

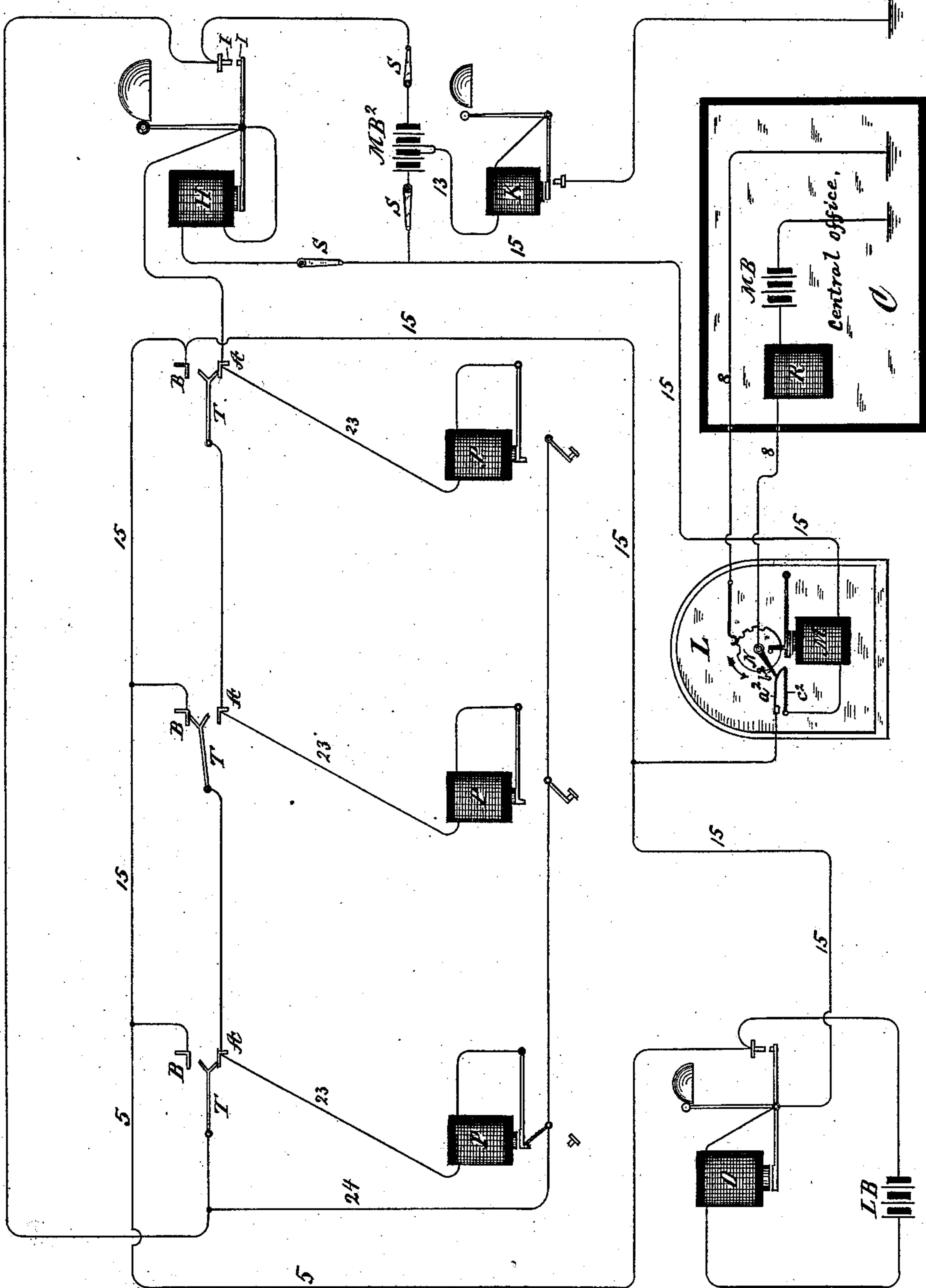
(No Model.)

J. H. GUEST.
FIRE TELEGRAPH.

No. 358,393.

