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Patented Dec. 26, 1899.

A. PETERS.

ELECTRIC LIGHT APPLIANCE FOR CONTROLLING THE NUMBER OF INCANDESCENT LIGHTS TO BE BURNED ON A CIRCUIT.

(Application filed June 26, 1899.)

(No Model.)

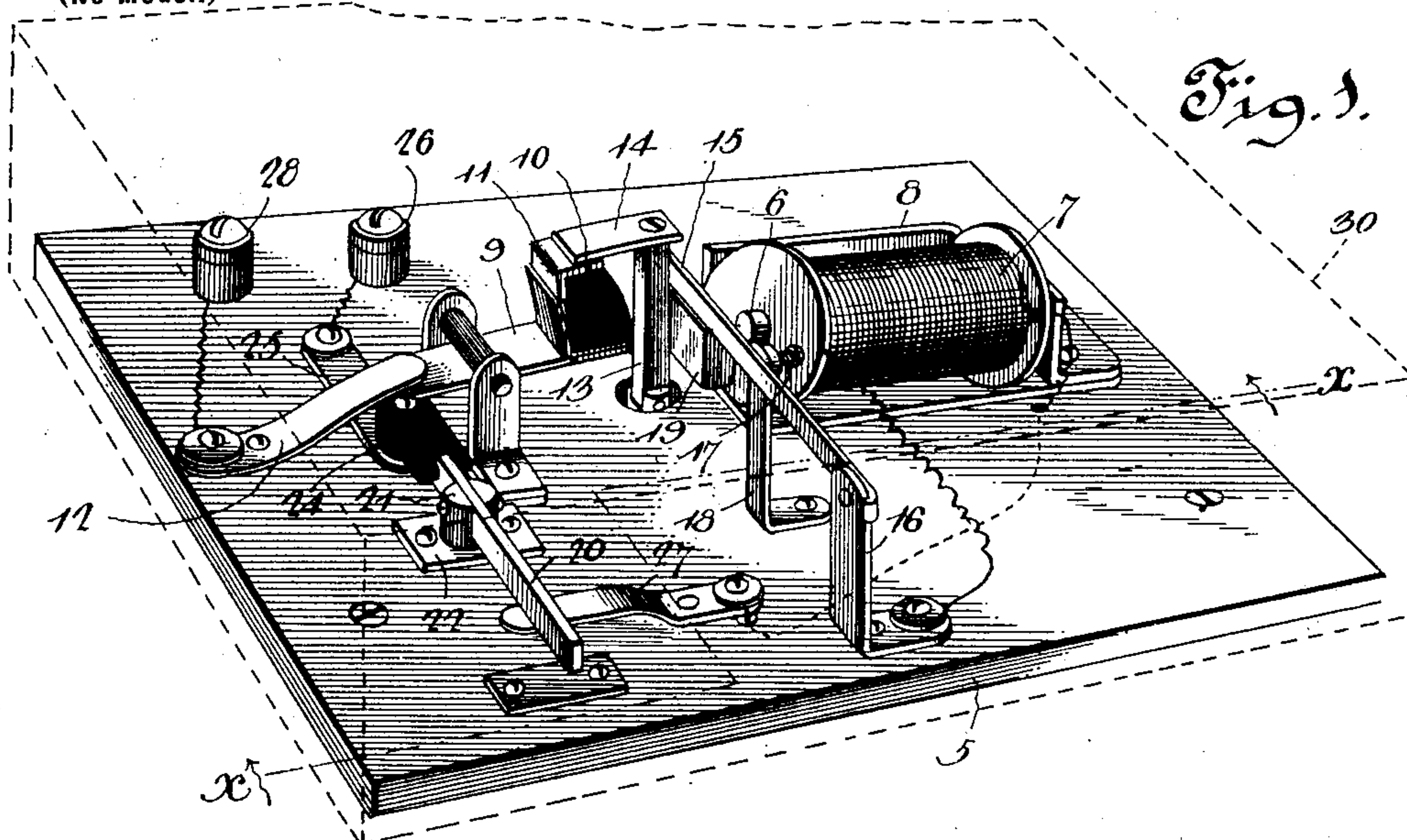


Fig. 1.

Fig. 2.

