

A. PAOLI.  
 MAGIC LANTERN.  
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1,002,078.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

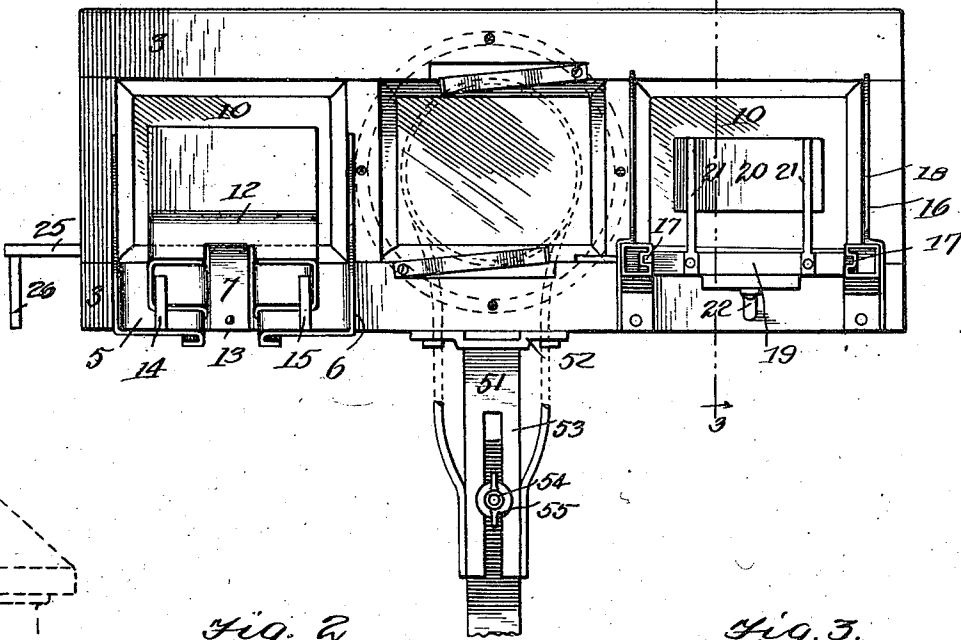
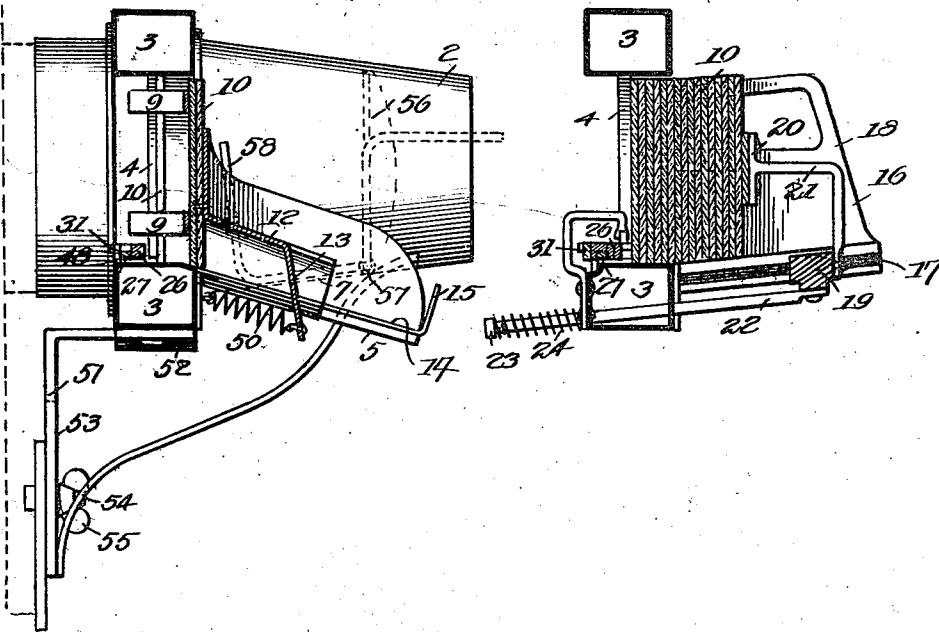


Fig. 2.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

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MAGIC LANTERN.

1,002,078.