Patented Feb. 22, 1887.

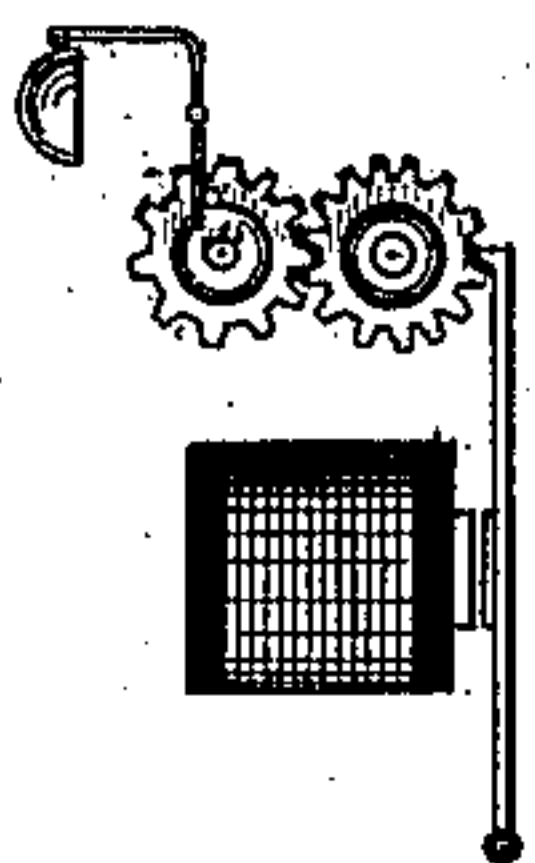
Fig. 1.



WITNESSES:

Gabriel J. W. Galtier
Mr. J. T. Cape

Fig. 2.



INVENTOR

J. H. Guest.

BY

Trinard & Maud Arthur

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN H. GUEST, OF BROOKLYN, NEW YORK.

FIRE-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 358,393, dated February 22, 1887.

Application filed November 13, 1886. Serial No. 218,781. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. GUEST, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Fire-Telegraph, of which the following is a specification.

My invention relates to an arrangement of circuits and apparatus designed more particularly for application in automatic fire-alarm systems in which automatic thermostats are employed for governing or controlling the alarm or signal circuits.

The object of the invention is to provide an improved arrangement of apparatus whereby a bell or alarm will be sounded on the operation of the thermostat or other automatic circuit-breaker, and whereby at the same time the locality of the disturbance will be indicated by a telegraph apparatus set into action through the simultaneous closing of a circuit by means of an automatic circuit-closer. The arrangements hereinafter described are, however, specially adapted for use with those forms of thermostats in which two sets of contacts are employed, on one of which the thermostat is normally closed so long as the temperature is normal, while the other is normally open, but is closed on an increase of temperature sufficient to open the first-named contact.

An example of a thermostat adapted to produce such an action may be found in my prior patent, No. 193,650. At the same time I do not wish to be understood as limiting myself to the employment of a single thermostat, but desire to include any arrangement in which a normally-closed thermostat-contact, connected as hereinafter described, is employed, in combination with a normally-open thermostat-contact on which the circuit shall be closed by dangerous increase of temperature when the circuit is broken at the normally-closed contact.

The object of my invention is, among other things, to provide arrangements of circuits and devices whereby a warning will be given in case of the accidental breaking or grounding of the circuit employed.

The object of the invention is further to simplify and improve the combination of apparatus.

The novel combinations of my invention

will be first described in connection with the accompanying sheet of drawings, illustrating the invention diagrammatically, and will then be more particularly specified in the claims.

Figure 1 of the drawings is a diagram illustrating my invention. Fig. 2 illustrates a modified detail of construction.

T T T indicate thermostats of any desired construction—such, for instance, as shown at Fig. 5 of my patent before referred to.

A A A indicate normally-closed contacts of such thermostats, and B B B normally-open contacts of the same.

