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2 SHEETS—SHEET 1.



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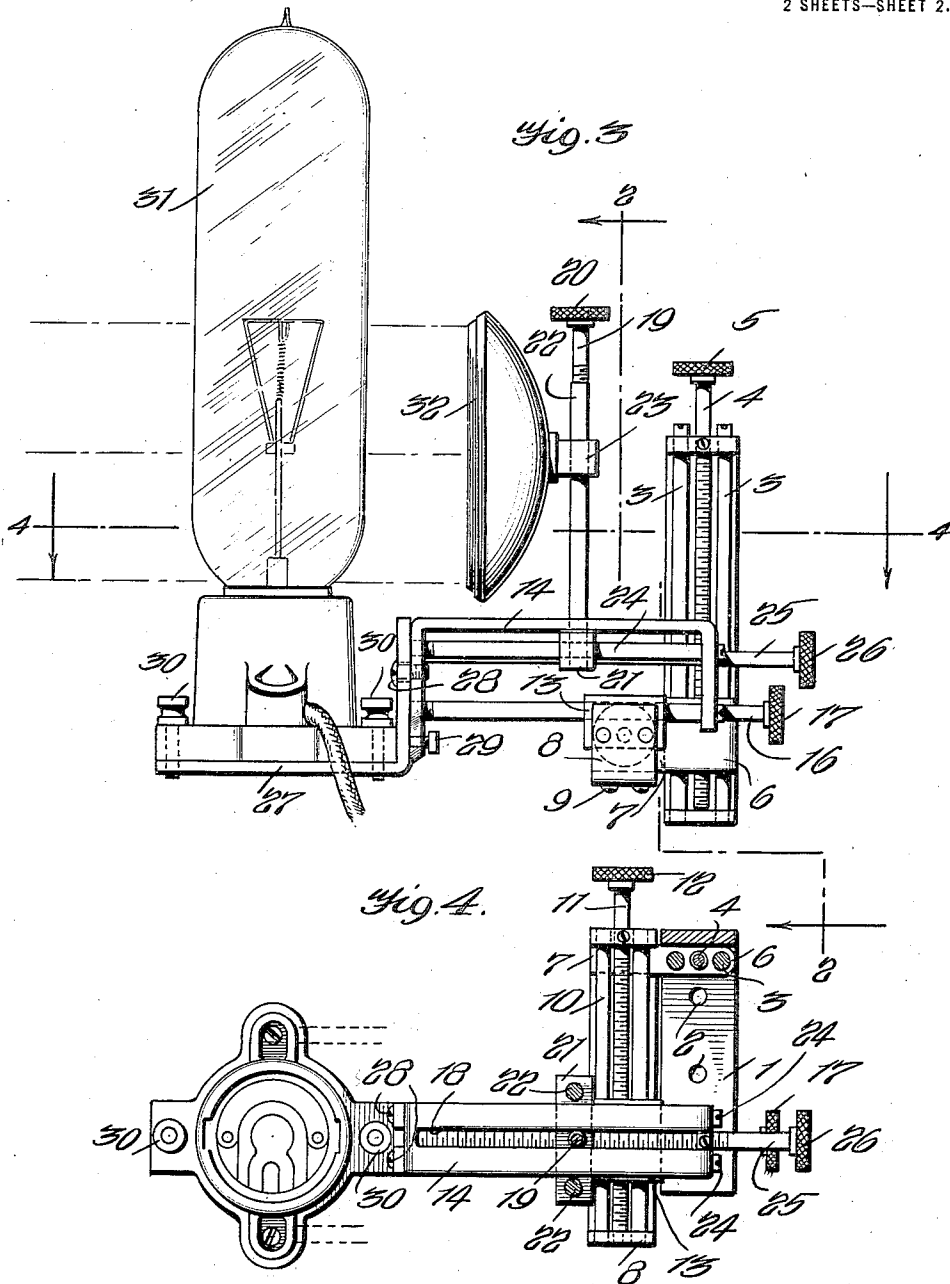
ADJUSTABLE LIGHT FOR PROJECTION LANTERNS.