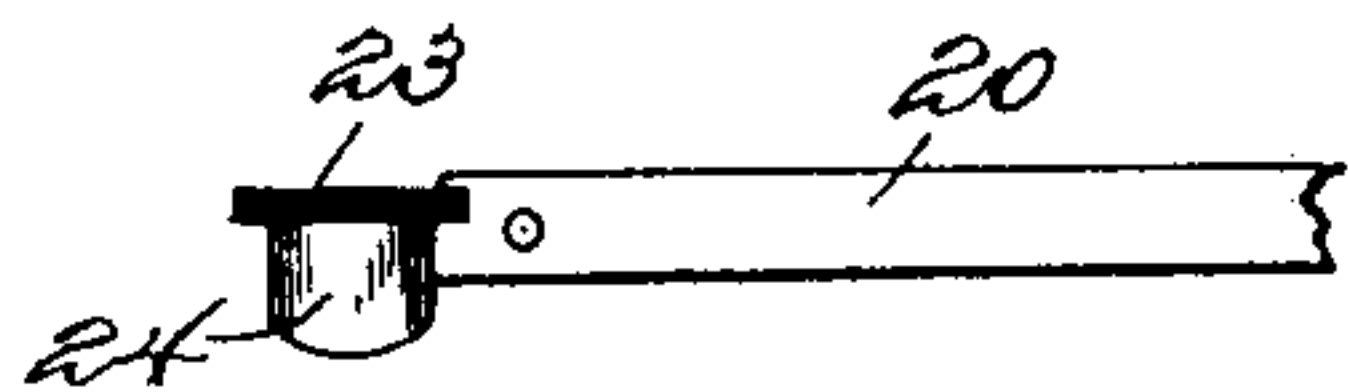
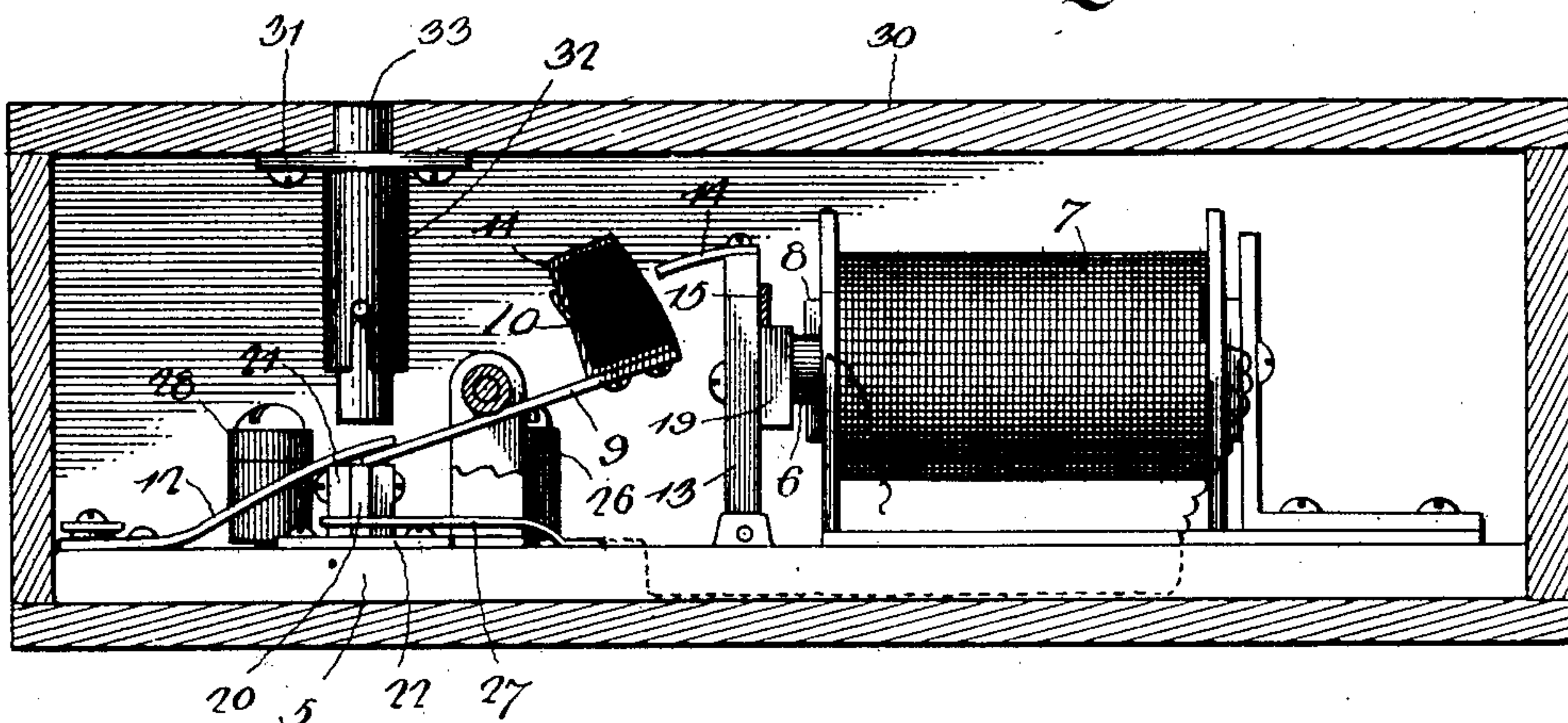


