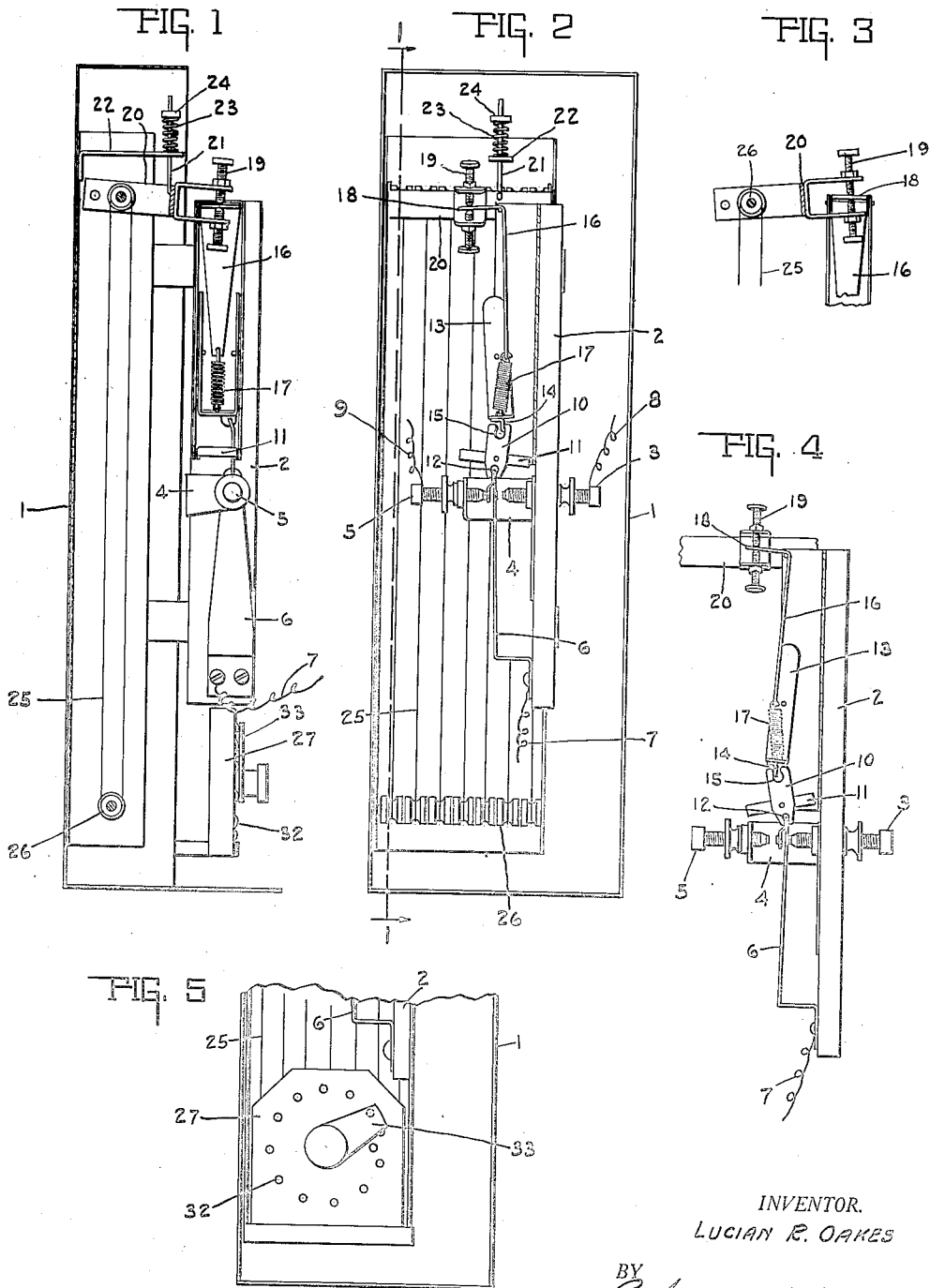


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CIRCUIT CONTROL FOR ELECTRIC DISPLAY SIGNS AND THE LIKE.
APPLICATION FILED APR. 12, 1919.

1,408,307.

Patented Feb. 28, 1922.

