Sept. 15, 1925. 1,553,783

H. M. LE HEW

MOTION PICTURE PROJECTOR

Filed June 5, 1922

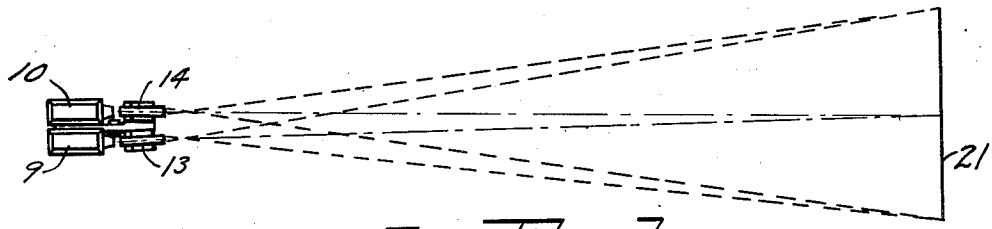


Fig 1

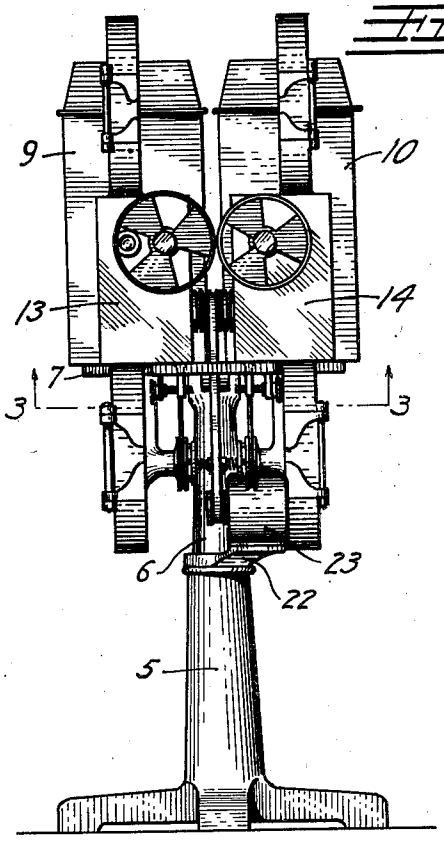


Fig 2

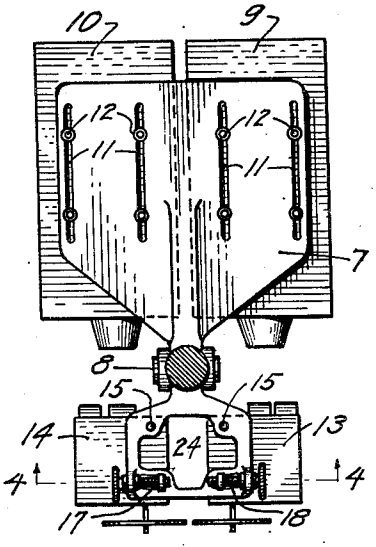


Fig 3

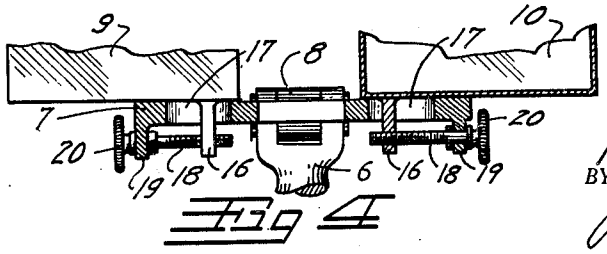


Fig 4

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UNITED STATES PATENT OFFICE.

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MOTION-PICTURE PROJECTOR.

Application filed June 5, 1922. Serial No. 566,021.

To all whom it may concern:

Be it known that I, HAROLD M. LE HEW, a citizen of the United States, and a resident of Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Motion-Picture Projectors, of which the following is a clear, full, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to machines for the projection of motion pictures and has for its principal object the provision of a device of this character which has all the advantages of two separate projecting machines and yet will eliminate the imperfect focus caused by the use of two independent and widely separated machines. All theaters of the better class, at present use two or more projecting machines, in order that no time is lost in the passing from one reel of pictures to the next. The lenses of these separate machines must be separated in the projecting booth by at least eight feet in order to allow space for the operator to work between the machines. This wide separation makes it impossible for the center line of projection to be at right angles to the screen and allows only one portion of the projected image to be in perfect focus. With the use of this invention the lenses will be separated only from six to eight inches—which allows the perfect focusing of both lenses over the entire screen.

Another object of this improved construction resides in the fact that after the two lenses are aligned with a certain screen and with each other, they will always remain so and when the second mechanism is put into operation it will always register its projected image immediately over that of the first machine. This allows the change from one reel to the next, in a continuous picture, to be made unnoticed on the part of the spectators. With the use of independent, widely separated projecting machines, the two machines may be in perfect alignment on the screen when the picture is started and yet when the time comes to cut in the second machine on the closing scenes of the first, it will sometimes be found that the second machine is out of line several feet on the screen, owing to the fact that the first machine during operation has moved slightly or that the machines or floor have settled, or that the second machine, in being prepared, has been displaced. A very slight movement in the machines will naturally be multiplied many times on the screen.

