R. NAUJOKS.

STAGE LIGHTING DEVICE.

APPLICATION FILED MAR. 7, 1912.

1,045,063.

Patented Nov. 19, 1912.

Fig. 1

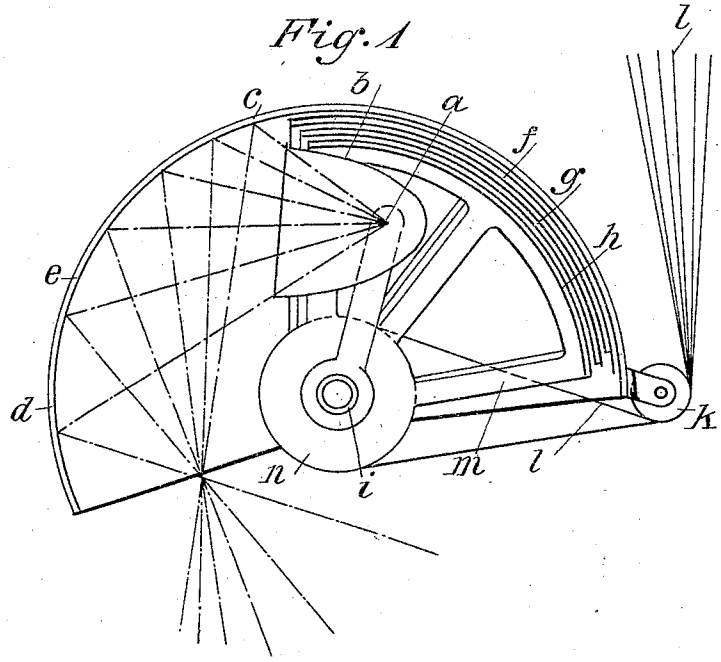
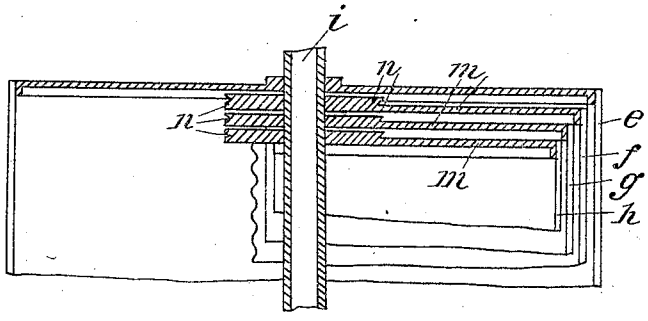


Fig. 2



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UNITED STATES PATENT OFFICE

RUDOLF NAUJOKS, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO THE FIRM OF DR. ING. SCHNEIDER & NAUJOKS ELEKTRIZITATS- GESELLSCHAFT MIT BESCHRANKTER HAFTUNG, OF FRANKFORT-ON-THE-MAIN, GERMANY.

STAGE-LIGHTING DEVICE.

1,045,063. Specification of Letters Patent. Patented Nov. 19, 1912.

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To all whom it may concern:

Be it known that I, RUDOLF NAUJOKS, a subject of the German Emperor, and a resident of Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements in Stage-Lighting Devices, of which the following is a specification.

My invention relates to improvements in light projecting devices such as are used for example for theater or stage lighting.

More particularly my invention relates to that class of light projecting devices in which a source of light is combined with a plurality of reflectors of different colors one or more of which may be put into operative or reflecting position relatively to the source of light to produce any desired color effects and dimming or changes from light to darkness. And the object of the improvements is to provide a lighting apparatus of this class in which the apparatus for regulating and coloring the light are combined into a compact device by means of which the different hues and colors of the light are produced without switching in different lamps, and in which there is no cover of transparent or translucent material which would absorb a part of the light, and in which even where a large number of colors is provided the said colors can be used in any desired succession. With these and other objects in view my invention consists in arranging the source of light within a system of reflectors which consists of a plurality of differently colored reflectors which are movable relatively to one another, and which are concentrically arranged about a common axis.

