April 27, 1926. 1,582,179

J. LEVY

PICTURE PROJECTION PROCESS AND APPARATUS

Filed July 9, 1924

Fig. 1.

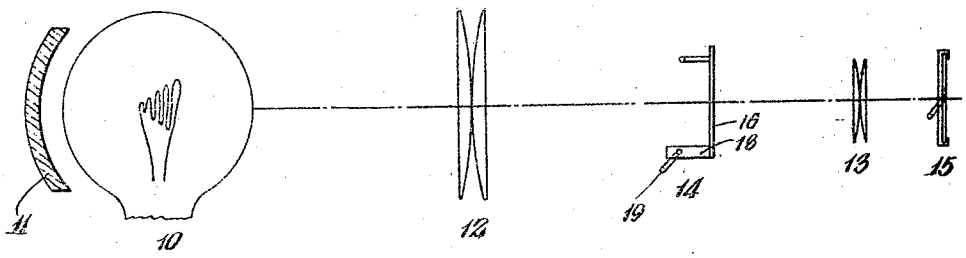


Fig. 2.

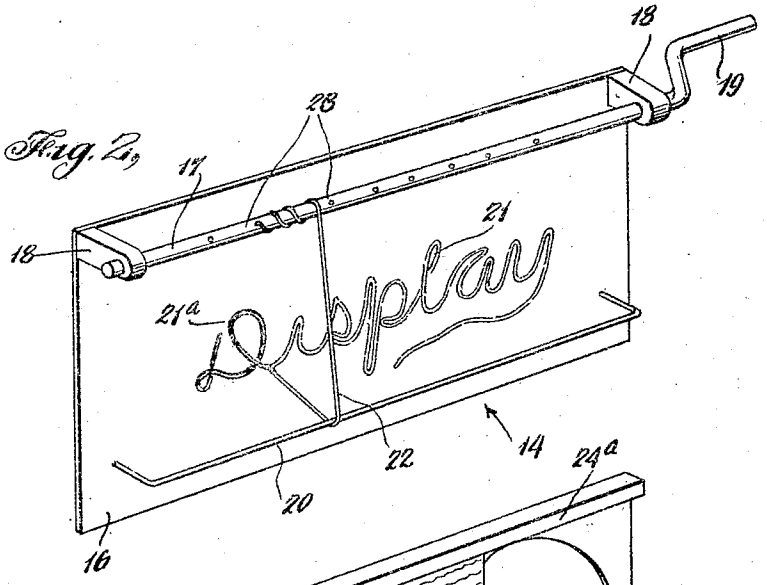
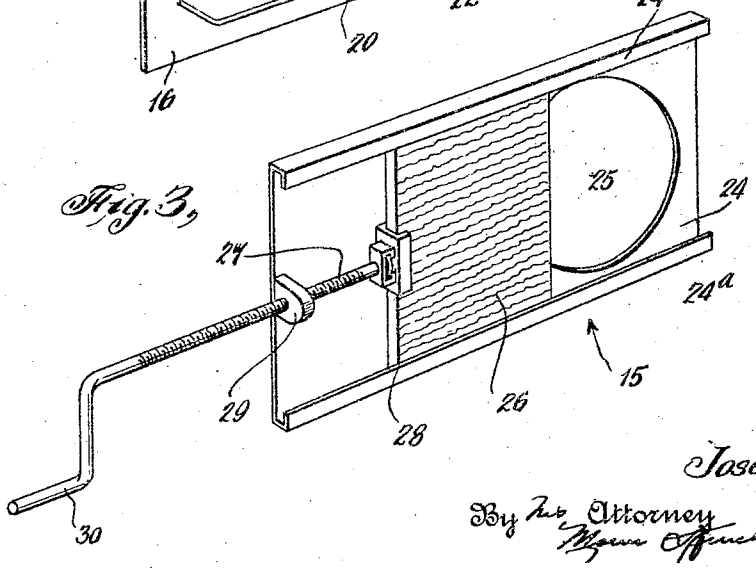


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PICTURE-PROJECTION PROCESS AND APPARATUS.

Application filed July 9, 1924. Serial No. 724,929.

To all whom it may concern:

Be it known that JOSEPH LEVY, citizen of the United States, residing at New York city, in the county of New York and State of New York, has invented certain new and useful Improvements in Picture-Projection Processes and Apparatus, of which the following is a specification.

This invention relates to picture projection processes and apparatus therefor.

It is desirable for theatrical or the like purposes to produce by optical means the effect of "sky writing," that is the writing which is now made by means of a stream of smoke emitted from a moving aeroplance guided so as to write or outline any desired symbol or word in the sky, and this invention has for one of its objects the provision of a simple, practical and efficient apparatus and process for effectively and realistically producing by projection on a screen the effect on the eye of "sky writing."

