

F. E. BALDWIN.
REFLECTING MACHINE.
APPLICATION FILED MAR. 30, 1910.

1,065,496.

Patented June 24, 1913.

Fig.1

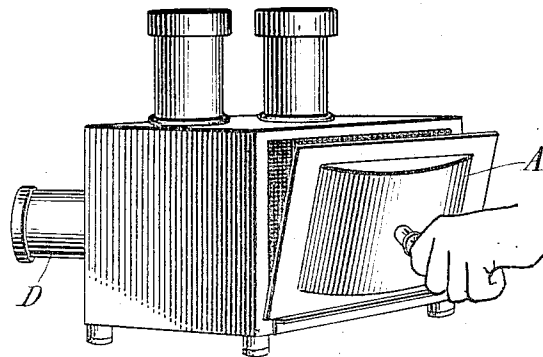


Fig.2

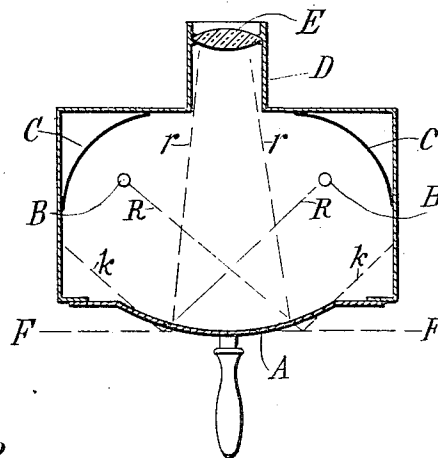


Fig.3

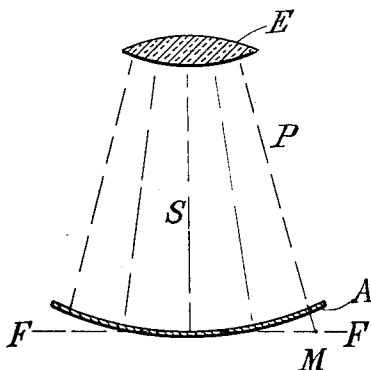
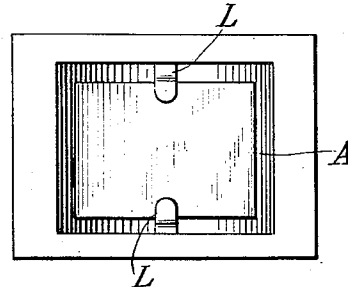


Fig.4



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REFLECTING-MACHINE.

1,065,496.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed March 30, 1910. Serial No. 552,366.

To all whom it may concern:

Be it known that I, FREDERIC E. BALDWIN, a citizen of the United States, residing at New York, county of Richmond, and State of New York, have invented certain new and useful Improvements in Reflecting-Machines, of which the following is a full, clear, and exact description.

As these machines have heretofore been made, the subject to be shown is placed on a flat or plain surface and inserted at the back of the machine. When used in this way the picture produced on the screen is indistinct at the sides or edges, owing to the aberration of the rays of light. This is due to the fact that the focus of the marginal rays is nearer the lens than that of the center rays. I have discovered that this difficulty may be overcome by mounting the post card that is to be projected so that it intersects all of the focal radii of the lens of the apparatus at the same distance from the focal center; that is to say, the post card is mounted in the arc of a circle whose center is the center of the lens. This result is attained by the employment of a picture holder, preferably opaque, which is curved in conformity with the focus of the lens.

I embody my invention in the simple apparatus illustrated in the accompanying drawings, in which—

Figure 1 shows, in perspective, my complete apparatus. Fig. 2 is a horizontal section thereof. Fig. 3 is a diagram illustrating the relation of the lens to the card holder. Fig. 4 is a detail of the card holder, illustrating the means for securing the post card in proper position.

