

No. 654,821.

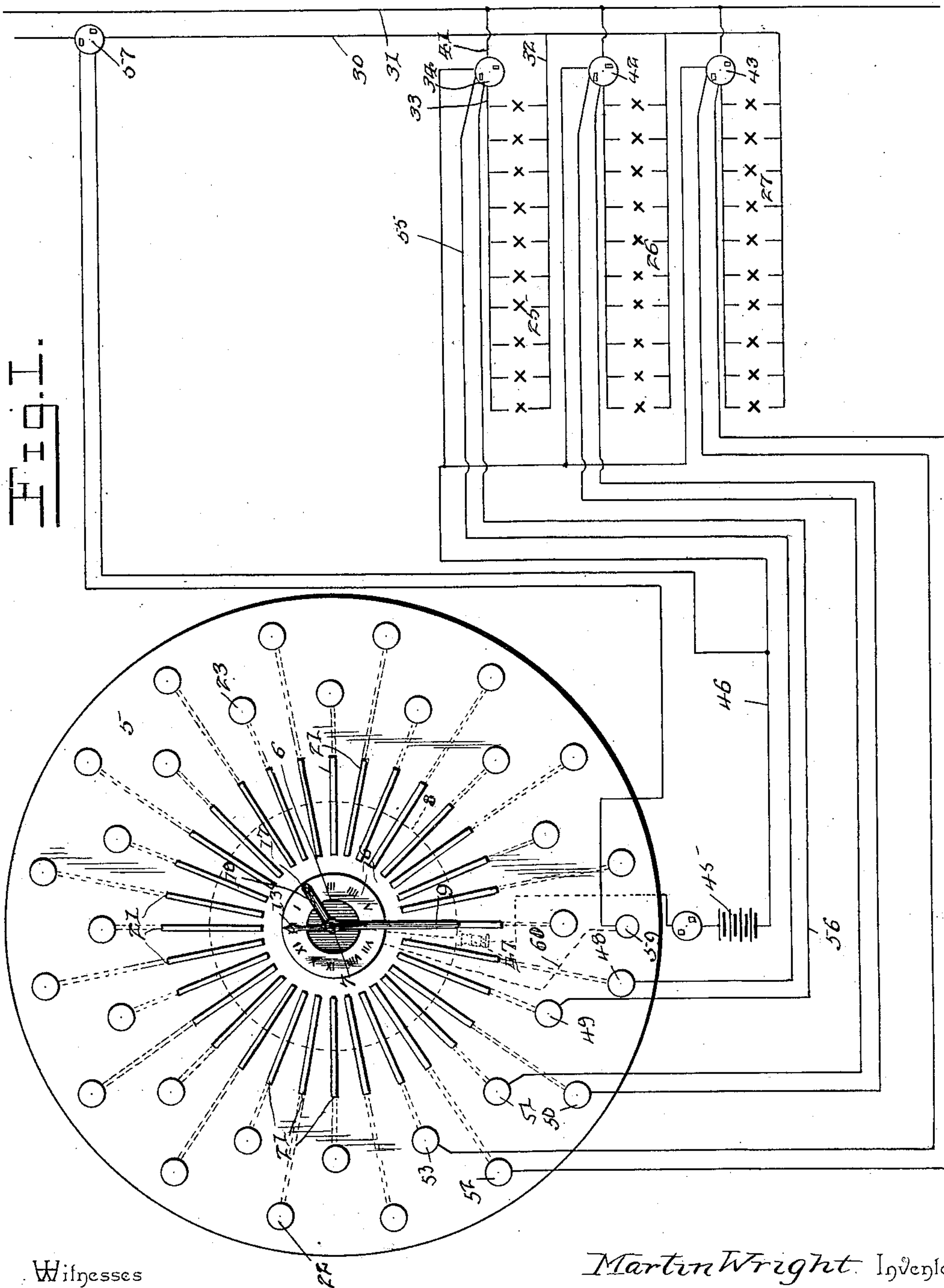
Patented July 31, 1900.

