

Dec. 24, 1929.

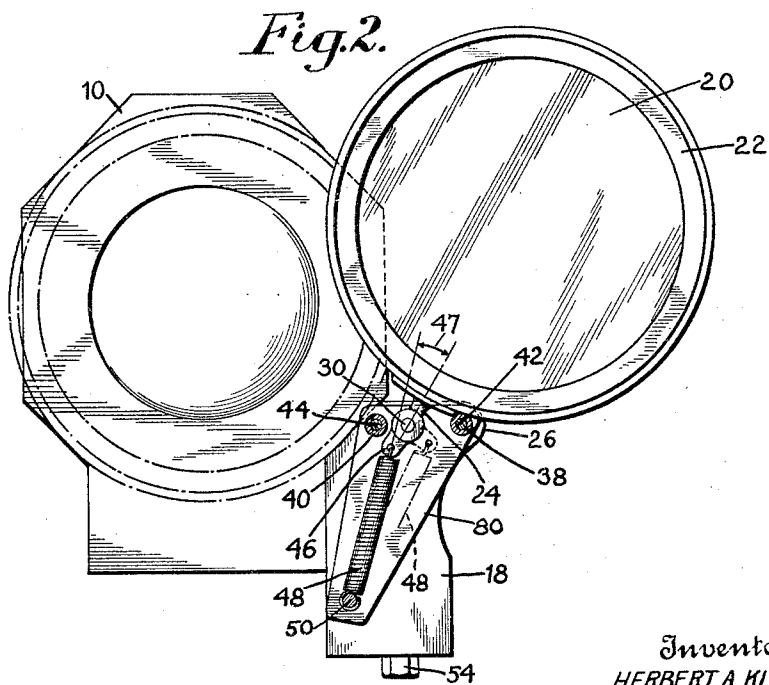
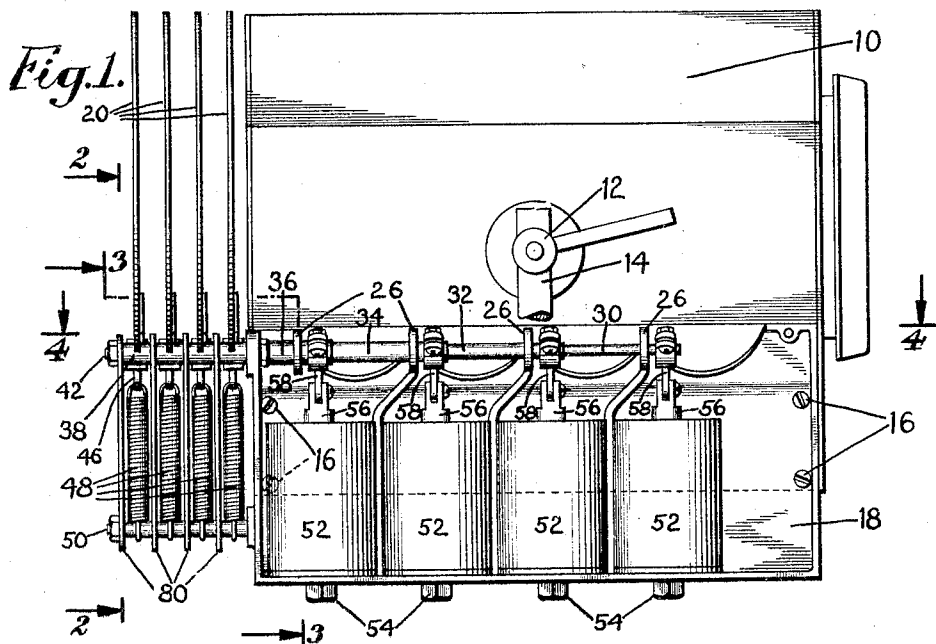
H. A. KLIEGL