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To all whom it may concern:

Be it known that I, ARTURO PAOLI, a subject of the King of Italy, and a resident of South Range, county of Houghton, and State of Michigan, have invented certain new and useful Improvements in Magic Lanterns, of which the following is a specification.

My invention is an improvement in magic lanterns, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a simple and easily operated mechanism for shifting the picture slides in devices of the character specified, and in such manner that the pictures will merge into each other without any abrupt demarcation between them.

Referring to the drawings forming a part hereof, Figure 1 is a front view of the improvement. Fig. 2 is an end view of the improvement in place in a projector. Fig. 3 is a section on the line 3-3 of Fig. 2, looking in the direction of the arrow. Fig. 4 is a perspective view from the rear of the improvement. Fig. 5 is a horizontal longitudinal section showing the parts in one position, and, Fig. 6 is a similar view showing the parts in another position.

The present embodiment of the invention is shown arranged between the source of light 1 and the projector 2 of a picture projector. As shown in Fig. 1, the device extends upon both sides of the projector, so that there is space for a slide in front of the projector and space for a slide on each side of the projector. The device proper comprises a frame consisting of longitudinal plates 3 and vertical plates 4 connecting the plates 3 at each end. Two magazines are connected with the frame and extend forwardly therefrom.

As shown in Fig. 5, one of the magazines consists of a plate 5 having flanged sides 6, and a longitudinal slot 7 is provided in the plate 5. A brace 8 is arranged between the plates 3 adjacent to the magazine, and springs 9 are connected with the brace and bear against the rearmost slide 10 in the magazine. The slides 10 are arranged in edgewise position on the plate 5, and the sides 6 engage the ends of the slide. As shown in Fig. 4, the sides 6 are cut away toward their front end on a curve as shown at 11. A follower 12 is movable in the magazine on the plate 5, and the said follower is

provided with a tongue 13 engaging the slot 7. Stops 14 are connected with the front of the plate 5 and extend forwardly on each side of the slot 7, and the front ends of the stops are up-turned as shown at 15 to limit the forward movement of the follower.

The magazine just described is for receiving the used slides and for storing them temporarily. The slides may be removed from the magazine by pulling the follower rearwardly and lifting out the slides.

The magazine at the opposite end of the frame is composed of forwardly extending spaced bars 16, each of which is provided with a groove 17 on its inner side. Shield plates 18 are connected with the bars, 16, one plate with each bar, and the said plates extend upwardly and engage the ends of the slides 10 to prevent longitudinal movement thereof.

A follower consisting of a bar 19 and a plate 20 offset rearwardly from the bar and connected thereto by arms 21, is movable between the bars 16. The ends of the plate 19 are reduced and engaged with the slot 17. A rod 22 extends rearwardly from the plate 19 and passes through the opening in the lower frame member 3, and is provided with a head 23 at its rear end. A spring 24 is arranged between the head and the plate 3, and the said spring normally forces the follower toward the frame, thus holding the slides 10 in position for engagement by the moving carriage or slide to be described. The said carriage comprises a bar 25, provided at its outer end with a depending handle 26 for moving the side slide or bar. The bar 25 is provided with a rearwardly extending bearing 26' which embraces and slides upon the fixed bar 27 arranged on the upper face of the lower frame member 3. The bar 25 is also provided at the end remote from the handle 26 and intermediate its ends with rearwardly extending lugs 28 and 29, and each of the said lugs is provided with a depending flange 30 for engaging the rear face of the fixed guide bar 27.

A locking lever 31 is pivoted at 32 to the flange 30 of each lug. Each lever is normally pressed downward by a spring 33 on the lug, and is limited in its downward movement by a pin 34 on the flange, the pin being arranged to hold the locking lever in horizontal position and with its free end abutting against the rear end of a pawl piv-

oted at 36 on the slide bar. One of the pawls 35 is pivoted at the end of the slide bar and the other pawl 35<sup>a</sup> is arranged intermediate the ends of the said bar. Each of the pawls (Figs. 4, 5 and 6) is cut away at its forward end to form a nose 37 for engaging the slide 10, and a spring 38 is provided for each pawl for normally pressing the pawl into the inclined position shown in Fig. 6. When in such position, the pawls do not engage the slides, for when so turned, the noses 37 on the pawls are moved rearwardly and out of position to engage the slide.

