April 22, 1941. J. H. HAMMOND, JR 2,239,522

ANIMATED SIGN

Filed Nov. 24, 1937

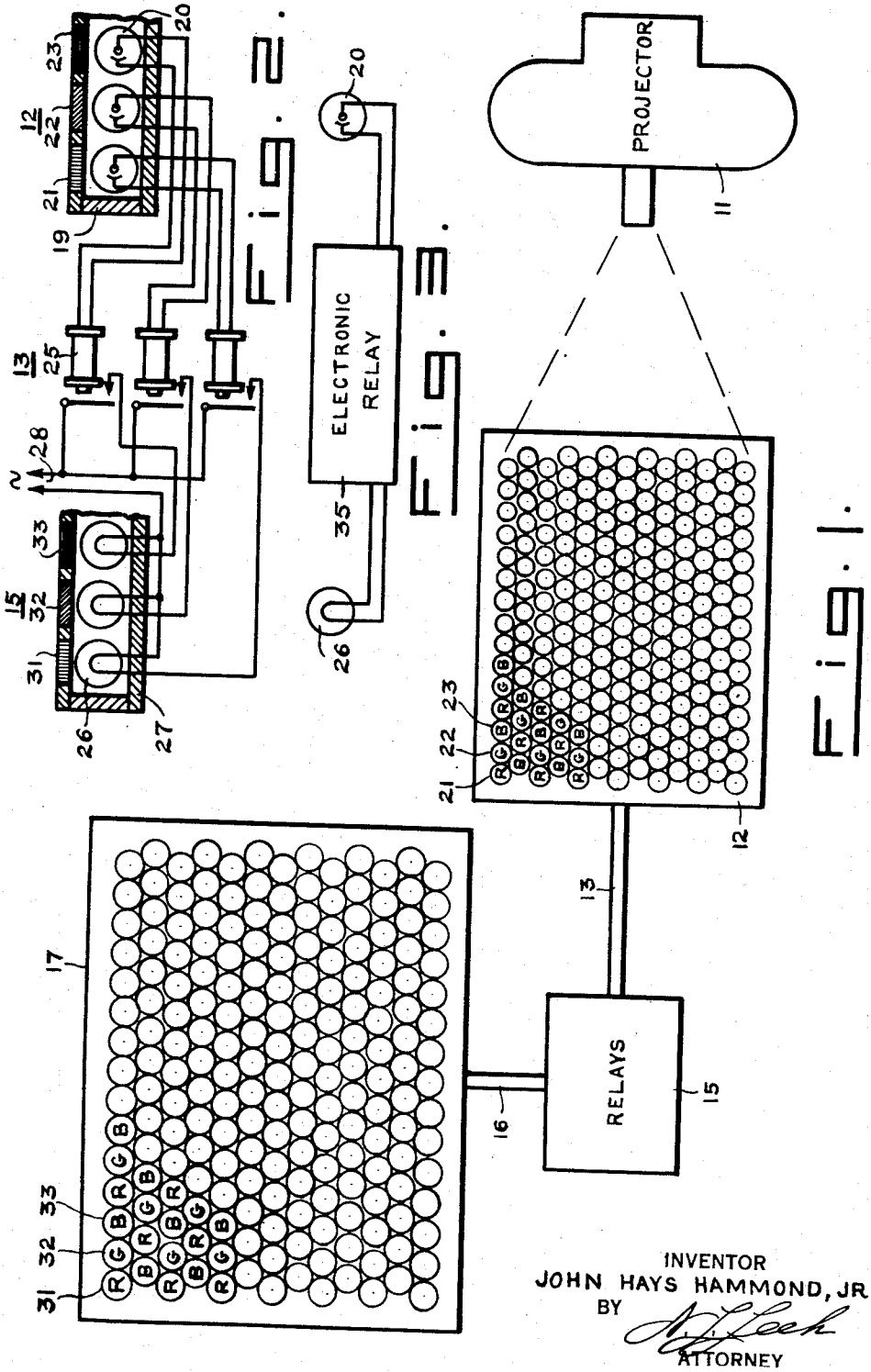


Fig. 1.

Fig. 2.

Fig. 3.

INVENTOR
JOHN HAYS HAMMOND, JR.
BY
ATTORNEY

Patented Apr. 22, 1941

2,239,522

UNITED STATES PATENT OFFICE

2,239,522

ANIMATED SIGN

John Hays Hammond, Jr., Gloucester, Mass.

Application November 24, 1937, Serial No. 176,150

1 Claim. (Cl. 177—346)

This invention relates to animated display signs and more particularly to an improved electric light display system in colors.

The invention further relates to a display system in which a colored moving picture is projected on a bank of photo-sensitive elements each of which controls the production of a corresponding colored light or lights so that the display device reproduces the moving picture in colored lights.

The invention also relates to a display system in which the intensity of the light produced on the display board varies in accordance with the intensity of the illumination on the corresponding photo-sensitive element, so that the gradations of light intensity on the display board correspond to those of the projected picture.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claim appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part thereof, in which—

Fig. 1 is a schematic view of a display system constructed in accordance with one embodiment of this invention;

Fig. 2 is a diagrammatic view of part of the apparatus shown in Fig. 1, and

Fig. 3 depicts a modified form of the control mechanism shown in Fig. 2.

