

No. 892,749.

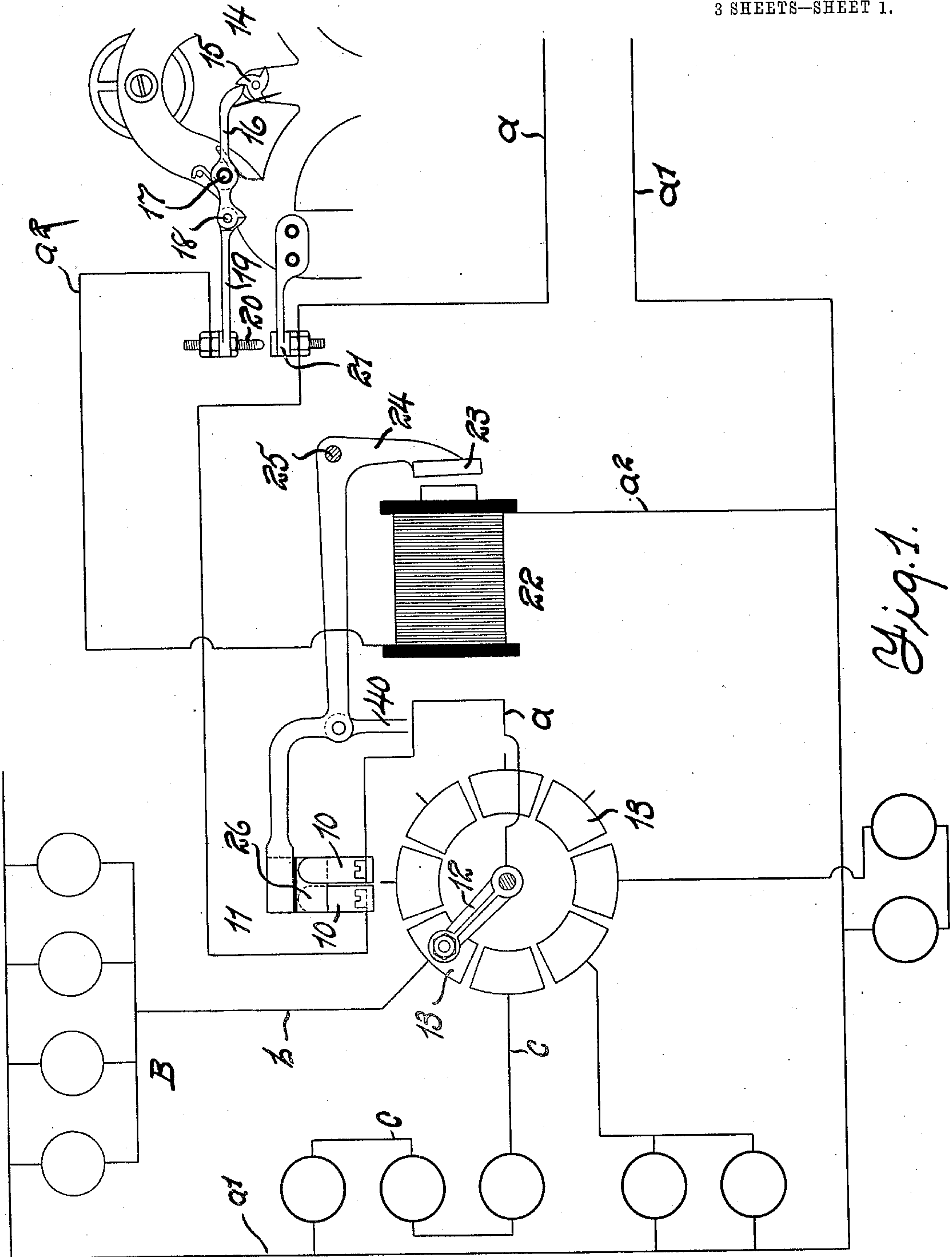
PATENTED JULY 7, 1908.

R. F. LE BROcq.

ELECTRIC SIGN APPARATUS.

