No. 695,548. Patented Mar. 18, 1902.

W. FREDRICK.

AUTOMATIC LANTERN SLIDE MOVING DEVICE.

(Application filed Nov. 9, 1901.)

(No Model.) 2 Sheets—Sheet 1.

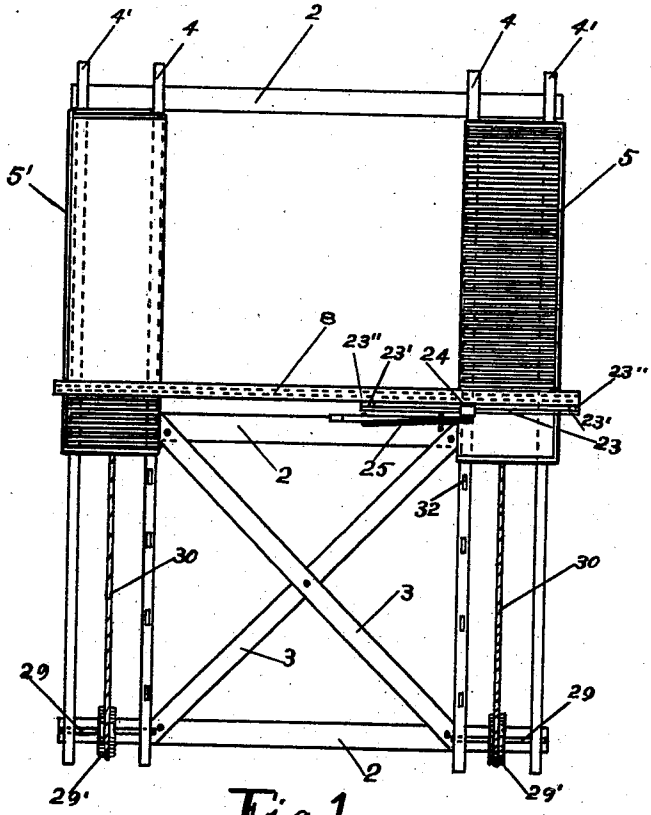


Fig 1.

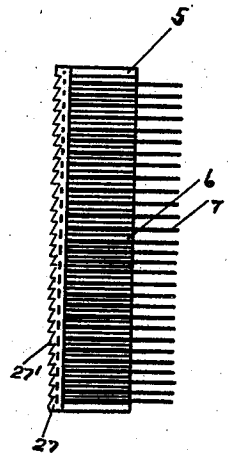


Fig 3.

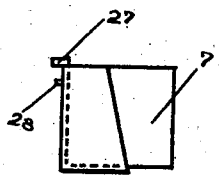


Fig 4.

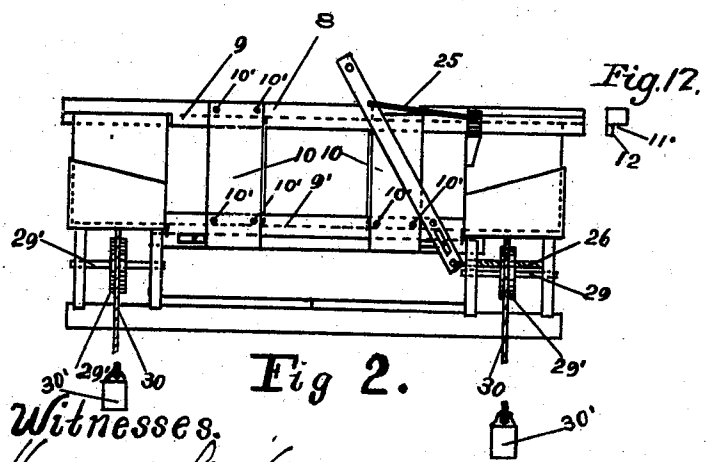


Fig 2.

Fig. 12.

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No. 695,548. Patented Mar. 18, 1902.

W. FREDRICK.

AUTOMATIC LANTERN SLIDE MOVING DEVICE.

(Application filed Nov. 9, 1901.)

(No Model.) 2 Sheets—Sheet 2.

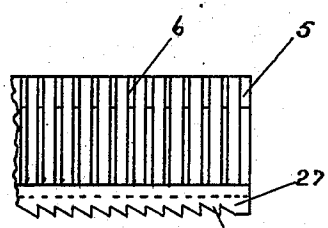


Fig 8.

