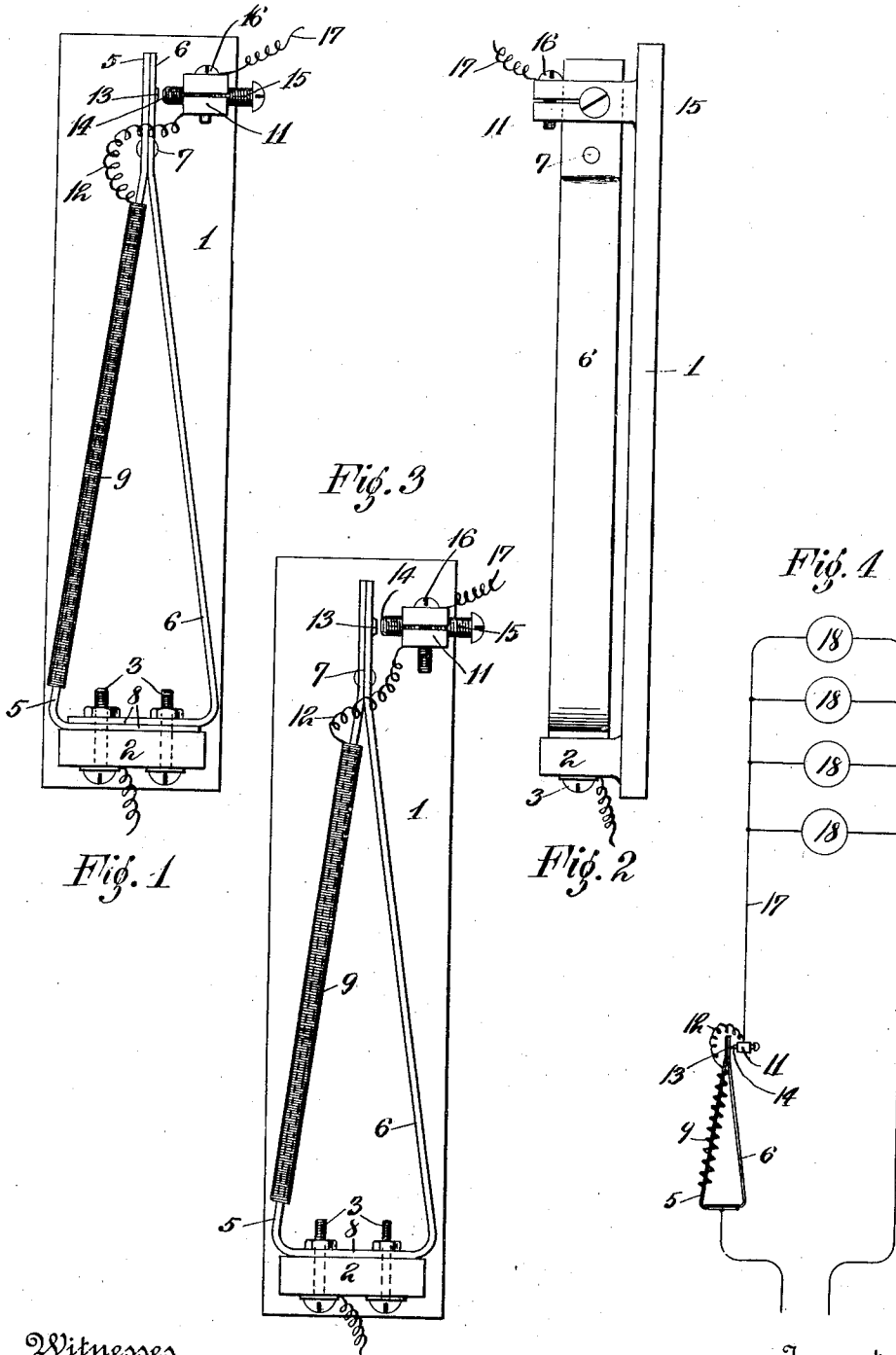


W. V. D. KELLEY.
THERMOSTATIC SWITCHING APPARATUS.
APPLICATION FILED AUG. 30, 1905.

908,679.

Patented Jan. 5, 1909.



Witnesses
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Inventor
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By his Attorney Julian S. Hooper.