APPLICATION FILED FEB. 25, 1907. RENEWED JUNE 1, 1908.

3 SHEETS—SHEET 1.



WITNESSES:

Frank L. White.

Ralph Lancaster

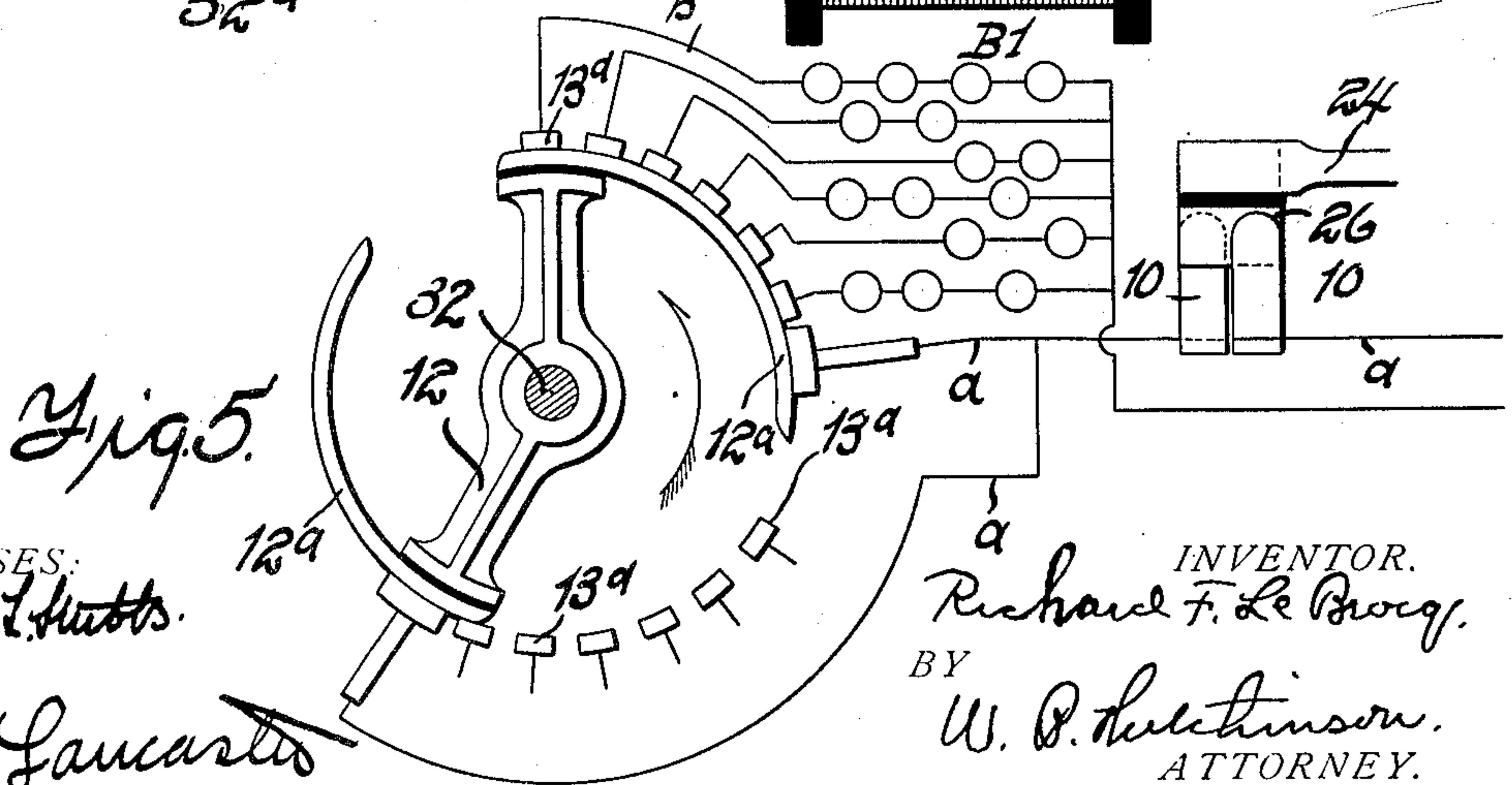
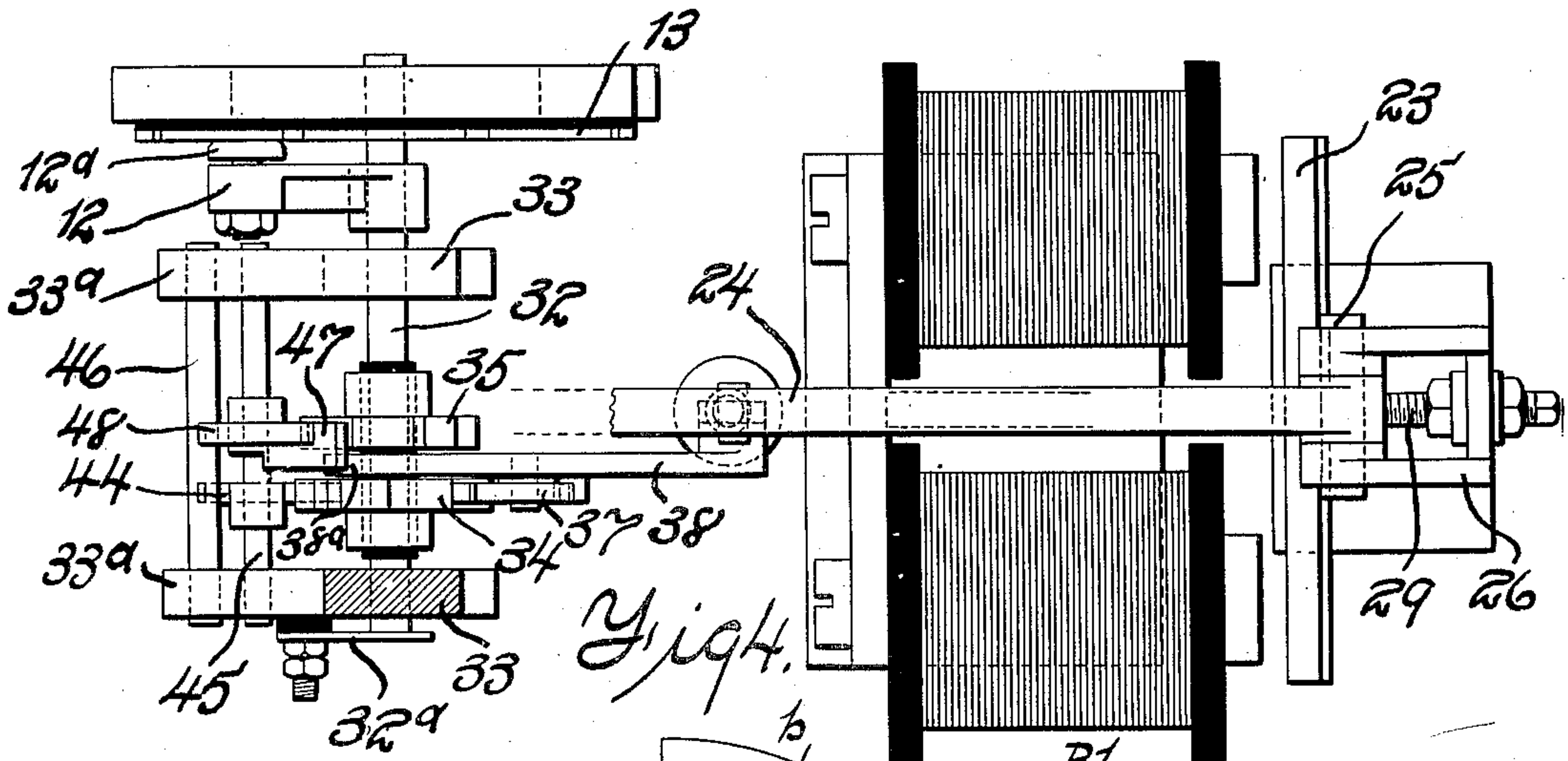