M B² is a battery or other generator of electricity, and H is a magnet of an automatic vibrator-bell or other alarm—such as a clock-work alarm released by a magnet, as indicated in Fig. 2—which magnet is placed in a circuit from the battery M B² leading through the normally-closed contacts of the thermostats in series, as shown, and back to the other pole of the battery.

The vibrator-contacts I I of the alarm-bell, which serve to automatically break and close the circuit of the bell-magnet H, to produce a continuous ringing of the alarm-bell, are, as will be obvious, normally shunted through the contacts A A, &c., of the thermostats; but when one or more of such thermostats break contact at A the circuit of magnet H will be completed through the vibrator-contacts I I through the falling away of the armature, and the bell will sound in the well-known manner by the repeated make and break of the contact.

Leading from battery M B² is a signal wire or branch, (indicated by the numeral 15,) which is connected to the normally-open contacts B B of the thermostats. In the signal-wire is placed an electro-magnet, M, which governs the operation of a telegraph apparatus—such, for instance, as a district-telegraph box, (indicated at L)—which serves to telegraph the location of a disturbance to a central office, C, furnished with a main battery, M B, and a register, R, for receiving the signal.

The circuit-breaking wheel N of the district box L is connected into the circuit 8 8, leading from station C, in any well-known manner, while the electro-magnet M is provided with an armature, which normally holds the circuit-breaking wheel from revolving.

When, however, the magnet is energized, the wheel is released and the telegraph apparatus operates on the circuit 8.

The circuit 15 is through a circuit breaker and maker which is adapted to sever said circuit when the circuit is completed at a contact, B. Such a device may be conveniently operated for this purpose by the apparatus of the district-telegraph box, in the manner indicated.

The circuit-breaker is composed of a spring, a^2 , which constantly tends to break contact with another spring or contact, c^2 . An arm, b^2 , insulated or of insulating material, holds the spring a^2 against its contact when the apparatus is at rest. Said arm is carried by a wheel of the apparatus, and when the latter is released moves away from the spring, thus permitting the circuit 15 to be broken when the box turns in an alarm. So long as circuit 15 is thus broken bell H will continue to ring, although the circuit 15 may be closed at a contact, B.

O indicates the electro-magnet of a vibrator or other alarm-bell, and L B a battery or generator for operating said bell. The circuit of said magnet and battery is a normally-closed one, and is completed by wires 5 5, connected to circuit or wire 15, as indicated. The contacts of the vibrator-bell are shunted by the circuit thus formed, which, as will be seen, is a normally-closed one.

If by any accident the signal wire or circuit 15 should be broken, so as to incapacitate it for action on the closure of contact at a thermostat, a signal or alarm would be given by the alarm-bell connected into the circuit of the battery L B, in obvious manner.

K indicates the electro-magnet of an automatic vibrator-bell or other automatic alarm—such, for instance, as indicated in Fig. 2—which is placed in a ground wire or branch, 13, from any portion of battery M B². Should signal-wire 15 become grounded by accident, the automatic vibrator-bell in branch 13 will give an indication. In the same manner warning will be given if by any accident the normally-closed circuit formed through magnet H and contacts A or the thermostats should become grounded. Try-switches S S S, one in a branch, 15, from the battery M B², and the other in the normally-closed circuit or branch just referred to, can be employed in a well-known manner to ascertain the location of the defect.

It is obvious that any breakage of the normally-closed circuit made through the thermostat-contacts A will be followed by the operation of the alarm-bell whose magnet is indicated at H.

Any accidental breakage of the alarm or signal wire 15 will be followed by the operation of the alarm-bell whose magnet is indicated at O.

P P P indicate the magnets of annunciators or indicators, which magnets are connected into branches 23, attached to the normally-

closed thermostat-circuit at points as indicated, and joined to a common wire, 24, leading to the normally-closed contact of battery M B² at a point beyond the last thermostat of the series. The circuit of each branch 23 to the common connection 24 is through contacts normally closed when the annunciator-drop is up, but broken when the drop is down. This is easily effected by carrying the circuit to the armature of the magnet, to the catch which holds the drop up, and thence to the drop. When the drop falls, the branch is broken.