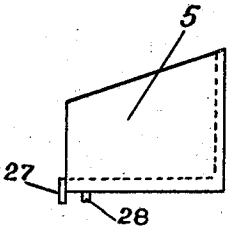


Fig 9.

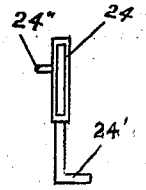


Fig 10.

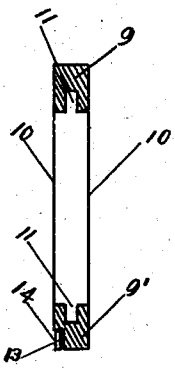


Fig 11.

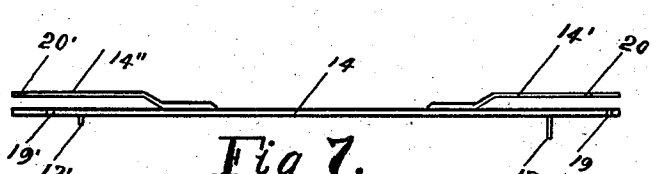


Fig 7.

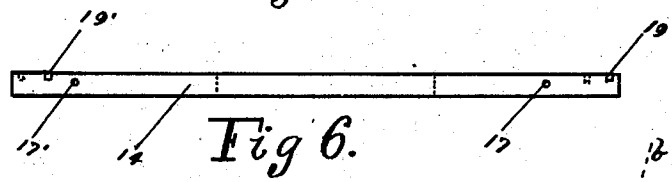


Fig 6.

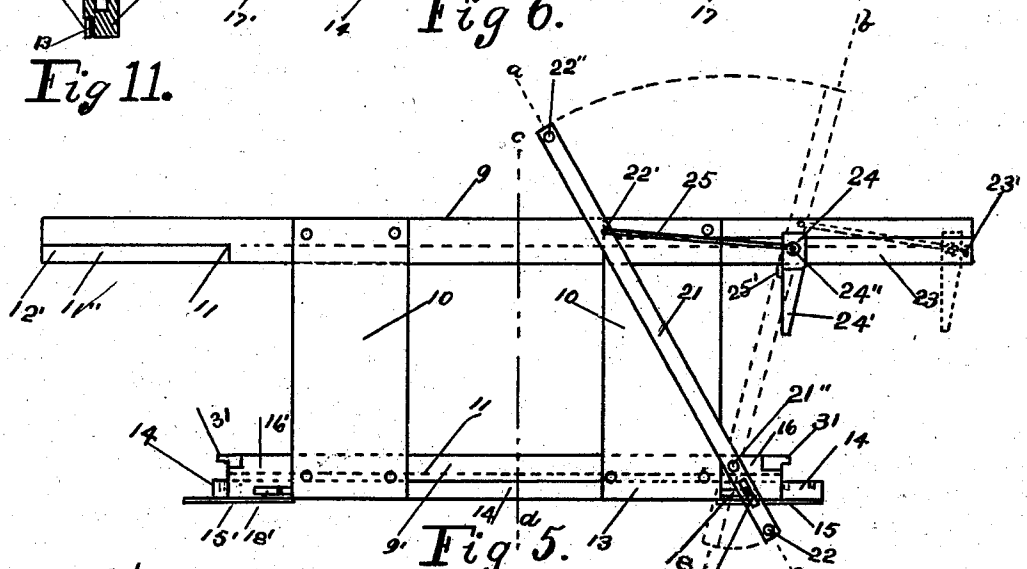


Fig 5.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM FREDRICK, OF CLYDE, OHIO.

AUTOMATIC LANTERN-SLIDE-MOVING DEVICE.

SPECIFICATION forming part of Letters Patent No. 695,548, dated March 18, 1902.

Application filed November 9, 1901. Serial No. 81,687. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FREDRICK, a citizen of the United States, residing at Clyde, in the county of Sandusky and State of Ohio, have invented a new and Improved Automatic Lantern-Slide-Moving Device; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to automatic devices for moving slides or views to and from a projecting or magic lantern; and it consists of the novel features, details of construction, and combination of parts, which hereinafter will be more fully disclosed and finally claimed.