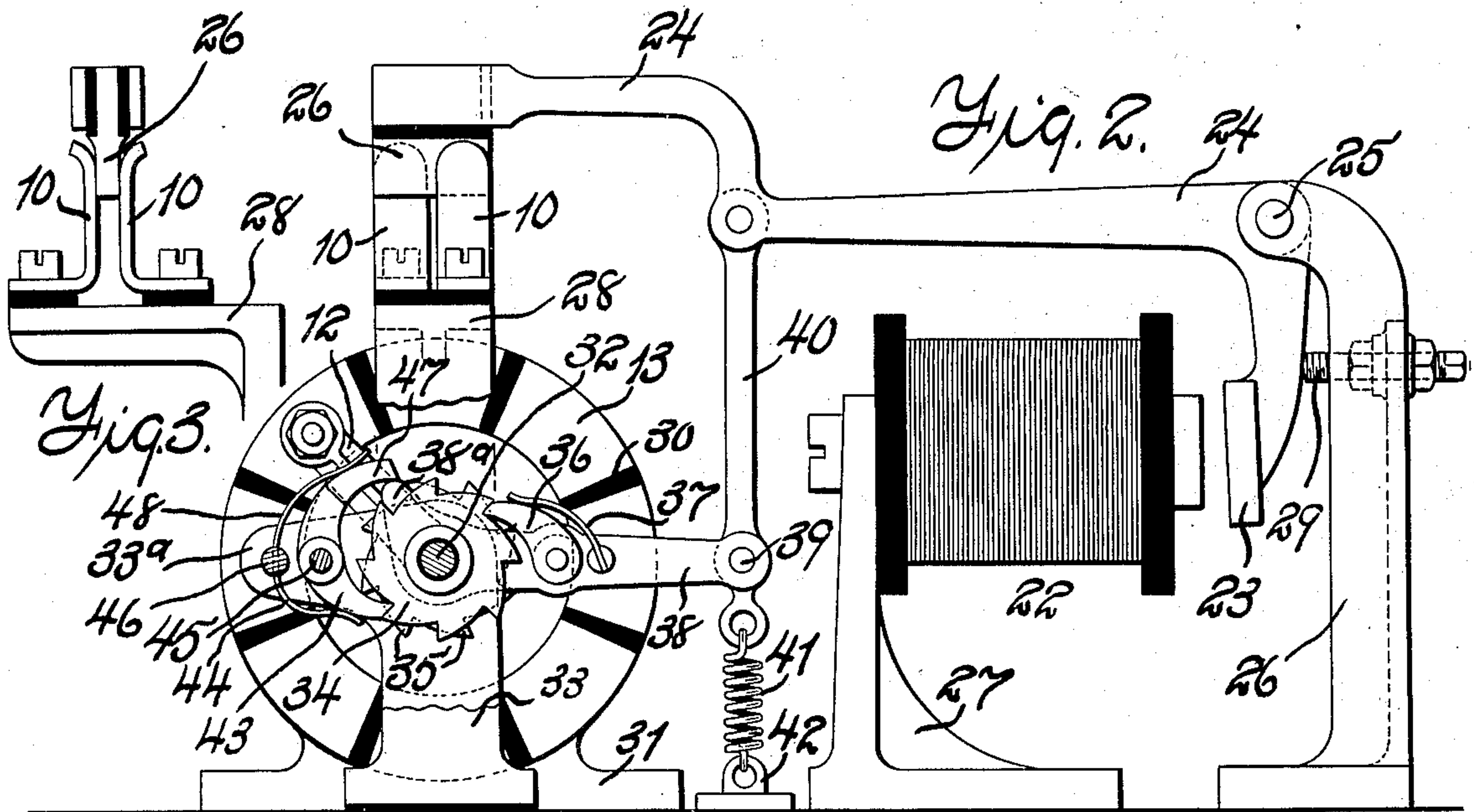
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ELECTRIC SIGN APPARATUS.