M. WRIGHT.
FLASH LIGHT SYSTEM.

(Application filed Apr. 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
F. E. Alden.

Geoff. Chandler

By Two Attorneys,

Martin Wright, Inventor

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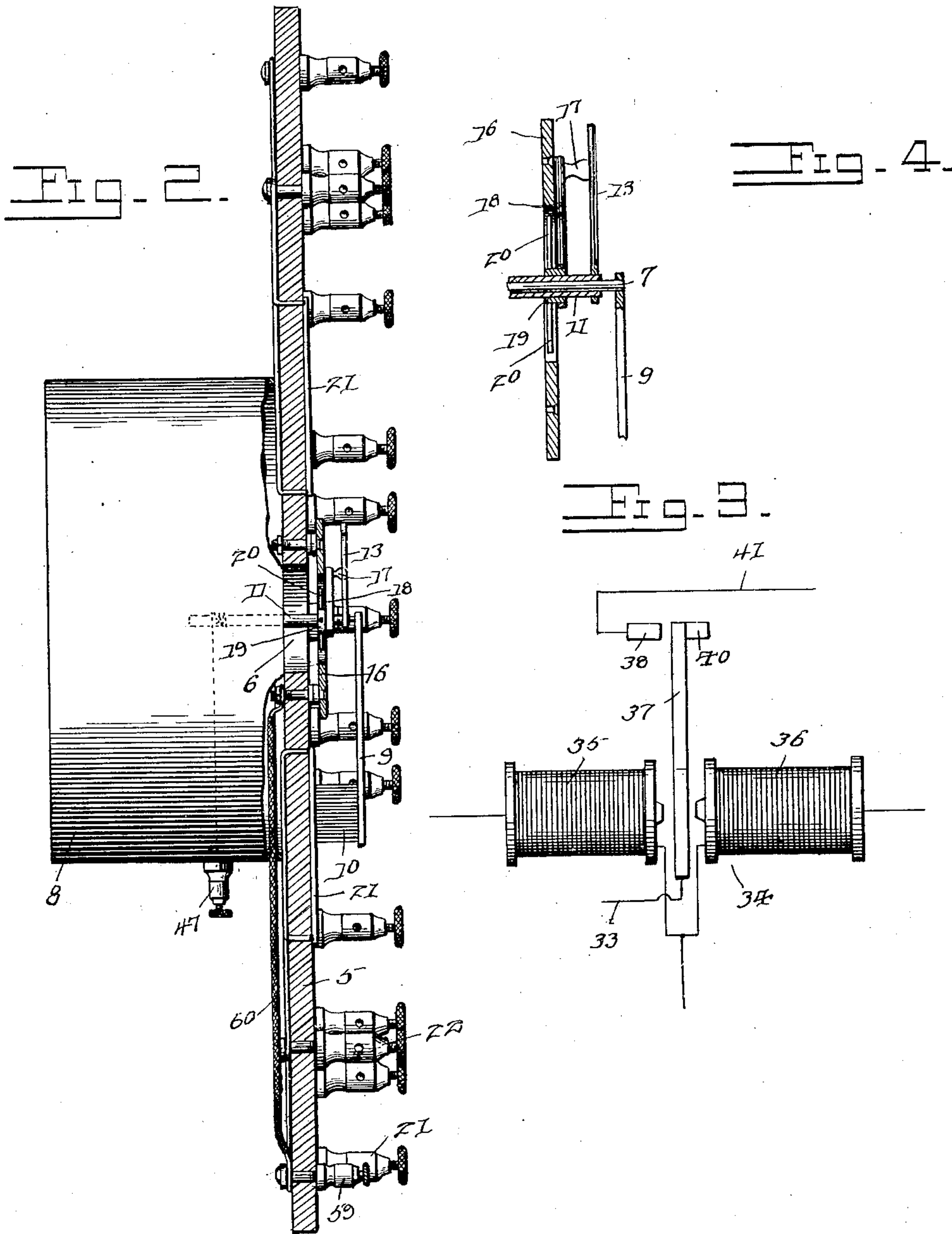
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UNITED STATES PATENT OFFICE.