The object of my invention is to provide a simple, cheap, and effective slide-carrying device by means of which a lecturer or other person may at a distance from the lantern cause the slides to be automatically transferred to and brought away from the optical portion of the lantern in such succession and at such times as may be appropriate to the context and character of his discourse, thus placing the display of the views directly under the control of the lecturer and dispensing with the usual attendant.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top perspective view of a device embodying my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a perspective view of a cabinet, showing stalls with views in position therein. Fig. 4 is an end view of the same. Fig. 5 is a perspective view of the guideway. Fig. 6 is a rear elevation of ratchet-bar. Fig. 7 is a top view of same, showing springs and pins thereon. Fig. 8 is a vertical section of cabinets, showing rack and stalls. Fig. 9 is an end elevation of the same. Fig. 10 is an end elevation of sleeve and finger. Fig. 11 is a detail vertical section of guideway at *c d* on Fig. 5. Fig. 12 is a right end view of the projecting arm of the upper horizontal member of the guideway, showing the L-shaped recess thereon.

My invention comprises a base consisting of the cross-pieces 2, the runners 4 and 4′, arranged on opposite sides of said cross-pieces and extending longitudinally thereof, and the diagonal strips 3, adapted to rigidly hold the cross-pieces and runners in proper adjustment. The cabinets or magazines 5 and 5′ are adapted to rest on and are longitudinally movable along the runners 4 and 4′ and are preferably provided with the stalls 6, in which the slides 7 are arranged in the order in which they are to be shown. The inner sides of these cabinets are open to permit of the free movement of the slides or views from the cabinet 5 to the cabinet 5′, as is hereinafter fully explained.

The cabinets or magazines 5 and 5′ are connected by the guideway 8, which consists of the upper horizontal member 9, the lower horizontal member 9′, and the side strips or pieces 10, said strips being secured to the horizontal members by the screws or rivets 10′. The upper and lower horizontal members 9 and 9′ are provided with the grooves 11 11 on their inner surfaces and extending their entire length, making a suitable track for the slides to run in as they are being pushed through the guideway. On the overhanging ends of the member 9 are the L-shaped recesses 11′ and 11″, the recess 11′ over the cabinet 5 opening to the front, allowing the view to be carried in line with the grooves 11, and the recess 11″ opening to the rear to permit of the view moving away from the grooves 11 with the rearward movement of the cabinet 5′. The shoulder 12 limits the rearward movement of the view, and the shoulder 12′ prevents its falling forward in the cabinet 5′ if the stalls in said cabinet are dispensed with. On the under part of the horizontal member 9′ is the recess 13, (shown in Fig. 11,) extending its entire length and in which is movably fixed the ratchet-bar 14. This bar is held in place in said recess 13 by the projecting plates 15 and 15′ on the under side of the member 9′ and the plates 16 and 16′ on the rear side of the said member 9′. The plates 15 and 15′ each have an aperture in their projecting ends which fit over a dowel-pin mount-

ed in a recessed portion of the runners 4 4 (not shown in drawings) and tend to rigidly hold the guideway and prevent any lateral or longitudinal movement thereof. The ratchet-bar 14 has on its front face the springs 14′ and 14″ and on its rear face the projecting pins 17 and 17′, which pins project loosely through the elongated slots 18 and 18′ in the side plates 16 and 16′ on the member 9′ and permit a limited reciprocation of the bar 14. The said bar 14 and the springs 14′ and 14″ have the notches 19 and 19′ and 20 and 20′ formed on their upper surfaces, their arrangement at one end being the reverse to that of the other end. The extended pin 17 in the bar 14 engages with the elongated slot 21′ in the lever or oscillating member 21. This lever 21 is fulcrumed to the horizontal member 9′ at 21″ and has at its lower end the aperture 22 and at its upper end the apertures 22′ and 22″.

On the end of the horizontal member 9′, projecting over the discharging-cabinet 5, the guide-strip 23 is secured by means of the bolts or rivets 23′, Fig. 1, and is held slightly away from the member 9 by the washers or collars 23″, insuring the free movement thereon of the sleeve 24. Integral with this sleeve is an L-shaped finger 24′, projecting downwardly and inwardly under the member 9 and adapted to engage the slides as they are brought in line with the grooves 11 on the inner surfaces of the members 9 and 9′ and draw them into the guideway. On the sleeve 24 is the pin 24″, to which is pivotally attached the push-bar 25 and having its other end bent inwardly and extending through and movably secured in the aperture 21′ of the lever 21. The movement of the sleeve 24 on the guide-strip 23 is limited by the pin 25′, located on the under side of the member 9.