The pawl 35<sup>a</sup> is designed to move the picture slide just shown from position in front of the projector to the first named magazine. The said pawl is provided with a pin 39 on the nose 37, and the said pin is designed for engaging a stop 40 on an overhanging arm 41 secured to the lower frame member 3 at 42.

When the slide bar 25 is moved to the left of Figs. 4, 5 and 6, as far as possible, the pawl 35 engages a block 43 on the frame adjacent to the last named magazine, and is moved from the position shown in Fig. 6 to the position shown in Figs. 4 and 5, that is, from a non-active inclined position to an active position at right angles to the slide bar. At the same moment, the pin 39 on the pawl 35<sup>a</sup> engages the stop 40 on the arm 41, and is similarly moved, that is, from an inclined non-active position to an active position at right angles to the slide bar. When so moved, the springs 33 force the locking members into the position shown in Figs. 4 and 5, that is, with the free end of each lever into position against the rear end of the adjacent pawl, thus locking the said pawls in active position at right angles to the slide bar. When now the slide bar is moved to the right of Figs. 4, 5 and 6, the nose of the pawl 35 engages a picture slide in the last named magazine, and the nose of the pawl 35<sup>a</sup> engages the slide 10, that is, at this time, in position between the source of light and the picture. The last named slide slips between the springs 9 and the slides 10 already in the magazine at the right, while the first named slide is moved in projecting position, and is held in such position by a spring 44 secured to a cross bar 45 connecting the frame members 3 between the magazines and stops 46 on the upper and lower frame members. It will be understood that the springs 44 are at the top and bottom of the picture slide and in such position that they do not appear on the projected picture.

As the slide bar reaches the end of its movement to the right, the locking levers 31, each of which is provided with a cam surface 47 on its lower edge, are engaged by a pin 43 on the frame member 3, the said pin engaging the cam surface 47 and lifting the

lever against the resistance of the spring 33 a sufficient distance to disengage the free end of the lever from the rear end of the pawls. The springs 38 immediately force the pawls into the inclined non-active position of Fig. 6, and the slide bar is returned to the opposite end of the frame and engaged with other slides.

It will be observed that when the slide bar is at the left of Figs. 4, 5 and 6, and is engaged with a slide 10 in the magazine at the left of the said figures, the pawl 35<sup>a</sup> is at the left of the slide in projecting position. At the commencement of the movement to the right of the slide bar, the pawl 35<sup>a</sup> is not in engagement with a slide, and the said pawl does not engage the slide in projecting position until the rearmost slide in the magazine has been moved some distance toward the projector, as shown in Fig. 5. This is due to the arrangement of the pawls on the slide bar, the said pawls being arranged a distance apart from each other less than the length of a picture slide, so that when both pawls are engaged with slides, the succeeding slide will overlap the edge of the preceding slide, as shown in Fig. 5. This prevents any break in the picture, the overlapping being the depth of the border on the slide not covered by the picture.

It will be noticed that the frame member 4 at the left of the frame is notched at 49 to permit the pawl 35 to engage the edge or end of the rearmost picture slide. The pawl 35 also extends farther forward than does the pawl 35<sup>a</sup>, so that the nose of the pawl 35<sup>a</sup> may move behind the slides in the magazine as shown in Fig. 5 without engaging the said slides. The pawl 35 moves the slides from the magazine behind the spring 44, and the said spring pushes the slide rearwardly into position for engagement by the pawl 35<sup>a</sup> as shown in Fig. 5.

The tongue 13 of the follower in the first named casing, has connected thereto at one end, a spring 50 whose opposite end is connected with the frame and normally draws the follower rearwardly to hold the picture slides against the springs 9. The frame is provided with a bracket arm 51 in the shape of an angle plate, and one side of the angle plate is passed through a bearing 52 on the frame. The other end is slotted as shown at 53, and the slot is engaged with a threaded stem 54 on the projector 1. A wing nut 55 engages the stem for securing the bracket in adjusted position. A shutter 56 is arranged in the projector 2 for shutting off the light from the curtain (not shown). The said shutter is concave transversely, and is hinged at 57 to the projector 2.