Fig. 4.

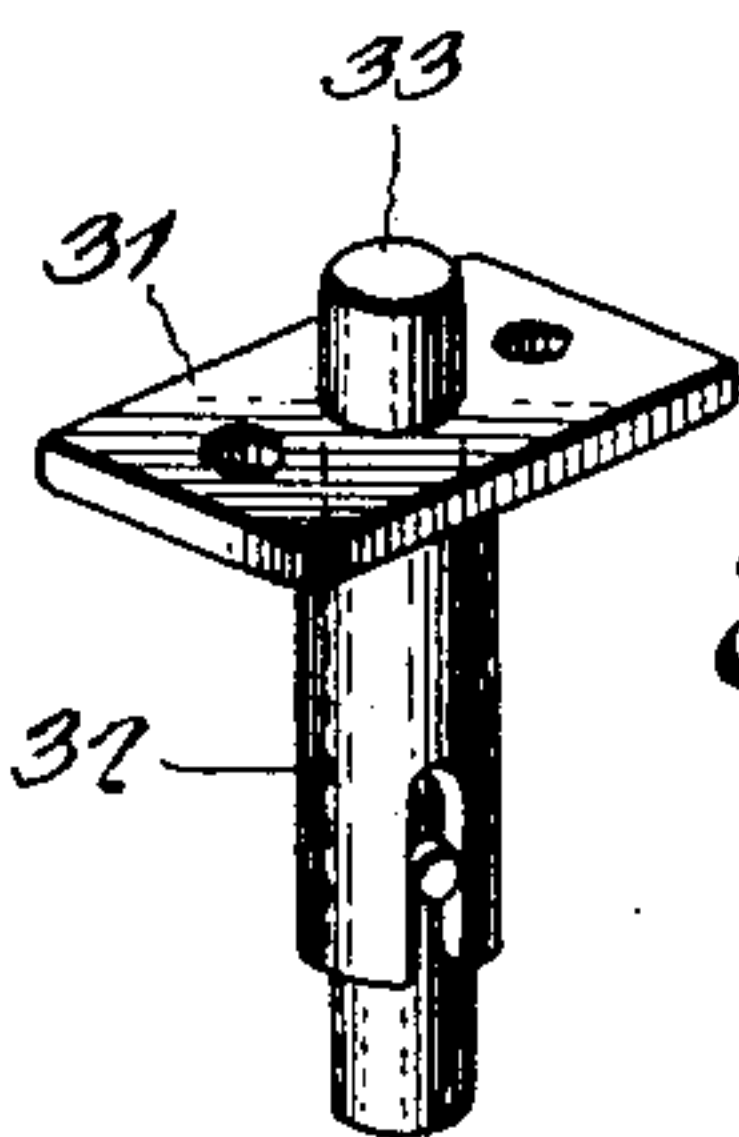


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR PETERS, OF MANITOU, COLORADO.

ELECTRIC-LIGHT APPLIANCE FOR CONTROLLING THE NUMBER OF INCANDESCENT LIGHTS TO BE BURNED ON A CIRCUIT.

SPECIFICATION forming part of Letters Patent No. 639,824, dated December 26, 1899.