In the aperture 22, at the lower end of the lever or oscillating member 21, is secured one end of a spring 26, which projects through an aperture in the runner 4 adjacent to said lever and is secured at its other end to the runner 4′ by any convenient and ordinary means. This spring should be of sufficient strength to draw the lever 21 when in the position indicated by the dotted line *b b* back to its normal position, as indicated by the dotted line *a a*, and at the same time draw the slide with which the finger 24′ is engaged in the position between the lens and the cabinet 5.

The cabinets 5 and 5′ are made of any suitable material, preferably wood, and comprise a bottom, two end pieces, a rear side, and the stalls 6, which are securely set in grooves formed in the bottoms and rear sides of the cabinets and are so arranged that they aline perfectly with the grooves 11 in the members 9 and 9′ of the guideway. I do not confine myself to the use of these stalls in the cabinets, as the same object can be attained without them. Secured to the lower inner portion of the cabinets are the racks 27, extending slightly below the bottoms of the cabinets and having the downwardly-projecting teeth 27′, which engage with the projecting ends of the ratchet-bar 14 and the springs 14′ and 14″ and alternately pass through the notches 19 and 20 and 19′ and 20′ on said bar and springs as the bar 14 is reciprocated by the oscillation of the member 21. The cabinets are prevented from any lateral movement on the runners by the racks 27, which extend slightly below the bottoms of the cabinets, engaging with the inner sides of the runners 4 4 and the cleats 28, secured to and extending longitudinally of the cabinet-bottoms engaging with the outer sides of the runners 4 4, thus insuring their direct rearward movement and preventing any lateral play. Rotatably mounted between each set of runners at their rear ends are the shafts 29, having intermediate of their ends the pulleys 29′. These pulleys are rigidly secured to said shafts, the latter rotating in apertures in the runners 4 and 4′. Over the pulleys 29′ are placed the cords 30, which are carried under and secured to the forward ends of the cabinets by hooks or other approved means and having the weights 30′ attached to their other ends, which hang at the rear of and below the base. When the cabinets are placed in position on their respective runners, the ears 31 on the plates 16 and 16′ project over the upper edge of the racks 27 and prevent the cabinets from being lifted or removed from the tracks until they have run their course. To insure the free movement of the cabinets on the runners 4 and 4′, a series of antifriction-rollers 32 are embedded in and project slightly above the surfaces of the runners. I wish it understood, however, that my invention may be used without these rollers; but they are preferably used to prevent any possible binding of the cabinets on the runners.

In operation the base is usually slightly elevated, so that the runners have downwardly and forwardly inclined surfaces. The two rear cross-bars 2 are arranged so that the usual-sized stereopticon-lantern will have its feet resting on them. When the lantern is in position, the guideway 8 is pushed through the slide-slot of the lantern and its lower horizontal member 9′ secured to the inner runners 4 4 by means of the projecting plates 15 and 15′, being removably secured to dowel-pins in said runners. The discharging-cabinet 5, with the slides arranged in the stalls in the order to be shown, and the receiving-cabinet 5′ are placed on the runners so that the ears 31 extend over the racks 27, and the teeth 27′ on said racks engage with the projecting ends of the bar 14 and the springs 14′ and 14″. When the operator desires to feed a slide into the lantern, the lever 21 is laterally drawn to the position *b b*, pushing the sleeve 24 and the finger 24′ over to the position shown in Fig. 5. As the finger 24′ reaches this position the tooth on the rack 27 which was engaged with the bar 14 passes through the notch 19, drawing the spring 14′, with which the next tooth of rack is engaged, flush

with the bar 14, and at the same time the cabinet 5, actuated by the weight on the cord 30, moves rearwardly on the runners the distance of one stall, thus placing the slide in line with the finger 24′ and the grooves 11 in the guideway. The lever then returns to its normal position *a a*, drawing the slide into the guideway and leaving it in the position between the cabinet 5 and the optical portion of the lantern, to be pushed in front of the lens by the next slide as it is drawn from the box in the same manner. As the slides are pushed through the guideway they are received in the stalls of the cabinet 5′, which, being actuated by the same ratchet movement as that of the cabinet 5, moves rearwardly step by step and simultaneously with the said cabinet 5. The weights, in connection with the downwardly and forwardly inclined surface of the runners, insure a quick response in the movement of the cabinets, the teeth of the racks being successively engaged and released as the ratchet member 14 is reciprocated.

