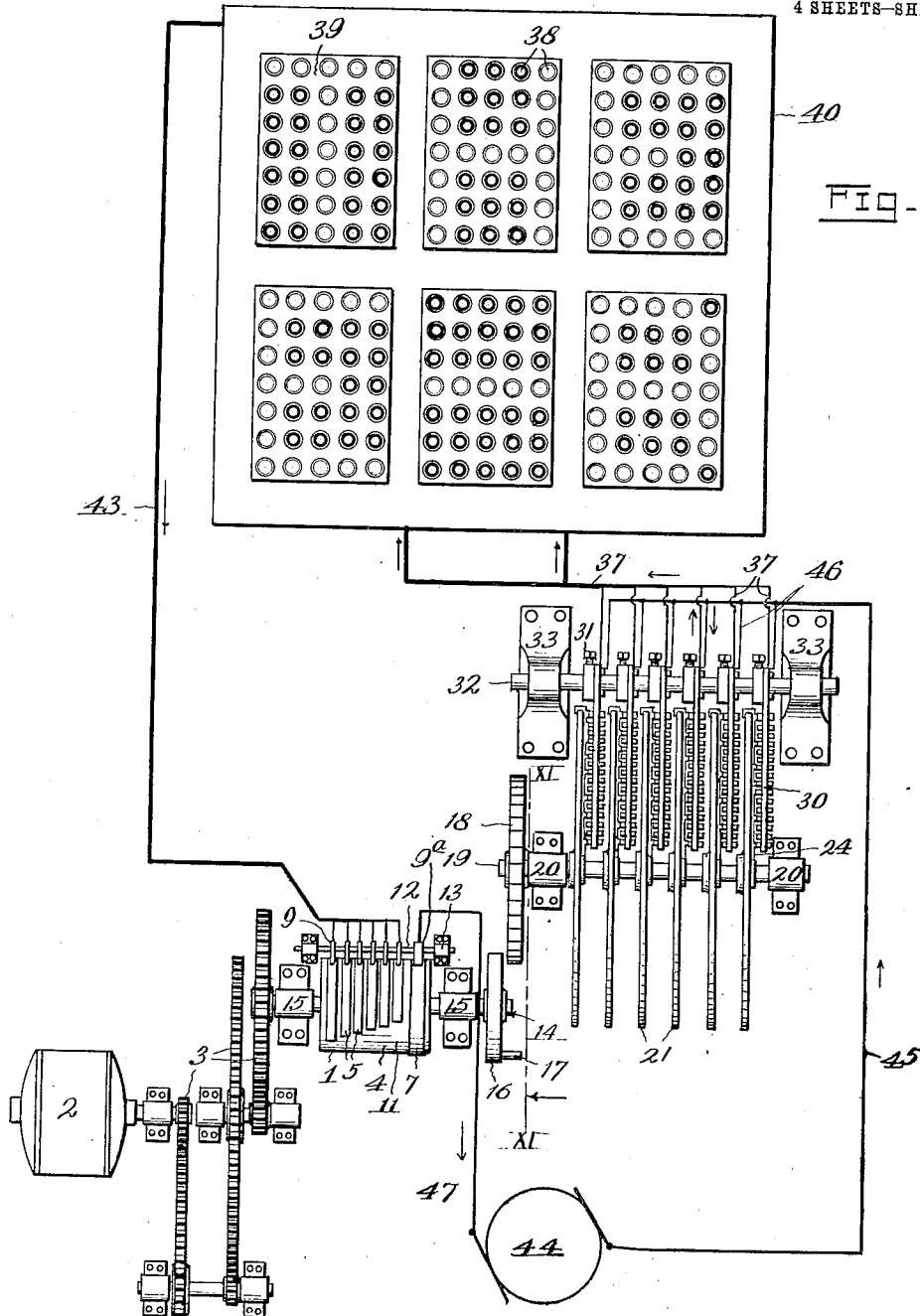


J. C. EUBANK.
 AUTOMATIC ELECTRIC DISPLAY SIGN.
 APPLICATION FILED OCT. 26, 1911.

1,065,513.

Patented June 24, 1913.

