A. M. HENRY.

PROJECTING APPARATUS.

APPLICATION FILED FEB. 10, 1913.

1,119,597.

Patented Dec. 1, 1914.

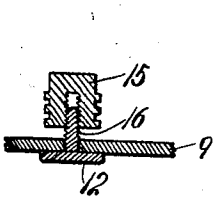


Fig 2

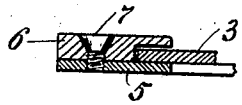


Fig 3

Fig 1

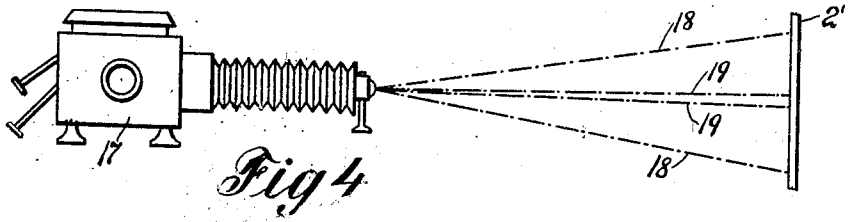


Fig 4

Witnesses:

A. E. Mueller

Inventor

By his Attorney

Frank J. Kent

UNITED STATES PATENT OFFICE.

AUGUSTUS M. HENRY, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO MABEL C. BAKER, OF STAMFORD, CONNECTICUT.

PROJECTING APPARATUS.

1,119,597. Specification of Letters Patent. Patented Dec. 1, 1914.

Application filed February 10, 1913. Serial No. 747,367.

To all whom it may concern:

Be it known that I, AUGUSTUS M. HENRY, a resident of New York city, in the county of New York and State of New York, (whose post-office address is 601 West One Hundred and Thirty-ninth street, in said city,) have invented certain new and useful Improvements in Projecting Apparatus, of which the following is a specification.

This invention relates broadly to projecting apparatus, and more particularly to that class of projecting apparatus wherein a relatively small optical interponent is disposed within the lens-area for travel therein thereby to be projected upon a screen during its said travel.

One of the objects of this invention is to provide supporting and operating means for said optical interponent adapted to admit of controlling, in a more advantageous manner than has been heretofore possible, the travel of said interponent within the lens-area simultaneously with an observation of the projected travel of the image of said interponent on the screen.

Specifically, a means of the above type is disclosed herein, whereby an actuation of a controlling portion in a particular direction will cause a corresponding travel of said interponent in substantially an opposite direction within said lens-area, so that the normal reversing action of the lens will be compensated for at the instant of projection, in such a manner that as a final result of manipulating said controlling portion the projection of said interponent on the screen will substantially agree in direction of travel with the direction of travel of said controlling portion of said supporting and operating means.

Many other objects and aims will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the description hereinafter set forth, the scope of the application of which will be indicated in the followings claims.

In the accompanying drawings, wherein is shown a possible embodiment of this invention, Figure 1 is a view in elevation showing the relation of the several parts; Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, looking in the direction of the arrow, to show more clearly one of the details of construction; Fig. 3 is a similar view, taken on the line 3—3 of Fig. 1 and looking in the direction of the arrow; Fig. 4 is an elevation of a type of projecting machine, showing diagrammatically certain of its functions with means of the type illustrated in Fig. 1, associated with such machine in a manner hereinafter explained and well-known.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now particularly to the means disclosed in Figs. 1, 2 and 3, 1 represents a main supporting member provided with an opening 2; said supporting member being disposed transversely of the light rays within a projecting machine so that said opening 2 will allow the passage of certain of said light rays therethrough. 3 is a preferably translucent member carrying in this embodiment a single relatively small indicium 4 for projection upon a screen 2′. In order to indicate clearly in the drawing that the opening 3 is carried by the support 1 and that the indicium 4 is carried by the translucent member 3, said member is disclosed as being broken away around said opening, and the presence of said indicium opposite said opening, and upon the portion of member 3 which is assumed to be broken away and removed for purposes of disclosure only, is indicated in broken lines. Member 3 is supported upon a carrier 5 and is secured thereto herein by clips 6, which latter are attached to carrier 5 by means of the screws 7 (Fig. 3). Formed integrally with carrier 5 is an arm 8 which, as shown, forms a link within the lever system comprised of the said arm and interlinked levers 9, 10, 11 and 12. Said system is carried upon said plate 1 as at 13 by means of a screw 14 and carries an operating handle 15 which, as shown more clearly in Fig. 2, is interiorly threaded to screw upon stud 16 carried by lever 12 and extending pivotally through lever 9.

In Fig. 4 is illustrated a type of projecting machine 17 which may be utilized as above for the interposition therein, as in a plane adjacent and substantially parallel to

the transverse plane indicated at *x*—*x*, of a plate 1 and its supported parts. The lines 18 indicate diagrammatically the area of the screen 2′ which is normally illuminated, and the lines 19 indicate similarly the boundaries of a position of the projection within such illuminated space of indicium 4.

