

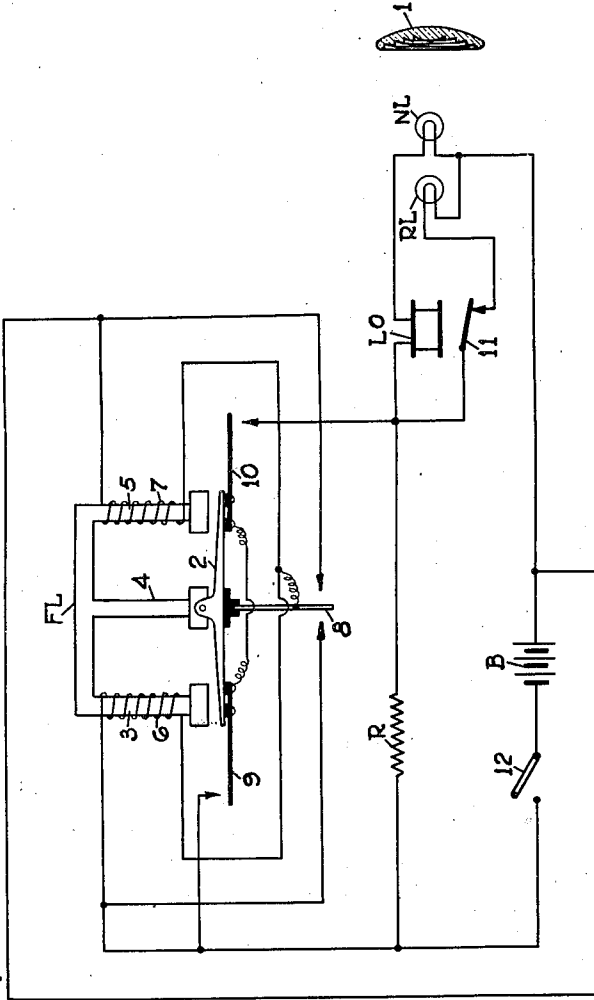
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FLASHING LIGHT SIGNAL

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FLASHING LIGHT SIGNAL

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2 Claims. (Cl. 177—329)

This invention relates to flashing light signals, and more particularly to means for cutting in a reserve lamp for signals of this type upon failure of the lamp normally in use.

In certain types of signals giving intermittent or flashing indications, such as are used for example for lighthouse beacons, highway crossing signals on railroads, and the like, it is sometimes desirable to provide a reserve lamp and to cut in this lamp automatically when the light normally in use burns out.

In accordance with this invention, it is proposed to employ a light-out relay which is energized in series with the filament in the lamp normally in use, and which when de-energized cuts in a reserve lamp, and to employ means for maintaining said relay energized at the time the lamp is to be extinguished to give the flashing indication.

The accompanying drawing illustrates in a diagrammatic and conventional manner one specific embodiment of the invention.

The invention contemplates a suitable light projecting unit, comprising lenses, reflectors and the like, to provide the desired light beam when the lamp of the signal is lighted. This light projecting unit may take various forms, and is indicated conventionally as a lens 1. It is also contemplated that this light projecting unit will be provided with two incandescent lamps of the usual concentrated filament type, one of these lamps NL normally in use being preferably disposed at the focal point of the light projecting unit, and the other reserve lamp RL as near to such focal point as space will permit. The reserve lamp RL may have a greater candle power to compensate for being out of focus, or both lamps may be disposed symmetrically with respect to the focal point.

The lighting of the signal is assumed to be controlled by a suitable flasher relay FL or equivalent means. One type of such flasher relay, such as disclosed for example, in the Patent 1,969,065, granted 8/7/34 to O. S. Field, is illustrated diagrammatically and comprises an armature 2 pivoted on a middle core 4 and adapted to be rocked or tilted in opposite directions by the energization of coils 6 and 7 on the outside cores 3 and 5. The armature 2 carries an insulated finger 8 which engages contacts to short-circuit each coil 6 and 7 in turn as the armature is rocked by that coil. Two fingers 9 and 10 carried by the armature engage contacts when the armature is tilted in one direction to close the circuit for lighting the lamps.

