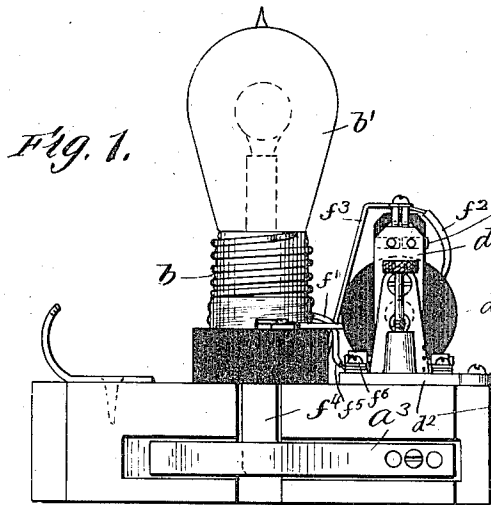
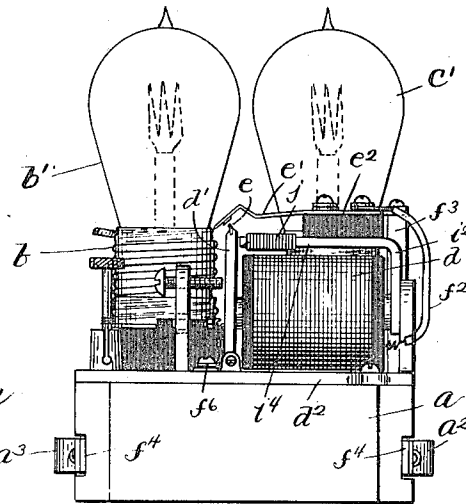
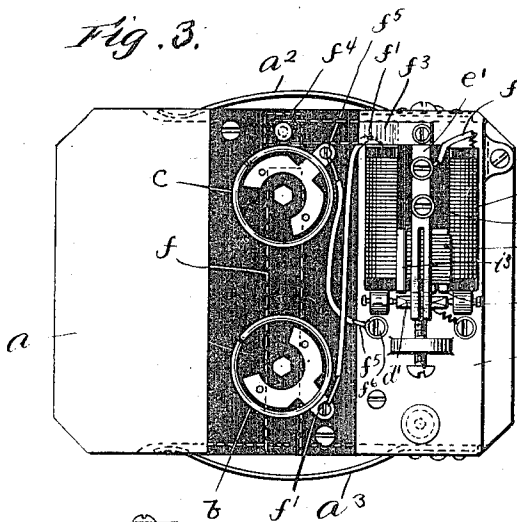
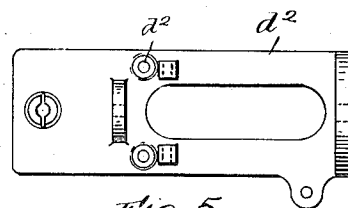
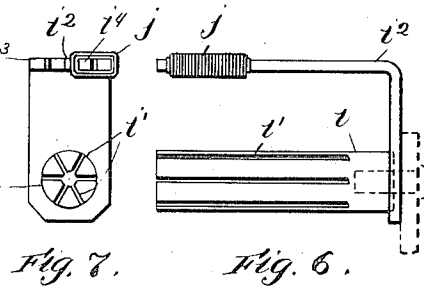
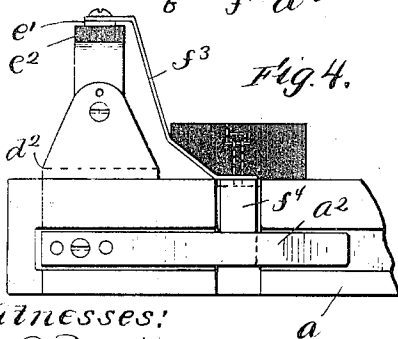
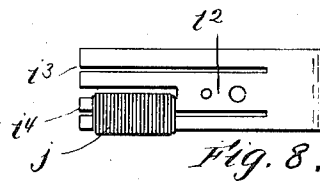


A. A. ZIEGLER.
RAILWAY SIGNAL LANTERN.
APPLICATION FILED JUNE 6, 1912.

1,173,239.

Patented Feb. 29, 1916.



Witnesses:
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N. M. Donald

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UNITED STATES PATENT OFFICE.

ALFRED A. ZIEGLER, OF BOSTON, MASSACHUSETTS.

RAILWAY SIGNAL-LANTERN.

1,173,239.

Specification of Letters Patent.

Patented Feb. 29, 1916.

Application filed June 6, 1912. Serial No. 701,978.

To all whom it may concern:

Be it known that I, ALFRED A. ZIEGLER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Railway Signal-Lanterns, of which the following is a specification.

This invention relates to automatic circuit-controllers for electric-lamps, wherein two lamps are employed, one of which will be included in the circuit when the other burns out. The invention is especially applicable for use in railway signal-lanterns employing incandescent electric-lamps, such for instance as represented in a divisional application Serial No. 740,773, as in such case the provision of a second lamp is of great importance. In some railway-signal systems a direct current, and in others an alternating current is employed, and one of the objects of the invention is to construct and arrange the automatic circuit-controller so that it may be operated by either current.