Like reference characters denote like parts in the several figures of the drawing.

In the following description and in the claim parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawing and more particularly to Fig. 1 a standard type of motion picture projector 11 is provided which projects a moving picture in color on a bank of photo-sensitive elements 12, which is connected by a cable 13 to a relay mechanism 15. This mechanism is connected by a cable 16 to an electric light display board 17.

The bank of photo-sensitive elements 12 comprises a casing 19, (Fig. 2) in which are mounted a plurality of photo-electric cells 20. These cells may be of any suitable type to control a current in proportion to the intensity of illumination for example a photo-electric cell such as the Weston Photronic cell which is capable of operating a relay without the use of any external source of energy. In front of the cells 20 are mounted a plurality of color screens 21, 22 and 23 which are adapted to transmit various colors such as red, green and blue light respectively. These color screens are preferably arranged as shown in Fig. 1 the three colors being indicated by the three letters R, G and B respectively. The arrangement may be varied to include any desired number of colors adapted to reproduce a colored picture. The red, green and blue colors have been shown only by way of illustration.

Each of the photo-electric cells 20 is connected to a relay 25 which controls the circuit of one or a group of the lamps 26 in the display board 17. These relays may be of any suitable type such as a magnetic relay, a triode mercury vapor rectifier or other type of electronic relay preferably of a type which transmits a current proportional to the excitation thereof. The lamps 26 are mounted in a casing 27 and are supplied with current from a source 28. In front of these lamps are mounted a plurality of color screens 31, 32 and 33 which transmit red, green and blue light respectively. These color screens are preferably arranged as shown in Fig. 1 the three colors being indicated by the three letters R, G, and B respectively.

In the operation of this system, a colored motion picture is projected in the usual manner by the projector 11 on to the bank of photo-sensitive elements 12, each cell receiving light transmitted through its color screen 21, 22 or 23 as the case may be. The cells 20 under the screens R will be energized only when light containing red rays is projected upon these screens. In a like manner the cells 20 under the screens G and B will receive energy only when light containing green and blue rays is projected upon these screens.

When a particular cell 20 is illuminated it will energize the corresponding relay 25 which in turn will close the circuit to the corresponding lamp 26 in the display board 17. This will cause light to be projected through the corresponding screen 31, 32 or 33 thus producing red, green or blue light as the case may be. In this way whenever light containing red, green or blue rays falls on any particular area of the cell bank 12 it will cause light of the same color to be produced at the corresponding point on the display board 17 so that the colored moving picture projected upon

the cell bank 12 will be reproduced on the display board 17.

While the use of color screens is shown in Fig. 2 it is to be understood that any other suitable color filter system may be employed such as the use of colored glass in the photo-electric cells 20 and lamps 26. In certain instances a special film may be used having areas arranged to transmit white light to the selected cells in which case color filters may be omitted.

In order to reproduce the effect of gradations in the intensity of the light thrown on the cell bank 12, as well as the color, the modified form of system shown in Fig. 3 may be employed in which the photo-electric cells 20 are individually connected to electronic relays 35 of the type in which the output power is proportional to the strength of the input signal. Such a type of relay is exemplified by the well known power tubes having a control grid. The output circuit of each of the power relays 35 is connected to the corresponding lamp 26 in the display board 17.

The operation of the modified form of the invention shown in Fig. 3 is similar to that described in connection with Figs. 1 and 2 except that in this case the amount of energy supplied to each lamp 26 is proportional to the intensity of illumination of the corresponding photo-electric cell 20, so that the effect produced on the display board 17 will reproduce the picture projected by the projector 11 not only in colors but also in variations in intensity of illumination thus giving a much more faithful reproduction of the moving picture. The electronic relay having the characteristics above described may also be used with a black and white color system to produce a picture having gradations in shade.

A flashing sign may be provided by using a type of power tube which, when once energized continues to discharge until the circuit is interrupted, such as a thyratron. In that event the photo-electric cell may be energized to start the thyratron and the light may then be interrupted until the picture is to be changed, means being provided to interrupt the circuit so as to break the discharge of the thyratrons prior to the next actuation of the photo-electric cells.

The above described systems are adapted to produce animated or flashing signs in color and having gradations in intensity, which can be varied easily and cheaply by merely changing the film at the projector.

Although only a few of the various forms in which this invention may be embodied have been shown herein, it is to be understood that the invention is not limited to any specific construction but may be embodied in various forms without departing from the spirit of the invention or the scope of the appended claim.

What is claimed is:

An animated display system comprising a bank of lights arranged in groups, each group comprising sources of three or more colors selected to represent a color combination adapted to reproduce a colored picture, a corresponding bank of photo-electric cells arranged in similar groups, each cell having associated therewith a color filter adapted to pass rays of the color of the corresponding light, each cell being adapted to pass a current proportional to the intensity of the selected color component of the light applied thereto, and relay means interconnecting each cell and the corresponding light, said relay means being adapted to energize said lights proportionally to the excitation thereof by said cells whereby a picture is reproduced by said bank of lights having gradations of color and light intensity corresponding to those of a colored picture projected on to said bank of cells.

JOHN HAYS HAMMOND, JR.