MARTIN WRIGHT, OF SAN ANTONIO, TEXAS.

FLASH-LIGHT SYSTEM.

SPECIFICATION forming part of Letters Patent No. 654,821, dated July 31, 1900.

Application filed April 28, 1900. Serial No. 14,698. (No model.)

To all whom it may concern:

Be it known that I, MARTIN WRIGHT, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Flash-Light System, of which the following is a specification.

This invention relates to lighting systems in general, and more particularly to electric-lighting systems wherein a plurality of lights or series of lights are alternately cut into and then out of the lighting-circuit, so that there are series of flashes, each flash being made by a separate light or series of lights until they have all been successively cut in and out of circuit, the cycle being repeated as many times as desired.

One object of the present invention is to provide such a system including an automatic circuit-closer which operates in connection with a plurality of separate local circuits, all energized from the same battery and each separate circuit including an electrically-operated switch which acts to cut into and out of circuit a lamp or a bank of lamps in a branch from the lighting-circuit when its local circuit is closed by the circuit-closer. It is of course understood that each bank of lamps has a separate switch and that the several banks are connected in multiple are in the main lighting-circuit.

A further object of the invention is to provide a simple and efficient construction of automatic circuit-closer which will operate to close and open the local circuits of the several switches and which may be set to cut out the entire system of lights at a predetermined time.

Further objects and advantages of the invention will be evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a diagrammatic representation of the several circuits connected with the automatic circuit-closer, which latter is shown in plan view. Fig. 2 is a central transverse section taken through the circuit-closer and showing parts of the structure in elevation. Fig. 3 is an elevation showing a form of electrically-operated switch which may be

used in the system. Fig. 4 is an enlarged sectional view showing the adjustable contacts for closing the circuit through the electrically-operated switch which controls the main lighting-circuit.

Referring now to the drawings, the present system includes a master circuit-closer and circuit-breaker which is operated by clockwork, and consists of a preferably disk-shaped base 5, of insulating material, having a central opening 6, through which projects a spindle 7, which is rotated at a suitable speed through the medium of a clockwork contained in a casing 8, secured to the back of the base 5, the details of the clockwork being not shown. The spindle 7 is of metal, and carried thereby is a circuit-closing arm 9, having a depending contact or commutator brush 10 at its outer end, which is adapted to sweep over the face of the base 5 when the spindle is rotated.

Encircling the spindle 7 is a sleeve 11, which is of metal and projects beyond the base 5, but terminates short of the outer arm 9, and fixed upon this sleeve is a contact-arm 13, which is rotated by the clockwork through the medium of the sleeve, this arm 13 being in effect the ordinary hour-hand of a clock. The outer end of the arm 13 traverses but does not touch a metallic dial ring or plate 16, which is fixed upon the base 5, and it is provided upon its outer face with the usual clock-numerals, as shown. This contact-arm 13 is adapted to engage the post 17 of a second contact-arm 18, mounted in an insulating-collar 19, which is loosely mounted upon the sleeve 11 and is held in its proper position thereon and against rotatable movement by spokes 20, which radiate therefrom and are connected at their outer ends with the ring or plate 16.

The contact-arm 18 rests upon the dial plate or ring 16 and in electrical contact therewith, and hence when the arm 13 engages the post 17 it is brought into electrical connection with the dial-plate. Thus it will be seen that inasmuch as the arm 13 is the hour-hand of a clock and the dial-plate forms the face of a clock the contact-arm 18 may be set with its outer end upon any portion of the dial-plate, and the arm 13 will make contact with the post thereof at the time which corresponds to the position of the arm 18, and a

circuit including the two arms 13 and 18 may be closed at any predetermined time.

In operative relation to the contact-brush and upon the upper face of the insulating-base 5 is a series of commutator-bars 21, which are radially disposed and arranged equidistant, so that as the commutator-brush sweeps around it will make contact with the bars successively. In the present instance two concentric circular series of binding-posts 22 and 23 are fixed to the upper face of the base 5, the commutator-bars 21 being connected alternately to the successive inner and outer posts.