APPLICATION FILED APR. 3, 1917. RENEWED JULY 26, 1918.

1,282,224.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 2.



WITNESSES
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UNITED STATES PATENT OFFICE.

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ADJUSTABLE LIGHT FOR PROJECTION-LANTERNS.

1,282,224.

Specification of Letters Patent.

Patented Oct. 22, 1918.

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To all whom it may concern:

Be it known that I, FRANK A. HARDYMAN, a citizen of the United States, and a resident of Quincy, in the county of Adams and State of Illinois, have made certain new and useful Improvements in Adjustable Lights for Projection-Lanterns, of which the following is a specification.

My invention relates to improvements in adjustable lights for projection lanterns, especially those used in moving picture machines, and it consists in the combinations, constructions and arrangements of parts hereinafter described.

15 An object of my invention is to provide a device by means of which an incandescent lamp may be used either on an alternating current or direct current system, and by means of which a saving of current is effected.

A further object of my invention is to provide an adjustable device, which is capable of such adjustments that not only is the light focused on the screen, but the chromatic aberration which is often present when incandescent lamps are used, is eliminated.

A further object of my invention is to provide a holder for an incandescent lamp which will permit its movement toward and away from the objective lens of the projection apparatus, which will permit the lamp to be moved vertically and laterally and to be tilted with respect to the frame upon which it is supported, and which has a reflector that may be adjusted with respect to the lamp itself.

Further objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application, in which;

Figure 1 is a perspective view showing one embodiment of my invention.

Fig. 2 is a section on the line 2—2 of Fig. 3.

Fig. 3 is a side view of the apparatus, and,

Fig. 4 is a section on the line 4—4 of Fig. 3.

In carrying out my invention I provide an L-shaped base plate 1, having openings 2, by means of which it may be secured to a

suitable foundation such as the bottom of a lamp house. Carried by the base plate 1 are vertical guide posts 3. A screw shaft 4 which is provided with a thumb wheel 5 extends through the opposite sides of the L-shaped base plate. A traveling block 6 is provided with an extension 7 to which is secured a U-shaped plate 8 extending parallel with the plate 1 by means of screws 9, or in any other suitable manner.

This U-shaped plate 8 has guide rods 10, which are similar to the rods 3, and is provided with a screw shaft 11 having a thumb wheel 12. A traveling threaded block 13 is provided, through which the screw shaft 11 extends.

A U-shaped plate 14 is supported by parallel guide rods 15, which pass through the block 13, as clearly shown in the drawing. A screw shaft 16 passes through the frame plate 14, and is provided with a hand wheel 17. It will be noted that the plate or frame 14 is slotted at 18. This is to permit the passage of a screw shaft 19, having a hand wheel 20. The end of this screw shaft 19 is journaled in a block 21 which bears guide posts 22. The guide posts 22 pass through an upper block 23, into which the shaft 19 is threaded. The lower block 21 is slidably disposed just underneath the plate 14, on guide rods 24, which are carried by the plate 14. A screw shaft 25 is provided with a hand wheel 26 by means of which the block 21 may be moved.

Secured to the frame plate 14 is an L-shaped bracket 27. This bracket is adjustable by means of upper screws 28, and a lower screw 29, in the manner hereinafter described.

The base of the incandescent light 31 is disposed on the bracket 27 and is secured to the same by means of screws 30, which also serve as binding posts for the lamp.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

In focusing the lamp it is moved toward and away from the objective lens (not shown) by means of the hand wheel 17, which turns the screw shaft 16, since it will be obvious that the frame 14 will be moved with respect to the stationary block 8. A lamp such as that shown at 31 will produce

chromatic aberration due to the fact that the light does not emanate from a single point, but rather from a quite extended line. Moreover, there is an absence of light from the region between the filaments of the lamp. To overcome this I provide the reflector 32, which is carried by the block 23. This reflector is preferably of parabolic shape, so as to reflect the rays parallel, thus illuminating the screen evenly so as to give a clear field. In order to bring the reflector so that focus of the latter is substantially on the central line of the incandescent lamp, the hand-wheel 26 is manipulated. This moves the block 21, and with it the guide posts 22, and the block 23 bearing the reflector.