1,740,463

SPOTLIGHT

Filed Jan. 16, 1928

2 Sheets-Sheet 1



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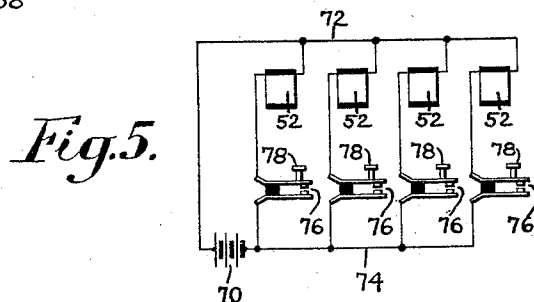
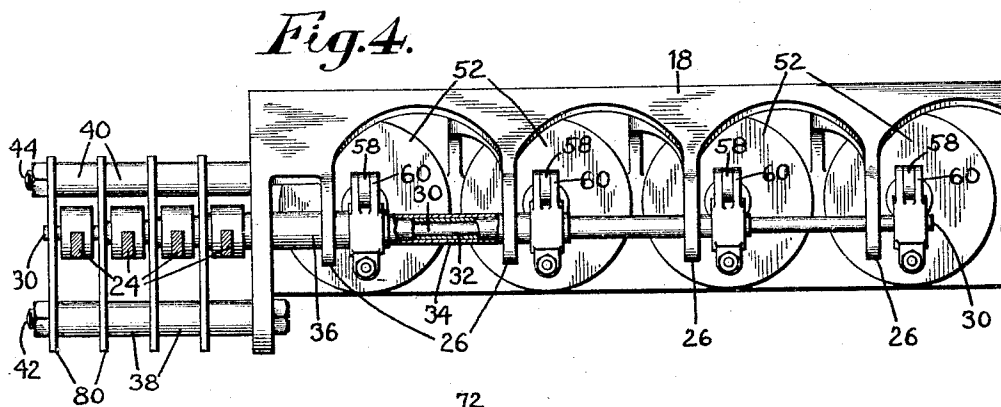
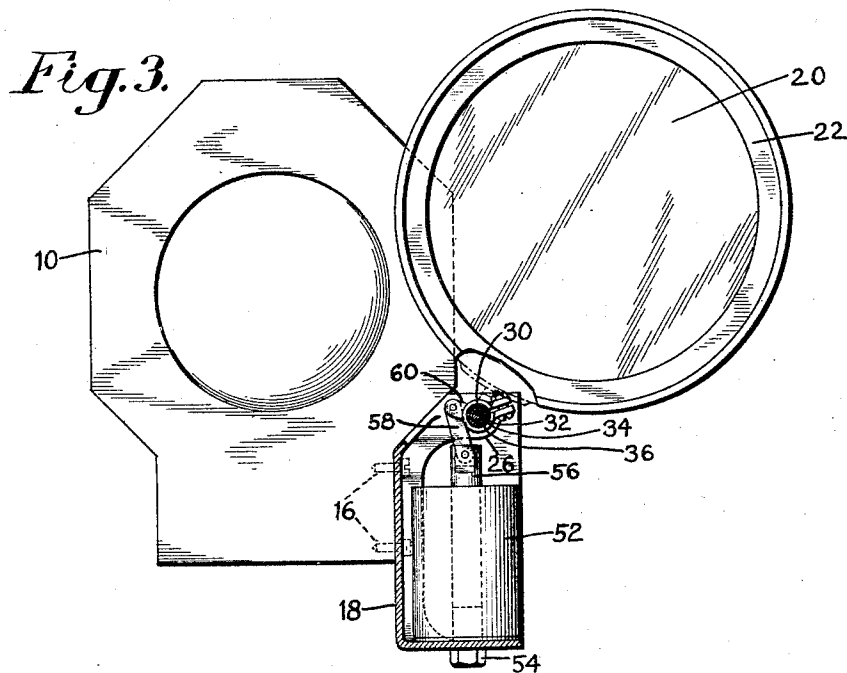
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UNITED STATES PATENT OFFICE

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SPOTLIGHT

Application filed January 16, 1928. Serial No. 246,932.

This invention pertains to spot lights of the type used in theatres, and is an improvement on the invention disclosed in Patent 1,679,361, issued August 7, 1928, to John H. Kiegl.

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

The above application discloses electromagnetic mechanism for controlling the color screens to permit their manipulation by an operator at a point removed from the light itself.

The particular object of the present invention is to provide an improved arrangement of such apparatus, so designed that the electromagnetic control devices may be gathered together as a unit suitable for easy attachment to spot lights of regular type, thereby greatly simplifying manufacturing operations and reducing cost of manufacture.

Further and other objects and advantages will be hereinafter set forth in the accompanying specification and claim, 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 is 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, on the line 2—2 of Fig. 1.

Fig. 3 is a view, partly in section, on the line 3—3 of Fig. 1.

Fig. 4 is a view of the electromagnetic assembly, on the line 4—4 of Fig. 1.

Fig. 5 is a wiring diagram.

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

Secured by screws 16 to the side of casing 10 is a box-like structure 18, within and upon which is assembled the entire electromagnetic control mechanism.

