

(No Model.)

2 Sheets—Sheet 1.

R. N. DYER.

THERMOSTATIC FIRE INDICATOR.

No. 287,757.

Patented Oct. 30, 1883.

Fig. 1.

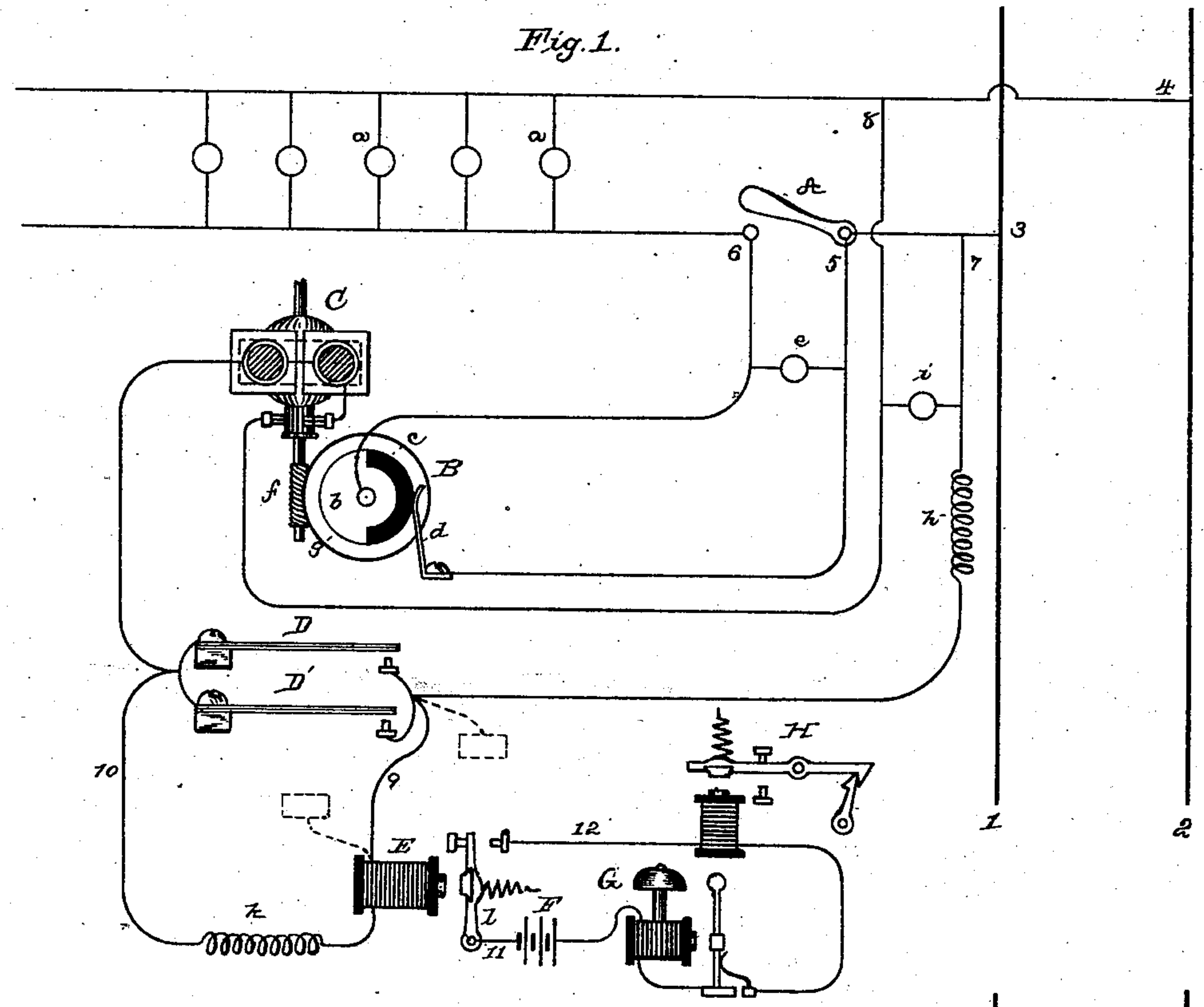
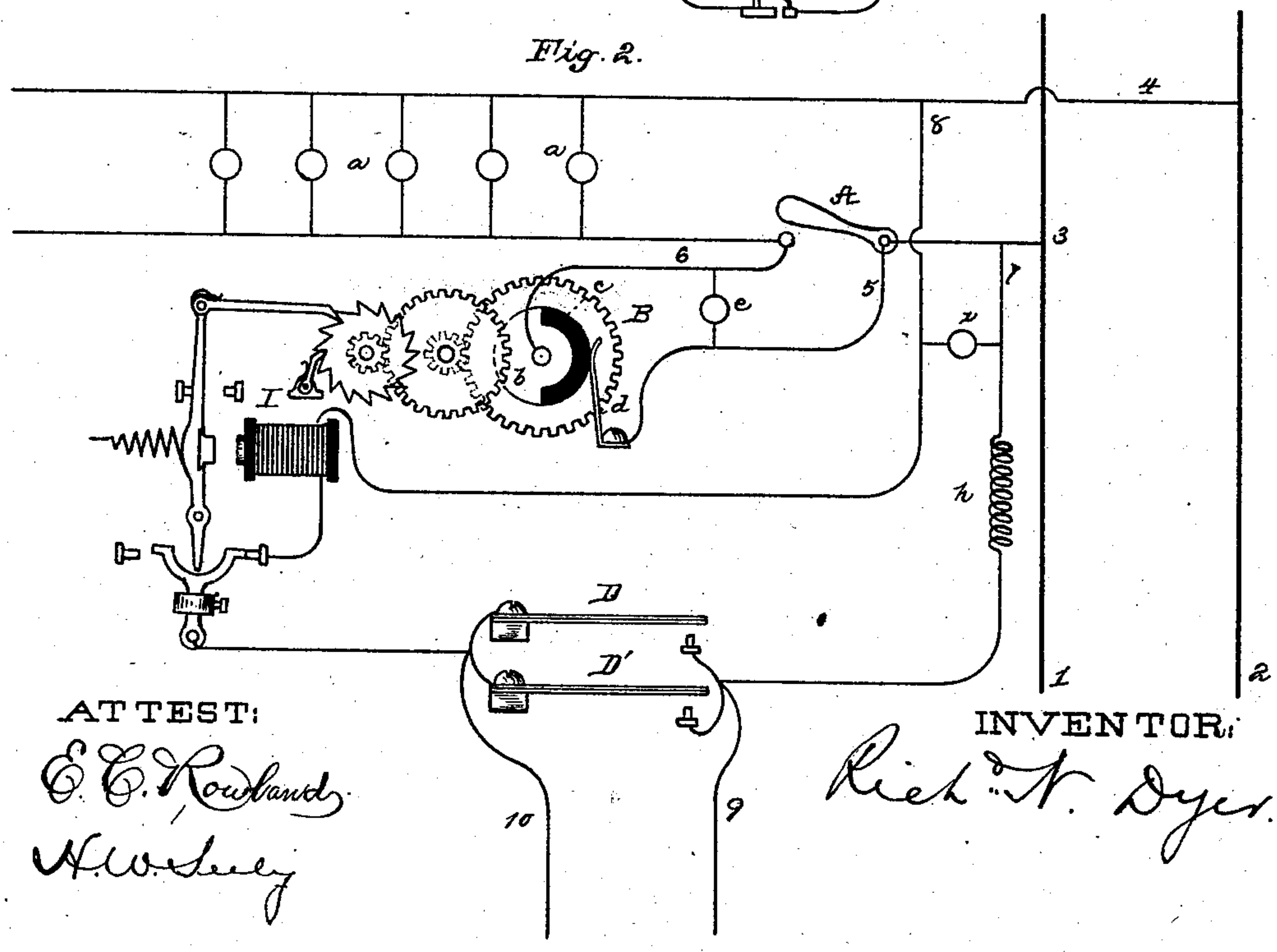


Fig. 2.