In order to center the lamp laterally the hand wheel 12 is operated, which moves the block 13, together with the lamp and the reflector back and forth, according to which direction the wheel is turned. The lamp and the reflector may be simultaneously adjusted vertically by operating the hand wheel 5, which turns the shaft 4.

It is desirable to keep the lamp in a vertical position so as not to increase the tendency to burn out, and consequently I make the bracket 27 adjustable with respect to the frame 14. In order to effect this adjustment it is only necessary to loosen the screws 28 slightly, and then to tighten up on the screw 29, the latter screw extending through the frame 14 and its end bearing on the bracket 28. The bracket will then be tilted with respect to the frame 14, but will be held rigidly in position. Thus, if the frame 14 is inclined downwardly 30 degrees the lamp may be brought into the vertical position by the adjustment just described.

I claim:

1. An adjustable light for projection lanterns comprising a base, a plate carried by the base, means for adjusting the plate in a vertical direction, an incandescent lamp, a bracket for supporting the lamp, a frame for supporting the bracket, means carried by said plate for adjustably supporting the frame, means for moving said frame to bring said lamp toward or away from said plate, means for moving said frame and said lamp laterally with respect to the first described movement of the frame, to effect a lateral adjustment of the lamp, a reflector carried by said frame, and means for moving said reflector toward and away from said lamp.

2. An adjustable light for projection lanterns comprising a base, a plate carried by the base, means for adjusting the plate in a vertical direction, an incandescent lamp, a bracket for supporting the lamp, a frame for supporting the bracket, means carried by said plate for adjustably supporting the frame, means for moving said frame to bring said lamp toward or away from said

plate, means for moving said frame and said lamp laterally with respect to the first described movement of the frame, to effect a lateral adjustment of the lamp, a reflector carried by said frame, means for moving said reflector toward and away from said lamp, and means for adjusting the position of the reflector vertically with respect to the lamp.

3. An adjustable light for projection lanterns comprising a base, a plate carried by the base, means for adjusting the plate in a vertical direction, an incandescent lamp, a bracket for supporting the lamp, a frame for supporting the bracket, means carried by said plate for adjustably supporting the frame, means for moving said frame to bring said lamp toward or away from said plate, means for moving said frame and said lamp laterally with respect to the first described movement of the frame, to effect a lateral adjustment of the lamp, a reflector carried by said frame, means for moving said reflector toward and away from said lamp, means for adjusting the position of the reflector vertically with respect to the lamp, and means for adjusting the position of the lamp angularly with respect to the frame.

4. An adjustable light for projection lanterns comprising a base, a movable block carried by the base, means for adjusting the block in a vertical direction, a plate carried by the block, a movable block carried by the plate and adjustable in a horizontal direction, a frame carried by said last named movable block, a lamp carried by the frame, means including a screw shaft for adjusting the position of the frame with respect to the second named block, a traveling block carried by said frame, a reflector carried by said traveling block, and means including a screw shaft for adjusting the position of the reflector with respect to the frame.

5. An adjustable light for projection lanterns comprising a base, an incandescent lamp carried by the base, a reflector also carried by the base, means for simultaneously moving the reflector and the lamp in a vertical direction while maintaining the relative positions of the lamp and the reflector, means for simultaneously moving the lamp and the reflector in a horizontal direction while maintaining their respective positions, independent means for moving the lamp with respect to the reflector, and independent means for moving the reflector with respect to the lamp.

6. An adjustable light for projection lanterns comprising a base, an incandescent lamp carried by the base, a reflector also carried by the base, means for simultaneously moving the reflector and the lamp in a vertical direction while maintaining the relative positions of the lamp and the reflector,

means for simultaneously moving the lamp and the reflector in a horizontal direction while maintaining their respective positions, independent means for moving the lamp
5 with respect to the reflector, independent means for moving the reflector with respect to the lamp, in a horizontal direction at right angles to the first-named horizontal movement, and means for inclining the position of the lamp, at will.

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Witnesses:

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