APPLICATION FILED FEB. 25, 1907. RENEWED JUNE 1, 1908.

3 SHEETS—SHEET 2.



WITNESSES:

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3 SHEETS—SHEET 3.

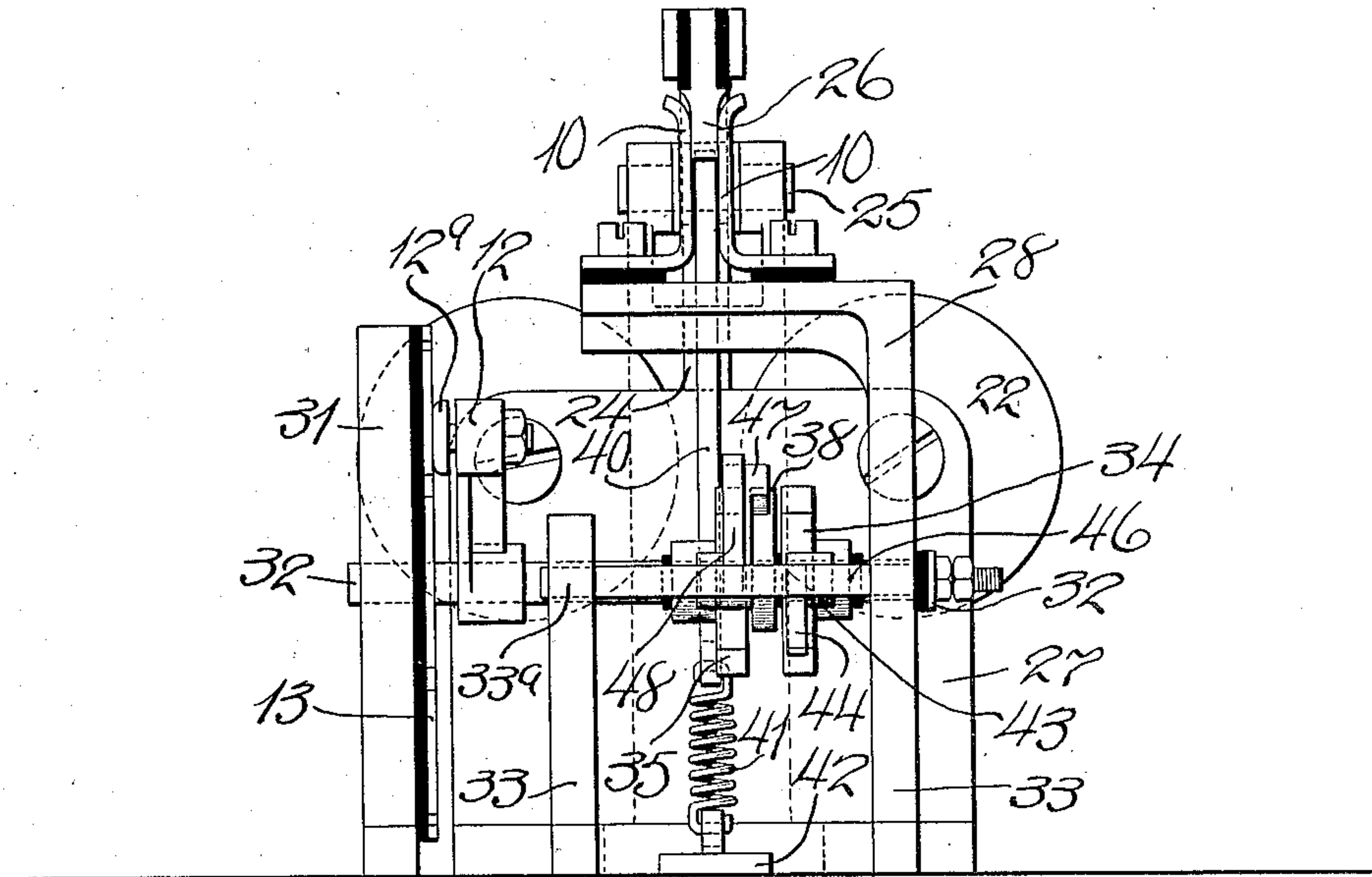
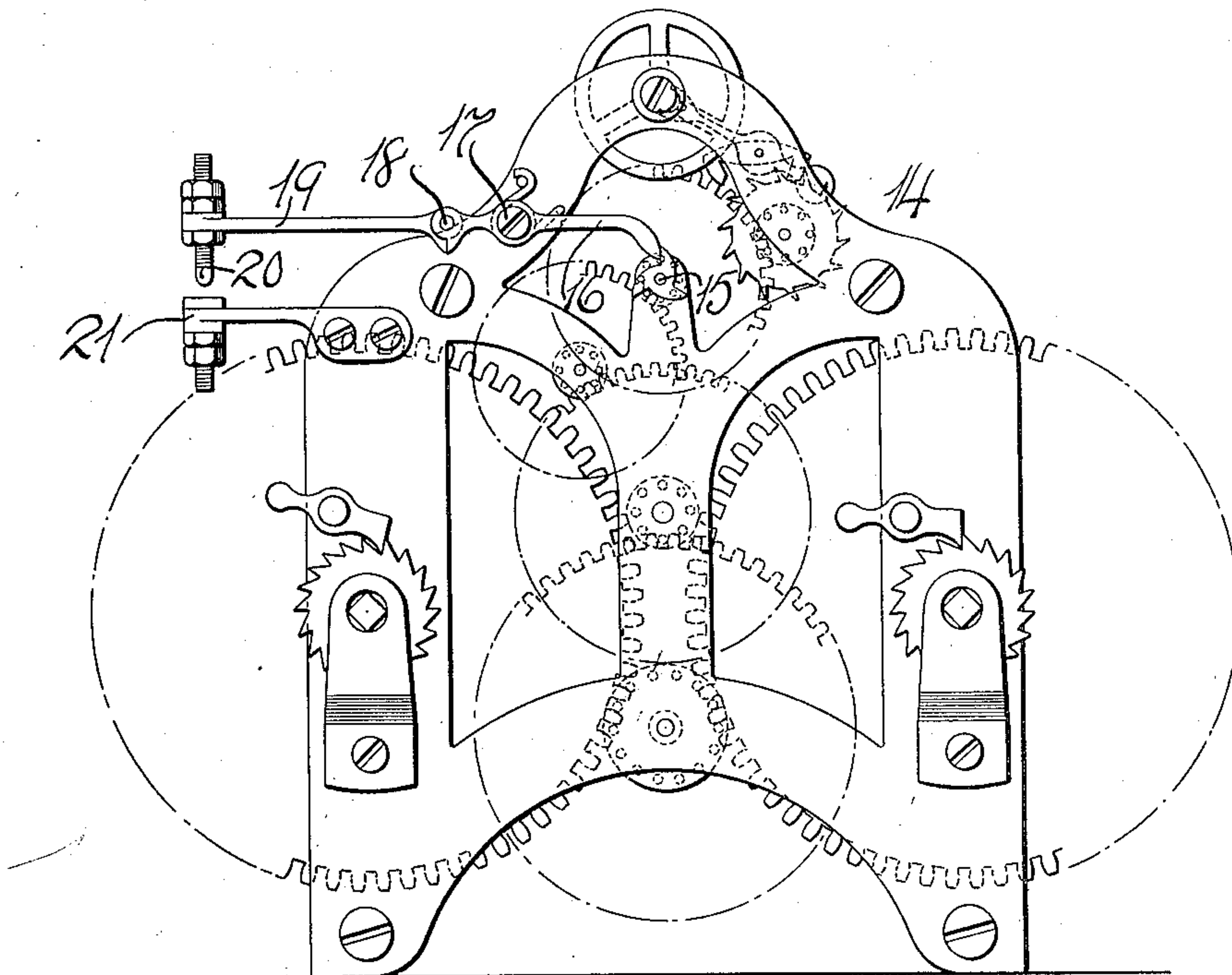


Fig. 6.



WITNESSES:

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L. A. Sands.