Should the operator desire to operate the lantern from a different part of the room to that in which it is situated, a cord may be attached to the aperture 22″ of the lever 21, passed through a screw-eye (not shown in drawings) located on the outer end of the horizontal member 9, adjacent to the cabinet 5, and carried to where the lecturer is standing, thus enabling him to automatically operate the slides in such succession and at such times as may be appropriate to the context and character of his discourse, placing the display of the views directly under his control and dispensing with the usual attendant.

Having thus described my invention, what I claim as new is—

1. In an automatic lantern-slide-moving device, the combination of a base, runners on opposite sides of base, discharging and receiving cabinets, a guideway comprising two horizontal members and side strips, extending transversely of the runners and connecting the cabinets, and means to move the receiving-cabinet intermittently, substantially as specified.

2. In an automatic lantern-slide-moving device, the combination of a base, a series of tracks on said base, antifriction-rollers pivotally secured in their surfaces, discharging and receiving cabinets, a guideway connecting said cabinets and comprising transverse horizontal members and side strips, and means provided for the intermittent consecutive movement of the cabinets on said tracks, substantially as specified.

3. In an automatic lantern-slide-moving device, the combination of a series of tracks, magazines on said tracks, slides in the magazines, a guideway connecting said magazines and comprising upper and lower horizontal members having grooved inner surfaces, side pieces connecting said members, a ratchet-bar located in said guideway, a lever adapted to impart a longitudinally-reciprocating motion to said ratchet-bar, means to permit the magazines to move longitudinally of the tracks, weights attached to said magazines to cause said longitudinal movement, and means provided for feeding slides into the guideway as magazines are moved on said tracks, substantially as specified.

4. In an automatic lantern-slide-moving device, the combination of a base, tracks arranged on opposite sides of base, magazines movable on said tracks, a guideway connecting the magazines and consisting of upper and lower transverse members having grooved inner surfaces, and rigidly held in proper adjustment to each other by side strips, the said upper member extending out over the magazines and lower member reaching to and its grooved surface being on a level with the magazine bottoms, and means for simultaneously moving magazines longitudinally of the tracks, substantially as specified.

5. In an automatic lantern-slide-moving device, the combination of a base, tracks on opposite sides of base, magazines movably placed on said tracks, a series of stalls arranged in the magazines, a slide-carrier connecting said magazines and consisting of an upper member extending over and past the magazines, a lower member extending to and on a level with magazine-bottoms, side strips, a ratchet-bar longitudinally movable in said lower member and having projecting ends, springs on said projecting ends, the ends and springs notched, a pin on the lower member, racks secured to the lower inner portion of magazines and arranged to engage with ratchet-bar and springs and alternately pass through notches in said bar and springs, means providing for the longitudinal reciprocation of ratchet member and means to impart a lengthwise movement of the magazines, substantially as specified.

6. An automatic lantern-slide-moving device, comprising a base, two slide-boxes, runners on opposite sides of base having a series of antifriction-rollers in their surfaces, means for simultaneously moving boxes longitudinally of the runners, a guideway consisting of two horizontal members having grooved inner surfaces, one member projecting over and beyond the boxes, the other being intermediate and on a level with bottom of boxes, side strips connecting said members, a lever fulcrumed to said lower member, a guide-strip secured to rear side of one end of upper member, a sleeve on said guide-strip, an L-shaped finger projecting downwardly from said sleeve and to engage with and push a slide into guideway, a push-rod engaging with said sleeve and lever, substantially as specified.