Normally the annunciator-magnets are all shunted through the thermostats; but if any thermostat opens circuit the current is forced to go through the magnets of all the annunciators to the right of the thermostat affected, and the thermostat acting is indicated by the number of drops which fall. By this means the location of the disturbance may be known.

The general operation would be as follows: The thermostat-contacts being closed at A, the circuit of magnet H from battery M B² will be completed, and the contacts I I will be open. The thermostat-contacts B B B being normally open, the armature of magnet M will be retracted, and the contacts $a^2 c^2$ closed. The circuit of electro-magnet O will be closed through the wires 5 and signal-wire 15, in obvious manner, and the vibrator-contacts of magnet O will be thus shunted. The annunciator-drops being up, the branches 23 are closed, but current is shunted from the annunciator-magnets through the thermostats. On the operation of any thermostat—as, for instance, the middle one of the series indicated—the circuit of magnet H from battery M B² will be broken, and the circuit of branch 15, containing magnet M, will be closed back to the battery through the thermostat-contact B of the thermostat in action, in obvious manner. The effect of breaking the circuit of magnet H will be to allow its armature to fall back and close contacts I I, after which the bell-hammer vibrates through the intermittent make and break of contact at I. By the closure of contact at B the magnet M will be excited and draw down its armature, thus releasing the telegraph apparatus of the district-telegraph box L, and the signal will be turned in and received upon the register R in the circuit 8, which signal is of a character to indicate the building or room in which the thermostats are located. When the wheel N begins to move, the circuit 15 will be broken at a^2 , and the current of battery M B² will thus be prevented from circulating through a path independent of magnet H and contacts I I. The bell operating H will therefore continue to sound. At the instant the contact A of the middle thermostat opens, and before closure of contact at B, the current which formerly passed through the contact A will now circulate in the right-hand branches 23, and the two annunciators in said branches will give an indication. At the same time said branches will be opened and the diversion of current from

the contacts of bell-magnet H through the normal contact A of the right-hand thermostat will be thus prevented. If the third thermostat of the series act, all the drops will fall, and the continual diversion of current through the two right-hand branches will at the same time be prevented by the breaking of their branches.

I do not limit myself to any particular construction of telegraph apparatus L, as it is obvious that any kind of automatic device may be employed for the particular purpose indicated.

It is obvious that the telegraph apparatus L may be normally on an open or on a closed circuit on the wires 8 8.

It is to be understood that the various parts may be disposed in buildings or rooms, as convenience may dictate and as is common and well known in the art.

The vibrator-bell whose magnet H is in the normally-closed circuit through the thermostat serves itself to give warning in case of any derangement or tampering with the metallic circuit in which it is placed, while the vibrator-bell whose magnet is indicated at K gives warning of the accidental or unauthorized grounding of said circuit. The latter bell also gives warning in case of accidental or other grounding of the signal-wire 15, while any unusual break of the latter wire will be indicated by the sounding of the alarm-bell whose magnet is indicated at O.

The annunciators or indicators may be of any desired type, constructed to show a tag or operated pointer on closure of a circuit through an annunciator-magnet.

The circuit-breaker in circuit 15 may be of any desired mechanical construction suitable for the purpose of normally holding the circuit complete when contacts B are open, and breaking said circuit immediately after the closure of a contact at B.

What I claim as my invention is—

1. An electric signal wire or circuit normally open at the contact of a circuit-closer and containing a device whereby the closure of the circuit will be indicated, in combination with a normally-closed automatic-alarm circuit normally completed through the wire or circuit leading from the indicator to the circuit-closer, whereby, in case of accident or breakage of said leading wire, an alarm will be given.

2. An electric wire or circuit normally open at the contacts of a circuit-closer and containing the releasing-magnet for a signaling mechanism, in combination with an automatic indicator or alarm connected to a wire or circuit which is normally closed through the wire leading from the releasing-magnet to the circuit-closer, as and for the purpose described.

3. The combination, with an electric circuit, of one or more automatic circuit closers or breakers, a signaling box or mechanism containing a releasing electro-magnet included in said circuit, and a ground wire or branch from

said circuit, containing an automatic vibrator-bell, as and for the purpose described.