Having thus described this embodiment of my invention, the description of the operation thereof is as follows: With the lever system aforesaid interlinked as shown at 20, 21, 22, 23, 24 and 25 and pivotally supported upon plate 1 as at 13, it should be obvious that upon moving handle 15 toward the pivotal point 13, or, say, in a southerly direction, the articulation of the levers will be such that the pivot point 24 will approach a central pivot point 13, or move in a northerly direction, and vice versa, and that if handle 15 is moved in a westerly direction the pivot point 24 will move in an easterly direction, and vice versa. It being true, then, that all vertical movements of handle 15 will cause corresponding vertical movements, but in an opposite direction, of pivot point 24, and that all horizontal movements of handle 15 will cause corresponding horizontal movements, but in an opposite direction, of pivot point 24, it is consequently true that all oblique or curved movements of handle 15 will cause corresponding oblique or curved movements, but in an opposite direction, or directions, of pivot point 24, due to the co-ordinate operation of the vertical and horizontal components of movement. Member 3, carrying its indicium 4, which latter is preferably normally positioned centrally of the opening 2, is carried by carrier 5 which is, as above, formed integrally with arm 8, it will therefore be seen that upon an operation of handle 15 in any direction, indicium 4 will be given a corresponding directionally-opposite movement within the lens-area, thereby anticipating within the projecting machine the normal well known reversing action of the lens, so that the indicium-projection upon screen 2′ will during any travel, correspond in characteristic of movement with any travel of handle 15. It will thus be seen that I have provided a device of extreme simplicity, durable construction and convenience of operation, and one well calculated to attain the ends and objects of this invention.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which as a matter of language, might be said to fall therebetween.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement within a plane substantially perpendicular to the light-ray travel, and a controlling means therefor comprising a handle and adapted upon the actuation of said handle in any direction to cause a movement of said interponent substantially in the opposite direction.

2. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement within a plane substantially perpendicular to the light-ray travel, a controlling means therefor comprising an operating portion and a portion adapted to cause by its movement substantially a corresponding movement of said interponent, said controlling means being adapted upon the actuation of its operating portion in any direction to cause a movement of said other portion substantially in the opposite direction.

3. In projecting apparatus, in combination, a lens, a source of light, an optical interponent, a movable support therefor adapted to have movement within a plane substantially perpendicular to the light-ray travel, a controlling means for said support comprising an operating portion and adapted upon the actuation of said operating portion in any direction to cause a movement of said interponent substantially in the opposite direction.

4. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement within a plane substantially perpendicular to the light-ray travel, a pivoted controlling means therefor comprising a lever system and an operating portion whereby upon the actuation of said operating portion in any direction there will be caused a movement of said interponent substantially in the opposite direction.

5. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent carrying a spot and adapted to have movement within a plane substantially perpendicular to the light-ray travel, a controlling means therefor comprising an operating portion and a portion adapted to cause by its movement substantially a corresponding movement of said spot, said controlling means being adapted upon the actuation of its operating portion

in any direction to cause a substantially diametrically opposed movement of said other portion.

6. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement within the lens area, and a lever system supporting said interponent and comprising a plurality of links and an operating portion, said system being adapted upon an actuation of its operating portion in any direction to cause a movement of said interponent substantially in an opposite direction.

7. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement within the lens-area, a controlling means therefor, and an operating device, said means being adapted upon the actuation of said device in any direction to cause a movement of said interponent substantially in the opposite direction, and said means comprising a plurality of linked levers, one of which is pivoted for rotation and another of which supports said interponent.

8. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement with the lens-area, and a controlling means therefor, said means including a lever pivoted between its ends, a link pivoted between its ends to one end of said lever, a second link pivoted between its ends to the other end of said lever, and a third link pivotally connecting the link first-mentioned and the second link.

9. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement with the lens-area, and a controlling means therefor, said means including a lever pivoted between its ends, a link pivoted between its ends to one end of said lever, a second link pivoted between its ends to the other end of said lever, a third link pivotally connecting the first-mentioned link and the second link, and a fourth link pivotally connecting the first-mentioned link and the second link.

10. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement with the lens-area, and a controlling means therefor, said means including a lever pivoted between its ends, a link pivoted between its ends to one end of said lever, a second link pivoted between its ends to the other end of said lever, a third link pivotally connecting the first-mentioned link and the second link, and a fourth link pivotally connecting the first-mentioned link and the second link, the third link being located to one side of the lever and the fourth link being located to the opposite side of the said lever.

11. In projecting apparatus, in combination, a lens, a source of light, a movable optical interponent adapted to have movement with the lens-area, and a controlling means therefor, said means including a lever pivoted between its ends, a link pivoted between its ends to one end of said lever, a second link pivoted between its ends to the other end of said lever, a third link pivotally connecting the first-mentioned link and the second link, and a fourth link pivotally connecting the first-mentioned link and the second link, the third link being located to one side of the lever and the fourth link being located to the opposite side of the said lever whereby the four links define a quadrilateral.

In testimony whereof I have hereunto signed by name in the presence of two witnesses.

AUGUSTUS M. HENRY. [L. S.]

Witnesses:
ROBERT STIBILY,
HERBERT WM. SMITH.