While the invention is described herein with reference particularly to the projection of such "sky writing" effect, it nevertheless is directed more generally to the provision of a process and apparatus for progressively projecting a legend, drawing, or symbol on a screen, and then gradually obliterating the same so as to produce the fading effect, which process and apparatus shall be adapted to be employed readily in connection and co-operation with optical projecting apparatus.

A further object of the invention is to provide in projecting apparatus a projecting slide adapted to project upon the screen a progressive legend, design or other desired symbol.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter described and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a diagrammatic view showing an arrangement of the device and projecting apparatus as employed in carrying out the invention;

Fig. 2 is a perspective view of a progressive drawing device made in accordance with this invention showing the lettering partially uncovered; and

Fig. 3 is a perspective view of the obliterating extension slide.

Referring in detail to the drawing, Fig. 1 shows diagrammatically the parts of a projection apparatus comprising a suitable light source 10, a reflector 11, a condensing lens 12, and an objective lens 13. These parts may be of the usual standard construction and arranged as shown in their usual relative position. 14 indicates the projection slide embodying this invention, interposed preferably between the lenses 12 and 13; and 15, an obliterating extension slide positioned preferably in the path of the projected light emitted from lens 13. The projection slide 14 it will be understood is mounted in position in the projection apparatus being inserted in the usual manner as the ordinary lantern slide.

As shown in Fig. 2, projection slide 14 comprises a slide-plate 16 formed of any suitable opaque material, preferably of sheet metal, composition, or other like suitable material, and a winding shaft 17 mounted for rotation on said plate in bearing supports 18 which extend forwardly from the upper edge thereof. Means for turning the shaft 17 is provided which for simplicity may be in the form of a crank handle 19 bent from an extended portion of shaft 17. A guiding bracket 20, the purpose whereof will hereinafter appear, is secured to plate 16 so as to extend out from and lengthwise of the lower portion thereof, said bracket

20 being preferably formed from a round rod.

The slide plate 16 bears the design, legend or other symbols 21 to be progressively projected on the screen. In the form shown in the drawing, the latter comprises the script words "Display" which is stencil-cut in the plate 16 as illustrated in Fig. 2.

The stencilled cut-out letter portions 21a of the symbol 21 are normally occupied by a continuous thread 22 of cotton, silk, or the like material, preferably inserted by working the thread 22 into said cut-out portions starting at the extreme end of the symbol 21, in this case the latter "y," and progressively working the thread 22 backwardly until all the said cut-out spaces are filled. The leading end portion of thread 22 is then passed under and in front of guiding bracket 20, and then upwardly to winding shaft 17 where it is secured in any one of the spaced apertures 23 in shaft 17, preferably the one in alignment with or just to the right of the beginning of the symbol 21 as being most convenient. To insure making the lettering light-proof, a coating of lamp black or similar material may be applied over the filled in lettering.

The obliterating extension slide 15 has a plate frame 24 formed of any suitable opaque material, as sheet metal, wood or the like with a circular opening 23 therein corresponding to the size of the objective lens 14. The side edges 24a of frame 24 are inturned to serve as guides for an obliterating member 26, the latter being mounted for sliding movement on said frame to form an obstruction of varying area over the said opening 25. Member 26 may be formed of ripple glass or other like semi-translucent material if incomplete obliteration is desired.

A suitable propelling and repelling means for controlling the sliding movement of member 26 may be provided as for example screw 27, the inner end whereof is in co-operative engagement with a piece 28 on member 26 to form a rotatable fitting. The screw 17 passes through a nut member 29 fixedly mounted on plate 24, and means is provided for turning the screw 27 in the form of a crank handle 30 at the outer end of the screen as shown in Fig. 3.

The operation of the apparatus and one example of carrying out the process embodying the invention is as follows: To project the progressive appearance of a design, legend or symbol on a screen, from the front thereof, as for instance to imitate "sky writing", the extension slide 15 with the entire openings 25 therein unobstructed is inserted over the front of lens 13 of the projection apparatus, and the device 14 is mounted between lens 12 and 13 as shown in Fig. 1, the slide-plate 16 being first filled with the thread 22 and rendered light proof as explained above. Since the device 14 intercepts the light coming through lens 12, nothing will now be projected on a screen (not shown). However, on slowly turning crank handle 19, the thread 22 is removed from the cut out portions of symbol 21 and wound on shaft 17. In Fig. 2 the thread 22 is shown partially removed from the cut-out lettering. As the winding of the thread 22 proceeds the word "Display" is progressively uncovered, projected and shown on the screen just as it would be done in the actual sky writing operation.

Before the letter "L" is reached in the above operation, crank handle 30 of the slide 15 may be rotated to cause member 26 to gradually slide over and cover the opening 25, thus gradually obliterating the projected symbol with a fading, vague cloudy effect similar to the gradual fading away of sky writing. Thus the entire effect of sky writing is reproduced in projected picture on the screen beginning with the progressive projection of the configuration on device 14 on the screen and ending with the gradual obliteration or fading thereof by operation of slide 15. To give a more natural effect, the results of the above described operation may be superimposed on a sky scene as a background projected on the screen in the well known manner.