In order that my invention be more clearly understood an example embodying the same has been shown in the accompanying drawing in which the same letters of reference have been used in all the views to indicate corresponding parts.

In said drawing—Figure 1, is a side view of the light projecting device, and Fig. 2, is a horizontal section thereof seen from below.

For the purpose of explaining the invention in detail I have shown in the accompanying drawing a light projecting device which is particularly adapted for lighting a stage from above. As shown the apparatus consists of a stationary parti-cylindrical reflector *e* and a plurality of movable parti-cylindrical reflectors *f*, *g*, *h*, which are arranged concentrically of the stationary reflector *e* and of one another, and which are connected by arms *m* with disks *n* mounted for rotation on a central tubular shaft *i*. Preferably the width of the movable reflectors is about one half the width of the stationary reflector and they are adapted to be separately moved over the surface of the stationary reflector. Such movement may be imparted to the reflectors in any preferred way. In the example shown in which the apparatus is mounted a certain distance above the floor I prefer to move the reflectors by means of cords *l* secured to the disks *n* and passed over pulleys *k*.

The source of light *a* is equipped with a reflector *b* of suitable form which is adapted to throw all the light emanating from the source *a* on the lefthand part of the reflector to be reflected therefrom to the stage. As shown the said source of light and reflector are mounted on an arm secured to the shaft *i*.

Preferably the stationary reflector *e* is covered at its inner side with a reflecting coating of white color, and the movable reflectors *f*, *g*, *h* have reflecting coatings of different colors. The latter are used for regulating the light emanating from the reflector and imparting thereto different hues. For this purpose either one of them or a suitable number thereof can be shifted with the whole or a part of their surfaces in front of the portion of the stationary reflector *e* which is lighted by the source of light *a*. If it is desired to have gradual color changes or dimming effects, the colored reflectors are slowly moved in front of the lighted portion of the stationary reflector. When using movable reflectors which are partly or entirely black, the light can be gradually changed from light to dark, or vice versa.

By reason of the cylindrical form of the reflectors the lighting apparatus is very compact, and the distribution of light is favorable in this respect, that the path of the light rays is as short as possible, and the entire stream of light emanates from the apparatus at an angle which is the most favorable one for lighting the various parts of the stage.

The number of the movable reflectors

can be as large as is necessary in each case. However, in order to keep the number of the movable reflectors mounted at any time within the apparatus as low as possible, I prefer to mount the reflectors on the device in such a way, that they can easily be removed and replaced.

I claim herein as my invention:

1. A light projecting device comprising a source of light, a primary reflecting surface, a colored reflecting surface, one of said reflecting surfaces being stationary, and means for adjusting the movable reflecting surface so that it will be disposed in and out of a position to receive rays from the source of light.

2. A light projecting device comprising a source of light, a primary reflector *b*, and a plurality of differently colored reflecting surfaces arranged one before the other and each adapted to be moved to and from position to receive rays reflected from the primary reflector.

3. A light projecting device comprising a source of light, a stationary reflector in position to reflect rays from said source, a plurality of differently colored movable supporting surfaces, and means for moving any of said movable reflecting surfaces between the stationary reflector and the source of light.

4. A light projecting device comprising a source of light, two opposed relatively stationary reflectors, *b*, *e*, a plurality of concentrically arranged parti-cylindrical reflectors, and means for moving any of the said reflectors to and from a position between the stationary reflectors.

5. A light projecting device comprising a source of light, a stationary parti-cylindrical reflector arranged in reflecting position relative to the source of light, a plurality of parti-cylindrical, differently colored movable reflectors, concentrically located relatively to each other and to the stationary reflector, and means for moving one or more of said movable reflectors into and from operative position relatively to the source of light.

6. A light projecting device comprising a source of light, and a plurality of differently colored independent reflecting surfaces arranged one before the other and each adapted to be moved into position and out of position to receive and reflect rays from said source of light.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUDOLF NAUJOKS.

Witnesses:
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