UNITED STATES PATENT OFFICE.

WILLIAM V. D. KELLEY, OF NEWARK, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ADVERTISING MIRRORGRAPH COMPANY, OF BROOKLYN, NEW YORK, A COPARTNERSHIP.

THERMOSTATIC SWITCHING APPARATUS.

No. 908,679.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed August 30, 1905. Serial No. 276,341.

To all whom it may concern:

Be it known that I, WILLIAM V. D. KELLEY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Thermostatic Switching Apparatus, of which the following is a specification.

This invention relates to thermostatic switching apparatus, and more particularly has reference to devices adapted for intermittently flashing lamps or the like, such as electric signs, or advertising devices.

An object of the invention is to construct a thermostatic switching apparatus wherein a lamp or other translating device may be automatically flashed without opening the electric circuit, and thereby destructive arcing at the switch contacts prevented.

A further object of the invention is to provide a thermostatic switch which will not be affected as to its opening or closing by variations in external temperature, and made of a single metal, instead of two metals as has heretofore been proposed, which will also be simple and cheap to build and capable of withstanding rough usage without getting out of order.

In carrying out the foregoing objects, I have devised a thermally operated, normally open switch having an electric heater connected in a shunt circuit across the main switch contacts, in combination with a lamp or other translating device, the resistance of the heater being proportioned to that of the translating device, whereby when the switch is open and the heater in series with the lamp or translating device, the normal operating current is cut down, and when closed, the heater will be short circuited and normal operating current permitted to flow to the lamp or translating device. By such an arrangement, the life of the contacts is very considerably prolonged, inasmuch as destructive arcing will be prevented, and also the switch rendered more regular in operation, as well as safety against fire risk and durability increased.

In the particular embodiment of the invention herein illustrated and described, wherein all of the aforesaid objects and advantages are attained, the switch comprises two divergent bars of like material connected together at one end and secured to a base at

the diverging ends, together with a heater disposed to heat one of said bars, thereby closing the switch and short circuiting the heater. Upon short circuiting the heater, the switch is opened automatically. In such a switch, variations of external temperature cause both bars to vary alike without affecting the opening or closing of the switch which is only affected by variation of one bar independently of the other.

The invention will be more fully understood in connection with the description of the accompanying drawing, wherein—

Figure 1 is a plan view of my improved thermostatic switch; Fig. 2 is a side view; Fig. 3 shows a slight modification; and Fig. 4 shows the invention in combination with a translating device.

1 represents a base of porcelain, vulcanized fiber, or the like, having an upright 2 at one end. Attached to the upright 2, as by screws 3 passing through the end portion 8, is a frame composed of the divergent bars 5, 6 secured together at 7, as by a rivet or soldering. 9 is the heater, preferably mounted on one of the bars, as 5, connected at one end with the screws 3, and at the other to contact plate 11, by a wire 12. Mounted on the free end of the frame is a contact 13 which is movable toward and from the relatively fixed, adjustable contact 14, mounted on plate 11, when the bar adjacent the heater is affected thereby. The contact 14 may be carried by a screw 15, and locked in position by means of screw 16, which may also be used as a binding post for the wire leading to the translating devices to be controlled. In Fig. 3, a single strip is bent to form both bars, which are secured together at the free end, as before described.

As shown in the drawings, the expansion of the bar carrying the heating coil completes the circuit, thereby short circuiting or shunting the heating coil and allowing the main current to pass through the bars 5, 6, to the contact plate 11. The advantage of the arrangement shown in the drawings is that the main circuit is never entirely broken, since there is always a circuit through the heating coil to the lamps or other translating devices, and by suitably proportioning the heating coils relatively to the lamps, they can be dimmed to any desired degree, or the operation of some other translating device

controlled. This arrangement is illustrated diagrammatically in Fig. 4, wherein the lamps 18 are connected by a wire 17 with the contact plate 11, which latter is always in circuit with the heating coil 9, the main circuit being closed at contacts 13 and 14.