4 SHEETS—SHEET 1.



Witnesses:
R. Hamilton
E. C. Lillian

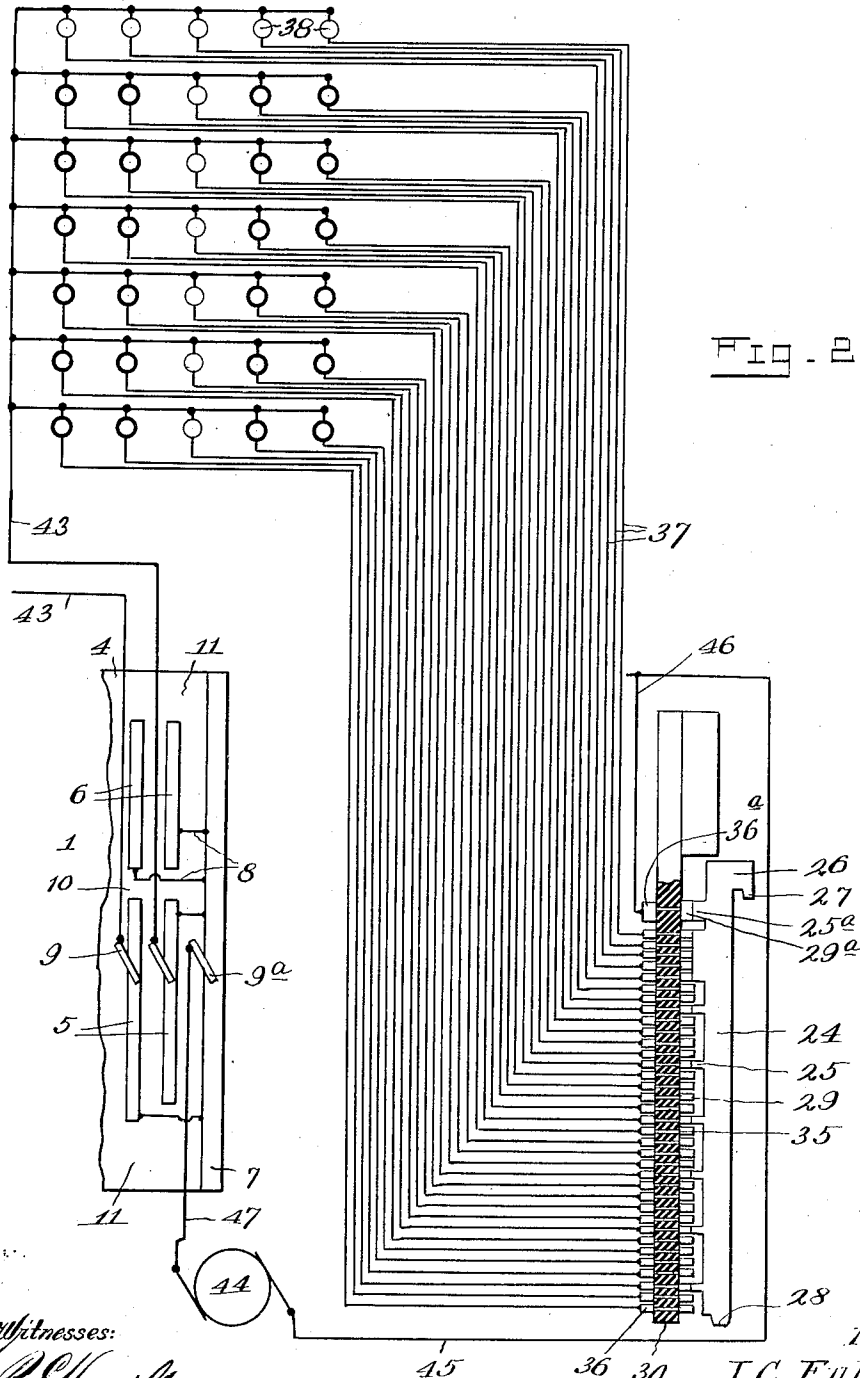
Inventor:
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4 SHEETS—SHEET 2.