Another object of the invention resides in the ease of its manipulation as compared with separate and independent projecting machines. At present the operator has to leave the machine which he is operating in order to prepare the other machine for operation and while intent on this, he will at times overlook the fact that the light, framing, etc., on the operating machine has become imperfect. With the use of this invention, both the machine that is operating and the one that is being prepared are directly before him and the controls of both are easily within his reach. At present, upon starting up the second projecting machine on the closing of the first, the operator, who cannot reach both machines at the same time, must start the second machine at the proper time by means of the motor switch. This is injurious to both the motor and the mechanism, as all present day projectors are arranged to be started mechanically, by means of a friction clutch, and it is not intended, though necessary, to use the motor for this purpose. With the use of this invention the second machine is started and the first one stopped by means of the friction clutches, without it being necessary to stop and start the motor.

A further object and advantage resides in the economy of parts and space obtained by the use of the invention. The space occupied in the projecting booth, is but slightly more than that occupied by a single projector. Only one motor, one pedestal and stand, one speed control, etc., are used for the two projecting mechanisms, and only one lamp house need be used altho two are

shown on the accompanying drawing. This results in greatly reducing the cost of manufacture in addition to giving the machine advantages not possessed by independent projecting machines. Traveling road shows that now have to carry and set up two machines will find the carrying of this improved machine a great advantage.

Still further objects and advantages of the invention reside in the detailed construction thereof which lead to simplicity and efficiency and which will become more apparent from the following description.

The invention will now be described in detail, reference being had to the accompanying drawing, which forms a part hereof. Like numerals refer to like parts throughout the following description and in all views of the drawing.

In the drawing:

Fig. 1 is a diagrammatic plan view, showing how the projection of the two lenses is aligned on the projection screen.

Fig. 2 is a front elevation of the complete apparatus. In this view details of construction which are old in the art of projection have been, to some extent, omitted.

Fig. 3 is a cross section, looking up, on the line 3—3, Fig. 2. In this view the winding reels, driving mechanism, etc., have been omitted in order to show the improved method of mounting.

Fig. 4 is a detail cross section taken on the line 4—4 Fig. 3, reversed to correct position.

Let the numeral 5 designate a pedestal, in which is slidably mounted a standard 6, to allow for vertical adjustment. Standard 6 carries, hinged to its upper extremity, as shown at 8, a base-plate 7.

The rearward portion of base-plate 7 is broadened, to accommodate two lamp houses 9 and 10. If desired, a single broad lamp house could be used, with two lamps mounted therein, in place of the two lamp houses 9 and 10.

Base-plate 7 is provided with grooves or slots 11, in which the lamp house supporting lugs, 12, ride. This allows the horizontal adjustment of the lamp houses necessary for proper focusing of the light beam in the projection lens.

The forward extremity of base-plate 7 is also broadened to form a supporting plate for two projecting mechanisms, 13 and 14, pivotally mounted thereon.

Each of the mechanisms 13 and 14 are secured to the base-plate 7 by means of pivots, 15, near their rearward edge, and carry near their forward edge downward projecting lugs 16, which are adapted to travel in arcuate slots, 17, formed in the base-plate 7.

Lugs 16 are adapted to travel on threaded rods 18, rotatably mounted in downward turned portions 19 of the base-plate 7. Rods 18 are rotated by means of knurled heads, 20, or in any other suitable manner, and their rotation results in causing the lugs 16 to travel in the slots 17, thereby changing the direction of projection of the projecting mechanisms 13 and 14. The projecting mechanisms are so adjusted as to cause the projected image from each to register with the other in the proper position on the screen, (designated by the numeral 21 in Fig. 1). After this adjustment has been made the second machine can be started and thrown on the screen with assurance that it will always register with the projection of the first machine.

Mounted on the pedestal 5, by means of a bracket 22, is a motor 23. Motor 23 drives a single speed control apparatus located between the two projecting mechanisms 13 and 14. From the speed control the power is supplied to the projecting mechanism through any of the usual friction clutch devices. Since both of the mechanisms operate from the same speed control, the two machines will synchronize perfectly when operating simultaneously at the overlap, and cause little or no disturbance when the change is made from one machine to the other.

An opening 24 is left in the base-plate 7 between the mechanisms 13 and 14 to allow for the usual driving belts, take ups, etc.

The two lamp houses, 9 and 10, and the two projecting mechanisms, 13 and 14, are constructed opposite hand so that the doors, controls, etc., will be upon the outside of the complete machine.

While I have herein illustrated and described a specific form of my invention, I wish it understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of my invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

1. A device for the projection of motion pictures comprising, in combination, two independent, forward facing, projection mechanisms of opposite hand, mounted adjacently on a single supporting standard, the projected image of each of said mechanisms adapted to overlap that of the other, said projectors being adapted to project their images independently or simultaneously and being driven in synchronized relation from a common power transmission device.

2. A device for the projection of motion pictures comprising, in combination; a single supporting standard; two independent, forward facing, motion-picture projection mechanisms of opposite hand, mounted adjacently on said supporting standard and means for causing the projected images of said mechanisms to simultaneously register with each other on the projection screen.

3. A device for the projection of motion pictures comprising, in combination; a single supporting standard; a projector base secured on said standard; two independent, forward-facing, adjacently mounted, projection mechanisms, secured on spaced pivots on said base and means for independently revolving each mechanism on its pivot, said means comprising threaded lugs carried by said mechanisms and engaging rotatable threaded rods carried by said base.

In testimony whereof, I affix my signature.

HAROLD M. LE HEW.