Fig. 7.

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UNITED STATES PATENT OFFICE.

RICHARD F. LE BROCCQ, OF ETNA, NEW JERSEY, ASSIGNOR OF ONE-HALF TO EDWIN J. SELLEY,
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ELECTRIC-SIGN APPARATUS.

No. 892,749.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed February 25, 1907, Serial No. 359,100. Renewed June 1, 1908. Serial No. 435,908.

To all whom it may concern:

Be it known that I, RICHARD F. LE BROCCQ, of the town of Etna, county of Bergen, and State of New Jersey, have invented a new and useful Improvement in Electric-Sign Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in apparatus for operating electric signs, that is, that class of signs in which letters, words or designs are made up of a series of incandescent electric lamps which often are of different colors, and which in the night cause the words, letters, or designs to appear luminous and have a very handsome effect.

The object of my invention is to produce a simple apparatus which is controlled by a clock-work or other mechanically rotating part, and which will cut the current in and out of any lamp or series of lamps as desired, and which further can be made to prolong the contact to any reasonable extent, so that the lamps may be alternately lighted and cut out, thus attracting attention to them for advertising effect.

My invention is intended to accomplish the above result in a very positive and mechanical manner, so that the apparatus can be relied upon to work perfectly for a long time and with little attention.

With these ends in view, my invention consists of an apparatus for controlling electric lights for signs and similar purposes, which apparatus will be hereinafter clearly described and the novel features claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a diagrammatic view illustrating the operation of the apparatus and the arrangement of the circuits. Fig. 2 is a broken enlarged detail view showing the arrangement of the parts for effecting the cutting in and out of the current. Fig. 3 is a detail end view of the switch. Fig. 4 is a broken plan view partly in section of the parts shown in Fig. 2, and Fig. 5 is a diagrammatic view of a modified form of a part of the apparatus. Fig. 6, is a view in end elevation of Fig. 2, looking from left to right. Fig. 7, is a detail view illustrating the clock mechanism partially shown in Fig. 1.

The operation of and a general idea of the

apparatus will be best understood from following through the circuits in Fig. 1, and then following up the detail construction in the other figures.

Referring to Fig. 1, the current comes in through a wire "a" and normally runs through the switch contacts 10, the brush arm 12 which has a brush 12^a thereon, a segment 13 of the commutator-like structure, and the wire "b", a series of lamps B, and the wire "a¹" back to the source of supply. Or instead, it may run from one of the segments 13 through a wire "c" and the lamp series C to the wire "a". I have shown several series of lamps B and C simply to illustrate that there can be any number, and as shown they may be connected up in parallel or series, as desired, and I have not attempted to illustrate the arrangement of the lamps, because obviously these can be arranged to produce any desired design in the form of a letter, figure, or other matter. It will be seen that the movement of the brush arm 12 will cut out one segment 13 and the lamp series connected therewith, and cut in another, and my apparatus is arranged so that the current is cut out just before the brush arm advances from one segment 13 to the next, so as to prevent sparking, and it is intended also by the same apparatus, to conveniently and positively move the brush arm. To effect this I operate the mechanism or rather control it from a multiple armed cam 15 on the spider of the clock work 14, though obviously the cam can be revolved by any other mechanical motor. These arms tilt the lever 16, which is fulcrumed as shown at 17, and is jointed at 18, connecting at this point with the extension 19 which carries the contact 20, adapted to contact with its mate 21, the latter being included in the circuit of the wire "a", and the former connecting with the wire "a²", which includes an electro-magnet 22. There is nothing new about the jointed arm 16 and its connections, and the object of the joint is, as usual, to prolong the contact between the parts 20 and 21, without regard to the elevation of the lever 16. It will be observed that when the lever 16 is raised and the contact 20 dropped into engagement with the contact 21, the circuit will be through the wire "a", the contacts 21 and 22, the wire "a²" and magnet 22, out through the wire "a¹". This obviously, cuts out all the light circuits, and at the same

time or immediately following this operation in very close sequence, the mechanism for actuating the brush arm 12 is operated by the energizing of the magnet, this being effected by the drawing in of the armature 23, which is hung on the bell crank 24, the latter being pivoted at its elbow as shown at 25, and carrying at its free end a switch blade 26, which drops between the contacts 10, already referred to.

