank
 20 of the plug, the ends of the switch engaging alternately with contact-plates, through which the electric current passes over wires T U, which are connected with the binding-posts R S, so that as the free end of the thermostat-strip engages with one or the other of the
 25 contact-points L L' one or the other of the electro-magnets will be energized and the valve-plug thereby moved.

From an examination of the drawings it will
 30 be understood that if the pointer D be set as indicated in Fig. 1—that is to say, at the point marked “55”—and the pointer B' be set at “65,” as indicated, the thermostat-strip being practically straight at a temperature of 60°, in case
 35 the temperature falls to 55° the contact-point L will engage with the contact-point K' of pointer D and establish an electrical circuit through binding-posts F³ R, wires U V W, and the battery. On the other hand, if the tem-
 40 perature rises to 65° an electrical circuit will be established through the contact-points K' L', the wires S T, and the battery.

I am aware that it is common to use sliding pointers provided with bent arms projecting
 45 into the path of the contact-points connected with and actuated by the thermostat-strip by means of an adjustable lever, the contact-point being carried by the long arm of the lever, whereby the normal of the lever might
 50 be shifted to different points upon the graduated scale; but my invention differs from such prior construction in that, among other things, the range or limits of movement of the thermostat-strip between the contact-points may
 55 be shifted from one part of the scale to another by moving the pointers, swinging one of them below the thermostat-strip in either direction, if necessary, with a corresponding adjustment of the contact-points which are
 60 carried by the pointers.

As any suitable form and arrangement of battery of ground-wires for connection may be used, according to the requirements in each case, these parts are not shown, it being be-
 65 lieved that the invention is fully illustrated without such parts.

By screw-threading the rod or pin K K', the

ends of which form contact-points, the distance which those points project from the thermostat-strip may be conveniently adjusted. 70

I am aware that it is common to employ separately-movable pointers arranged upon opposite sides of the swinging end of a thermostat-strip to give a signal when a variation in the temperature of the strip deflects its
 75 free end in either direction to a predetermined extent, such signal being given, however, by one and the same bell or other alarm whether the change in position of the free end of the thermostat bar or spring be effected by a rise
 80 in the temperature or by a fall in the temperature; but in my invention I prefer to so construct and arrange the electrical circuits and the appliances operated thereby that the wire V connects the thermostat strip or spring
 85 directly with the battery, while the return-wire T connects with one electro-magnet, the return-wire U connecting with another and different magnet, so that the engagement of the contact-points K L will energize a magnet
 90 which is separate and apart from the magnet which is energized when the contact-points K' L' are in engagement.

What I claim is—

1. In a thermostat, the combination of the
 95 elastic strip or spring, two adjustable pointers, each mounted upon a separate circuit-pivot, said pointers each carrying a contact-point through which the current is transmitted by way of the contacting strip and the re-
 100 spective circuit-pivot of the pointer, and a graduated scale at the swinging ends of the pointers, substantially as set forth.

2. In a thermostat, the combination of the
 105 elastic strip or spring, two adjustable pointers, each mounted upon a separate circuit-pivot, said pointers each carrying a contact-point through which the current is transmitted by way of the contacting strip and the
 110 respective circuit-pivot of the pointer and upon opposite sides of the strip, and a graduated scale adjacent to the swinging ends of the pointers and the fixed end of the strip, substantially as set forth.

3. In a thermostat, the combination of the
 115 elastic strip or spring and two adjustable pointers, each pivoted upon a separate circuit-terminal and upon opposite sides of the strip and below the strip, with a graduated scale below the strip and adjacent to its fixed end,
 120 the swinging ends of the pointers being arranged to traverse the scale below the strip, substantially as set forth.

4. In a thermostat, the combination of the
 125 elastic strip or spring, two adjustable pointers, each carrying a contact-point and each mounted upon a separate circuit-pivot, and two binding-posts electrically connected to the circuit-pivots, substantially as set forth.

5. In a thermostat, the combination of the
 130 elastic strip, two adjustable pointers, each carrying a contact-point and each mounted upon a separate circuit-pivot upon opposite sides of the elastic strip, a battery-wire con-

necting the strip with the battery, and two return-wires, each connected at one end with the battery and at the opposite end with one of the pointers, whereby an electric current may
5 be sent through the return-wires alternately as the temperature of the strip is changed, substantially as set forth.

6. The combination of the strip or spring, two pointers, each carrying a contact-point
10 and each mounted upon a separate circuit-pivot, two electro-magnets, and electrical connections, substantially as set forth, whereby when the temperature of the elastic strip or
15 spring is raised one of the magnets is energized and when the temperature of the elas-

tic strip or spring falls the other electro-magnet is energized, substantially as set forth.

7. In a thermostat, the combination, with the base, of the screw-threaded circuit-pivot formed at its upper end with a screw-threaded
20 socket, the pointer, and the set-screw which pivots and clamps the pointer, substantially as set forth.

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

WALTER H. TAPLEY.

Witnesses:

H. H. DOUBLEDAY,
M. P. CALLAN.