S. J. JACOBSON.

PROJECTING APPARATUS.

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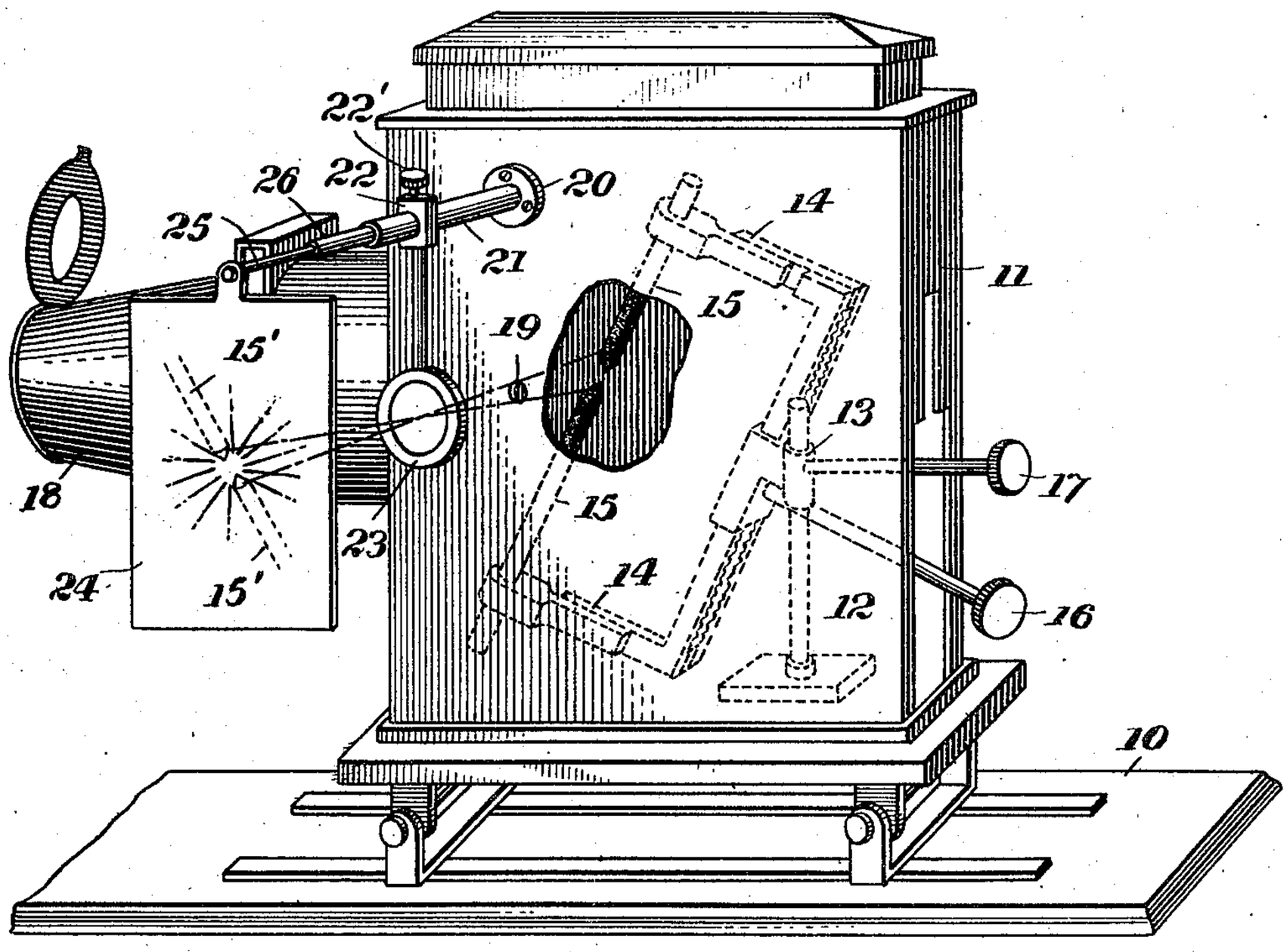
996,647. Patented July 4, 1911.



