

(No Model.)

2 Sheets—Sheet 1.

E. I. S. HART.
MAGIC LANTERN.

No. 484,854.

Patented Oct. 25, 1892.

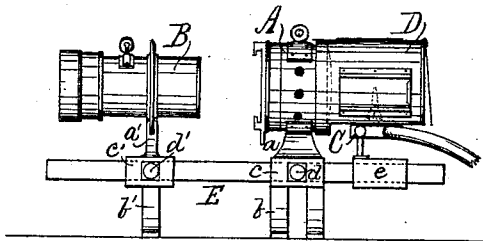


Fig. 1.

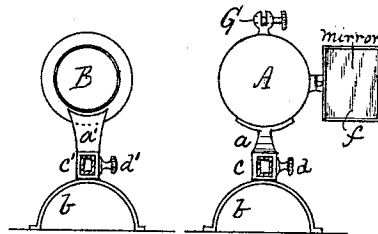


Fig. 2.

Fig. 3.

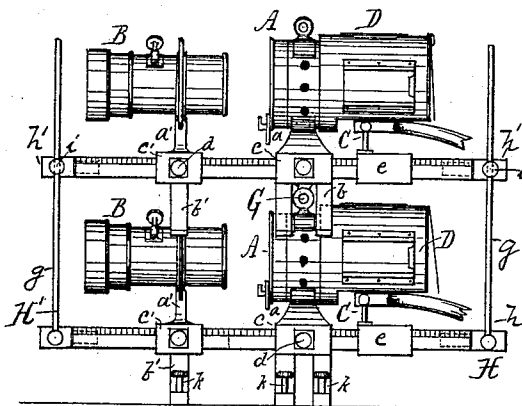


Fig. 4.

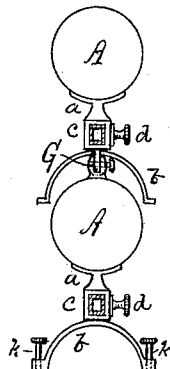


Fig. 5.

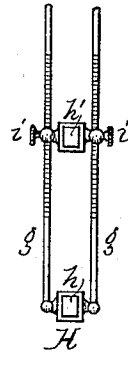


Fig. 6.

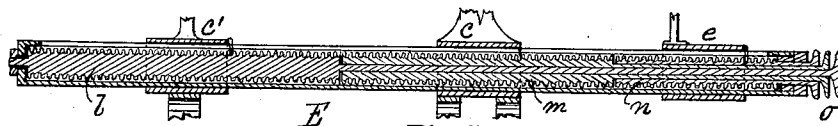


Fig. 7.

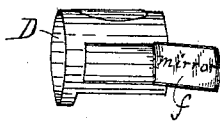


Fig. 8.

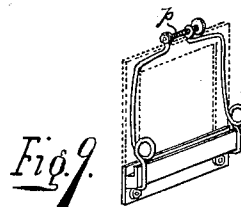


Fig. 9.

Witnesses
J. C. McCormick
Thomas Conner

Inventor
Emanuel Hart

(No Model.)

2 Sheets—Sheet 2.

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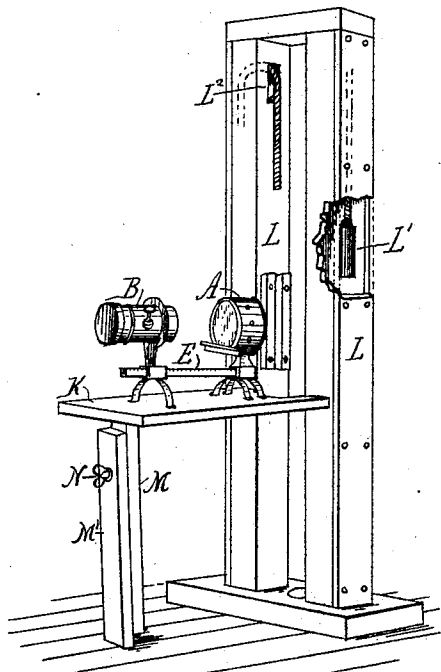


Fig. 10.