Witnesses:

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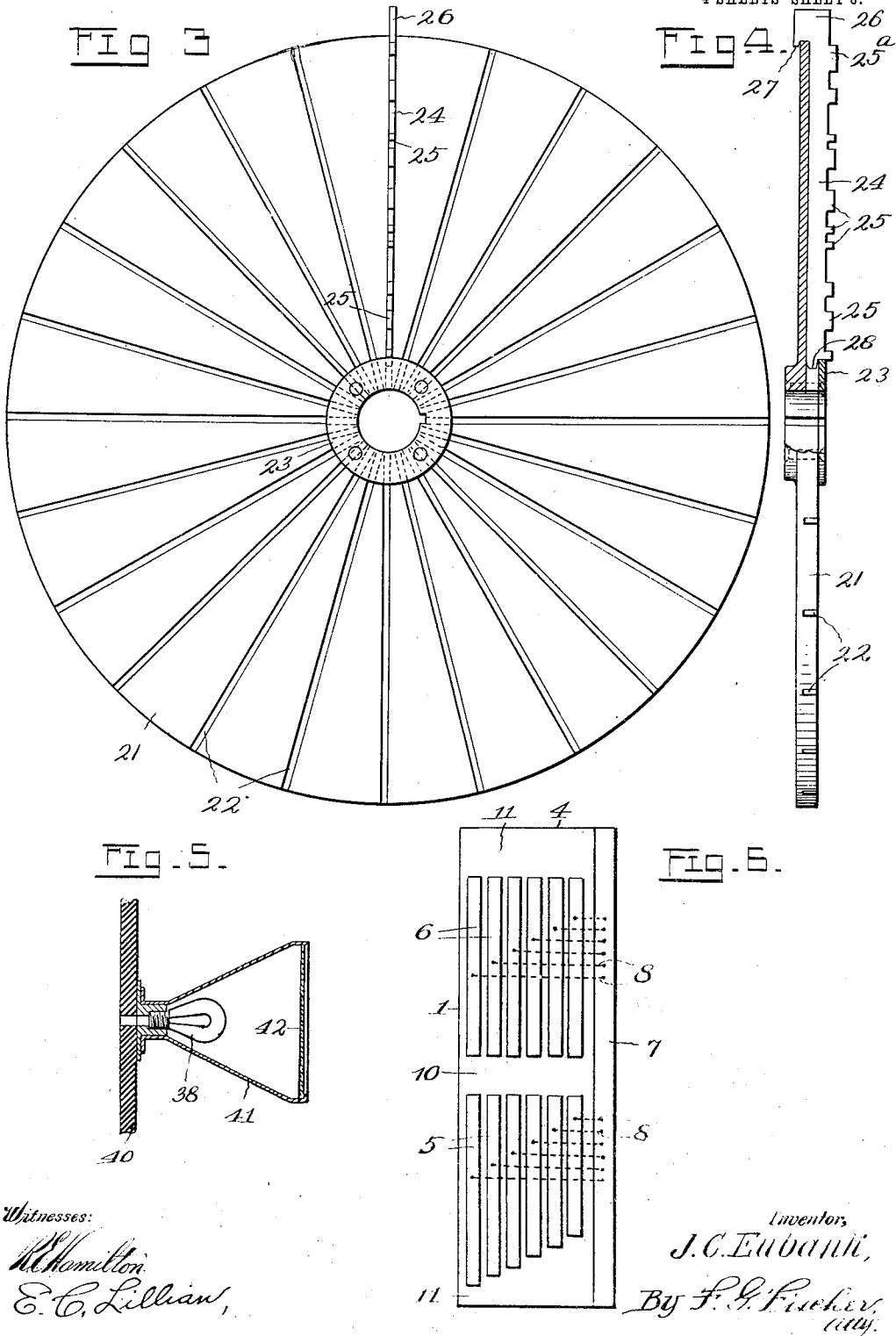
By F. G. Fischer,
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

