

10, 11 and screen 12 may be placed comparatively close together and yet the image or images upon the screen will appear distinct, undistorted and highly pleasing and natural in appearance. Indeed, I have obtained highly satisfactory results in the production of clear, artistic, undistorted images upon a screen where the distance between the screen 12 and light source 10 was no more than one-half the greater dimension (usually width) of the screen. In other words, if the total available distance between the light 10 and apron 14 is 45 feet and the width of the screen 12 is 30 feet, the screen 12 need be placed only 15 feet (or even less) from the light 10, and yet undistorted and highly artistic images are produced upon the screen. This leaves a distance of 30 feet between the screen 12 and apron 14 so that the action may proceed satisfactorily upon the stage in front of the back drop 12.

My invention in its fundamentals necessitates the use of only the following apparatus: the light source 10, the screen 12 and the object or objects 11 located between the said elements 10 and 12. Lenses are entirely dispensed with and the apparatus is comparatively cheap to manufacture. Furthermore, instead of shifting scenes by substituting, for a back drop 12, a different back drop or back drops, one need only substitute a different object bearing the desired scene for that shown at 11. The objects 11 are comparatively small and inexpensive to produce and may be transported with greater facility and at a greatly reduced cost.

While the apparatus thus far described is operative to practice the novel method, I prefer to mount the light 10 in a housing, such housing having an object holder adapted to hold an object (such as that shown in Fig. 2) in the path of the light rays and into which or from which the object or objects may be readily inserted or removed. One form of such apparatus is shown in Figs. 3 et seq. and may be constructed substantially as follows:

A housing 20 of metal or other suitable material and comprising top, bottom, rear and side walls, is provided at its open front with channels or grooved members 21 adapted slidably to receive, one at a time, objects 11, 13. A source of light 10 is mounted in the housing. While this source of light 10 may assume the form of an incandescent lamp, I have selected for the purpose of illustration, the crater of the carbon or other electrode 25 of a D. C. arc lamp. The other carbon 26 of the lamp is suitably insulated from the carbon 25 and both are insulated, in the usual manner, from the housing 20 which supports them. Suitable mechanism for striking the arc and feeding the carbons is provided and obviously the carbons or electrodes may be replaced when consumed.

Direct current may be supplied to the electrodes from any suitable source. The housing 20 not only serves to exclude extraneous light from the side of the object toward the light but serves also to screen the high intensity light source from the operator's eyes. The housing 20 need not serve in any sense as a reflector or condenser. In fact, I prefer to coat the interior of the housing with a non-reflecting or light-absorbing substance such as dull black paint.

The dimensions of the housing 20 will depend upon the dimensions of the screen employed, the dimensions of the objects employed, and the distance between the light 10 and the screen. If the screen be wider than it is high, as is usually the case, and calling this width  $W$  and the height  $H$ , the following relative dimensions and distances will be found satisfactory.

The distance between light source 10 and screen 12 may be  $W/2$ ; the width of the object  $W/10$ ; the height of the object  $H/10$ ; and the distance between light source 10 and the object (or plane of the object holder)  $W/20$ . Such an apparatus will project clear, highly artistic, and undistorted images of objects 11 upon the screen 12. Obviously other relationships of dimensions may be employed and the apparatus otherwise modified without departing from the scope of the invention as defined in the following claims.

What I claim is:

1. The method of forming a background for the stage of an amusement house, which method consists in projecting a substantially undistorted image from a translucent object upon a screen, by projecting a cone of light having an apex angle of more than  $60^\circ$  upon the screen through the object; and substantially preventing the passage, to the side of said object remote from the screen, of rays of light other than those bounded by the cone.
2. A machine for projecting enlarged images of objects and comprising in combination, a housing, an object holder carried thereby, and a lamp-support carried by said housing and spaced from said object holder at a distance less than the greater dimension of said object holder, said housing being provided with means for substantially preventing rays of light, other than rays bounded by a cone having its base in the plane of said object holder and its apex adjacent said lamp support, from reaching the plane of said object holder.
3. The method of forming a background for the stage of an amusement house, which method consists in projecting a substantially undistorted magnified image from a translucent object upon a screen, by projecting a cone of light having an apex angle of more than  $60^\circ$  upon the screen through the object; and substantially preventing the passage, to