2 SHEETS—SHEET 1.



INVENTOR.
LUCIAN R. OAKES

BY
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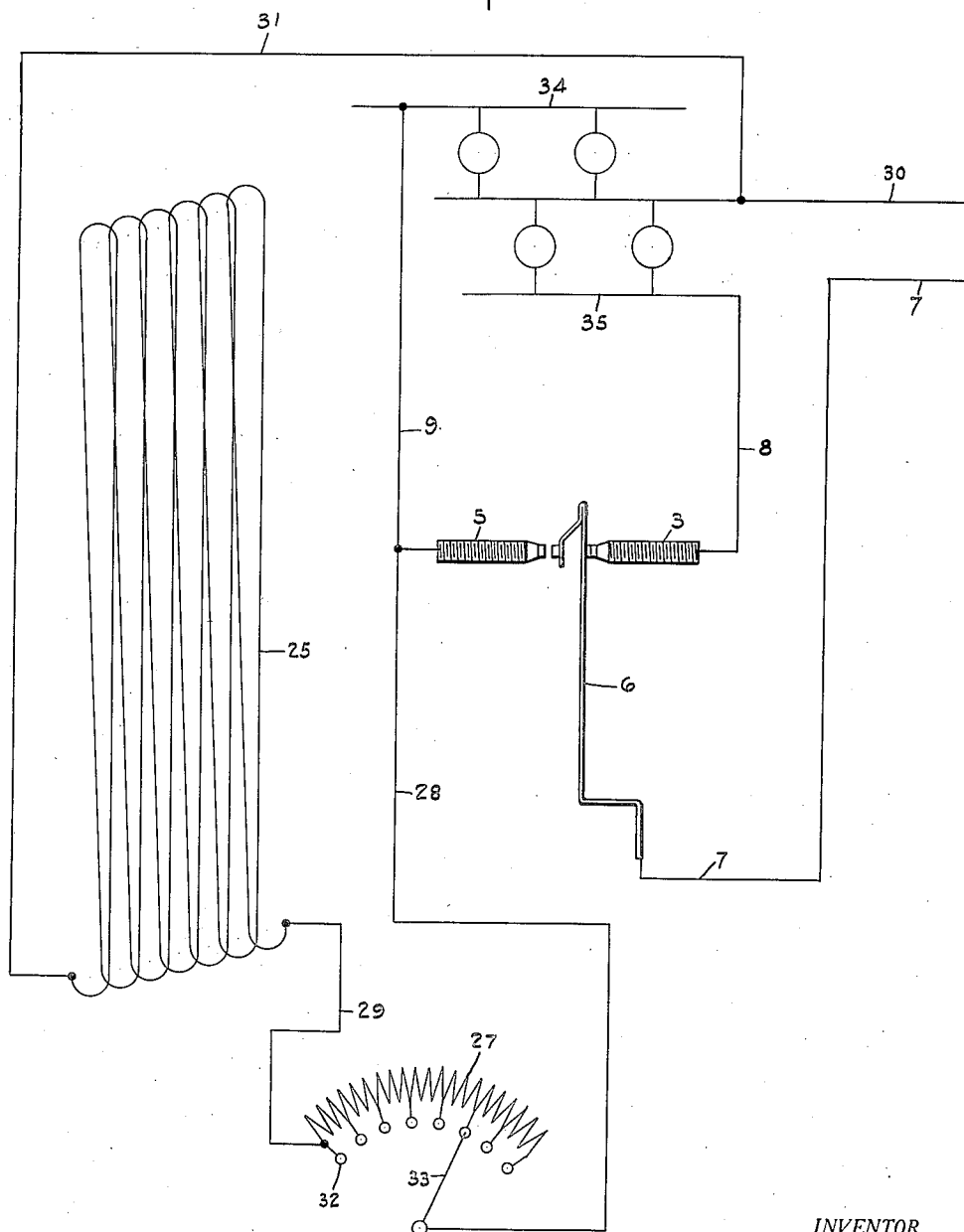
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FIG. 6



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UNITED STATES PATENT OFFICE.

LUCIAN R. OAKES, OF TIPTON, INDIANA.

CIRCUIT CONTROL FOR ELECTRIC DISPLAY SIGNS AND THE LIKE.

1,408,307.

Specification of Letters Patent. Patented Feb. 28, 1922.

Application filed April 12, 1919. Serial No. 289,599.

To all whom it may concern:

Be it known that I, LUCIAN R. OAKES, a citizen of the United States, and a resident of Tipton, county of Tipton, and State of Indiana, have invented a certain new and useful Circuit Control for Electric Display Signs and the like; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a circuit control for electric display signs and the like, and the prime feature of the invention is the employment of means for shifting the circuit controlling mechanism from one shunt circuit to another by contraction and expansion of parts of the controlling mechanism, thus obviating the necessity of employing a motor or other device for performing this operation.

