Aug. 7, 1928. 1,679,361

J. H. KLIEGL

SPOTLIGHT

Filed Dec. 14, 1926

Fig. 1.

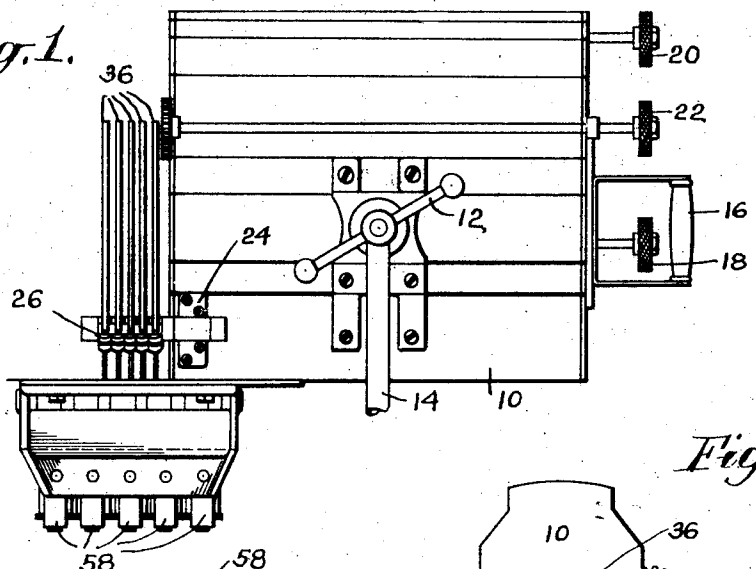


Fig. 2.

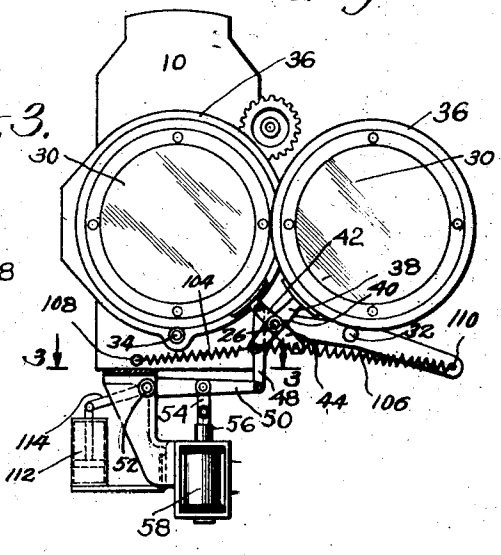


Fig. 3.

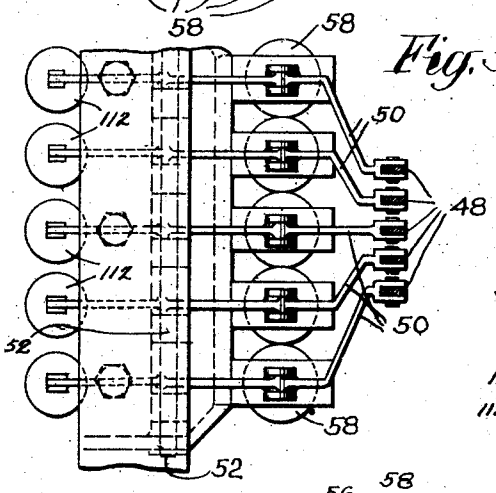
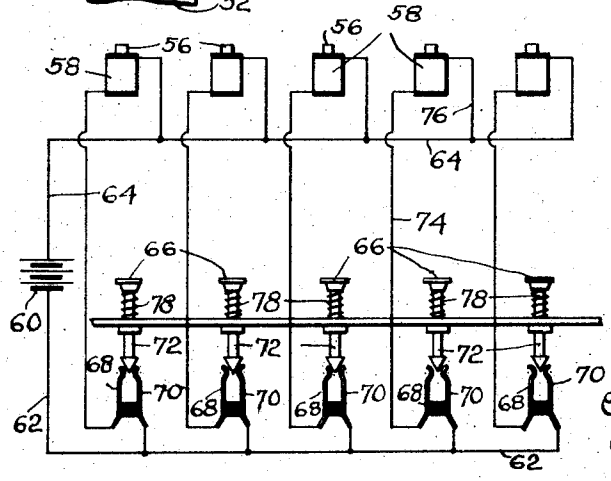


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SPOTLIGHT.

Application filed December 14, 1926. Serial No. 154,701.

This invention pertains to spot lights of the type used in theatres.

In the use of such devices it is customary to place transparent screens of various colors before the spot light in order to produce the desired color effects on the stage.

An object of the present invention is to provide such mechanism for controlling the color screens that the screens may be safely manipulated from a distant point so that no operator will be necessary at the light.

Another object is to provide improved electromagnetic devices for manipulating the color screens.

Another object is to provide mechanism whereby the screens may be manipulated with safety against breakage.

Another object is to provide mechanism for reducing the amount of current required by the electromagnetic devices.

Further and other objects and advantages will be hereinafter set forth in the accompanying specification and claims, and shown in the drawings, which by way of illustration show what is now considered to be the preferred embodiment of the invention.

Fig. 1 shows a side view of a typical spot light with my invention in place thereon. The front of the light is at the left.

Fig. 2 is a front view of the light with one color screen in front of the lens and the unused screens in inoperative position. The cushioning and current-saving springs are also shown.