ATTEST:

E. C. Rowland
H. W. Sney

INVENTOR:

Rich. N. Dyer

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

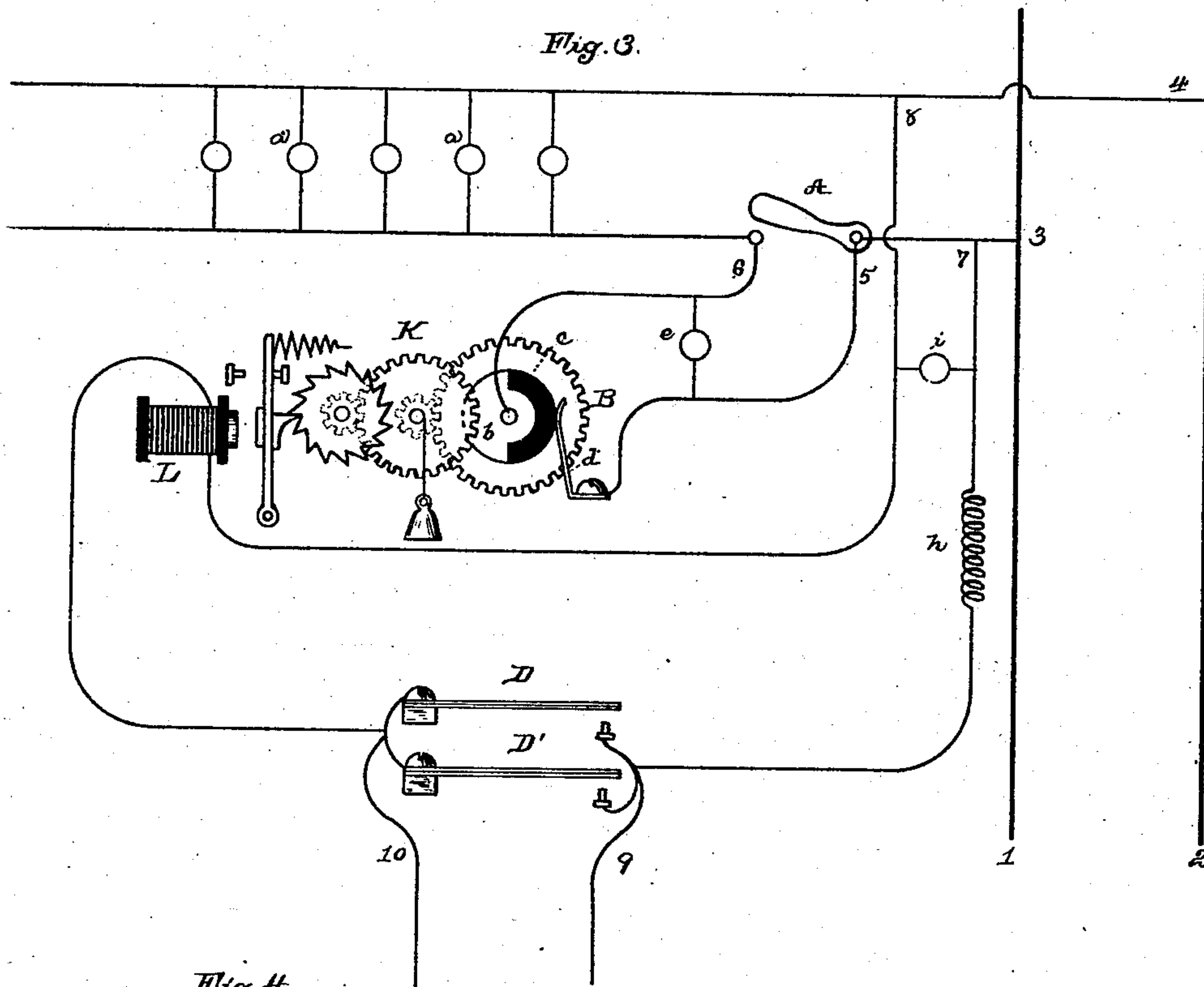
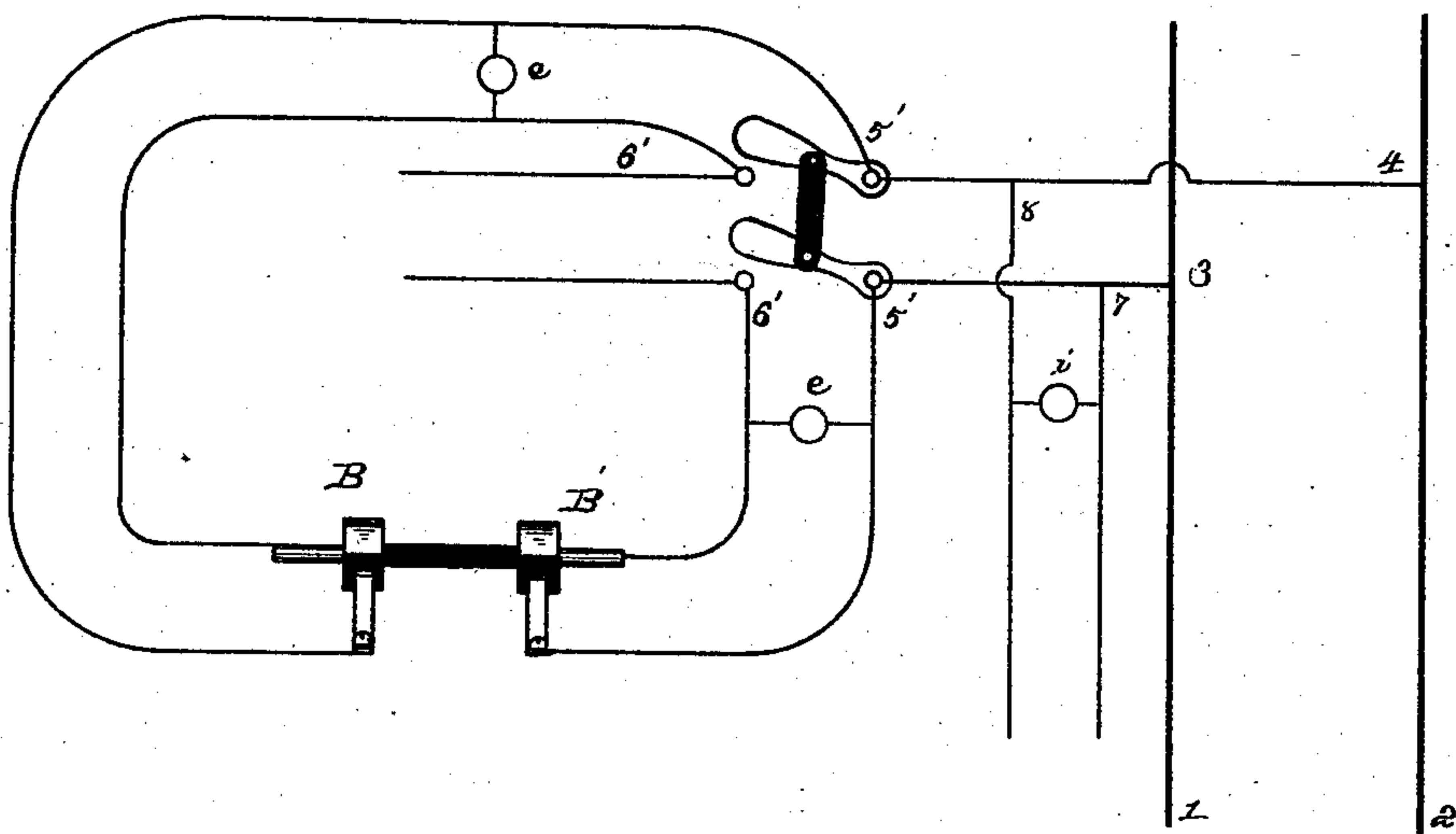


Fig. 4.