Application filed June 26, 1899. Serial No. 721,904. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR PETERS, a citizen of the United States, residing at Manitou, in the county of El Paso and State of Colorado, have invented a new and useful Improvement in Electrical-Light Appliances for Controlling the Number of Incandescent Lights to be Burned on a Circuit, of which the following is a specification.

10 This invention relates to controlling devices, and more particularly to means for controlling the number of lights to be burned on a circuit in a system of incandescent lighting; and it has for its object to provide a simple
15 and efficient device of this nature which may be included in the lighting-circuit and which will operate to cut out the lamps when more than a predetermined number are in use, the
20 apparatus being applicable to any system in which the lamps are connected in multiple.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate like and corresponding parts in the several views, Figure 1 is a perspective view showing the automatic cut-out
25 mechanism removed from its box or casing. Fig. 2 is a side elevation showing one side of the box removed. Fig. 3 is a detail perspective showing the push-rod through the medium of which the apparatus is set. Fig. 4
30 is a detail elevation of the resetting-lever and showing the insulating-plate upon its upper surface.

Referring now to the drawings, 5 represents
35 a base upon which is fixed an electromagnet comprising a core 6, having a spool 7 of insulated wire thereon, a pole-piece 8 being secured to the rear end of the core 6 and bent to lie parallel with the core and to project
40 forwardly and in line with the forward end of the core in order to centralize the magnetic field, as will be readily understood. In connection with this electromagnet there is employed a circuit-breaker comprising a pivoted
45 lever 9, having a block of insulating material 10 upon its upper surface, the outer face of which block is arc-shaped and upon the upper end of which and in electrical connection with the lever 9 is a metallic contact-plate 11.
50 This plate 11 is adapted to be held at the upper limit of its movement by means of a

spring-tongue 12, one end of which is fixed to the base 5 and the other end of which is in slidable contact with the adjacent end of the lever 9. An upright 13 is pivoted to
55 the base 5, as shown in Fig. 1, which upright has a metallic plate 14 fixed upon its upper end and normally projecting over the plate 11 to make contact with the upper surface thereof. When the plates 11 and 14 are in
60 engagement, the plate 11 is held in its lowermost position and against the tendency of the spring-finger 12. The upright 13 is held normally in a position to hold the plate 14 upon
65 and in engagement with the plate 11 by means of a spring-strap 15, the free end of which rests against the upright and the opposite end of which is fixed to a post 16 upon the
70 base 5. The tension of the spring-strap 15 against the upright 13 is regulated by a set-screw 17, carried by a post 18 and adapted for engagement with the spring-strap between
75 the upright 13 and the post 16. It will be understood that the parts 9, 11, 13, 14, 15, and 16 are of brass or other suitable conducting material.

In order to withdraw the plate 14 from engagement with the plate 11, and thus to break
a circuit including these plates, an armature 19 is fixed to the upright 13 in a position to
80 lie in the field of force of the electromagnet when the latter is energized, when the armature will be drawn rearwardly and will draw the plate 14 from the plate 11, when the latter will rise under the influence of the spring-
85 finger 12.

The tendency of the spring-strap 15 is to move the upright 13 in a direction away from the electromagnet, and thus if the rear end of the lever 9 be raised to a sufficient extent
90 the plate 11 will pass below the plane of the plate 14, at which time the insulating-block 10 will ride downwardly over the end of the plate 14 and the upright 13 will move outwardly, when if the lever 9 be released the
95 spring 12 will move the plate 11 against the plate 14 and hold it in position.

In order to move the lever 9 to reset the apparatus, a metallic lever 20 is pivoted between ears 21 upon a plate 22, secured to the
100 base 5, and one end of this lever lies beneath the lever 9 and has an insulating-plate 23 at

the upper surface, which is adapted to contact with the lever 9 when the lever 20 is operated. Upon the under side of the lever 20 and beneath the lever 9 is a downward extension 24 of the lever, which normally lies against and makes contact with a metallic plate 25 upon the base 5 and in electrical connection with a binding-post 26. The opposite end of the lever 20 extends beyond the ears 21, and beneath this end is disposed the extremity of a spring-finger 27, which exerts an upward pressure upon the lever to depress the extension 24 and hold it against the plate 25. This spring-finger is in electrical connection with one terminal of the winding of the electromagnet, the opposite terminal being in electrical connection with the post 16. A binding-post 28 is electrically connected with the base of the spring-finger 12.