Fig. 3 is an enlarged view on line 3—3 of Fig. 2.

Fig. 4 is a wiring diagram.

The spot light casing is designated 10, and it is locked in position to clamp 12 on supporting standard 14.

A handle 16 is provided by which the operator moves the light with reference to standard 14. Hand wheel 18 is used to control the electric light within casing 10, while hand wheels 20 and 22 are provided to control the iris shutter and curtain shutters respectively, both of which are contained within the front end of casing 10.

Secured to the side of casing 10 is a bracket 24 in which is fast a shaft 26 projecting forwardly beyond the front of the casing (Figs. 1 and 2).

Mounted on shaft 26 are a number of color screens 30. Five are shown, but any number may be used. Each screen 30 is rotatable on shaft 26 from its inoperative position resting on stop 32 to its operative position on stop 34, or vice versa.

Each transparent color screen 30 is supported by a circular frame 36, to which is fast a supporting arm 38 (Fig. 2). Arm 38 has a hub-like portion 40, and projecting from hub 40 at substantially right angles with arm 38 are arms 42 and 44.

Depending from the free end of arm 42 is a link 48, the lower end of which is pivotally attached to the free end of a lever 50, the other end of which is pivotally mounted on a shaft 52, fast in the machine.

At a mid-position on each lever 50 is attached a depending link 54, to the lower end of which is attached the plunger 56 of the solenoid 58. When solenoid 58 is energized plunger 56, lever 50, and link 48 are drawn down to rock arm 42 and screen 30 from its inoperative position on stop 32 to its operative position on stop 34.

The screen may be retained in operative position in any one of a variety of ways, but I prefer to have the magnet itself act not only to set the screen but also to hold it in operative position.

So long as a magnet is energized its corresponding screen is held in operative position, and the instant the magnet is deenergized the screen will be drawn back to its inoperative position as will appear.

There is one solenoid operatively connected to each screen. The screens are spaced closely together on shaft 26 and as they are comparatively thin as compared to the magnets, the levers 50 are bent or offset as shown in Fig. 3 in order to permit a convenient arrangement of magnets and screens. It will be understood that each link 48 in Fig. 3 is aligned with one of the screens.

The electric circuits are shown diagrammatically in Fig. 4, in which 60 is the source of current, from which extend the two lines 62 and 64. There is a button switch 66 corresponding to each magnet 58. When a button 66 is pushed in, a circuit is completed between a pair of switch blades 68 and 70 and the correlated magnet is energized. For instance, if the second switch from the right were pushed in current would flow as follows: from source 60, through wire 62, switch blade 70, switch stem 72, blade 68, wire 74, magnet 58, wire 76, and wire 64 back to source. When switch button 66 is with-

drawn contact is broken between stem 72 and blades 68–70, and the magnet is deenergized, whereupon the screen 30 controlled by that magnet is restored to normal position by its spring 46.

Coil springs 78 around switch stem 72 serve to keep the switches from inadvertently contacting with the switch blades 68 and 70.

It is evident that one or more or all of the color screens may be in their operative positions at the same time if the operator so desires. The usual procedure, however, is to use the screens one at a time. To change from one color to another the operator simply pulls out the switch controlling the screen in use and pushes in the switch controlling the screen desired.

Stops 32 and 34 are cushioned to prevent injury to the mechanism due to the rapid action of the parts, or I provide a dash pot 112 connected to the free end 114 of each lever 50, or an arrangement such as shown in Fig. 2 is provided. Attached to the lower end of each arm 44 are two coil springs 104 and 106. These springs extend in opposite directions, their outer ends being attached to the frame of the machine at 108 and 110 respectively. Springs 104 and 106 are so adjusted as to tension that spring 104 normally overpowers spring 106 so as to hold screen 30 in its inoperative position at the right.

When a magnet 58 is energized, spring 104 is overpowered by the magnet assisted by spring 106, with the result that the screen controlled by that magnet is drawn over and held in the operative position against stop 34. When the magnet is deenergized, spring 104 draws the screen back to its inoperative position against stop 32. While the screen is approaching stop 32 the tension in spring 106 steadily increases, reaching a maximum when the screen rests on the stop, thereby acting to cushion the screen as it descends against the stop. In like manner spring 104 acts as a cushion when the screen is moved to its other position.

Due to the fact that spring 106 acts to assist the magnet in starting the screen to its operative position, less current is required for the operation of the screens. Thus the arrangement just described serves the double purpose of cushioning the screens, and of decreasing the current consumption.

It is to be understood that the invention is not limited to the construction herein specifically illustrated and described but can be embodied in other forms without departure from its spirit as expressed by the claims.

I claim—

1. In combination with a spot light, a color screen, having operative and non-operative positions, a magnet, means connecting said magnet to said screen whereby upon energization of said magnet said screen is moved to operative position, a resilient device to return said screen to inoperative position when said magnet is deenergized, and means for assisting said magnet in starting the movement of the screen from its inoperative to its operative position.

2. In combination with a spot light, a color screen, having operative and non-operative positions, a magnet, means connecting said magnet to said screen whereby upon energization of said magnet said screen is moved to operative position, a resilient device to return said screen to inoperative position when said magnet is deenergized, and supplemental means for assisting said magnet in starting the movement of the screen from its inoperative to its operative position, said means also serving to cushion said screen when it returns to its inoperative position.

In testimony whereof I hereto affix my signature.

JOHN H. KLIEGL.