Referring to Figs. 2 to 4, the mechanism above referred to in general will be described in detail. While the mechanical parts above referred to can be supported in any convenient way, I have shown the bell crank 24 pivoted on a standard or bracket 26, the magnet 22 supported on a bracket 27, the contacts 10 supported on a bracket 28, the movement of the bell crank 24 limited by a screw 29, and the segments 13 arranged like a commutator, insulated from each other as shown at 30, and supported on a suitable base 31.

The brush arm 12 is carried on a shaft 32, which is mounted on suitable supports 33, and it is turned from the lever 24 through the medium of ratchets 34 and 35, which are affixed to the shaft 32, and are of opposite pitch. The shaft is turned forward by a pawl 36 which engages the ratchet wheel 34, is pressed by springs 37, and is pivoted on the beam 38, this being in turn pivoted on the shaft 32, and having its outer end pivotally connected as shown at 39, with the link 40, which pivotally connects with the beam or lever 24, and is normally pulled down by the spring 41 connecting with the link and also with a support 42 beneath it. The ratchet wheel is prevented from turning back by a detent 43, which is pressed by a spring 44, and is pivoted on the supporting rod 45, this rod and a second rod 46 which supports the springs 44 and 48, being secured in arms 33^a of the posts or supports 33. In order that the movement of the pawl 36 may not carry the ratchet wheel 34 too far, the second pawl 47 is used to engage the ratchet wheel 35, and this is pressed into engagement by a spring 48. Obviously the pawl 47 would prevent the shaft 32 from being turned at all, but at the time the beam 38 is moved back by the spring 41, a cam projection 38^a on the beam lifts the pawl 47, as shown in Fig. 3, but when the beam is raised to operate the ratchet wheel 34, the part 38^a drops, permitting the pawl 47 to drop into engagement with the ratchet wheel 35, and so limit the movement of the shaft 32 and segments 13 carried thereby. For

convenience, the connection with the segments 13 is through the shaft 32 by means of a contact spring 32^a at the end of the shaft. This is shown clearly in Fig. 4.

From the foregoing description it will be seen that I have devised a positive and simple means of intermittently lighting a relatively large number of lamps or series of lamps, and that the apparatus works automatically from the clock work or other rotary shaft, and should continue to operate successfully for a long time without special attention. It will also be noticed that in operation the current is cut out from the segments 13, a trifle in advance of the movement of the brush, so that no sparking results when the latter is advanced.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent:—

1. An apparatus of the kind described, comprising a series of contacts, a series of lamps, each series being connected to a contact, a rotary shaft, a brush carried by the shaft and moving over the contacts, an electro-magnet, a switch operated by energizing the magnet to control the circuit through the brush, a ratchet wheel on the shaft, a pawl engaging the ratchet wheel to turn it, the means controlled by the magnet for operating the pawl, a second ratchet on the shaft, said second ratchet being of opposite pitch to the first named ratchet wheel, and a pawl engaging the second ratchet wheel, the second ratchet wheel and pawl limiting the movement imparted by the first named ratchet wheel and pawl.

2. An apparatus of the kind described comprising a series of contacts, a series of lamps, each series being connected to a contact, a rotary shaft, a brush carried by the rotary shaft and moving over the contacts, an electro-magnet, a switch operated by the energizing of the magnet to control the circuit through the brush, a ratchet wheel on the shaft, a pawl engaging the ratchet wheel to turn it, the said pawl being operated from the magnet, a second ratchet on the shaft, said second ratchet being of opposite pitch to the first named ratchet wheel, a pawl engaging the second ratchet wheel, the said second ratchet wheel and pawl limiting the movement imparted by the first named ratchet wheel.

RICHARD F. LE BROCCQ.

Witnesses:

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J. W. MUDGETT.