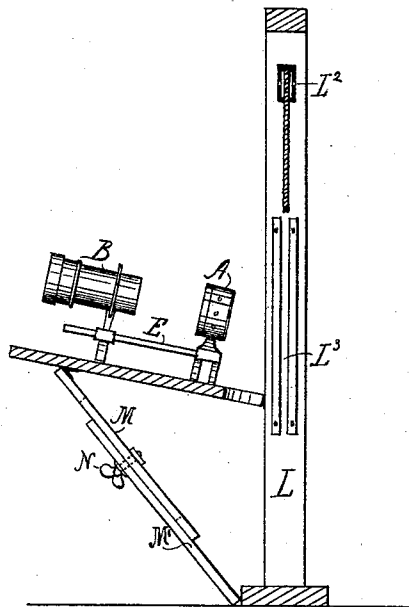


Fig. 11.

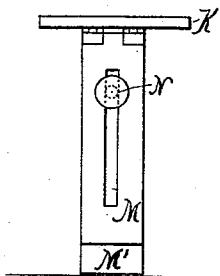


Fig. 12.

Witnesses
J. C. McCormick
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Inventor
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UNITED STATES PATENT OFFICE.

EMANUEL I. S. HART, OF NEW YORK, N. Y.

MAGIC LANTERN.

SPECIFICATION forming part of Letters Patent No. 484,854, dated October 25, 1892.

Application filed February 25, 1891. Serial No. 382,733. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL I. S. HART, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Magic Lanterns, of which the following is a specification.

My invention relates to magic lanterns or stereopticons, the lighting thereof, and supports therefor, whereby their use for exhibition purposes is greatly facilitated; and my invention consists in the combination of condenser and objective lens-carriers, (each provided with a special and suitable supporting-standard,) and a single hollow longitudinal connecting bar or beam of angular shape (in cross-section) passed through and fitted to a correspondingly-angular opening in the vertical stem of each standard.

It further consists of a certain supporting table or shelf, having at one end an adjustable leg whereby the sloping or leveling of the table may be set and at the other end vertical standards provided with arrangement of cords, pulleys, and weights, whereby may be hung the lighting device, and its exact position in line with the center of all the lenses of the lantern exactly maintained at no matter what slope the table may be set, all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a magic lantern, the lens-carriers supported each by a single standard, and the standards connected by a longitudinal bar or beam of angular cross-section passed through angular openings in the stem of each standard. Fig. 2 is a front elevation of objective-mounting or carrier and standard. Fig. 3 is a front elevation of condenser-mounting with standard. Figs. 4, 5, and 6 are views illustrating a manner of using two lanterns at one time. Fig. 7 is a longitudinal section of the angular connecting bar or beam with sectional worm-gear in its hollow and connection of the lens-carrier standards therewith. Fig. 8 shows in perspective a hood which may be sometimes used with the lantern in case other lighting is used than that herein provided and described. Fig. 9 shows in perspective the slide-

holder used with this lantern and herein described. Fig. 10 shows in perspective the lantern with its table, having adjustable leg and vertical standards with the light-carrying device and counter-balance. Fig. 11 is a vertical section of the lantern-table and light-holder, the table shown as at a slope to throw the view upward. Fig. 12 is a rear view of the adjustable leg supporting the table.

In the drawings, A indicates the mounting or lens-carrier of condenser, and B the mounting or lens-carrier of objectives, constructed as usual.

Beneath the condenser-mounting is shown a supporting-standard connected thereto by suitable means and comprising stem *a*, legs *b*, and at *c* a sleeve or opening of rectangular shape for reception of a lengthwise connecting-bar E. The objectives are also provided with a similar standard secured to their mounting and formed with stem *a'*, legs *b'*, and sleeve *c'*.

At E is the lengthwise connecting-bar, of angular shape, adapted to fit sleeves *c* and *c'* of the standards. Passing through both sleeves the bar E unites the objectives and condensers, constituting them one lantern.

The rod or bar E, when desired, is marked with a scale, as shown in Fig. 4, to determine the proper distance apart at which to place the operative parts of the lantern held by sleeves thereupon. Thumb-screws through one side of each sleeve serve to secure the parts to the bar when set.