A light-out relay LO is connected in series with the filament of the normal lamp NL, and has an armature finger 11 closing a back contact to include the reserve lamp RL in the lighting circuit.

A resistance R is connected across the contacts 9 and 10 of the flasher relay FL; and the operating characteristics of the relay LO and the value of this resistance R are so selected or adjusted that, when this resistance is included in the lighting circuit, sufficient current flows through the relay LO to maintain its armature attracted, but this current is insufficient to heat the filament to give off any substantial amount of light.

The parts are illustrated in the inactive condition. When the switch 12 is closed, current may flow from the battery B or other suitable source, through the resistance R, relay LO and filament of the normal lamp NL. Current also flows through the coils 6 and 7 of the flasher relay FL in series over a circuit readily traced on the drawing. The magnetic circuits for these coils will not be exactly balanced and the pull of one will predominate, rocking the armature 2 in one direction. Upon such movement of the armature, the coil 6 or 7 causing such movement, as the case may be, is short-circuited by the contact finger 8, thereby permitting the other coil to rock the armature in the opposite direction. The coils 6 and 7 are thus alternately energized to rock the armature back and forth to intermittently close the contacts 9—10.

Each time the contacts 9—10 of flasher relay FL close the resistance R is shunted or short-circuited and sufficient current flows through the normal lamp NL to light it and display the desired indication. When these contacts 9—10 open, sufficient current flows through the resistance R to maintain the armature of relay LO attracted, although the lamp NL is not effectively lighted and failing to give enough light for an indication, it can be considered to be effectively extinguished.

So long as the filament of the normal lamp NL is intact, it is intermittently lighted by the closing of the contacts 9—10 of the flasher relay FL, and the light-out relay LO is maintained energized sufficiently to hold open its back contact 11; but if this filament should burn out, the relay LO is de-energized, and includes the reserve lamp RL in the lighting circuit through the back contact 11 of said relay LO.

The resistance R not only serves to provide current for maintaining the relay energized while

the lamp NL is effectively extinguished, but also minimizes the arcing and sparking at the contacts 9-10 of the flasher relay FL.

The structural organization shown and described is merely illustrative. Any suitable type of flashing means may be employed, operated by direct current or alternating current; and various modifications, adaptations, and additions may be made to the specific embodiment of the invention disclosed, without departing from the invention.

What I claim is:—

1. A flashing light signal comprising, normal operation and reserve lamps; a light-out relay; a circuit including in series a source of current, a resistance, the relay winding and the filament of the normal lamp, the resistance of said circuit being too great to effectively energize the lamp; means operating contacts for intermittently short-circuiting said resistance to cause the lamp to be effectively energized, the winding of said relay being maintained energized to attract its armature so long as the filament of the normal lamp is intact; and a circuit controlled by said relay for connecting the reserve lamp in multiple with said relay and normal lamp when the relay winding is deenergized.

2. In a flashing light signal, in combination, a normal operation lamp, a reserve lamp, a single wound light-out relay, a separate resistance, a source of electrical energy, a control switch, a circuit including in series, the control switch, the source, the normal lamp, the entire winding of the relay, and the resistance, the circuit being of such a resistance that the relay armature is held up but the normal lamp is not effectively energized, electro-magnetically operated contact means energized through said control switch for automatically and intermittently making and breaking a shunt around the separate resistance whereby the normal lamp is effectively energized when the resistance is shunted out of the circuit, the resistance being connected directly across the said contact means to minimize arcing at said contact means, the reserve lamp being connected in multiple with the normal lamp and the relay winding through a back contact of the relay, whereby to replace the normal lamp upon failure of the normal lamp, and whereby, following a failure of the normal lamp, the manual replacement of the normal lamp by a new lamp, automatically restores the system to normal operation.

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