Another object of the invention is the provision of a switch, an electro-magnet for operating it, circuit-wires, and connections, all of simple form and arranged in a simple manner for effective operation.

Figure 1 is a side elevation of a base-plate and lamps thereon and automatic circuit-controller for the lamps. Fig. 2 is a rear elevation of the parts shown in Fig. 1. Fig. 3 is a plan view of the parts shown in Fig. 1. Fig. 4 is a detail of a portion of the base-plate showing one of the electric connections thereon. Fig. 5 is a detail of the supporting-frame for the automatic switch. Figs. 6, 7 and 8 are details of the core and pole-piece of the electro-magnet of the automatic-switch.

a represents the base-plate for the lamps having arranged thereon two lamp-sockets *b*, *c*, to receive incandescent electric-lamps *b'* and *c'*.

d represents an electro-magnet arranged on the base-plate, and *d'* its armature which controls a switch and constitutes the automatic means for turning on the lamp *c'* in case the lamp *b'* fails. One member of the switch, as *e*, is borne by the armature, and the other member, as *e'*, is arranged above the member *e* and is secured to a block *e²* of insulating material.

The member *e*, as here shown, consists of a short strip of conducting material fitted into a slot formed in the end of the armature,

or otherwise secured thereto. The member *e'*, as here shown, consists of a resilient pen, attached by screws or otherwise, to the block *e²*, the extremity of said pen extending over the member *e*, and bent or formed with an inclined portion adapted to be engaged by said member *e* when the armature is retracted. To electrically connect the lamps and automatic-switch, the means shown particularly in Fig. 3 may be employed, wherein *f* represents a conducting-plate extended part way across and secured to the base-plate *a*, to which both lamps *b'* and *c'* are connected; *f'* a circuit-wire leading from the lamp-socket *b* to one side of the electro-magnet *d*; *f²* a circuit-wire leading from the other side of said electro-magnet *d* to the switch-member *e'*; *f³* a bent strip or plate leading from said switch-member *e'* to a plate *f⁴* arranged on the base-plate; *f⁵* a circuit-wire leading from the lamp-socket *c* to a binding-screw *f⁶* on the supporting-plate *d²* of the electro-magnet *d* and its pivoted armature *d'*, whereby the current is conducted to the armature and thence to the switch-member *e*. When the circuit is closed by turning on the lamp *b'* the current flows through the lamp *b'* and electro-magnet *d*, causing the former to glow and the latter to attract its armature *d'*. When the armature is attracted the switch *e, e'*, is opened and the lamp *c* is disconnected from the circuit. In case the lamp *b'* burns out the circuit of the electro-magnet *d* is opened and its armature *d'* is permitted to move away from the electro-magnet, whereupon the switch *e, e'*, closes the circuit of the lamp *c'* causing said lamp to glow.

For direct current work the electro-magnet *d* may be of any usual or suitable construction, but for alternating current work an especially constructed electro-magnet is employed, whereby the armature is held from repeatedly vibrating or chattering. This form of electro-magnet is shown particularly in Figs. 3, 6, 7 and 8.

The magnet-coil is placed on a core *i*, which is slitted longitudinally, as at *i'*, to provide for a quick discharge, and a pole-piece is attached at one end of said core consisting of a flat bar *i²*, bent at right angles or thereabout, to extend forward so as to terminate in the plane of the opposite end of the core. The forward end of said pole-piece is slotted longitudinally to form two arms *i³* and *i⁴*, and each arm is slotted lon-

gitudinally from its end inward for a considerable distance, to provide for a quick discharge. One of said arms, as 2^4 , for instance, has arranged on it a coil 2^5 of fine magnet-wire. This coil is isolated and acts to cause the armature to lag sufficiently to prevent its repeated retraction when the electro-magnet is placed under the influence of an alternating current, yet permits said armature to be influenced by a direct current although under the influence of either current said armature will be permitted to move away from the electro-magnet when the circuit is opened.

The railway signal lantern herein referred to forms the subject-matter of my divisional application #740,773, filed January 8, 1913.

I claim:—

1. In an automatic circuit controller for electric lamps, a base plate, two incandescent electric lamps arranged thereon, an electro-magnet supported on the base plate, an armature for the electro-magnet, a switch including a spring element and an element carried by the armature, a circuit for one lamp including a conductor leading from the lamp to the electro-magnet, a conductor leading from the electro-magnet to the

spring element of the switch, and a conductor leading from the spring element to a terminal, a circuit for the other lamp including a conductor leading from the lamp to the armature, and a common conducting plate electrically connecting both lamps and forming a terminal therefor.

2. An automatic circuit controller for electric lamps, a base plate, two incandescent electric lamps arranged thereon, an electro-magnet, an armature therefor forming a switch element, an independent switch element, the independent switch element forming a portion of a circuit conductor for one of the lamps beyond the electro-magnet, said electro-magnet being in series circuit with the other element and with the independent switch element, the position of the armature controlling the use of the independent switch element as a circuit conductor.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALFRED A. ZIEGLER.

Witnesses:

B. J. NOYES,

H. B. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."