ATTEST:

E. C. Rowland
Witness

INVENTOR:

Rich. N. Dyer.

UNITED STATES PATENT OFFICE.

RICHARD N. DYER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-THIRD TO
HENRY W. SEELY, OF SAME PLACE.

THERMOSTATIC FIRE-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 287,757, dated October 30, 1883.

Application filed June 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD N. DYER, of New York city, in the county and State of New York, have invented a certain new and useful Improvement in Thermostatic Fire-Indicators, of which the following is a specification.

The object I have in view is to produce means operated or set in operation by the current of a multiple-arc system of electric lighting, and controlled by thermostatic devices for indicating a fire or dangerously-high temperature in a store or other building lighted by electric lamps arranged in such a system; and the invention consists, principally, in the combination of fire-indicating apparatus with a multiple-arc system of electric lighting controlled by thermostatic devices, and arranged and connected with the electric lighting system, so as to be operated or set in operation by the current of such system; and, further, in the peculiar devices employed in carrying out the invention, as fully hereinafter explained.

In the accompanying drawings, forming a part hereof, Figure 1 is a view, partly diagrammatic, of apparatus embodying the invention; Fig. 2, a similar view of part of the apparatus, showing a modified form; Fig. 3, a view, similar to Fig. 2, of a further modification; and Fig. 4, a diagram showing the invention applied to a circuit having a double-pole switch.

In carrying out my invention I provide indicators of two kinds, which, forming one complete apparatus, are preferably used in conjunction with each other, but are capable of independent employment. One indicates at the locality the presence of a fire or dangerously-high temperature by closing circuit to all the electric lamps of the store or other building, or any particular portion or floor or room thereof, and by alternately opening and closing such circuit continuously causing the lighting and extinguishing of the lamps at regular intervals, attracting the attention of passers-by, watchmen, or others. The other kind of indicator transmits to a distance—as to a neighboring police or fire station, or to a watchman's room in the same or another building—a signal which indicates visually or

audibly, or preferably in both ways, the existence of a fire or dangerously-high temperature in a particular store or building, or in any special portion of a building—such as a particular floor or room. These devices are controlled by thermostats located at various points in a store or building, the devices being set in operation by the closing or opening of electrical circuits. The indicators are operated by the current of the multiple-arc electric lighting system; or that current may be used to set in operation mechanical devices or electrical devices supplied from other sources of electrical energy.

With reference more especially to Fig. 1, 1 2 are main conductors of a multiple-arc system of electric lighting, which system is supplied with electrical energy, as will be well understood, by one or more dynamo or magneto electric machines. 3 4 are conductors of a branch circuit entering a building; or the circuit may be for the lamps of a particular portion of a building—as for the sales-room of a store—or any particular floor or room of a building. With the conductors 3 4 are connected in multiple arc the incandescing electric lamps *a*. The circuit 3 4 is controlled by a switch, A, which is shown in Fig. 1 as being a device breaking one pole or side of the circuit. This switch controls all the lamps in the circuit 3 4, and by working it the lamps can be extinguished or lighted simultaneously. Around the break made by the switch A is a shunt-circuit, 5 6, extending to a circuit-controlling device, B. This may be a cylinder, partly of metal *b* and partly of insulation *c*, and upon it rests one or a number of springs, *d*. One side of the shunt 5 6 runs to the metal portion of the cylinder and the other side to the spring or springs *d*. This circuit-controller is set normally, so that the spring *d* rests upon the insulation *c*, and the shunt 5 6 is broken, except that it will be always completed through a spark-arresting resistance, when one is used. This may be a lamp or lamps, *e*, arranged in circuit 5 6. This lamp *e* may be used for a watch or desk lamp. It will receive current through all the lamps *a* when the switch A is open, and if there are enough lamps *a* the lamp *e* will be brought nearly up to normal

incandescence; but the desk or watch lamp may be, and preferably is, placed in another circuit, as will be presently explained.

