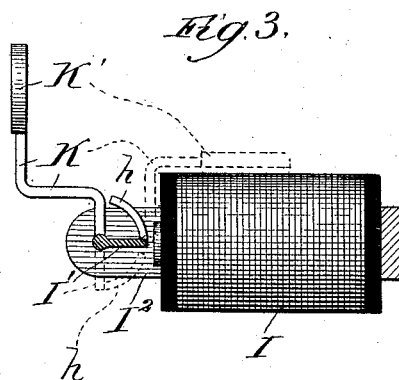
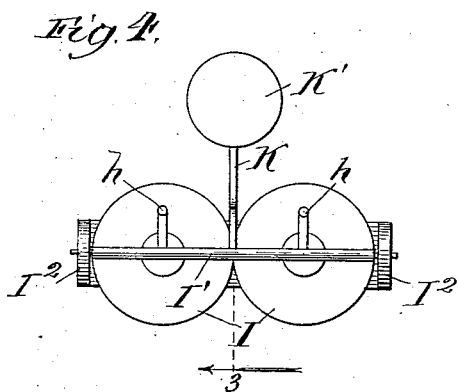
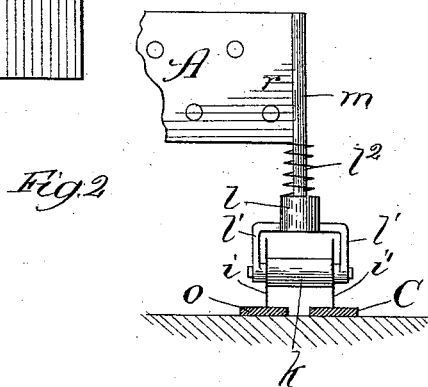
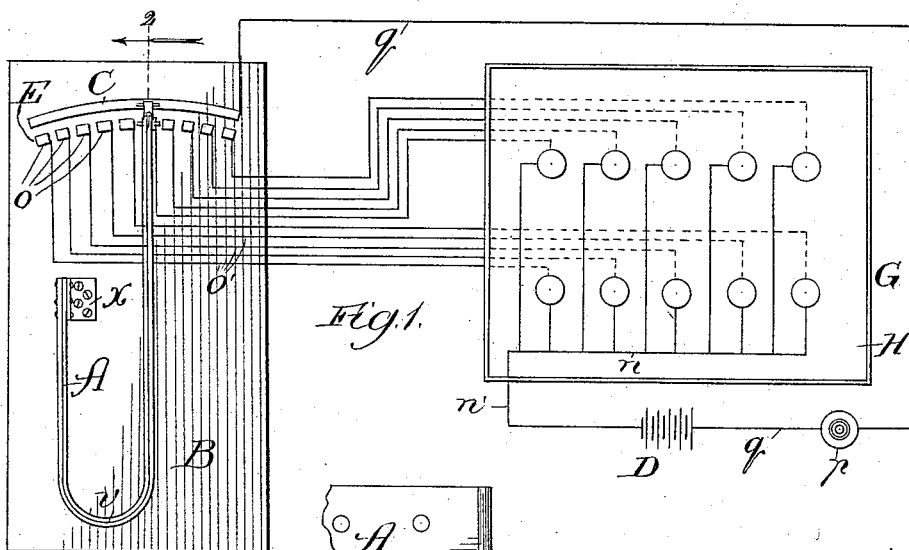


(No Model.)

H. B. PAYNE.
TELETHERMOMETER.

No. 490,883.

Patented Jan. 31, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

HOWARD B. PAYNE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
DAVID B. VAN SLYKE, OF SAME PLACE.

TELETHERMOMETER.

SPECIFICATION forming part of Letters Patent No. 490,883, dated January 31, 1893.

Application filed September 22, 1892. Serial No. 446,514. (No model.)

To all whom it may concern:

Be it known that I, HOWARD B. PAYNE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Electric Temperature Apparatus, of which the following is a specification.

My invention relates to an improvement in the class of devices for use in the regulation of temperature of apartments and inclosures and involving; as the generally stated means for the purpose, an electric circuit containing, in the apartment or inclosure the temperature of which is to be controlled, an instrument affected by change in temperature to close the circuit and thereby produce the operation of electrically actuated mechanism at a distance, such as a valve controlling the heat or cold-air supply to the inclosure, or a temperature-indicating device.

More definitely stated, my invention relates, to an improvement in the construction of the primary instrument affected as described by change in temperature; when combined for use as a telethermometer with a suitable indicating or valve apparatus in circuit with it; and it also relates to the construction and mode of operation of the combined electro-telethermometric apparatus.

Referring to the accompanying drawings—Figure 1 is a view in front elevation, diagrammatic in its nature, of my improved apparatus; Fig. 2 an enlarged broken section taken at the line 2 on Fig. 1, viewed in the direction of the arrow and showing a contact-detail; Fig. 3, a section at the line 3 on Fig. 4, of an electro-magnet in side elevation, showing by dotted lines the armature in its normal position; and Fig. 4 shows the electro-magnet and its indicating armature in front elevation.

