A. F. GALL.

LENS SUPPORTING DEVICE.

APPLICATION FILED JUNE 21, 1913.

1,204,425. Patented Nov. 14, 1916.

Fig. 2

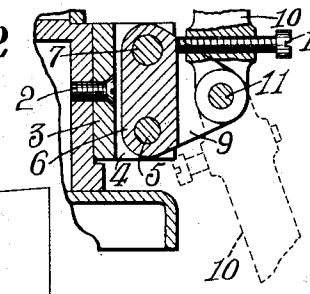


Fig. 1.

WITNESSES

J. A. Brophy

William A. Hardy.

INVENTOR

Adolph F. Gall

BY Dyer & Holden

his ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADOLPH F. GALL, OF WEST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NEW JERSEY PATENT COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LENS-SUPPORTING DEVICE.

1,204,425. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed June 21, 1913. Serial No. 774,963.

To all whom it may concern:

Be it known that I, ADOLPH F. GALL, a citizen of the United States, and a resident of West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Lens-Supporting Devices, of which the following is a specification.

The invention relates to a new and improved supporting device for lenses which is especially adapted for holding the "stereopticon" lens of a moving picture machine. In practice, it is customary to use a "stereopticon" lens in connection with the lamp house of a motion picture machine to project lantern slide pictures on the same screen that is used to display the moving pictures. This is usually done by supporting the "stereopticon" lens at one side of the "head" of the moving picture machine and moving the lamp house laterally to a position in which the lamp is located opposite such lens and then interposing the picture slides between the lamp and lens. In the majority of moving picture machines now on the market, after such a lateral adjustment of the lamp house, the lantern slide pictures projected through the "stereopticon" lens will be displayed on the screen in a position displaced laterally somewhat from that in which the motion pictures are displayed, and in fact, when a comparatively small screen is employed, it often happens that portions of the lantern slide pictures will not be displayed on the screen at all, but on the wall or other part of the building or stage at one side of the screen.

Accordingly, the principal object of my invention is to provide an improved lens supporting device whereby it will be possible to readily effect the adjustment of the "stereopticon" lens both longitudinally for focusing and angularly to center the picture on the screen.

A further object of my invention is to provide, in a device of this character, a construction whereby when the "stereopticon" lens of a moving picture machine, or similar apparatus, has once been adjusted to operative position for projecting pictures centrally and in focus on the screen, a simple manipulation will effect the movement of the lens and its mounting to inoperative position to render the moving picture machine or similar apparatus readily accessible for any desired or necessary adjustment or repair, and whereby another and single manipulation will serve to effect the return of the lens to its former operative position without the necessity of further adjustment.

My invention also consists in the various details of construction and combinations of elements hereinafter described and claimed.

While my invention may be embodied in many forms, I have shown the preferred form thereof in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved lens supporting device as applied to a moving picture machine showing the lamp house in a position opposite the lens carried by the supporting device; and Fig. 2 is a fragmentary sectional view on a plane in Fig. 1 just to the left and at right angles to the pivotal axis of the pivoted supporting arm, the pivoted supporting arm being shown, in dotted lines, in inoperative position.

To the head of the moving picture machine, designated generally by reference character 1, is secured as by means of screws 2, a plate 3 having at its ends parallel out-standing flanges 4. A rod 5 is fixedly mounted in the flanges 4, and slidably mounted on this rod is a block 6. Also rotatably mounted in the flanges 4 is a screw threaded rod 7 having at one end a milled head 8. Rod 7 passes through block 6 and is in screw threaded engagement therewith, whereby, on turning the rod 7, by means of its milled head 8, the block 6 may be moved along the rod 5 within the limits defined by the flanges 4.

The block 6 is provided with a vertical slot 9, between the side walls of which and in frictional engagement therewith is pivoted one end of an arm 10 by means of the pin or bolt 11. A screw 12 is threaded through the arm and is adapted to bear at its inner end against the rear wall of the slot 9, and provides adjustable means for limiting the pivotal movement of the arm in one direction. The upper end of the arm 10 is provided with a horizontal split clamp or sleeve 13, preferably formed integrally therewith, which is adapted to be clamped to a horizontal rod 14 at any point in its length, as by means of a screw 15. A double clamping member 16, comprising two split clamps or sleeves 17 and 18 pref-

erably substantially at right angles to each other, is adjustably mounted on the rod 14 by one of the clamps 17, and in the other clamp 18 is adjustably mounted a vertical rod 19. Screws 20 and 21 serve to rigidly fasten clamps 17 and 18 to rods 14 and 19 respectively. The upper end of rod 19 is provided with a flat vertical bearing portion 22, secured to which, for pivotal movement about a horizontal axis, as by a bolt or pin 23, is a split ring 24. Rods 5 and 14 are preferably parallel, while pin 23 is arranged substantially at right angles to rods 5 and 14. The split ring 24 carries the lens tube 25 in which are mounted the "stereopticon" lenses.