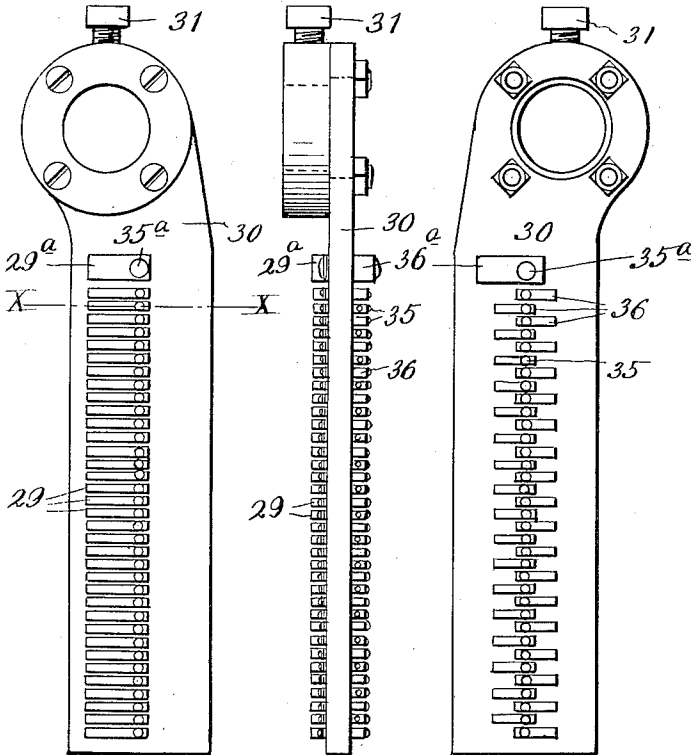


FIG. 7. FIG. 8. FIG. 9.

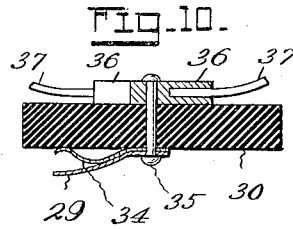


FIG. 10.

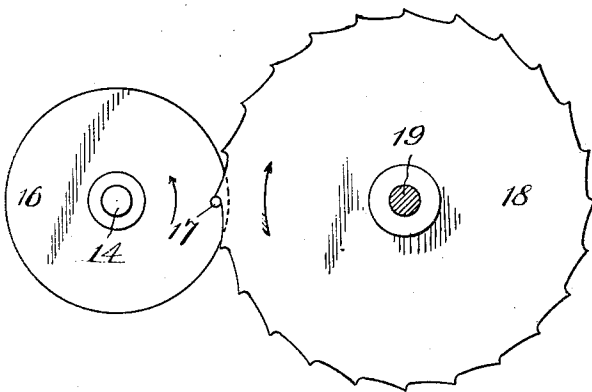
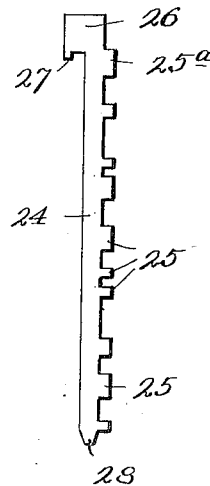


FIG. 11.



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UNITED STATES PATENT OFFICE.

JUDSON C. EUBANK, OF KANSAS CITY, MISSOURI.

AUTOMATIC ELECTRIC DISPLAY-SIGN.

1,065,513.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed October 26, 1911. Serial No. 657,004.

To all whom it may concern:

Be it known that I, JUDSON C. EUBANK, citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Automatic Electric Display-Signs, of which the following is a specification.

My invention relates to electric display signs, and embodies groups of plain or colored lamps so connected that any desired number thereof may be illuminated to display any symbol, letter, word, or combination of words.

The apparatus is preferably arranged to automatically display the words of a sentence successively and then after a short intermission simultaneously, and certain of the parts are interchangeable so that the reading of the sign can be readily altered as desired. As the lamps successively forming each letter of a sentence are made to glow they are kept illuminated until all are illuminated, when the entire sentence is displayed for a space of time. The complete sentence then disappears and after a pause is simultaneously flashed on and displayed for a certain period of time, after which it again disappears. The apparatus is then ready to repeat the above cycle for the same or any other prearranged sentence, or series of sentences, indefinitely. The lamps are so arranged that different letters may be formed by causing different lamps in the same group to glow at different times.

The apparatus is comparatively compact considering the large number of sentences that may be displayed at each cycle, and embodies means whereby sparking and burning of parts may be avoided while changing the several circuits.

