

UNITED STATES PATENT OFFICE

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COLOR SCREEN CONTROL

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This invention pertains to spot lights of the kind used in theatres, and is devoted particularly to the apparatus and method for controlling color screens used in connection with such lights. The invention is an improvement on the invention described in my Patent No. 1,679,361, issued August 7, 1928, which discloses electro-magnetic mechanism by which an operator at a distance may manipulate the screens.

Broadly, the control mechanism comprises a solenoid, which when energized throws a screen to operative position and holds it there against the resistance of a spring, until the magnet is deenergized, whereupon the spring will return the screen to normal inoperative position.

In order to prevent too rapid movements of the screens and undue slamming of the screens against their stops, it has been necessary to restrict the power of the solenoids and to use an arrangement of balanced springs, which on the one hand helped the magnet to start the screen in motion, and on the other hand helped to retard the screen during the final stage of its travel. Such arrangements work well when the springs are properly adjusted and when the torque of the solenoid is always the same. However, it often happens, due to conditions on the supply line, dirt on contacts, etc., that the magnet does not act normally and trouble results. If the magnet is so designed as to have ample power when the voltage is low it will have so much power when the voltage is normal that violent action of the screws results.

The object of the present invention is to provide a magnetic control apparatus which will have ample power under any line conditions, which will not slam the screens under any conditions, and which does not require the use of carefully adjusted springs.

Further and other objects and advantages will appear from the specification and drawings which by way of illustration show what is now considered to be the preferred form of the invention.

In the drawings,
Fig. 1 is a side view of the spot light with

the electromagnetic control mechanism assembled thereon.

Fig. 2 is a cross-section on the line 2—2 of Fig. 1.

Fig. 3 is a cross section on the line 3—3 of Fig. 1.

Fig. 4 is a cross section on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail view of the return spring control, on the line 5—5 of Fig. 4.

Fig. 6 is a circuit diagram.

In the drawings 10 is the spot light, to the side of which is bolted a box-like housing or frame 12 which supports the entire screen control mechanism. Four screens 14 are shown, each being secured by a clamp 16 to one of the concentric shafts 18, 20, 22, 24, which are supported for rotation in brackets 26 on the upper part of frame 12. Each screen is balanced about its axis by a weight 28 on the opposite side of its shaft.

Mounted on frame 12 are four solenoids 30, the plunger 32 of each solenoid being connected by a link 34 to a crank arm 36 fast on one of the shafts 18, 20, 22, 24, in such manner that when any solenoid 30 is energized its plunger 32 is drawn down, one shaft is rotated, and the screen 14 attached to the other end of that shaft is moved from its inoperative position as shown in Figs. 2 and 3 to its operative position in front of the spot light, and is held there so long as the magnet is energized. Padded rods 38 and 40 act as stops for the screens while in operative and inoperative position, respectively. When the magnet is deenergized the screen is returned to normal position by its spring 42. The spring arrangement will be understood from Fig. 5. One end of the torsion spring is attached by screw 44 to a bracket 26, while the free end of the spring is attached to a collar 46 fast on shaft 18. The spring tends to rotate shaft 18, and its attached screen 14, always toward inoperative position of the screen.

Collar 46 is of non-conducting material, and carries a contact ring 50, in two semi-circular sections, as shown in Fig. 6, the two sections being entirely out of electric contact with each other. With the above in