PUBLISHED
JUNE 15, 1943.
BY A. P. C.

L. LUMIERE

PROCESS AND DEVICE FOR OBTAINING AN APPEARANCE OF RELIEF IN THE PROJECTION OF STILL OR MOVING IMAGES

Filed May 27, 1941

Serial No. 395494

Fig: 1

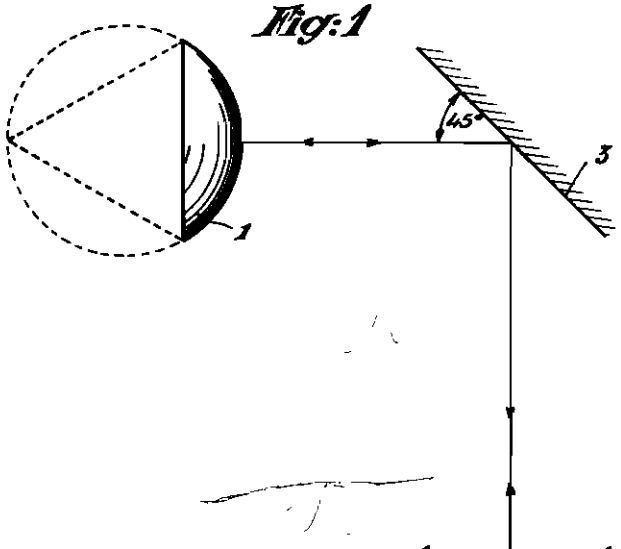
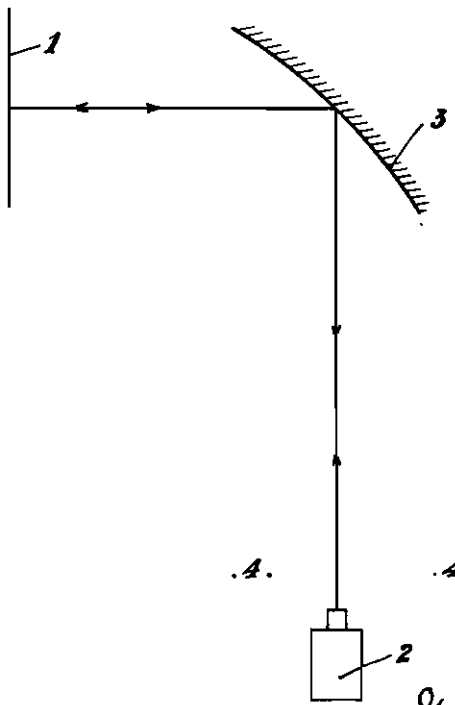


Fig: 2



Inventor
Louis Lumiere
By
Watson, Cole, Grindle & Watson
Attorneys

Published June 15, 1943

Serial No. 395,494

ALIEN PROPERTY CUSTODIAN

PROCESS AND DEVICE FOR OBTAINING AN APPEARANCE OF RELIEF IN THE PROJECTION OF STILL OR MOVING IMAGES

Louis Lumiere, Bandol, France; vested in the Alien Property Custodian

Application filed May 27, 1941

My invention concerns a device for obtaining the appearance of relief in the projection of still or moving images, wherein a reflecting surface is interposed between the projection apparatus and the screen so that the image is formed on the latter after being reflected by the said surface.

According to my invention, the surface of the screen or of the reflecting surface is curved, cylindrical or spherical according to the case, and application is made of the principle of the reverse return of the light rays, in order to observe the projected image and correct the distortion produced by the curved surface. The image formed on the screen, after the rays have been once reflected by the mirror, is sent back to the eyes of the spectators after a second reflection by the said mirror, as a result of the reverse return of the light rays.

According to a preferred embodiment of my invention, the screen is spherical and the reflecting surface is a plane mirror inclined at 45° with respect to and in the path of the light rays.

According to another embodiment, the screen is plane and the mirror is cylindrical.

The description which follows with regard to the appended drawing given by way of example not inclusive of all cases will allow a thorough understanding of how my invention can be embodied, those particularities which appear on the drawing as well as in the specification being, of course, a part of it.

Fig. 1 is a plan, diagram view of the first embodiment comprising a spherical screen.

Fig. 2 shows another embodiment comprising a plane screen and a cylindrical mirror.

On Fig. 1 can be seen at 1 a diffusing spherical screen on which the projection apparatus 2 forms an image, after reflection by the plane mirror 3 inclined at 45°. This image is observed, as a result of the reverse return of the light rays, after a second reflection by the mirror 3, by the spectators situated at 4 in the vicinity of the projection path.

The appearance of plasticity is remarkable.

On the other hand, the distortion of the image which would be very great if it were observed directly on the spherical screen is completely corrected by the reflection on the mirror 3, in the reverse return of the light rays.

A sphere the radius of which is approximately equal to the height of the projected image may be used. The screen is but a part of the surface of this sphere, for example the spherical cap bound by the side of the inscribed equilateral triangle. Practically, it may be realized for instance by means of lune-shaped strips of veneer assembled together, the strips bearing a coat of diffusing white paint or else an aluminum paint.

In the embodiment shown in Fig. 2, the diffusing screen 1 is plane, but the mirror 3 is cylindrical. The image projected on the screen 1 is formed thereon only after reflection on this mirror and the spectators observe it after a second reflection by the same mirror which corrects the deformations resulting from the first reflection.

It is difficult to construct correct cylindrical mirrors of large sizes, but substantially defectless plane mirrors are now to be found on the market, and one of the features of my invention consists in the obtention of the required cylindrical mirrors by initially utilizing plane mirrors and deforming them elastically in order to curve them along one of their dimensions. As the curvature radius of the mirrors used is large (of a magnitude of several meters which corresponds to a rise of the order of one centimeter for a mirror the side of which is approximately one meter) it is easy to obtain this elastic deformation. To this effect, it is advantageous to use very thin mirrors, or, better still, tempered mirrors which possess the property of being able to resist, without breaking, deflections from four to five times greater than non-tempered mirrors.

It is of course obvious that the embodiments which have just been described have been given only by way of example and that they could be altered without, by so doing, departing from the scope of my invention. For instance, the spherical screen of Fig. 1 could be replaced by a cylindrical screen.

LOUIS LUMIERE.