In the practical application of this circuit-closer there is employed a plurality of banks of lamps 25, 26, and 27. In the present instance only three banks are shown; but it will of course be understood that additional banks may be connected in the system up to the entire capacity of the circuit-closer. The system is shown in Fig. 1 of the drawings, in which 30 and 31 represent the main circuit-wires which feed the current to the lamps, and the bank of lamps 25 is arranged in multiple between two wires 32 and 33, of which the wire 32 is connected directly with the line-wire or main wire 30, while the wire 33 is connected with line-wire 31 through an electrically-operated switch. (Shown in detail in Fig. 3.) This switch 34 comprises two opposing electromagnets 35 and 36, having their cores in mutual alinement, and between them is disposed an armature 37, with which is connected directly the wire 33. A contact-piece 38 is disposed for contact by the armature 37 when moved in the direction and under the influence of the magnet 35, and when the opposing magnet 36 is energized the armature is moved thereby from the contact 38 to rest against a stop 40, the contact being connected with wire 30 through the medium of a short connection 41. Similar electrically-operated switches 42 and 43 are provided for the banks of lamps 26 and 27, so that by closing first the circuit including magnet 35 and then closing a circuit including magnet 36 the corresponding bank of lamps will be first cut into circuit with the main line and then cut out therefrom.

In order to energize the several electromagnets at the proper times, a battery 45 or other source of electricity has one terminal connected by means of wire 46 with one end of the winding of each of the electromagnets, said wire thus forming a common return for the local circuits including the several magnets, while the other terminal of the battery is connected to a binding-post 47, mounted upon the casing 8, from which electrical connection is made with spindle 7 and sleeve 11 either through a direct wire or through the frame of the clockwork and other metallic parts in the well-known manner. The second terminal of the winding of magnet 35 of switch 34 is connected with post 48 of the outer series of binding-posts upon the base 5.

The second terminal of winding of magnet 36 of the same switch is connected with post 49 of the inner series. The second terminal of winding of magnet 35 of switch 42 is connected with post 50 of the outer series, and the second terminal of winding of magnet 36 of the same switch is connected with post 50. The second terminal of winding of magnet of switch 43 is connected with post 52, and the second terminal of winding of the magnet 36 of the same switch is connected with post 53. Thus as the arm 9 rotates to engage its brush with the commutator-bars when the brush strikes the bar or post 48 the circuit from the battery is through a cut-out 54 to post 47, through clockwork-frame to spindle 7, to arm 9, through brush 10, to commutator-bar, to post 48, to magnet 35 of switch 34, by way of wire 55, to common return 46 to battery, the result being that the armature 37 is operated to engage the contact 38. The local lighting-circuit of lamps 25 is then closed between wires 30 and 31, the circuit from wire 30 being through wire 32, through lamps 25 in multiple, through wire 33, to armature 37, to contact 38, and through wire 41 to wire 31, with the result that the lamps are energized. As the arm 9 moves onward it leaves the commutator-bar connected with post 48 and comes into contact with the bar connected with post 49, when the circuit through magnet 35 is broken. A new local circuit is, however, closed through magnet 36, the circuit from battery 45 being the same as in the former instance as far as the brush 10, after which the circuit is through commutator-bar connected with post 49 to said post, thence through wire 56 to the second terminal of magnet 36, and thence through common return 46 to battery 45, the result being that the magnet 36 is energized and the armature 37 attracted from the contact 38 to break the local lighting-circuit, which includes the lamps 25. The brush 10 next engages the commutator-bar that is connected with post 50, when the magnet 35 of switch 42 is operated to close the local lighting-circuit including lamps 26, and when the brush engages the succeeding commutator-bar the magnet 36 of switch 42 is energized to break the circuit of lamps 26, all of which will be understood by those skilled in the art and without giving the specific explanation and tracing of each circuit, all being similar to that above described in connection with switch 34. If after a certain duration it is desired to cut out all of the lamps permanently, it is of course necessary to open the main line, and for this purpose a common form of electrically-operated cut-out 57 is provided and is placed in the wire 30 or, if preferred, in the wire 31, it being of course desirable that said switch have also means for operating it manually when desired. This switch comprises the usual electromagnet, (not shown,) and one terminal of this electromagnet is connected with the common return 46, while the other terminal is connected by

