

Dec. 2, 1930.

A. B. HECTOR
APPARATUS FOR PRODUCING COLOR MUSIC OR OTHER
SPECTACULAR LUMINOUS EFFECTS

1,783,789

Original Filed July 7, 1927 2 Sheets-Sheet 1

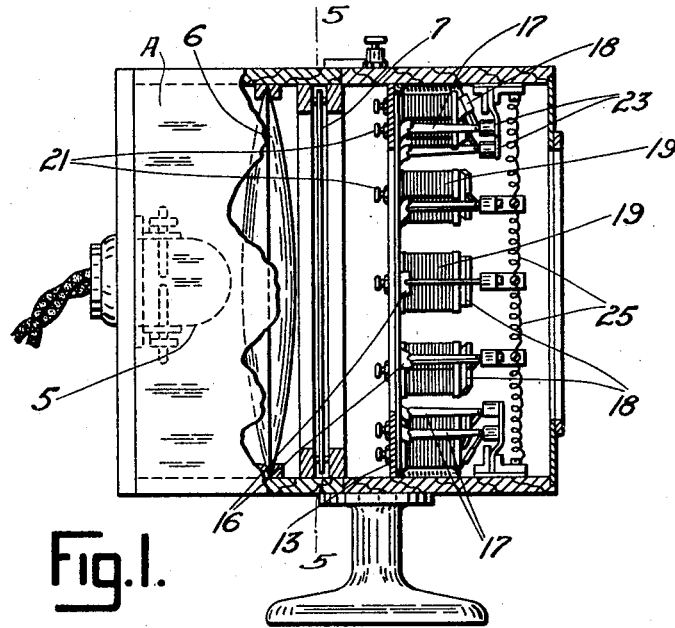


Fig. 1.

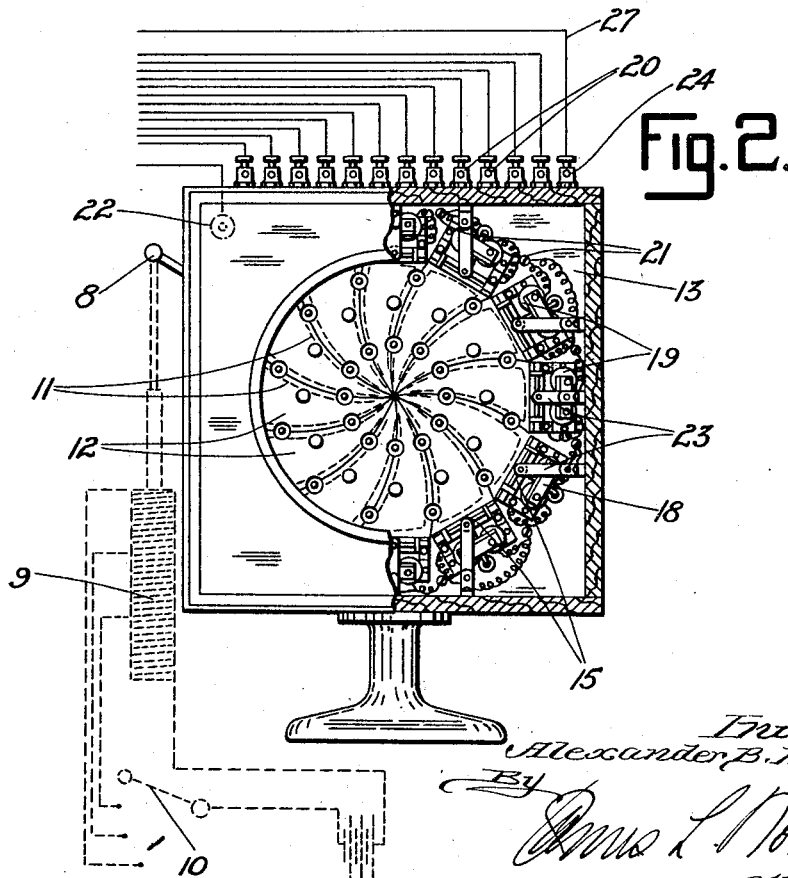


Fig. 2.

Inventor
Alexander B. Hector

By
James L. Norris
Attorney

Dec. 2, 1930.