In order that the invention may be fully understood, reference will now be made to the accompanying drawings in which:

Figure 1 is an elevation of the apparatus assembled ready for use. Fig. 2 is a diagram showing the circuits for one group of lamps. Fig. 3 is an elevation of one of the contact bar wheels and a contact bar in position thereon, employed in carrying out the invention. Fig. 4 is an edge view partly in section of said wheel, with a contact bar in position thereon. Fig. 5 is a vertical section of one of the lamps and a reflector therefor. Fig. 6 is a diagram of a com-

mutator for controlling the lamp circuits. Fig. 7 shows one side of one of the contact arms, whereby certain lamps are selected to display a predetermined letter, number, symbol, or other character. Fig. 8 is a face view of said contact arm. Fig. 9 shows the reverse side of the contact arm to that disclosed by Fig. 7. Fig. 10 is a cross section of the contact arm taken on line X—X of Fig. 7. Fig. 11 is a section on line XI—XI of Fig. 1, showing gearing for imparting intermittent rotary motion to the contact bar wheels, and Fig. 12 is a side elevation of one of the contact bars.

1 designates the commutator which is driven by a motor 2, through the intermediacy of a train of gearing 3, so that the speed of said commutator will be considerably less than the speed of the motor. Said commutator, in the present instance, comprises an insulated cylinder 4, a group of segmental conductors 5, a group of segmental conductors 6, an annular conductor 7 which is connected to all of the segmental conductors by wires 8, and a plurality of brushes 9 and 9^a, which coact with the segmental conductors and the annular conductor, respectively. The group of conductors 5 diminish in length, that at one side of the group being longest, and that at the opposite side shortest (see Fig. 6) to cause the letters of a word to appear in succession, as hereinafter described. The rear ends of the conductors 5 terminate on the same horizontal plane to cause all the letters to simultaneously disappear. The conductors 6 are preferably of the same length to cause the letters to simultaneously appear and to simultaneously disappear after they have been dark for a time due to the blank space 10 between the rear ends of conductors 5 and the front ends of the conductors 6. A blank space 11 is left between the rear ends of conductors 6 and the front ends of conductors 5, to interrupt the lamp circuits hereinafter described. Brushes 9 and 9^a are arranged side by side upon a bar 12, supported by brackets 13.

Cylinder 4 is mounted upon a shaft 14 journaled in bearings 15, provided at one end with one of the gears of train 3, and at its opposite end with a disk 16, provided with a laterally-projecting wrist pin 17. At each revolution of the disk 16, the wrist-pin 17 engages and moves one step a notched wheel 18, fixed upon a shaft 19, journaled in

bearings 20. Shaft 19 is provided with a series of contact bar wheels 21 keyed or otherwise fixed thereon and provided at one side with a plurality of radial grooves 22, covered at their inner ends by an annulus 23.

The grooves 22 of wheels 21 are adapted to receive interchangeable contact bars 24, each of which has circuit-closing fingers 25 and 25^a, of such number and so related that when brought into play a certain letter, number, or symbol will be flashed on the sign, and said contact bar being interchangeable, the wording of the sign can be readily altered, as desired. Each contact bar has a finger-hold 26, projecting beyond the periphery of its perspective wheel 21, so that it can be readily removed from said wheel, and is provided at its ends with tongues 27 and 28, the former of which overlaps the periphery of the wheel 21, while the latter engages the inner side of annulus 23, to prevent lateral displacement of the contact bar from its respective groove 22, into which it fits sufficiently snug to prevent accidental longitudinal displacement.

The fingers 25 of each contact bar 24 are adapted to coact with a like number of spring contacts 29, and the large finger 25^a with a large spring contact 29^a, on a companion contact arm 30, secured by a set-screw 31 upon a stationary bar 32, fixed in a pair of brackets 33. The spring contacts 29 and 29^a are held out in the path of their respective fingers, by springs 34, which, together with said contacts are secured to one side of the arm 30 by conductors 35 and 35^a, which extend through said arm and secure to the opposite side thereof metallic lugs 36 and 36^a, respectively. Lugs 36 are alternately arranged (Fig. 9) to leave room for connection therewith a plurality of circuit-wires 37, each of which leads to the positive pole of a lamp 38.

