May 10, 1932. K. BRENKERT ET AL 1,857,135

COMBINATION PROJECTOR

Filed April 25, 1927

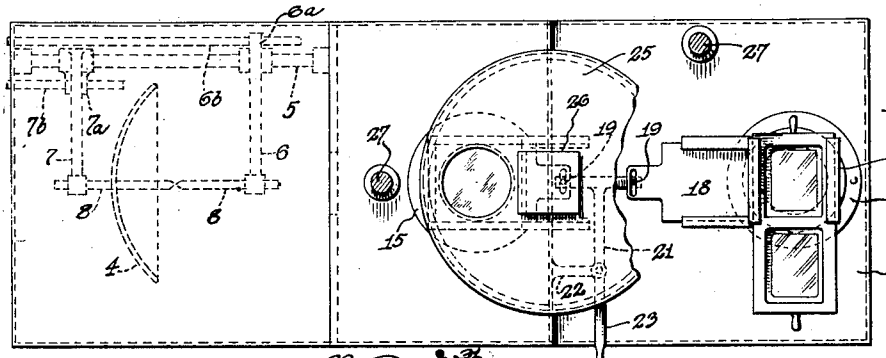


Fig. 3.

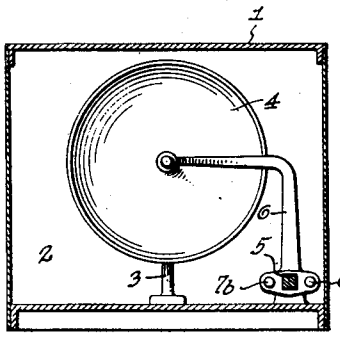


Fig. 2.

Fig. 1.

Inventor
Karl Brenkert,
Joseph W. Brenkert,
By Burhoff & Burhoff
Attorneys

Patented May 10, 1932 1,857,135

UNITED STATES PATENT OFFICE

KARL BRENKERT AND JOSEPH W. BRENKERT, OF DETROIT, MICHIGAN

COMBINATION PROJECTOR

Application filed April 25, 1927. Serial No. 186,204.

The present invention pertains to a novel combination projector adapted to throw scenic effects, color lighting and lantern slides.

Present devices of this character comprise a body mounted for universal movement and carrying practically all the essential parts excepting the base. Any adjustment in the direction of projection requires the movement of this large body, which must allow sufficient space between the lamps to accommodate two drums for producing scenic effects. This space results in the necessity for vertical distance between the ports in the projection room which is already restricted in height.

One of the objects of the present invention is to permit the use of scenic effects in a two-unit machine without requiring such spacing of ports as that mentioned above. This and other objects of the invention are accomplished by mounting the light source in a fixed housing which also supports the devices for producing scenic effects, and projecting the beams on adjustable reflectors which are directed towards the stage. These projecting reflectors are the only movable parts of the device for varying the direction of the final beams, and may be positioned relatively close to each other vertically or horizontally since they are quite remote from the large scenic effect devices.

Another object is to enable the use of a single light source for a two-effect machine and to build the machine in such a manner that the reflector for this source need not be increased in area when large effects are used.

Projectors of the present construction, although embodying two projection units, do not permit two projections side by side on a screen, but are constructed for alternate projection from the units upon a given area of the screen. The present invention provides also for simultaneous adjacent projections, and this function is realized by effecting a proper lateral adjustment of one of the projecting reflectors already mentioned. This method is considerably simpler than modifying the movable body type in such a way that one unit could be adjusted relatively to the other.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of an apparatus constructed in accordance with the invention;

Fig. 2 is a transverse section on the line 2—2 of Figure 1; and

Fig. 3 is a plan view.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The apparatus comprises a fixed box or housing 1 containing in its rear section 2 a standard 3 fixed to the base and supporting a reflector 4. The reflector is here illustrated as emitting a beam of parallel rays, in which case it would preferably be a parabolic reflector, but the invention is not to be understood as limited to the nature of the reflector or to the form of beam emitted from it. A rod 5 is supported at the base, preferably offset laterally from the reflector, and has slidably mounted thereon a pair of arms 6 and 7 which rise vertically and extend horizontally to define a straight line passing through the center of the reflector in the direction of a normal. These arms support carbon rods 8 which form a light crater at a suitable point at the concave side of the reflector. The lower ends of the arms 6 and 7 are formed with internally threaded ears 6^a and 7^a which receive screws 6^b and 7^b journaled in a wall of the housing and enabling longitudinal adjustment of the carbon rods.

In advance of the reflector 4, the housing 1 supports fixed brackets 9 and 10 carrying reflecting mirrors 11 and 12 respectively. These reflectors are so arranged as to intercept each a half of the beam emanating from the reflector, and are so spaced as to reflect the divisions of the original beam as two separate and independent beams. The reflectors are preferably positioned to project the divided beams vertically, and the top of the housing is fitted with lenses 13 and 14 through which these beams are projected and by which they are condensed.