By making both bars of the same material, a constant temperature coefficient will be secured, that is to say, any variations in external temperature will affect both bars to the same extent, and not one more than the other. With forms of thermostats heretofore proposed, there has been this objection, which has been overcome in some instances by devices considerably more complicated and expensive than the construction here described. The frame composed of divergent flat strips has an important practical advantage in its rigidity and consequent freedom from injury or accidental closing. Still another advantage is that the contact point has a large movement relatively to the amount of expansion, so that a good break is secured.

The invention is capable of various modifications and changes, without departing from its scope, and may be combined with various forms of translating devices to obtain a periodic, automatic operation.

Having thus described my invention, I declare that what I claim as new and desire to secure by Letters Patent, is:—

1. In combination, an incandescent electric lamp, a normally open thermostatic switch, a heater operating the switch to close the same and of such a resistance as to dim said lamp when the switch is open, said heater being located in proximity to the thermostatic element of said switch and connected in a shunt around the switch, and a circuit including the lamp and the switch.

2. In combination, an incandescent electric lamp, a switch including a stationary member and a movable thermostatic conducting member normally out of contact with said stationary member, said thermostatic member being biased to move into contact with said stationary member upon being heated, a heater of such resistance as to dim said lamp when in circuit therewith, located in proximity to said thermostatic member and connected in a shunt around the switch, and a circuit including the lamp and the switch members.

3. In combination, an incandescent electric lamp, a normally open switch, thermostatically operated means for closing the same, a heater of such resistance as to dim said lamp when the switch is open, located in proximity to said switch and connected in a shunt around the switch, and a circuit including the lamp and the switch members.

4. In combination, an incandescent electric lamp, a normally open thermostatic

switch, a heating coil operating the switch to close the same and of such resistance as to dim said lamp when in circuit therewith, said coil being located in proximity to the thermostatic element of said switch and connected in a shunt around the switch, and a circuit including the lamp and the switch.

5. In combination, an incandescent electric lamp, a normally open thermostatic switch, a heating coil wound around one member of said switch to close the same and of such resistance as to dim said lamp when in circuit therewith, said coil being connected in a shunt around the switch, and a circuit including the lamp and the switch.

6. In combination, an incandescent electric lamp, a switch including a stationary member and a movable thermostatic conducting member normally out of contact with said stationary member, said thermostatic member being biased to move into contact with said stationary member upon being heated, a heating coil of such resistance as to dim said lamp when in circuit therewith, located in proximity to said thermostatic member and connected in a shunt around the switch, and a circuit including the lamp and the switch members.

7. In combination, an incandescent electric lamp, a switch including a contact member and a movable thermostatic conducting means biased to move into contact with said member upon being heated, an electric heater of such resistance as to dim said lamp when in circuit therewith, located in proximity to said thermostatic means, and connected in shunt around the switch, and a circuit including the lamp and the switch.

8. In combination, an incandescent electric lamp, a normally open switch, thermostatically operated means for closing the same, a heating coil of such resistance as to dim said lamp when in circuit therewith located in proximity to said switch and connected in a shunt around the switch, and a circuit including the lamp and the switch members.

9. In combination, an element operable by electrical energy, a normally open thermostatic switch, a heater operating the switch to close the same and of such resistance as to prevent the passage of normal operating current when the switch is open, said heater being located in proximity to the thermostatic element of said switch and connected in a shunt around the switch, and a circuit including the electrically operable element and the switch.

10. In combination, an element operable by electrical energy, a normally open thermostatic switch, a heating coil operating the switch to close the same and of such resistance as to prevent the passage of normal operating current when in circuit therewith, said coil being located in proximity to the

thermostatic element of said switch and connected in a shunt around the switch, and a circuit including the electrically operable element and the switch.

10 11. In combination, an incandescent electric lamp, a thermostatic switch comprising two divergent bars of like material, connected together at one end, and to a base at separated points at the other end, the free end carrying a contact adapted to move laterally when one or the other of said bars varies in length relatively to the other bar, a stationary contact cooperating with said movable contact, a heating coil of such resistance

as to dim said lamp when in circuit therewith, located in proximity to the bar farthest from said stationary contact and connected in a shunt around the switch contacts, and a circuit including the lamp and the switch members. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses, this 28th day of August 1905. 20

WILLIAM V. D. KELLEY

Witnesses:

JULIAN S. WOOSTER,
GEO. A. HOFFMAN.