Lamps 38 are arranged in groups to form the illuminating means, which I shall term letter-plates 39, a sufficient number of lamps being provided in each group to form several letters or symbols, one at a time. The lamps are supported by an insulating board 40, which together with the parts carried thereby may be placed at some distance from the remainder of the apparatus. Each lamp is provided with an outwardly flaring reflector 41, provided at its front side with a plate of glass 42, which may be plain or colored, and, preferably, has a ground surface, so that the light from the lamp will be diffused over the entire surface of said plate. The groups of lamps 38 are preferably arranged in horizontal and vertical rows, as shown in Fig. 1, although this arrangement may be varied as desired.

The negative poles of each group of lamps are connected to a circuit-wire 43, each of which leads to one of the brushes 9 of the

commutator, there being one brush for each group of lamps.

The current for illuminating the lamps 38 may be derived from any desired source, a generator 44 being shown in the present instance. The current passes from said generator over a main line wire 45 to a plurality of branch-wires 46, which communicate with the large lugs 36^a on the contact arms 30. The current returns to the generator over a main line wire 48 from the large brush 9^a of the commutator 1.

In practice the commutator 1, which travels at low speed completes one revolution, while the contact bar wheels 21 are advanced one step, the distance from one radial groove 22 to another, through the intermediacy of the gears 16 and 18. This successively brings the contact bars 24, with which the grooves 22 are filled, into coincidence with their respective contacts 29 and 29^a, and thereby closes circuits with certain of the lamps. Starting from the generator 44, the current flows through the main line wire 45, thence through the branch-wires 46, to the large contacts 29^a thence through the large lugs 36^a to the large fingers 25^a of the contact bars, thence through said contact bars and those fingers 25 thereof, which are in engagement with certain of the contacts 29, thence through said contacts 29, through lugs 36, branch-wires 37, the lamps 38, thence through the return wires 43, the commutator 1, and back to the generator through the main line wire 47.

To make different letters appear in any group at different times, it is only necessary to change the respective contact bars.

When the contact bars pass into and out of engagement with the spring contacts 29 and 29^a, burning of the parts is avoided by the commutator, the blank space 11 of which interrupts the main line circuit during movement of the contact bar wheels.

Having thus described my invention what I claim and desire to secure by Letters Patent, is:

1. In combination, a group of lamp circuits, and automatic means to select any combination of circuits to cause the lamps to display any desired character, said means consisting of a rotary disk, a series of radial contact-bars carried by said disk, a row of fingers on each contact-bar to select a certain combination of circuits, and a stationary contact-member radially-arranged relative to said rotary disk, and having contacts for each circuit to coact with said fingers in selecting the desired combination of circuits.

2. In combination, a group of lamp circuits, and automatic means to select any combination of circuits to cause the lamps to display any desired character, said means

consisting of a rotary member, a series of interchangeable contact-bars radially-mounted upon said rotary member, a row of fingers on each contact-bar to select a certain combination of circuits, and a stationary contact-member radially-arranged relative to said rotary-member and having resilient contacts for each circuit to coact with the fingers in selecting the desired combination of circuits.

3. In combination, groups of lamp circuits, and automatic means to select any combination of circuits to cause the lamps to display any desired character, said means consisting of a plurality of disks spaced apart and mounted side by side upon a driven shaft, a series of radial contact-bars carried by each disk, a row of fingers on each contact-bar to select a certain combination of circuits, a finger-hold on each contact-bar, and a plurality of stationary contact-members radially-arranged relative to said rotary disk, said contact-members having contacts for each circuit to coact with

the fingers in selecting the desired combination of circuits.

4. In combination, a group of lamp circuits, an automatic means to select any combination of circuits to cause the lamps to display any desired character, said means consisting of a rotary member having radial grooves, interchangeable contact-bars slidably-mounted in said grooves, tongues on said contact-bars to secure them to said rotary-member, fingers on each bar to select a certain combination of circuits, and a stationary contact-member radially-arranged relative to said rotary disk, and having contacts for each circuit to coact with the fingers in selecting the desired combination of circuits.

In testimony whereof I affix my signature, in the presence of two witnesses.

JUDSON C. EUBANK.

Witnesses:

C. P. BARNETT,
F. G. FISCHER.