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UNITED STATES PATENT OFFICE.

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PROJECTING APPARATUS.

996,647. Specification of Letters Patent. Patented July 4, 1911.

Application filed October 14, 1909. Serial No. 522,670.

To all whom it may concern:

Be it known that I, SYDNEY J. JACOBSON, a citizen of the United States, and resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Projecting Apparatus, of which the following is a specification.

This invention relates to a projecting apparatus in which the light generated by suitable illuminating means is projected upon a surface external to the apparatus.

In apparatus of the type referred to the light is usually generated by an arc formed between a set of electrodes. The electrodes burn off however and therefore must be adjusted so as to compensate for this. The electrodes also burn unevenly and both of the above mentioned occurrences require careful attention where the light must be constant and unvarying. For this purpose it has been the previous practice to provide the door of one of the walls of the lamp house or casing with a window through which the arc may be observed. Since the light given by the arc, however, is very intense it is very injurious to the eyes. A colored glass is usually placed in the window, but this necessarily renders the observance faulty and often does not cut down the intense light from the crater of the arc. The above noted method of observation, besides having the disadvantages noted, is very inconvenient, due to the fact that the operator's hands and attention are necessarily otherwise occupied with the proper attention to the apparatus. Where, for instance, the apparatus is a stereopticon or kinetoscope, his attention is generally taken up with the manipulation of the slides or the film. Also, where the apparatus is a stage light, the light and arc are generally placed higher than the operator, and thus the arc cannot be observed conveniently. It is necessary, however, in all the above mentioned cases that the light be constant and uninterrupted during the time that the light is projected.

The object of this invention therefore is to provide an arrangement by means of which the illuminating means or arc may be easily and conveniently observed.

The invention generally stated, consists in an arrangement whereby an image or a picture of the arc and electrodes is projected on a screen outside of the lamp house or casing. This screen may be the wall of the building or a screen attached to the lamp support or casing. By means of this arrangement the condition of the arc and the electrodes may be readily observed leaving the hands of the operator entirely free, and his whole attention may be taken up in the proper manipulation of the apparatus.

In the drawing the figure is a perspective view of a projecting apparatus showing this invention applied thereto.

Referring to the drawing, 10 designates a support upon which is adjustably mounted a lamp house or casing 11. A support 12 is mounted in this casing and receives a carrier 13 for the electrodes. A pair of electrode clamps 14 support the electrodes 15 which form an arc in the casing. A handle 16 projecting through the casing regulates the relative position of the electrodes, and the handle 17 is arranged to regulate the position of the carrier in the casing. A suitable projecting device 18 is provided, by means of which the light from the arc may be projected upon an external surface or upon the film or slide which is to be thrown on the screen. One of the walls of the casing has formed therein an aperture 19 located opposite the arc formed between the electrodes. A support 20 is suitably secured to one of the walls of the casing by screws or the like, and has formed thereon or secured thereto a hollow shank 21 which receives a carrier 22 supporting a lens 23. This carrier is adapted to be adjusted toward and from the casing and clamped in adjusted position by means of a set screw 22′. A screen 24 is mounted upon a suitable carrier which comprises a rod 25 sliding in a hollow sleeve 26, which slides in the hollow shank 21. By means of this construction the distances between the screen and the lens and the casing may be adjusted.

The operation of this arrangement will be obvious from the drawing. The arc and the electrodes will be projected on the screen by the lens 23 forming an image 15′, 15′. By means of the adjustable mounting of the lens carrier and the screen carrier the proper

adjustment may be obtained, so that an image magnified to any suitable degree may be obtained, and this image can be made as clear as desired by properly focusing the lens.

It is obvious that the screen 24 may be dispensed with and the image of the arc and electrodes may be thrown on one of the walls of the building or any other suitable screen set up for that purpose. The image will be reversed, but this may be righted by using an additional lens for reversing the reversed image. The operation of this additional lens will be obvious to any one skilled in the art.