The process and devices described above may also be utilized in producing other novel stage and the like effects.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a projection apparatus, a projection slide comprising a plate having a symbol cut therethrough, a thread occupying the cut-out portions of said plate, and means for progressively withdrawing said thread.

2. In a projection apparatus, a projection slide comprising a plate having a symbol cut therethrough, a thread occupying the cut-out portions of said plate, and a winding means mounted on the plate for progressively withdrawing said thread.

3. In a projection apparatus, a projection slide comprising a plate having a symbol cut therethrough, a thread occupying the cut-out

portions of said plate, and means for progressively withdrawing said thread, said means including a bracket for guiding the thread and a winding means.

4. In a projection apparatus, a projection slide comprising an opaque plate having a symbol stencil-cut therethrough, a thread worked into the cut-out portions of said plate, means for light proofing the filled-in portions of said drawing, and means for progressively removing the thread.

5. In combination, a projection apparatus and projection slide inserted therein comprising a plate having a symbol cut therethrough, a thread occupying the cut-out portions of said plate, and means for progressively withdrawing said thread.

6. In combination, a projection apparatus having a lens, a projection slide insertable therein comprising a plate having a symbol cut therethrough, a thread occupying the cut-out portions of said plate, and means for progressively withdrawing said thread, and an obliterating slide comprising a frame having an opening therein adapted to permit unobstructed passage of the light from the lens and a member mounted for sliding movement on the frame relative to the opening to form an obstruction to the passage of light therethrough, said frame having means for guiding and supporting said member.

7. In combination, a projection apparatus having lens, a projection slide insertable therein comprising an opaque plate having a symbol stencil-cut therethrough, a thread worked into the cut-out portions of said plate, means for light proofing the filled-in portions for the drawing, and means for progressively removing the thread, and an obliterating slide comprising a frame having an opening therein adapted to permit unobstructed passage of the light from the lens, and a ripple-glass plate mounted for sliding movement on the frame relative to the opening to form an obstruction to the passage of light therethrough and adapted to cause a fading effect to any image projected therethrough.

8. In a projection apparatus, a projection slide comprising an opaque plate having a symbol stencil-cut therethrough, and removable means positioned in said stencil-cut portions for light proofing.

9. In a projection apparatus, a projection slide comprising an opaque plate having a symbol stencil-cut therethrough, and means positioned in said stencil-cut portions for light proofing the plate, and means for progressively removing said light proofing means.

10. The art of reproducing the progressive appearance of a symbol on a screen which comprises projecting a light on an opaque body having a removable portion constituting said symbol, said portion permitting the passage of the light through said body after removal therefrom, and gradually removing said portion to progressively project the image of the symbol on the screen.

11. The art of reproducing the progressive appearance of a symbol on a screen which comprises projecting a light on an opaque body having a removable portion constituting said symbol, said portion permitting the passage of the light through said body after removal therefrom, and gradually removing said portion to progressively project the image of the symbol on the screen, and obliterating portions of the said image.

12. The art of projecting the progressive appearance of a symbol on a screen which comprises arranging a transparent symbol on an opaque plate, covering only the transparent symbol with a removable material to form a light proof body, inserting the body into the path of light beams from a projecting apparatus, and gradually withdrawing the removable material from said body to progressively permit the passage of light through the symbol on the plate to the screen.

13. The art of reproducing the progressive appearance of a symbol and obliteration thereof on a screen which comprises projecting a light on an opaque body having a removable portion constituting said symbol said portion permitting the passage of the light through said body after removal therefrom, gradually removing said portion to progressively project the image of the symbol, and interposing a semi-translucent slide in the path of the light beams passing through the drawing to cause the projected image thereof to gradually fade.

14. The art of reproducing "sky writing" effect projected on a screen which comprises forming a writing of transparent lettering, by stencil-cutting through an opaque plate, working a thread into the cut-out portions to make the plate light proof, interposing the plate in the path of light beams from a projecting appartus and gradually withdrawing the thread from the lettering to progressively permit the passage of the light to a screen.

15. The art of projecting the progressive appearance of a drawing on a screen which comprises arranging a transparent drawing on an opaque plate, covering, the drawing with a removable material to form a light-proof body, inserting the body into the path of light beams from a projecting apparatus, and gradually withdrawing the material from said body to progressively permit the passage of light through the drawing on the plate, and interposing a ripple-glass slide in the path of the light beams passing through an uncovered portion of the lettering to cause the projected image thereof to have a fading effect.

16. The art of reproducing "sky writing" effects projected on a screen which consists in projecting a sky scene on the screen to serve as a background, and causing the progressive appearance of a writing on said screen by projecting a light on a body having a removable opaque portion covering a transparent portion constituting said writing, and progressively removing said opaque portion to permit the passage of the light so that the image of the writing is gradually projected on the screen superimposed on said projected sky scene.

In testimony whereof I affix my signature.

JOSEPH LEVY.