In Fig. 7 the bar E is shown with sleeves *c* and *c'* thereon in section. The bar is hollow, and within the hollow I arrange a threaded rod *l*, whereby the sleeve *c'* may be moved forward or backward, and at *m* another threaded rod, encircling a reduced portion or shank of rod *l*, whereby the sleeve *c* may be moved forward or backward. I also, when desired, add thereto another threaded rod *n*, encircling a shank of rod *m*, whereby another sleeve *e* may be moved. Such sleeve may sustain a lighting device when one is used distinct from the device herein described. By means of the rod so constructed the distances apart of the operative parts of the lantern projecting the picture may be readily adjusted by turning heads or buttons at *o*, of

which I have shown three, each connected with one of the threaded rods, so that each may be revolved separately or all revolved together, as desired. The angular bar E may also be used without the threaded rods inside, if desired; but when using said threaded rods thumb-screws to secure the sleeves may be dispensed with. A pin passed through a hole in each sleeve or a lug forming a part thereof will form a means of connecting the sleeves to enable the engagement of the threads therewith. The top of the bar E is slotted to permit of the connection and allow the movement.

15 The slide-holder shown in Fig. 9 is used with this lantern. It is formed with a spring for keeping the slide close to the face of the condenser-mounting. The spring is made in two parts, of metal. At the top the two parts meet, as at *p*, where a thumb-screw passing through the two ends of the spring (expanded to receive the same) affords means of closing or spreading the spring to enable it to fit slides of varying sizes.

25 In Fig. 10 is shown a support for the lantern, comprising a shelf K, its rear end hinged to two uprights L, and at its outer end provided with an adjustable leg formed in two parts M and M'. The part M is slotted, as shown by back view, Fig. 12. A thumb-screw N, passing through parts M and M', secures the two parts together at any point. By this means the shelf may be tilted or sloped upward, as in Fig. 11, or downward, as the leg is lengthened or shortened by sliding one of the parts over the other and tightening the screw. The uprights L are formed hollow to contain a balance-weight each, as shown at L', Fig. 10. A cord or chain from each weight, passing over a pulley at L², (to each upright,) extending outside and downward to be connected to any lamp or other lighting means, serves as a carrier. Grooves or cleats at L³ provide guides for holding the lamp or other lighter to a direct vertical line.

45 This apparatus so constructed affords a sustaining medium for the lantern and holder for the lighting implement, whereby the light may be readily and conveniently adjusted to a proper height to always keep its center of illumination exactly in line with the center

of all the lenses at whatever angle the lantern may be placed.

What I claim, and desire to secure by Letters Patent, is—

1. A magic lantern in which the condenser and objective shells or mountings are adjustably and solely connected by a single bar extending longitudinally through the standard supporting each, the bar angular in shape and fitted to an angular opening through each standard, as set forth.

2. In a magic lantern, the combination of condenser-shell A, provided with a bottom standard *a*, having legs *b*, sleeve *c*, and set-screw *d*, objective-shell B, provided with standard *a'*, having legs *b'*, sleeves *c'*, and set-screw *d'*, and longitudinal connecting-bar E, of angular cross-section, extending through sleeves *c* and *c'*, essentially as shown and described.

3. In combination with the sustaining-standards of a magic lantern, a hollow connecting-bar extending longitudinally through said standards and having in its hollow a sectional worm, the sections formed and arranged to be operated individually or collectively, as set forth.

4. The combination of a magic lantern with a lighting device suspended by a counter-balance, whereby the light and center or axis of all the lenses in the lantern are brought and adjustably kept in direct line, as set forth.

5. The combination of a magic lantern with a lighting device suspended by a counter-balance, the lantern resting upon a table or shelf K, and the table supported at one end by hollow standards L and its other end by adjustable leg formed in two parts M and M', united by screw N, and the standards L, provided with cords L² and weights L', whereby a lighting device held thereby can be raised and lowered to enable the operator to bring the light to coincide with the center of all the lenses of the lantern in longitudinal line at whatever slope the table K may be placed, as set forth.

EMANUEL I. S. HART.

In presence of—

J. C. MCCORMICK,
THOMAS ENNIS.