The image thrown on the screen will at all times indicate the condition of the arc, especially since this image may be very much magnified by properly positioning the lens carrier. The operator may therefore at any time observe the condition of the electrodes and the arc formed, and his attention is therefore entirely left to the proper manipulation of the projecting apparatus. The position of the electrodes and arc as a whole in the casing may also be observed by the image on the screen, since an identification mark may be made on the screen locating the proper position of the arc, and therefore the proper adjustment may be readily obtained by moving the electrodes until the image of the arc coincides with this identification mark.

Although this invention is shown as applied to one form of projecting apparatus, it is obvious that it is not limited to this form. The invention may be used in any projecting apparatus where the electrodes are used to form an arc for the purpose of throwing the light thereof on an external surface directly, or throwing an image of a figure on the screen, or illuminating a figure to be projected on the screen by additional means. In this particular instance the support 20 is shown as secured to the casing. It is obvious however that this support may be secured to the support or base 10 or any other suitable support as the floor of the building. The lens may also be mounted in the casing wall, that is, directly in the aperture 19. It is advantageous however to mount this lens on the outside of the casing so that it will not be affected by the extreme heat of the arc. It is further obvious that various changes may be made in the details of construction without departing from this invention, and it is therefore to be understood that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention, what is claimed is:

1. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating means for the electrodes, means for projecting the light from said arc, and means for projecting an image of said arc and electrodes on a screen, for the purpose set forth.

2. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating means for the electrodes, means for projecting the light from said arc, said casing being provided with an aperture opposite the arc, and a lens in line with the aperture and arc arranged to project an image of said arc and electrodes on a screen, for the purpose set forth.

3. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating means for said electrodes, means for projecting the light from said arc, a lens arranged to project an image of said arc and electrodes on a screen, and a support for said lens secured to said casing, for the purpose set forth.

4. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating means for said electrodes, means for projecting the light from said arc, a lens arranged to project an image of said arc and electrodes on a screen, a support for said lens secured to the casing, and means for regulating the position of said lens, for the purpose set forth.

5. In a projecting apparatus, the combination with a support and casing, of a set of electrodes therein arranged to form an arc, means for regulating said electrodes, means for projecting the light from said arc, a screen mounted on said support, and means for projecting an image of said arc and electrodes on said screen, for the purpose set forth.

6. In a projecting apparatus, the combination with a support and casing, of a set of electrodes therein arranged to form an arc, means for regulating said electrodes, means for projecting the light from said arc, a screen mounted on said support, a lens for projecting an image of said arc and electrodes on said screen, and a carrier for said lens mounted on said support.

7. In a projecting apparatus, the combination with a support and casing, of a set of electrodes therein arranged to form an arc, means for regulating said electrodes, means for projecting the light from said arc, a screen, a screen carrier mounted on said support, a lens for projecting an image of said arc and electrodes on said screen, a carrier for said lens mounted on said support, and means whereby the position of one of said carriers may be adjusted.

8. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating

means for said electrodes, means for projecting the light from said arc, a lens arranged to project an image of said arc and electrodes on a screen, a bar secured to said casing, and a support for said lens adjustable on said bar, for the purpose set forth.

9. In a projecting apparatus, the combination with a casing, of a set of electrodes therein arranged to form an arc, regulating means for said electrodes, means for projecting the light from said arc, a hollow bar secured to said casing, a screen having a support adjustable in said bar, a lens arranged to project an image of said arc and electrodes on said screen, and a support for said lens adjustable on said bar, for the purpose set forth.

10. In apparatus of the character set forth, the combination with a lamp house and projecting mechanism associated therewith, of illuminating means within the lamp house, said house having an opening in one side, and means for projecting from said opening a picture of the illuminating means.

In testimony whereof I affix my signature in presence of two witnesses.

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