An arm 58 is connected with the pivot pin 59 on which the shutter is hinged, the said arm being outside of the tube. It will

be evident that by turning the arm into the dotted line position of Fig. 2, the shutter will be opened and closed. It will be noticed that the frame members 3 and 4 are preferably of sheet material, for the sake of lightness.

I claim:

1. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of pawls pivoted transversely of the slide bar intermediate their ends, each pawl having a nose at one end for engaging a slide, a locking lever pivoted to the slide by one end adjacent to the opposite end of each pawl, a stop on the slide for normally holding each locking lever in position for engaging the end of the pawl to hold the pawl at right angles to the direction of movement of the slide bar, and in position for engaging a picture slide, a spring pressing each of the levers toward the stop, cams on the frame for lifting the levers to release the pawls, springs normally acting to hold the pawls in inoperative position and inclined with respect to the direction of movement of the slide bar, stops on the frame for engagement by the noses of the pawls to move the said pawls into active position at right angles to the slide bar, a follower in each magazine, and a spring pressing each of the said followers toward the slide bar, the pawls being arranged at a distance from each other less than the length of the picture slide, and being offset laterally with respect to each other to permit the adjacent edges of the slides carried by the pawls, to overlap.

2. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of pawls pivoted transversely of the slide bar intermediate their ends, each pawl having a nose at one end for engaging a slide, a locking lever pivoted to the slide by one end adjacent to the opposite end of each pawl, a stop on the slide for normally holding each locking lever in position for engaging the end of the pawl to hold the pawl at right angles to the direction of movement of the slide bar, and in position for engaging a picture slide, a spring pressing each of the levers toward the stop, cams on the frame for lifting the levers to release the pawls, springs normally

acting to hold the pawls in inoperative position and inclined with respect to the direction of movement of the slide bar, stops on the frame for engagement by the noses of the pawls to move the said pawls in active position at right angles to the slide bar, a follower in each magazine, and a spring pressing each of the said followers toward the slide bar.

3. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of pawls pivoted transversely of the slide bar intermediate their ends, each pawl having a nose at one end for engaging a slide, a locking lever pivoted to the slide bar by one end adjacent to the opposite end of each pawl, a stop on the slide bar for normally holding each locking lever in position for engaging the end of the pawl to hold the pawl at right angles to the direction of movement of the slide bar, and in position for engaging a picture slide, a spring pressing each of the levers toward the stop, means on the frame for lifting the levers to release the pawls when the picture slides are in register with the central opening and the magazine respectively, springs engaging the pawls and acting normally to hold them in inoperative position, and means for moving the pawls into operative position, the pawls being arranged at a distance from each other less than the length of a picture slide, and being offset laterally with respect to each other to permit the adjacent edges of the picture slides carried by the pawls to overlap.

4. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of pawls pivoted transversely of the slide bar intermediate their ends, each pawl having a nose at one end for engaging a slide, a locking lever pivoted to the slide by one end adjacent to the opposite end of each pawl, a stop on the slide for normally holding each locking lever in position for engaging the end of the pawl to hold the pawl at right angles to the direction of movement of the slide bar, and in position for engaging a picture slide, a spring pressing each of the levers toward the stop, means on the frame for lifting the levers to release the pawls when the picture slides are in register with the central open-

ing and the magazine respectively, springs engaging the pawls and acting normally to hold them in inoperative position, and means for moving the pawls into operative

5 position.

5. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of pawls pivoted transversely of the slide bar intermediate their ends, each pawl having a nose at one end for engaging a slide, releasable means for holding each pawl at right angles to the slide, and in engaging position, means for releasing the said means at the end of the travel of the slide bar in one direction, and means for moving the pawls into active position at the end of the travel of the slide bar in the opposite direction.

6. A device of the character specified, comprising in combination with a picture projector, a frame arranged transversely thereof, and having a central opening registering with the projector, a magazine for picture slides supported by the frame on each side of the central opening, a slide bar movable on the frame transversely of the projector, a plurality of means on the slide bar for engaging the picture slides, means on the bar for normally holding said engaging means in inoperative position, means on the frame for moving said engaging means into operative position at the end of the movement of the slide bar in one direction, a locking device for holding the engaging means in operative position, and means at the end of the travel of the slide bar in the opposite direction for releasing the locking means.

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Witnesses:

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