Reference character 26 represents generally the lamp house of a moving picture machine which is suitably mounted for lateral movement, as by means of rollers (one of which is shown at 27) on the track 28 secured to the support of the moving picture machine. The lamp house 26 is provided with a guideway 29 for the lantern slides.

It will be readily seen, that a wide range of adjustment for focusing is provided, as the "stereopticon" lens tube 25 can be moved toward and away from the lamp house both by moving the rod 14 longitudinally in the clamp 13, and by moving the double clamp 16, which can be placed on the rod 14 on either side of the clamp 13, along the rod 14. While it is possible to secure perfect adjustment of the lens tube for focusing by such movements of the rod 14 and clamp 16, it is the intention to obtain merely a rough or approximate adjustment thereby, after which a further delicate adjustment of the lens, in the nature of a micrometer adjustment, to position the same to throw the light exactly in focus on the screen, may be obtained by the movement of the supporting arm 10 and the parts carried thereby as a whole through the medium of the screw threaded rod 7 and block 6.

The construction hereinbefore described also provides means whereby the lens may be readily adjusted with respect to the lamp house for exactly centering the pictures on the screen. The lens tube may be bodily adjusted in a vertical direction by moving rod 19 up or down in clamp 18 and may be bodily adjusted in a horizontal direction either by turning clamp 16 on rod 14 or turning rod 14 in clamp 13. Furthermore the lens tube may be angularly adjusted with respect to the lamp house about a vertical axis by turning rod 19 in clamp 18 and about a horizontal axis by turning split ring 24 about the pin 23.

The adjustments of the "stereopticon" lens for the purposes of focusing and centering the pictures on the screen are made with the supporting arm or bracket 10 in the position shown in Fig. 1 with the inner end of screw 12 abutting the rear wall of slot 9. Accordingly, after these adjustments have once been made, the arm 10 with the lens tube and connections therebetween may be moved about its pivot from the operative position, shown in Fig. 1, to a position corresponding to that shown in dotted lines in Fig. 2, to render the moving picture machine readily accessible for adjustment or repair, with the assurance that, when the arm 10 and parts carried thereby are moved in the opposite direction, until screw 12 contacts the rear wall of slot 9, they will again be exactly in their former operative position. The frictional engagement of arm 10 with the side walls of slot 9 serves to hold the arm and parts carried thereby in any position to which they may be moved by the operator.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is as follows:

1. A lens supporting device, comprising a support, an arm mounted on said support, a lens carrying element, means for supporting said lens carrying element from said arm comprising a member adjustably secured to said arm for sliding movement in one direction with respect thereto, and means for adjusting said arm on said support in a direction parallel to the direction of the sliding movement of said member, substantially as described.

2. A lens supporting device, comprising a support, an arm mounted on said support, a lens carrying element, means for supporting said lens carrying element from said arm comprising a member adjustably secured to said arm for sliding movement in one direction with respect thereto, and mechanism adjustably supporting the lens carrying element from said member for universal pivotal movement with respect thereto, and means for adjusting said arm on said support in a direction parallel to the direction of the sliding movement of said member, substantially as described.

3. A lens supporting device, comprising a support, an arm pivotally secured to said support and slidable on its pivot, a lens carrying element, means for supporting said lens carrying element from said arm comprising a member adjustably secured to said arm for movement in a direction substantially parallel with the pivotal axis of the arm, and means comprising a member having a screw threaded connection with said arm for effecting the sliding movement of the latter on its pivot, substantially as described.

4. A lens supporting device, comprising a support, an arm pivotally secured to said support and slidable on its pivot, a lens carrying element, means for supporting said

lens carrying element from said arm comprising a member adjustably secured to said arm for movement in a direction substantially parallel with the pivotal axis of the arm, means comprising a member having a screw threaded connection with said arm for effecting the sliding movement of the latter on its pivot, and means for adjustably limiting the pivotal movement of said arm in one direction, substantially as described.

5. A lens supporting device, comprising a support, a lens carrying element, an arm mounted on said support for sliding movement in one direction, means comprising a member having a screw-threaded connection with said arm for effecting such movement thereof, a member adjustably secured to said arm for movement in a direction substantially parallel to the sliding movement of said arm on said support, and means for adjustably securing said lens carrying element to said last named member for universal pivotal movement with respect thereto, substantially as described.

6. A lens supporting device, comprising a support, a lens carrying element, an arm pivotally mounted on said support and slidable on its pivot, means comprising a member having a screw-threaded connection with said arm for sliding said arm on its pivot, a member adjustably secured to said arm for movement in a direction substantially parallel to the sliding movement of said arm on its pivot, and means for adjustably securing said lens carrying element to said last named member for universal pivotal movement with respect thereto, substantially as described.