One feature of the invention is the provision of thermally expansible means for operating the switch mechanism and of electrical means controlling the thermally expansible means, whereby the frequency of expanding and contracting the thermally expansible means may be varied.

A further feature of the invention is the particular switch mechanism including electrically energized thermally expansible means such that the contraction and expansion thereof will operate the switch to shift the current from one shunt circuit to another shunt circuit.

Other objects and advantages will be hereinafter more fully set forth and pointed out in the accompanying specification.

In the accompanying drawings, which are made a part of this application, Fig. 1 is a vertical sectional view of the circuit controlling means as seen on line 1—1 Fig. 2. Fig. 2 is a front elevation of the circuit controlling mechanism with the front portion of the casing therefor removed. Fig. 3 is a detail elevation of the upper end of the controlling mechanism when operated to a position opposite that shown in Figs. 1 and 2. Fig. 4 is a detail front elevation thereof. Fig. 5 is an elevation of the lower portion of the circuit controlling mechanism showing a rheostat for varying the degree of operation of the device. Fig. 6 is a diagrammatic view of the operating parts of the controlling mechanism.

Referring to the drawings, in which simi-

lar reference numerals designate corresponding parts throughout the several views, 1 indicates a housing, preferably constructed of metal in which the circuit controlling mechanism is located, and this housing may be made in any preferred shape or design, as it forms no part of the invention, and is merely to serve as a protection for the controlling mechanism.

Mounted within the housing 1, in any suitable manner, is an insulating block 2, through which transversely extends a contact point 3, said block having an L-shaped bracket 4 mounted thereon through which extends a contact point 5, said contact points being in alignment with each other and spaced apart, and also adjustable longitudinally of each other so that the gap between said contact points may be varied as desired. Attached at one end to the block 2 is a contact arm 6, the free end of which projects between the adjacent ends of the contact points 3 and 5 and cooperates with either for closing a circuit through said contact point. The contact arm 6 is connected to a suitable source of electrical energy through a line wire 7, and the contact points 3 and 5 each are connected with circuit wires 8 and 9 respectively, said circuit wires 8 and 9, in turn being connected to separate circuits of a display sign or the like, shown in the diagrammatic view, Fig. 6.

The free end of the contact arm 6 is moved laterally, rocked or oscillated to engage the same with either the contact point 3 or the contact point 5 by means of the rocking bar 10, which is fixed to a pivoted frame 11. The lower end of the rocking bar has a slot 12 therein into which enters the free end of the contact arm 6, so that when the rocking bar 10 is swung back and forth on its pivot the contact arm 6 will be oscillated and alternately engage or contact with one of said contact points 3 or 5.

The movement of the rocking bar 10 is controlled by a lever 13, the lower end of which is provided with a tongue 14 which enters a slot 15 in the upper end of the bar 10, the lever 13 being pivotally attached to parts carried by the block 2 so that it may swing laterally for operating the rocking bar. The lever 13 is caused to rock on its pivot by pivotally mounting a pendulum 16 to parts carried by the block 2, the pivot point being adjacent the upper end of the pendulum, while the lower end thereof is

attached to a coil spring 17. The opposite end of the spring is attached to the lower end portion of the lever 13, the pendulum 16 being so mounted that the end thereof to which the coil spring is attached will swing past the center of gravity, thereby employing the tension of the spring for swinging the lever 13 from side to side to rock the bar 10 which oscillates the contact spring member 6.

The pendulum 16 is provided with a lateral extension 18, preferably at the pivot end of the pendulum which passes between adjusting screws 19 carried by the bifurcated arm portion of a pivoted latch 20. When the latch is swung upwardly or downwardly on its pivot, the pendulum 16 will be rocked on its pivot for operating the lever 13 and the parts associated therewith to close the respective circuits alternately through the contacts 3 and 5.

The latch 20 is swung upwardly by attaching a rod 21 thereto which projects upwardly through a bracket 22 and is provided with a spring 23 surrounding parts of the rod 21 between the bracket 22 and an adjusting nut 24 threaded on to the rod, the compression of the spring 23 being such as to raise the latch 20, which operation swings the pendulum 16 to the left, or to the position shown in Fig. 4. This movement operates the lever 13 and the rocking bar 10 to move the contact arm 6 into engagement with the contact point 3.