means of wire 58 with a binding-post 59, which is in turn connected with the dial-plate 16 through conductor 60. Thus when the contact-arm 13 engages the post 17 the circuit from battery 45 will be to post 47 and thence through clockwork-frame to sleeve 11 and arm 13, from which the current will pass to post 17 and arm 18 to dial-plate 16, through wire 60 to post 59, and through wire 58 to the second terminal of the magnet of switch or cut-out 57, thus energizing said magnet and opening the cut-out. Thus at whatever time the arm 18 is set the entire system will be cut from the main lighting-circuit.

Any number of the banks of lamps may be simultaneously illuminated or energized by connecting their corresponding binding-posts of the outer series in circuit, and if their corresponding posts of the inner series be not connected then they will be successively extinguished. In this manner the arm 13 may be properly timed in its rotation, and the posts may be so connected that all the lamps will be simultaneously energized and then deenergized successively or in groups, the entire number of lamps being deenergized finally, this result requiring proper wiring of the apparatus; also, by first connecting all of the outer series of binding-posts with the battery 45 and then opening the switch 54 the entire number of lamps will be placed in circuit and will remain therein until the switch or cut-out 57 is energized in the manner above stated, when the whole number of lamps will be cut out.

It will of course be understood that in practice the specific construction and arrangement shown and described may be altered and that other changes may be made, such as increasing or diminishing the number of commutator-bars and corresponding bars, without departing from the spirit of the invention.

What is claimed is—

1. A flash-light system comprising main-line wires, a plurality of banks of lamps connected across the main line, an electrically-operated switch for the circuit of each bank of lamps for cutting the banks of lamps into and out of the main line, an electrically-operated switch for opening and closing the circuit of the main line, a battery common to all the switch-circuits, and a circuit-closer adapted to open and close the circuits of the several switches successively.

2. A flash-light system comprising main-line wires, a plurality of banks of lamps connected across the main line, an electrically-

operated switch for opening and closing the circuit of each bank of lamps, an electrically-operated switch for opening and closing the circuit of the main line, a circuit-closer comprising a contact included in each circuit of each electrically-operated lamp-switch, a shiftable contact forming one terminal of the main-line switch, a contact-arm for engagement with said contacts, and a battery connected with said arm, said battery being common to all the circuits of the electrically-operated switches.

3. A flash-light system comprising main-line wires, a plurality of banks of lamps connected across the main line, an electrically-operated switch for the circuit of each bank of lamps for cutting the lamps into and out of circuit, an electrically-operated switch for opening and closing the main line, a source of energy for the several circuits of the switches, and a circuit-closer for the several switch-operating circuits, said closer including a series of contacts forming each one terminal of a switch-operating circuit and a movable arm for engagement with the contacts and forming the second terminal of all the switch-operating circuits of the banks of lamps, a shiftable contact forming one terminal of the operating-circuit of the main line, a movable arm for engagement with the last-named contact and forming the second terminal of the circuit of the main-line switch, and a clock mechanism connected with the arms for operating them.

4. An automatic switch comprising a base of insulating material having a plurality of radial commutator-bars fixed thereto, a binding-post electrically connected with each bar, a spindle, a contact-arm mounted upon the spindle and adapted for contact with the commutator-bars, a sleeve mounted upon the spindle and movable independently thereof, a contact-arm carried by the sleeve, a dial-plate disposed to be traversed by the arms, a contact which is shiftable over the dial and in electrical contact therewith and lies in the path of movement of the second contact-arm, and a binding-post electrically connected with the arms, said dial-plate being adapted for connection of a wire therewith.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MARTIN WRIGHT.

Witnesses:

STEPHEN W. KEARNY,
MASON WILLIAMS.