7. A lens supporting device, comprising a support, a lens carrying element, an arm pivotally mounted on said support and slidable on its pivot, means comprising a member having a screw threaded connection with said arm for sliding said arm on its pivot, a member adjustably secured to said arm for movement in a direction substantially parallel to the sliding movement of said arm on its pivot, means for adjustably securing said lens carrying element to said last named member for universal pivotal movement with respect thereto, and means for adjustably limiting the pivotal movement of said arm in one direction, substantially as described.

8. In a lens supporting device, a fixed support, a block slidably mounted on said support, said block being provided with a recess, a lens carrying member, means for supporting said lens carrying member from said block comprising an arm pivotally mounted in said recess, and means for adjustably limiting the pivotal movement of said arm in one direction, substantially as described.

9. In a lens supporting device, a fixed support, a block slidably mounted on said support, said block being provided with a recess, a lens carrying element, means for supporting said lens carrying element from said block comprising an arm pivotally mounted in said recess, and means, comprising a screw threaded through said arm and adapted to engage the rear wall of said recess, for limiting the pivotal movement of said arm in one direction, substantially as described.

10. A lens supporting device comprising a lens carrying element, a support, an arm pivotally connected at one end with said support and provided with a clamp at its other end, a horizontally extending rod adjustably mounted in said clamp, a clamping member comprising two clamps arranged substantially at right angles to each other adjustably mounted on said rod by one of its clamps, and a vertically extending rod slidably and rotatably mounted in the other clamp of said clamping member, said lens carrying element being connected to the upper end of said vertically extending rod for pivotal movement about a horizontal axis, substantially as described.

11. In a device of the class described, the combination with a projecting apparatus having a lamp house, of a lens carrying element, an arm adjustably mounted on said apparatus for movement in a direction substantially parallel to the path of light in the projecting apparatus, means for effecting such movement of the arm, and means for supporting said lens carrying element from said arm and in front of the lamp house comprising a member adjustably connected to said arm for movement in a direction substantially parallel to the path of light, substantially as described.

12. In a device of the class described, the combination with a projecting apparatus having a lamp house, of a lens carrying element, an arm adjustably mounted on said apparatus for movement in a direction substantially parallel to the path of light in the projecting apparatus, means for effecting such movement of the arm, and means for supporting said lens carrying element from said arm and in front of the lamp house comprising a member adjustably connected to said arm for movement in a direction substantially parallel to the path of light and mechanism for adjustably supporting the lens carrying element from said last named member for universal pivotal movement with respect thereto, substantially as described.

13. In a device of the class described, the combination with a projecting apparatus having a lamp house, of a lens carrying element, an arm pivotally mounted on said apparatus and slidably mounted on its pivot, said pivot being substantially parallel to the path of light in the projecting appara-

tus, means for effecting sliding movement of said arm on its pivot, and means for supporting said lens carrying element from said arm and in front of the lamp house comprising a member adjustably connected with said arm for movement in a direction substantially parallel to the pivot of said arm, substantially as described.

14. In a device of the class described, the combination with a projecting apparatus having a lamp house, of a lens carrying element, an arm pivotally mounted on said apparatus and slidably mounted on its pivot, said pivot being substantially parallel to the path of light in the projecting apparatus, means for effecting sliding movement of said arm on its pivot, means for supporting said lens carrying element from said arm and in front of the lamp house comprising a member adjustably connected with said arm for movement in a direction substantially parallel to the pivot of said arm, and means for adjustably limiting the pivotal movement of said arm in one direction, substantially as described.

15. In a device of the class described, the combination with a projecting apparatus having a lamp house, of a lens carrying element, an arm pivotally mounted on said apparatus about an axis substantially parallel to the path of light of the projecting apparatus, means for adjustably supporting said lens carrying element from said arm for universal movement with respect thereto and in front of said lamp house, and means for adjustably limiting the pivotal movement of said arm in one direction, substantially as described.

16. A lens supporting device, comprising a support, an arm mounted on said support, a lens carrying element, and means for supporting said lens carrying element from said arm, comprising a member adjustably secured to said arm for movement in one direction with respect thereto, said arm being adjustable on said support in a direction substantially parallel to the direction of movement of said member, substantially as described.

17. A lens supporting device, comprising a support, an arm mounted on said support, a lens carrying element, and means for supporting said lens carrying element from said arm, comprising a member adjustably secured to said arm for movement in one direction with respect thereto, and mechanism adjustably supporting the lens carrying element from said member for universal pivotal movement with respect thereto, said arm being adjustably mounted on said support for movement in a direction substantially parallel to the direction of the movement of said member, substantially as described.

18. A lens supporting device, comprising a support, an arm pivotally secured to said support and slidable on its pivot, a lens carrying element, and means for supporting said lens carrying element from said arm, comprising a member adjustably secured to said arm for movement in a direction substantially parallel with the pivotal axis of the arm, substantially as described.

This specification signed and witnessed this 20th day of June 1913.

ADOLPH F. GALL.

Witnesses:
WILLIAM A. HARDY,
MARY J. LAIDLAW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."