4. The combination, with the automatic alarm-bell having its contacts normally shunted through the contacts of a circuit-breaker, of a ground-connection from said circuit containing an alarm-bell, as and for the purpose described.

5. The combination, with a normally-closed thermostat-circuit, including an electro-magnet of an alarm-bell, and a normally-open thermostat-circuit containing the releasing-magnet for an automatic telegraph apparatus, of an automatic alarm contained in a ground branch, as and for the purpose described.

6. The combination, with the alarm-circuit containing magnet H and normally closed through the contacts of a thermostat or thermostats, of a signal-wire, 15, connected to the normally-open contact of a thermostat and containing the releasing-magnet for the automatic telegraph apparatus.

7. The combination, with a double-contact thermostat and a bell-magnet whose contacts are normally shunted through the normally-closed contact of the thermostat, of a district-telegraph box provided with a releasing-magnet contained in a circuit controlled at the normally-open contact of the thermostat, as and for the purpose described.

8. The combination, with a district-telegraph box and a controlling-magnet for releasing the same, of an electric signal wire or circuit containing said magnet and connected to the normally-open contact of the circuit-controlling thermostat, and an automatic vibrator alarm-bell whose contacts are normally shunted through said signal-wire circuit, as and for the purpose described.

9. The combination, with the double-contact thermostat and a battery, M B², of a vibrator-bell in the circuit completed through the normally-closed contact of the thermostat, a releasing-magnet for a district-telegraph box in a signal wire or circuit connected to the normally-open contacts of the thermostat, and an automatic vibrator-bell in a ground-wire from the battery, as and for the purpose described.

10. The combination, with a double-contact thermostat, of an electro-magnetic alarm-bell whose magnet is in a circuit normally closed through the normally-closed contact of the thermostat, vibrator-contacts for said bell normally shunted, as described, and a signal wire or branch containing the releasing devices for a telegraph apparatus and connected to the normally-open contacts of the thermostat.

11. An automatic vibrator-signal in a ground wire or branch, in combination with a try-switch in the normally-closed circuit and a try-switch in the signal wire or branch connected to the normally-open contacts of the thermostat.

12. The combination, with double-contact thermostats, of an alarm-circuit completed through the normally-closed contacts of the thermostats in series and indicator or annunciator magnets placed in branches connected

to said circuit at points between the thermostats and normally shunted by the closed circuit through said contacts, as and for the purpose described.

5 13. The combination of a generator, M B², an alarm-bell whose magnet is included in a circuit normally closed through the contact of a thermostat, vibrator-contacts for said bell-magnet shunted by said thermostat-contact, a
10 signal wire or circuit connected to the same battery and leading to the normally-open contact of a thermostat, a releasing-magnet for a telegraph-transmitter included in said signal-wire, and a circuit-breaker included in said
15 signal-wire for automatically breaking the signal-wire circuit, as and for the purpose described.

14. The combination, with a double-contact thermostat and a generator of electricity, of a
20 branch through the normally-closed contact containing an automatic alarm, and a second branch to the normally-open contact containing the releasing-magnet for a district-telegraph box.

25 15. The combination, with the normally-closed thermostat-circuit and bell for giving a

signal in case of a breakage of the same, of a normally-open thermostat-circuit, means for indicating the closure of said circuit by the thermostat, and an alarm signal apparatus in
30 a normally-closed circuit completed through said normally-open signal-wire, as and for the purpose described.

16. The combination, with normally-closed and normally-open thermostat circuits or
35 branches, of a ground wire or branch containing an automatic alarm, as and for the purpose described.

17. The combination, with double-contact thermostats, of branches from the normally-
40 closed thermostat-circuit normally completed around the closed contact and each containing an annunciator and a circuit-breaker, as and for the purpose described.

Signed at New York, in the county of New
45 York and State of New York, this 30th day of October, A. D. 1886.

JOHN H. GUEST.

Witnesses:

WM. H. CAPEL,

GABRIEL J. W. GALSHER.