The downward movement of the latch 20 is controlled by the contraction of the resistance wires 25, which are wound around insulating spools 26 adjacent the top and bottom of the housing 1, while the operation of the spring 23 for lifting the latch 20 is likewise controlled by the expansion of said resistance wires. That is to say, when the resistance wires are brought into the circuit and sufficiently heated so as to expand, the tension spring 23 will raise the latch 20 and shift the contact arm 6 into engagement with the contact point 3 thereby cutting out the resistance wires. As the resistance wires become cooled they will contract and consequently they will become shortened, which contraction will overcome the tension of the spring 23 and swing the latch 20 downwardly, thereby again connecting the contact arm 6 with the contact point 5 and directing the current through the resistance wires and again heating the same to cause them to expand.

By controlling the action of the switch mechanism in this manner, the various circuits to the parts of the display sign or the like are intermittently operated, thereby giving a flashing effect to the display sign or intermittently display different features thereon.

Any suitable means may be provided for

controlling the intervals between the operation of the various circuits of the display sign, but in the present instance a rheostat 27 is introduced into the circuit between the contact point 5 and the resistance wires 25, the current being conducted from the contact point 5 through a wire 28 to the rheostat 27, and from the rheostat to the resistance wire through a wire 29, the resistance wire in turn being connected to the return line wire 30 through a wire 31. The rheostat 27 is provided with a plurality of contact points 32 with which cooperates a tongue 33, and by turning the tongue in one direction the total resistance will be increased, and the current correspondingly decreased, thereby retarding the expansion of the thermal member and securing a slower rate of operation of the display sign, while by turning the tongue in the opposite direction the total resistance will be decreased, thereby increasing current and decreasing the elapsed time between the operations of the display sign.

In operation, supposing the parts to be in the position shown in Figs. 1 and 2, the current from the line wire 7 will pass through the contact arm 6, the contact point 5, through the wire 9, one section 34 of the display sign and into the line wire 30. The current also passes through the wire 28, rheostat 27, wire 29, resistance wires 25, the wire 31 to the line wire 30, thereby energizing the resistance wires and heating the same to such an extent that they will expand. As soon as the wires 25 are expanded sufficiently the spring 23 will throw the latch 20 upwardly, thereby operating the pendulum 16 and shifting the upper end of the contact arm 6 to the right and into engagement with the contact 3, thus causing the current to pass from the line wire 7, through the contact arm 6, the contact point 3, wire 8, through the other section 35 of the display sign and into the line wire 30, thus cutting out the resistance wires 25 and permitting said wires to cool and contract so that when the wires have contracted to a certain degree they will again lower the latch 20 and again move the contact arm into engagement with the contact point 5. This operation is repeated so long as the current is passing through the main feed line.

It will likewise be seen that as the contact point 3 is attached to one circuit of the display sign and the contact point 5 is attached to another circuit thereon, a flashing effect will result when the switch is intermittently operated or one part of the sign is displayed for a predetermined time and then another part of the sign displayed for a prescribed length of time, and the period of time between these changes is regulated through the rheostat 27.

It has been customary heretofore to use

a motor in connection with the operation of devices of this class, but in the present instance a motor is entirely dispensed with and the switch operated direct from the line wire.

The invention claimed is:

1. A switch mechanism including pendulum means, bar means associated with said pendulum means and actuated by the oscillation thereof, a switch member, a plurality of contacts positioned adjacent each other and in operative relation to said switch member and adapted to be alternately associated with said switch member when actuated by said bar means, pivoted means for actuating said pendulum means, spring means for moving said last mentioned pivoted means in one direction, and electrically operated means for moving said last mentioned pivoted means in the opposite direction.

2. A switch mechanism including pendulum means, bar means associated with said pendulum means and actuated by the oscillation thereof, a switch member, a plurality of contacts positioned adjacent each other and in operative relation to said switch member and adapted to be alternately associated with said switch member when actuated by

said bar means, pivoted means for actuating said pendulum means, spring means for moving said last mentioned pivoted means in one direction, electrically operated means for moving said last mentioned pivoted means in the opposite direction, and means for determining the frequency of said alternations.

3. A switch mechanism including pendulum means, bar means associated with said pendulum means and actuated by the oscillation thereof, a switch member, a plurality of contacts positioned adjacent each other and in operative relation to said switch member and adapted to be alternately associated with said switch member when actuated by said bar means, pivot means for actuating said pendulum means, spring means for moving said last mentioned pivoted means in one direction, electrically operated means for moving said last mentioned pivot means in the opposite direction, and electrical means associated with said electrically operated means for determining the frequency of said alternations.

In witness whereof, I have hereunto affixed my signature.

LUCIAN R. OAKES.