Over each lens is mounted a frame 15 in which a holder 16 is rotatably mounted. The holders are slotted to accommodate dissolving shutters 17 and 18 having stems 19 which are joined by a bar 20 from which extends a link 21 pivoted to a fixed bracket 22. A handle 23 is provided for oscillating the device so that one lens may be covered and the other uncovered. The shutter and holder do not constitute original parts of the invention and may be of any construction that is preferred or already known in the art.

Each holder is formed with a guide 24 above the shutter slide, and two guides of this kind may be provided on each holder for holding the slide and a modifying scenic device.

These scenic devices are known in the art as effects, and are described in the literature of the Brenkert Light Projection Company, Detroit, Michigan, on their Brenkert F3, combination effect projector. The effect consists of a short drum 25 containing a rotatable transparent plate driven by a spring clock motor 26.

Adjacent each holder is mounted a standard 27 carrying an adjustable focusing lens 28 for receiving the beam emitted from the reflector therebeneath. Over the focusing lens, the standard carries an arm 29 which may also be vertically adjustable and which is equipped at its free end with a clamp socket 30 adapted to be tightened by a wing nut 31. In the socket is mounted a ball 32 having a stem 33 carrying a projecting reflector 34 positioned to receive the beam issuing from the focusing lens 28 and to project it on the screen or stage. The reflecting projectors are positioned so as not to be in the path of each other and may be spaced laterally as indicated by the standards in Figure 3 and also vertically as shown in Figure 1. The direction of the beams issuing from the projecting reflectors 34 is obviously varied by adjusting these members on their universal joints.

This device is intended more particularly for projecting upon a given area on the screen. Only one lens at a time is exposed, and while a given lens is covered the slide positioned over the same is changed. This practice is common in the use of dissolving shutters. One of the advantages of this construction is that adjustment is made by merely changing the position of the reflecting member 34, while in present devices it is necessary to swing the entire head which carries the lamps, shutters, effects and lenses. The essential characteristic of this construction is that the beam of light is intercepted and modified by parts carried by a fixed base and then is cast upon a projecting reflector which constitutes the sole means of adjustment insofar as directing the modified beam is concerned.

The present projector of the Brenkert type F3 is swiveled at a point between the lamp and the focusing lens. Consequently the lamps are removed from the ports in the projection room to the extent of the distance between the focusing lens and the swivel point, and there arises the problem of imparting to these slots sufficient length to accommodate, in a room of limited height, the swing which occurs in vertical adjustment of the beams. In the novel construction there is no such distance between the focusing lens and the swivel point, and the apparatus may therefore be brought close to the ports and the projecting reflectors swiveled locally rather than on a remote pivot.

This device may also be used for throwing two projections side by side upon a screen, and this result is obtained merely by displacing one of the projecting reflectors 34 laterally to the proper extent. The holder 16 beneath the adjusted reflector is then turned on its pivotal mounting to reflect the beam properly against the reflector. It will be apparent that the adjustment of the apparatus for adjacent projections is exceedingly simple as compared with a movable body machine wherein one of the lamps or units would be mounted for adjustment relatively to the other. Also, this adjustment of the new machine requires no larger size than usual for the port in the projection housing.

An advantage common to both uses of this machine is that the adjustment or manipulation therefore does not require the movement of a body sufficiently large to support and accommodate two effects. The space or area required by the mounting of these effects is immaterial in the adjustment of the device because they are carried by a fixed part of the machine.

In using a single light source for two projections, it is desirable to use a reflector of a reasonably small size in order to utilize the relatively greater efficiency of a small reflector. Also, the reflector, also supplying light for two projections, must not require replacement by different sizes of effects in order that the device be practical. It will be seen that these two properties are realized by spacing the reflecting mirrors 11 and 12 horizontally from the reflector 4 and from each other and by effecting the spacing of the effects, due to variation in size thereof, also in a horizontal direction on the fixed casing 1. Thus, variation in the size of the effects merely alters the spacing between the focusing lenses 13 and 14 and consequently the horizontal spacing of the reflecting mirrors 11 and 12, which spacing does not interfere with the diameter of the source reflector 4.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various altera-

tions in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What we claim is: —

1. A projector comprising a housing, means for producing a primary beam therein, opaque reflectors for dividing said primary beam into substantially parallel secondary beams, standards mounted on said housing, and projecting reflectors slidably mounted on said standards and having a universal connection thereto, said projecting reflectors being disposed in the paths of said secondary beams.

2. A projector comprising a housing, means for producing a primary beam therein, opaque reflectors for dividing said primary beam into substantially parallel secondary beams, standards mounted on said housing, projecting reflectors slidably mounted on said standards and having a universal connection thereto, said projecting reflectors being disposed in the paths of said secondary beams, and a focusing lens inserted between each of the first named reflectors and the corresponding projecting reflector.

In testimony whereof we affix our signatures.

KARL BRENKERT.
JOSEPH W. BRENKERT.