A is a telethermometer essentially comprising a bar of materials (preferably two metals) differentially affected by temperature, which thus causes it to bend in one direction under the influence of a rise, and in the opposite direction under that of a fall, in the temperature surrounding it; and in order to provide the telethermometric bar, which is fastened at one end, as indicated at *x*, (Fig. 1,) to a

base B, in a length that will, without taking up too much lineal space, produce, by its bending, a sweep at its free contacting end *r* adapting it to describe an arc of adequate length to contain the number and size of contacts I desire, I may bend it, as at *v*, one bend only being shown, as that is ordinarily sufficient for my purpose, though as many more may be provided as desired without thereby departing from the spirit of my invention.

On the base B is a metal contact-bar C forming one terminal of a generator (battery D) circuit, being connected with one pole of the battery by a conductor *q*, represented as normally broken and containing a circuit-closing device, shown in the form of a push-button *p*. Below the contact-bar C on the base B is ranged a series E of contacts *o*, each of which is connected by a separate conductor *o'* with an electro-magnet I in an indicator or receiver represented as an annunciator G, and hereinafter described; and the several magnets have a common connection, through the medium of a conductor *n* with the opposite pole of the battery.

The contacting end of the bar A carries, as a desirable, because effective, construction of contact-insuring means, a rod *m* extending toward the contacts C and E and supporting on its free end a sliding collar *l* formed with brackets *l'* affording journals for a roller *k* sufficiently wide to extend across the plane of both said contacts and provided toward its ends with knife-edge disks *i* and *i'* of metal. A spring *l²*, confined against the collar *l*, tends to force the disks against the adjacent contacts; and the knife-edges tend to prevent imperfect contact by corrosion or the accumulation of foreign matter on them.

The annunciator G involves a peculiar construction of drop. The annunciator comprises a suitable case H containing electro-magnets I, one for each contact *o* and provided with a pivotal armature I' journaled at opposite ends near one edge between the arms of a bracket I² fastened to the sides of the heads of the magnet-spools; and from the armature, preferably at its center, extends at a suitable angle (say a right-angle, as shown) an arm K carrying at its extremity a tag K' 100

to bear the sign (number) denoting the temperature represented by the contact *o* with which the respective magnet *I* is connected. On the armature, in the planes of the magnet-cores, are metal extensions *h*, in the form of arc-shaped strips, which project close to the cores when the magnets are not energized, or are in their normal condition in the open circuit, in order that when energized their attracting influence on the armature will be effective.

The operation is as follows: Supposing the instrument *A* to be in a room (as a cold-storage room) the temperature of which has to be watched periodically to insure its normal maintenance, and the indicator *G* and push-button attachment *p* to be in the office, or in the room of the person in charge of the temperature-control. At any contact *o* in the series *E* thereof at which the bar *A* bears, its contact-disks *i* and *i'* will close the circuit at the break between the bar *C* and series *E* by bridging the break, so that the circuit is normally closed at these contacts, but it is normally open at the push-button *p*, which controls the operation of the annunciator. On closing the circuit by pressing the push-button, the magnet *I* connected with the particular contact *o* on which the bar *A* bears will be energized and attract its armature *I'*, thereby turning the latter into the position in which it is represented in Fig. 3, wherein its finger *K* is raised from the normal dotted position represented to that of the full line position illustrated, in which it presents its tag *K'* indicating the temperature in degrees at an opening in the cover of the annunciator. If the showing thus made indicates a rise or fall in the temperature of the storage-room, it will need attention accordingly; whereas if it show the temperature to be normal the purpose is served of ascertaining that fact.

The details of the construction involved in the annunciator, while very desirable, are not indispensably necessary for the operation of my improvement, nor is it necessary that an indicator, if used in connection with my im-

proved form of instrument *A*, be in the form of an annunciator *G*.

What I claim as new and desire to secure by Letters Patent is—

1. An electric temperature apparatus comprising, in combination with an electric generator, a contact-bar *C* connected with one pole of the generator, a series of contacts *o*, a bar formed of materials differentially affected by temperature, fastened at one end and free toward its opposite end, a spring contact-device on the free end of the bar, and formed with a roller *k* carrying disks *i* and *i'* normally bridging contacts *C* and *o*, and an indicator, or the like having electro-magnets connected with the contacts *o* and with the opposite pole of the said generator, substantially as and for the purpose set forth.

2. An electric temperature apparatus comprising, in combination with an electric generator and its circuit, and a telethermometer having contacts, an annunciator *G* having electro-magnets *I* each connected with a different contact and all with one pole of the generator and provided with pivotal armatures *I'* provided with extensions *h* carrying signs, and a circuit-closer *p* in the circuit, substantially as and for the purpose set forth.

3. An electric temperature apparatus comprising, in combination with an electric generator and a telethermometer normally connecting a contact-bar *C* forming one terminal of the generator with a contact *o* in a series thereof, an annunciator *G*, comprising a case *H* containing electro-magnets *I* having pivotal armatures *I'* provided with extensions *h* and carrying arms *K* provided with tags *K'*, said magnets being each connected with a different contact *o* and all with the generator, and a circuit-closer *p* in the connection of the contact-bar *C* with the generator, substantially as and for the purpose set forth.

HOWARD B. PAYNE.

In presence of—

M. J. FROST,

W. W. WILLIAMS.