The circuit-controlling cylinder is connected with an electrical or mechanical motor for giving it motion. The preferable form is shown in Fig. 1, wherein an electro-dynamic motor, C, is used. To reduce the speed at the circuit-controller, the motor-shaft is provided with a worm, *f*, engaging a worm-wheel, *g*, on the same shaft with the circuit-controlling cylinder. The motor C is located in a multiple-arc circuit, 7 8, connected with the conductors 3 4, outside of the switch A, so as to be independent of such switch. An extra resistance, *h*, is also placed in this circuit 7 8.

D and D' are thermostats of any suitable type, which are located in the circuit 7 8. One or more of these thermostats may be employed. If two or more are used, they will be located in different parts of the store, and will bear to each other a multiple-arc relation, so that the closing of any one of them will close the circuit 7 8 and set the motor C in operation. A lamp, *i*, is arranged in circuit 7 8, (or two or more lamps may be so placed,) and will serve as a desk or watch lamp, it being independent of the circuit-switch A. At night the switch A is opened, extinguishing lamps *a*, but leaving the watch lamp or lamps burning. If a fire occurs, or if the temperature is raised to a dangerously-high point, one or more of the thermostats will close the circuit 7 8, and the motor C will be set in motion, operating the circuit-controlling device B and closing and opening the shunt 5 6 around the switch A, causing the lamps *a* to be lighted and extinguished at regular intervals. This operation of closing and opening the shunt 5 6 continues until the circuit 7 8 is opened by the thermostats. When the fire is put out or the heat reduced, the circuit-controlling device B is set in its normal position to keep the shunt 5 6 open.

To indicate at a distance the existence of a fire or dangerously-high temperature, a shunt-circuit, 9 10, is formed around the thermostat or thermostats D D', &c., and includes a relay-magnet E and an extra resistance, *k*. This magnet controls a lever, *l*, in a local circuit, 11 12, extending to the lever and its back contact. This local circuit is supplied with electricity by a galvanic battery, F, or other source of electrical energy, and it includes a bell, G, for audible indication, and an annunciator-drop, H, for visual indication. The circuit 9 10 extends from the thermostats to the distant point where the fire is indicated, the relay, local circuits, bell, and drop being all located at the distant point. For the circuit 9 10 the ground may be utilized for the return, as shown in dotted lines. This circuit 9 10 is of such high resistance that there is only sufficient current passing through it to hold the lever *l* on its front contact and break the local circuit 11 12. The motor C is con-

structed so that this current will not operate it; and hence the circuit-controller B is not disturbed by the current passing to the motor through the shunt 9 10. The instant the direct circuit 7 8 is closed by one of the thermostats the relay-magnet E will be short-circuited and the lever *l* will be drawn to its back contact, closing local circuit 11 12 and operating the bell and drop. The motor C at such times is also put in operation, as has been fully explained. The circuit 7 8 being outside and independent of the circuit-switch A, the indication at a distance of fire will be made without regard to whether the switch A is opened or closed. This same method of circuiting could be used for operating other translating devices from multiple-arc systems of electric lighting to make them independent of the light-switches.

It is evident that a number of circuits in different buildings lighted by electric lamps, or in the same building, could be provided with the indicating devices described, or either of them, a general system being formed for the indication of fire by visual and audible indicators, (either or both,) operated or set in operation by current from the multiple-arc system of electric lighting, and, if desired, extending to a distant point, where the annunciator-drops or equivalent devices would show the locality of the fire and the bell or bells attract the attention audibly.

Instead of using a revolving motor for working the circuit-controlling cylinder, a vibrating motor, I, may be employed, located in circuit 7 8, as shown in Fig. 2; or the circuit-controlling cylinder may be revolved by a weight or spring-operated train of gearing or clock-work, K, which is released by an electro-magnet, L, placed in circuit 7 8, as shown in Fig. 3.