A. B. HECTOR
APPARATUS FOR PRODUCING COLOR MUSIC OR OTHER
SPECTACULAR LUMINOUS EFFECTS
Original Filed July 7, 1927

1,783,789

2 Sheets-Sheet 2

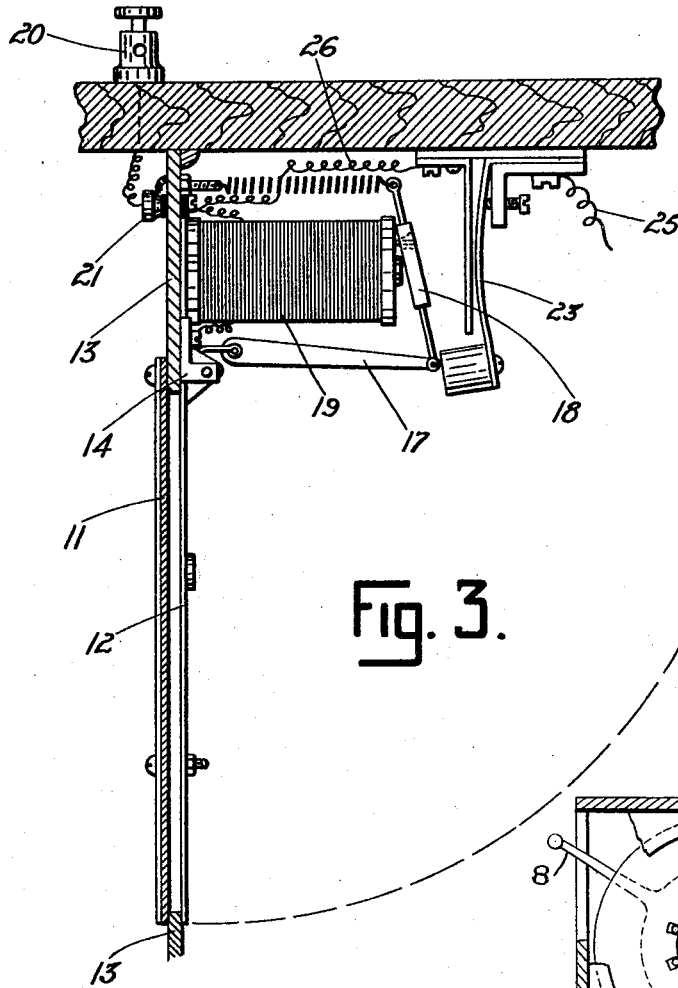


Fig. 3.

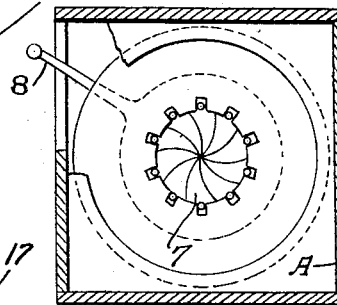
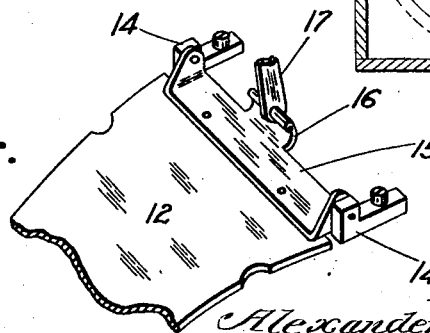


Fig. 5.

Fig. 4.



Inventor
Alexander B. Hector

By *James L. Norris*

Attorney

UNITED STATES PATENT OFFICE

ALEXANDER BURNETT HECTOR, OF GREENWICH, NEAR SYDNEY, NEW SOUTH WALES,
AUSTRALIA

APPARATUS FOR PRODUCING COLOR MUSIC OR OTHER SPECTACULAR LUMINOUS EFFECTS

Original application filed July 7, 1927, Serial No. 204,086, and in Australia July 15, 1926. Divided and this application filed August 31, 1928. Serial No. 303,306.

This invention has reference to improvements in, and relating to the production of color music or the harmony of color and musical sounds, and other spectacular effects and apparatus therefor in which the movements of the keys of a piano, piano player, organ, or other keyboard are made to operate a series of switches and electromagnets so as to display or project colored lights in such manner as to harmonize with musical sounds.

The main object of the invention is to express more effectively by means of lights the emotions of a musician, through the keyboard of a musical instrument or the like. I may in some instances use a silent keyboard, that is without the agency of sound, to produce luminous displays.

The invention consists briefly of the arrangement and/or projection of colored lights according to a color scale of treble and bass notes and in apparatus whereby the mechanism of piano players, organs, or other keyboard instruments may be conveniently utilized to obtain the desired effects, and in means for the reflection and diffusion of light and the production of shadows.