In the present embodiment of the invention four color screens 20 are shown, each mounted in a ring-like frame 22. Each frame 22 is provided with an arm 24 fast to one of four concentric shafts supported for rotation in brackets 26 at the top of frame 18

and integral therewith. The shafts are hollow except the center one. From the center outwardly the shafts are designated 30, 32, 34 and 36 (Figs. 1 and 4). By rotation of any shaft the screen frame 22 fast to that particular shaft may be moved from its normal position on stop 38 (Fig. 2) to the dotted line position on stop 40, or vice versa. Stops 38 and 40 are preferably of resilient material, and are mounted on rods 42 and 44 projecting forwardly from frame 18.

Each arm 24 is extended below the shaft to which it is attached, to form a finger 46, to which is connected one end of a helical spring 48 (Fig. 2), the other end of the spring being connected to a rod 50 which projects forwardly from frame 18 below, and parallel to, rods 42 and 44. Whenever a screen is in its inoperative position at the right (Fig. 2), its spring 48 is in the full line position.

Rod 50 and finger 46 are so located relatively to each other that, when the screen is at the right, in contact with stop 38, spring 48 is operating with a slight leverage 47 to urge the screen toward the left about its supporting shaft 30, 32, 34 or 36. This leverage is so adjusted as to enable spring 48 to hold the screen in substantially the normal position shown at the right in Fig. 2, even though stop 38 be removed. When the screen is moved to that position stop 38 serves the useful purpose of bringing the screen to rest without the oscillation which would take place if a stop or equivalent device were not provided. Particular utility of this arrangement will be pointed out later in the specification.

When the screen is to be moved to its operative position at the left, the spring and finger 46 assume the dotted line positions, in which position the spring is under sufficient tension to return the screen from operative to non-operative position whenever the screen is no longer forcibly held in operative position, as will be more fully explained.

Arranged in a row within frame 18 and directly underneath the nest of shafts 30, 32, 34 and 36, are four solenoids 52, each fastened to the floor of frame 18 by a screw 54. Each solenoid is provided with a vertically movable plunger 56, the upper end of which is opera-

bly connected by a link 58 to a crank arm 60, each crank arm being fast to one of the shafts 30, 32, 34 or 36 as shown in Figs. 1, 3 and 4. Reference to Fig. 3 will show that if a plunger 56 be drawn down by energization of solenoid 52, crank 60, and the shaft to which the crank is attached, will be rotated counter-clockwise and the particular screen attached to the other end of that shaft will be moved to its operative position at the left, against stop 40.

Due to the fact that, as previously explained, the screen while in normal position is held in equilibrium by spring 48, the solenoid is enabled to start the screen in motion from normal position with very slight effort, thereby permitting a great saving in the amount of current required for the operation of the device, as compared to the amount necessary if the weight of the screen were not balanced by the tension of spring 48.

When a solenoid is energized to move a screen to its operative position at the left, as the screen approaches operative position the tension of the spring gradually increases with the result that the screen assumes its operative position very gently and is then retained in position by the solenoid, against the resistance of the spring, until the solenoid is deenergized.

The circuit diagram is shown in Fig. 5, in which 70 is the source of current, 72 is a common wire leading to all solenoids 52, 74 is a common wire leading to all switches 76. When the operator depresses any switch key 78 a circuit is closed through a solenoid 52 and the screen controlled by that solenoid is moved to operative position. When key 78 is released the screen is drawn back to normal position by spring 48, which was placed under tension, as above described, when the screen was moved to the left (Fig. 2). It will be evident that one or more screens may be in operative position at the same time, at the will of the operator, depending on how many keys 78 he holds down simultaneously.

Plates 80 serve as spacers between the screens and also add stiffness to the screen-supporting portion of the structure.

It will be noted that the complete electromagnetic mechanism is supported by the box-like frame 18 to form a unit, and that therefore a hand-operated spot light may be converted into an electrically controlled machine almost instantly by simply inserting the screws 16.

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

I claim—

A color control apparatus for a spot light, comprising in combination, a frame, a plurality of color screens movably mounted on

said frame, a plurality of electromagnetic devices mounted on said frame, a plurality of concentric shafts each operatively connecting one of said devices to one of said screens whereby each of said screens may be moved relatively to same frame by the device associated with said screen, said screens, devices, and shafts being arranged to form a unitary structure suitable for attachment to a spot light for the purpose set forth.

In testimony whereof I hereto affix my signature.

HERBERT A. KLIEGL.