When the invention is applied to a circuit controlled by a double-pole switch, A', Fig. 4, or one making and breaking both poles or sides of the circuit simultaneously, a shunt-circuit, 5' 6', will be formed around each side of the switch, as shown in Fig. 4. These circuits may extend to circuit-controlling devices B B', the cylinders of which are mounted upon the same shaft, but are insulated from each other, this shaft being revolved in any of the ways before indicated.

What I claim is—

1. The combination, with the conductors of a multiple-arc system of electric lighting, of one or more fire-indicators connected with such conductors, and operated or set in operation by current therefrom, substantially as set forth.

2. The combination, with the conductors of a multiple-arc system of electric lighting, of a visual fire-indicator connected with said conductors, and operated or set in operation by current therefrom, substantially as set forth.

3. The combination, with the conductors of a multiple-arc system of electric lighting, of

an audible fire-indicator connected with said conductors, and operated or set in operation by current therefrom, substantially as set forth.

5 4. The combination, with the conductors of a multiple-arc system of electric lighting, of a visual fire-indicator and an audible fire-indicator connected with said conductors, and operated or set in operation by current therefrom, substantially as set forth.

10 5. The combination, with the conductors of a multiple-arc system of electric lighting, of one or more thermostats and one or more fire-indicators connected with such conductors, the
15 fire-indicators being operated or set in operation by current therefrom, and being controlled by the thermostats, substantially as set forth.

20 6. The combination, with the conductors of a multiple-arc system of electric lighting, of a circuit connected therewith and including one or more thermostats, one or more fire-indicators, and devices in said thermostat-circuit for operating or setting in operation said fire indicator or indicators, substantially as set forth.

25 7. The combination, with the conductors of a multiple-arc system of electric lighting, of a lamp-circuit containing a number of lamps, and having a switch controlling all the lamps, a
30 circuit independent of the switch, and including one or more thermostats, one or more fire-indicators, and devices in said thermostat-circuit for operating or setting in operation said fire indicator or indicators, substantially as set
35 forth.

40 8. A visual fire-indicator having in combination an electric lamp or lamps, and thermostatically-operated means for lighting and extinguishing the lamp or lamps, substantially as set forth.

9. The combination, with an electric-lamp circuit controlled by a switch, of a shunt around said switch, and means controlled by one or more thermostats for closing and opening said
45 shunt, substantially as set forth.

10. The combination, with an electric-lamp circuit controlled by a switch, of a shunt around said switch, means controlled by one or more thermostats for closing and opening said shunt,

and a spark-arresting resistance around said circuit closing and opening device, substantially as set forth. 50

11. The combination, with an electric-lamp circuit controlled by a switch, of a shunt around said switch, means for closing and opening said shunt, and one or more thermostats located in a circuit independent of the switch for controlling said means, substantially as set forth. 55

12. The combination, with an electric-lamp circuit controlled by a switch, of a shunt around said switch, including a circuit-controller, an electric motor operating said circuit-controller, and one or more thermostats controlling said electric motor, substantially as set forth. 60

13. The combination, with an electric-lamp circuit, of a circuit therefrom, including one or more thermostats, and a shunt around said thermostat or thermostats to indicating apparatus, substantially as set forth. 65

14. The combination, with an electric-lamp circuit, of a circuit therefrom, including one or more thermostats, a shunt around said thermostat or thermostats containing a relay-magnet, a local circuit controlled by said relay-magnet, and indicating apparatus in said local
75 circuit, substantially as set forth.

15. The combination, with an electric-lamp circuit, of a circuit therefrom, including one or more thermostats and local and distant fire-indicating apparatus controlled simultaneously by said thermostat or thermostats, substantially as set forth. 80

16. The combination, with an electric-lamp circuit controlled by a switch, of a shunt around said switch, a circuit-controller closing and opening said shunt, a circuit independent of the switch, including one or more thermostats, a device in said circuit for operating or setting in operation said circuit-controller, and a shunt around said thermostat or thermostats operating distant indicating apparatus, substantially as set forth. 85

This specification signed and witnessed this 8th day of June, 1883.

RICH'D. N. DYER.

Witnesses:

H. W. SEELY,
EDWARD H. PYATT.