A represents the curved card holder, which may be detachably secured to the body of the apparatus so as to form the back thereof; B B are the sources of light; C C the reflectors; E the lens, which may be mounted in a tube D.

Referring to the diagram, Fig. 3, it will be noted that the focal radii extend back from the lens, not as a flat plane but in an arc, which is represented by the curved line. A represents this focal curve. I arrange my card holder to follow this curve. E is the lens and the dotted line F, F is the usual flat plane on which post cards are generally placed. It is quite evident that if the focal distance of the lens E is, say, 8 inches the

line S will be 8 inches long. It is also evident that the line P extending from the lens E to the flat plane F F must be much longer than the line S and therefore were the subject, placed on the flat plane F F, most of its surface would be more than 8 inches from the lens at the point M, and therefore out of focus; whereas, by arranging the card on the curved line A, as is accomplished by my holder, the entire subject is brought to the proper and uniform focal distance, and consequently all parts of it are projected with equal clearness. By curving the card holder in this manner both ends of the post card are brought into focus and therefore the picture thrown on the screen is much better defined at the edges. This card holder has also another great advantage because, being curved entirely upon the focal radius, it acts as an additional reflector.

The rays of light coming from the burners B B, Fig. 2, strike the card holder as shown by dotted line R R and owing to this curvature of the holder are reflected into the lens as shown by dotted line r r whereas were the back flat, as shown by F F the rays would be reflected as shown by dotted line k k and not reach the lens at all. This affords much greater illumination on the sheet than would otherwise be obtained. This device is also subject to another advantage. It has always been difficult to find a suitable means of holding these cards in place on the holder. I accomplish this by placing on the holder two ears or lugs as shown at L L, Fig. 4. The card is easily inserted under these lugs and as it is bent from its natural form by following the curve of the card holder and held in this position by the lugs the natural resiliency of the card affords sufficient friction between itself and the card holder to cause it to remain in position without slipping while being shown in the machine.

What I therefore claim as new is:

1. A reflecting apparatus for projecting opaque pictures, having a curved picture holder, the curvature of the picture holder being in conformity with the focus of the lens.

2. In a reflecting apparatus for projecting opaque pictures, in combination, a projecting lens, and a curved picture holder, the curvature of the picture holder being in

conformity with the focus of the lens and adapted to show pictures larger in field than the diameter of the lens.

3. In a reflecting apparatus for projecting
5 opaque pictures, in combination, a projecting lens, a picture holder back of the lens, and sources of light in front of the picture holder and on opposite sides of the same, the picture holder being curved to reflect
10 light from said sources into the lens.

4. In a reflecting apparatus for projecting opaque pictures, in combination, a projecting lens, a picture holder back of the lens, and a source of light in front of the picture
15 holder and to one side of the same, the picture holder being curved to reflect light from said source into the lens.

5. In a reflecting apparatus for projecting opaque pictures, in combination, a projecting
20 ing lens, a lens-tube in which the lens is mounted, and a picture holder in rear of the lens and lens-tube, said picture holder being curved to bring the sides of a picture thereon into the field of the lens whereby light
25 rays from the sides of the picture can enter the lens tube and lens.

6. A reflecting apparatus for projecting opaque pictures, a curved picture holder

provided with means adapted to engage the picture and hold the same in conformity
30 with the curvature of the holder.

7. A holder for opaque pictures for use in an apparatus of the class described, consisting of a curved picture-supporting back, having its two opposing curved edges fitted
35 with means to retain the edges of the picture, substantially as specified.

8. In projecting apparatus for opaque objects, an object-holder concave toward the lens, and a lamp located to one side of the
40 object-holder.

9. In a projecting apparatus for opaque objects, an object holder curved toward the lens, the curvature of the holder being substantially in conformity to the focus of the
45 lens and adapted to show pictures larger in field than the diameter of the lens, and a lamp located to one side of the picture holder.

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

FREDERIC E. BALDWIN.

Witnesses:

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M. LAWSON DYER.