7. In an automatic lantern-slide-moving device, the combination of a base, tracks on opposite sides of base, discharging and receiving magazines, a guideway connecting magazines and comprising upper and lower

horizontal members, said upper member projecting over and slightly beyond magazines and lower member interposed between lower portion of magazines, longitudinally-reciprocating bar movably secured in said lower member and having projecting ends, means for holding bar in place, springs on said projecting ends, said ends and springs provided with notches, racks secured to inner lower portion of magazines and adapted to engage with said projecting ends and springs and alternately pass through notches, means to impart a longitudinally-reciprocating motion to said bar and means to impart an intermittent consecutive rearward movement to magazines, substantially as specified.

8. In an automatic lantern-slide-moving device, the combination of a base, a series of runners on opposite sides of base, discharging and receiving cabinets on said runners, a guideway communicating with said cabinets and comprising upper horizontal member projecting over and past said cabinets, a lower horizontal member interposed between and extending to said cabinets, said members having grooved inner surfaces, a lever fulcrumed to lower member, a guide-strip secured to upper horizontal member, a sleeve movable on said strip, means provided to secure movement to said sleeve, a pin on under side of upper horizontal member to limit movement of said sleeve, a downwardly-extending L-shaped finger attached to said sleeve and adapted to engage with and draw the slides into guideway, substantially as described.

9. In a lantern-slide-moving device, the combination of discharging and receiving cabinets, a connecting-guideway between said cabinets, a base, tracks on opposite sides of base, a series of antifriction-rollers, pivotally secured in their surfaces, a rod between each set of tracks, wheels on said rods, strings passing over said wheels, weights at one end of said strings, the other ends being secured to said cabinets, a longitudinally-reciprocating ratchet-bar in lower portion of guideway and having projecting ends, springs on said ends, said ends and springs provided with notches, racks on lower inner sides of cabinets and extending slightly below the same, and adapted to engage said ends and springs and alternately pass through said notches as bar is reciprocated producing a rearward movement to said cabinets, substantially as specified.

10. A lantern-slide-moving device, comprising a base, a series of runners on opposite sides of base, discharging and receiving cabinets, racks on lower inner sides of said cabinets, a guideway connecting cabinets and consisting of upper and lower horizontal members, projecting arms on upper member extending over and beyond said cabinets, side pieces connecting said members, an oscillating member on said guideway, a guide-strip secured to one of the projecting arms, a sleeve on said guide-strip, a push-bar connecting said sleeve and oscillating member, a pin to limit movement of said sleeve, a downwardly-projecting L-shaped finger secured to said sleeve and adapted to engage with and move a slide as member is oscillated, substantially as specified.

11. A lantern-slide-moving device, comprising a base, a series of runners on opposite sides of base, discharging and receiving cabinets, partitions in said cabinets, a guideway comprising upper and lower horizontal members and having grooved inner surfaces, projecting arms on upper member, said projecting arms provided with recesses, racks on said cabinets, a longitudinally-reciprocating bar in said guideway and engaging said racks, springs on its projecting ends, notches in said springs and ends, an oscillating member to impart motion to said bar, a guide-strip on upper projecting member, a sleeve on said guide-strip and means for reciprocating sleeve, substantially as specified.

12. In a lantern-slide-moving device, the combination of a base, a series of runners on opposite sides of base, discharging and receiving cabinets, a guideway connecting said cabinets, and comprising transverse horizontal members and side pieces, means for the simultaneous rearward movement of the cabinets and means providing for the moving of slides in guideway, substantially as specified.

13. In an automatic lantern-slide-moving device, the combination with a base, a series of tracks, discharging and receiving cabinets, slides in one of said cabinets, a guideway comprising upper and lower horizontal members and side strips, of means providing for the movement of the cabinets on said tracks, and means for actuating the movement of the slides in said guideway comprising a lever, a guide-strip, a sleeve on said guide-strip, a projecting finger, and connection between said lever and sleeve, substantially as specified.

14. In a lantern-slide-moving device, the combination with a base, runners on opposite sides of base, discharging and receiving cabinets, of slides in said discharging-cabinet, a guideway consisting of an upper transverse member, projecting arms on said member, a lower transverse member, a downwardly-projecting finger movably located on one of said projecting arms and adapted to engage with slides, means for reciprocating said finger and moving slides through said guideway from one cabinet to the other, and means provided for the simultaneous lengthwise movement of the cabinets as slides are moved in said guideway, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM FREDRICK.

Witnesses:
ASHTON H. COLDHAM,
HARVEY SCRIBNER.