It is well known that if the space occupied by the normal spectrum be divided the various colors occupy different proportions of this space. The ratios of each color may be determined and form the basis for a color scale.

Advantage of this is taken by me to construct what I term a color scale of treble and bass notes.

In applying the color scale to the keys of a keyboard musical instrument I start at the lowest bass note and proceed upwardly.

The scale or ratio of the spectrum colors may be arranged over the various keys and octaves in several ways.

According to the present invention a series of projector apparatus is used to display colored lights under the control of a musician or mechanical player by the use of electromagnetically controlled shutters which may be of varying sizes according to the respec-

tive areas of the different colors shown in the spectrum.

The apparatus may be portable and the keys or hammers of a keyboard instrument may be provided with metal contact strips to close an electric circuit on their depression.

But in order that the invention may be more readily understood, reference will now be made to the accompanying drawings wherein:—

Figure 1 is a side elevational view, partly in section, of one of a number of projectors having electromagnets controlled from a keyboard.

Figure 2 is a front elevational view thereof, also partly in section.

Figures 3 and 4 are detail views, on an enlarged scale, of parts of the shutter mechanism of Figures 1 and 2.

Figure 5 is a view of the iris diaphragm taken on the line 5—5, Figure 1.

The construction illustrated shows one of the series of projectors used to display colored lights under the control of a musician or mechanical player. Electromagnetically controlled shutters of various sizes according to the respective areas of the different colors shown in the spectrum are used to display the colors, one source of light being utilized to display twelve colors or the representation of one octave in color music. A keyboard instrument having seven octaves would require seven of the projectors illustrated in Figures 1 to 5.

Each projector comprises a casing A in which is mounted a source of light 5 and a condenser 6 in front of which is an "iris", or contracting diaphragm 7 having a lever 8 adapted to be controlled by a solenoid 9 and a three position switch 10 which may be arranged as a swell pedal on the keyboard instrument.

The color screens 11, twelve in number, one for each note of an octave, are arranged in sections in front of the diaphragm 7, as best shown in Figure 1, and are covered by electromagnetically controlled shutters 12. Each shutter is hinged to the partition 13 by lugs or brackets 14 and has secured to it a member

15 having an extension 16 which is connected to a coupling 17 adapted to be depressed on the attraction of the armature 18 of the electromagnet 19.

5 In this invention relays are not provided for operation by each note of the keyboard instrument, the instrument being connected directly to the electromagnet of its particular color screen. The connecting wires for
10 one octave are shown in Figure 2 leading to the terminals 20. Each of these terminals is connected to its respective insulated terminal 21 leading to the coil of the particular one of the twelve electromagnets.

15 The return wire from each electromagnet is grounded to its respective lug brackets 14, the path leading by way of the metallic partition 13 to the return terminal 22.

20 The sustaining of the shutters in their open position is effected by a switch 23 controlled by the coupling 17 which is so arranged that on raising a shutter 12 the switch is closed allowing current to flow to the respective relay from a common terminal 24 by way
25 of a common wire 25 connected to each of the switches 23. The opposite sides of the switches 23 are connected by wires 26 to their respective insulated terminals, the return circuit being completed by way of the earth
30 terminal 22.

The common terminal 24 of the sustaining switches is connected by a wire 27 to a suitable sustaining switch capable of being operated from the keyboard instrument.

35 I claim:

1. In improvements in the production of color music and other spectacular luminous effects, a source of light, a series of color screens in front of the light, a condenser and
40 contracting diaphragm between said screens and light, shutters for covering and uncovering the color screens, electromagnetic means for actuating said shutters, means for sustaining any of the shutters in the open position and electrically actuated means for
45 operating the diaphragm.

2. Apparatus according to claim 1 wherein the electromagnetic means for actuating the shutters comprises an electromagnet for
50 each of the shutters and an armature for each of said electromagnets, each of said armatures being operative when its associated electromagnet is energized, to move its associated shutter into open position, and wherein the
55 means for sustaining the shutters in open position comprises a plurality of electric switches each associated with one of the shutters and operable by the opening movement of such shutter to close the electric circuit to the electromagnet associated there-
60 with.

3. In an apparatus for the production of color music and other spectacular luminous effects, a source of light, a series of color
65 screens in front of said source of light, a

light condenser and a contractible diaphragm between said color screens and said source of light, and shutters selectively operable for exposing and covering said color screens.

In testimony whereof I have hereunto set my hand. 70

ALEXANDER BURNETT HECTOR.

75

80

85

90

95

100

105

110

115

120

125

130