From the above description it will be seen that if the apparatus be included in a circuit to be governed by attaching the electrical conductors to the binding-posts 26 and 28 there will be a flow of electricity through the finger 12 to the lever 9, thence through plate 11 to plate 14 and upright 13, to strap 15, to post 16, to electromagnet, to spring-finger 27, to lever 20, to plate 25, and post 26. If then a sufficient number of lamps or other translating devices be placed in circuit to increase the flow of current beyond a predetermined point, the electromagnet will be energized to an extent sufficient to move the armature 19, and thereby draw the plate 14 from the plate 11 and break the circuit, the block 10 immediately moving upwardly, so that when the plate 14 is returned because of the deenergization of the electromagnet the end of the plate 14 will rest against the insulating-block and there will be no flow of current.

In order to permit depression of the lever 20 to reset the apparatus and at the same time to preclude a manipulation of the apparatus to prevent its action, the mechanism is placed within a box or casing 30, to the inner surface of the cover of which is attached a plate 31, carrying a cylindrical casing 32, in which is disposed a reciprocatory plunger or push-rod 33, which is normally held with its upper end flush with the outer surface of the cover by means of a suitable spring within the cylindrical casing. The lower end of the plunger is disposed directly over the free end of the lever 20, and thus if the plunger be pressed it will engage the lever 20 and move it to set the apparatus.

The lever 20, which is termed a "resetting-lever," is normally in circuit when the portion 24 thereof is resting upon the plate 25. When, however, the rear end of the lever is depressed to reset the mechanism, the portion 24 is raised from the plate 25, and thus the circuit is broken at this point. Therefore there can be no flow of current between the parts 11 and 14 when they are initially engaged, and the circuit through the apparatus will not be reestablished until the lever

20 has returned to engage with the plate 25. By this means sparking and fusing between the parts 11 and 14 is prevented during their engagement, and excessive wear of these portions is thereby prevented.

It will of course be understood that the conductive parts of the structure may be of brass or other suitable conducting material, while the base 5 and other insulating portions may be of vulcanite or similar substance and that various modifications may be made without departing from the spirit of the invention.

What I claim, and desire to secure by Letters Patent, is—

1. An automatic cut-out, comprising an electromagnet, an armature for the magnet, a contact-plate carried by the armature, a lever having a contact-plate adapted for engagement with the first contact-plate, means for exerting a pressure upon the lever to move the second contact-plate and hold it against the first contact-plate, and connections between one terminal of the winding of the magnet and one of the plates, the second terminal of the winding of the magnet and the second plate being adapted for connection with the wires of the circuit to be governed, whereby the plates and winding may conduct current in series when the plates are in contact.

2. The combination with an electromagnet and its armature, of a contact-plate connected with the armature and movable therewith, a pivoted lever carrying a contact-plate adapted to move into the path of movement of the contact-plate upon the armature to be engaged and held thereby, means connected with the lever for moving its plate when released by the plate of the armature, connections between one terminal of the winding of the electromagnet and the armature contact-plate, electrical connections with the opposite terminal of the winding of the electromagnet, and electrical connections with the contact-plate carried by the lever, whereby the electromagnet may be energized to attract its armature and draw the armature contact-plate from engagement with the contact-plate upon the lever.

3. The combination, in an incandescent-light control, of a connecting and disconnecting switch consisting of the lever pivoted to swing on a center post, and having secured to such lever the post and insulating fiber, with the spring adapted to lift one end of said lever whereby the post is brought into contact with the conductor-plate, the plate, and push resting on said lever, all substantially as described and for the purpose set forth.

4. The combination with an electromagnet and an armature, of variable means for holding the armature yieldably against the pull of the electromagnet, a contact-plate connected with the armature, a pivoted lever having a contact-plate adapted to engage the first-named plate, means for holding the lever yieldably at one limit of its motion, the first-named plate projecting into the path of move-

ment of the second plate to engage and hold
the latter, electrical connections between the
first-named contact-plate and the electromag-
net, at one terminal of the winding of the lat-
5 ter, electrical connections with the opposite
terminal of the magnet, electrical connections
with the lever, a lever adapted for engage-
ment with the first-named lever to move it

against the tendency of the first-named mov-
ing means to lower the second contact-plate 10
below the first contact-plate, and means for
returning the second lever.

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Witnesses:

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