Aug. 11, 1931. W. C. READEKER 1,818,355

MOTION PICTURE MACHINE

Filed Jan. 8, 1926

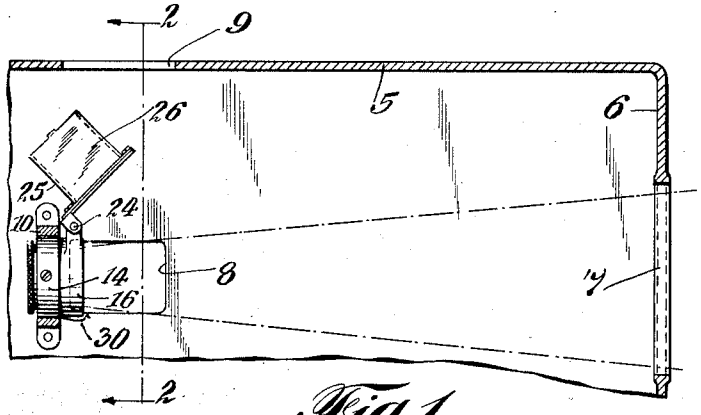


Fig. 1.

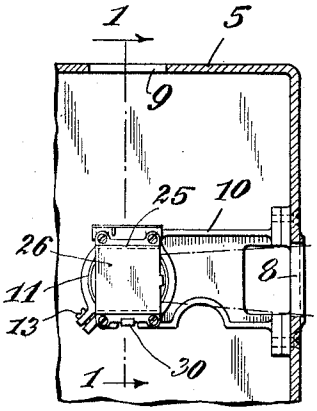


Fig. 2.

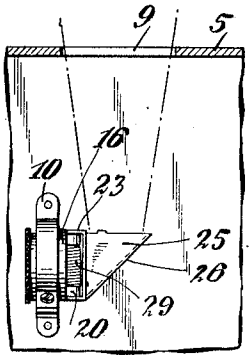


Fig. 3.

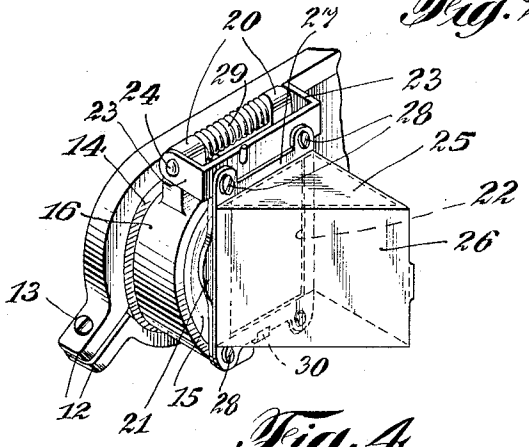


Fig. 4.

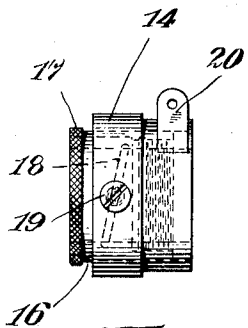


Fig. 5.

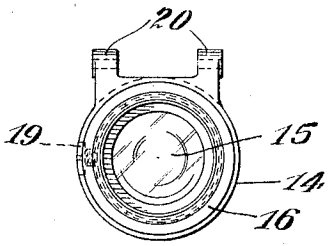


Fig. 6.

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UNITED STATES PATENT OFFICE

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MOTION PICTURE MACHINE

Application filed January 8, 1926. Serial No. 79,919.

This invention relates to motion picture machines, and more particularly to a simple and inexpensive means readily adaptable to various types of such machines whereby the pictures or images may be projected from the cabinet or casing of the projecting mechanism in a plurality of angular directions.

It is the principal object and purpose of my present invention to provide a deflecting device mounted upon the adjustable lens holder and also movable with respect thereto to operative or inoperative positions whereby in addition to the normal direction of projection of the images through the lens, such images may also be projected in a plurality of other directions at relatively different angles with relation to the normal line of projection.

It is also another object of the invention to provide a very simple and inexpensive mounting for the adjustable lens holder within the casing or cabinet, whereby the necessary adjustment for the projection of the images in the desired direction can be easily and quickly made.

With the above and other objects in view, the invention consists in the improved adjustable lens holder and deflecting means to be hereinafter more fully described, illustrated in the accompanying drawings, and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have illustrated one simple and satisfactory embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a fragmentary longitudinal section through the casing or cabinet of a picture projecting mechanism taken substantially on the line 1—1 of Fig. 2, and showing the deflector in its normal inoperative position;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1, the deflector being lowered to project the pictures or images through one side of the casing or cabinet;

Fig. 3 is a fragmentary view similar to Fig. 1 and showing the lens holder after adjustment from the position of Fig. 2, whereby the images are projected through the top wall of the casing or cabinet;

Fig. 4 is a perspective view of the device;

Fig. 5 is a detail elevation of the lens holder, the deflector being omitted, and

Fig. 6 is a front end elevation thereof.

My present improvements are more particularly designed for use in connection with portable motion picture apparatus designed for use in the home, hospital, or other institutions, and which is a more or less recent development in the art. In such machines, the projecting mechanism is contained within a suitable casing, housing or cabinet which I have partially illustrated at 5 in the accompanying drawings. As herein shown, the front end wall 6 of this casing is provided with an opening 7 therein of suitable size and shape through which the pictures or images may be projected upon a suitable screen. In addition to the opening 7, either one or both side walls of the casing 5 may be provided with an opening as indicated at 8 while the top wall of said casing likewise has an opening 9 therein.

At the rear side of the opening 8 in one of the side walls of the casing, a transversely projecting supporting arm or bracket 10 is suitably fixed at one of its ends. The other end of this arm is provided with a circular opening 11 and at the outer side thereof, said arm is split and the opposed ends provided with radially projecting lugs 12 connected by a suitable clamping screw 13.

The circular opening 11 of the supporting arm 10 is adapted to receive one end of the tubular lens holder 14, the other end of which projects forwardly from the arm 10 towards the opening 7 in the front casing wall. By properly adjusting the screw 13, the split end of the arm 10 may be caused to tightly clamp the lens holder in adjusted position within the opening 11.

The objective lens 15 is suitably mounted in one end of a sleeve 16, the other end of which is provided with a knurled flange 17. This sleeve is adapted to be fitted within the tubular holder 14 and is provided in its wall at one side thereof with a spiral cam grove 18 in which the inner end of a screw 19 threaded

in the wall of the holder 14 is engaged. By loosening this screw the sleeve 17 may be rotated within the holder 14, the end of the screw having a camming action on the walls of the groove 18 to move the sleeve axially in said holder and thereby adjust the lens 15 with relation to the source of light (not shown).

The forwardly projecting end of the lens holder 14 is provided upon its periphery with spaced ears 20. A plate 21 having a rectangular aperture 22 therein is provided on one of its ends and on its opposite sides with angularly projecting lugs 23 which are connected by means of the hinge pintle 24 with the ears 20. A deflector generally indicated at 25 is suitably mounted upon the front side of the plate 21. As herein shown, this deflector consists of a sheet metal member having spaced parallel walls of substantially rectangular form extending from opposite sides of the opening 22 at right angles to the plane of the plate 21. These parallel walls are connected by the obliquely inclined wall 26 having an inner reflecting surface. The triangular shaped walls at their base edges may be provided with flanges 27 secured to the plate 21 by suitable screws 28.

Between the lugs 20 a coil spring 29 surrounds the hinge pintle 24, said spring at one end being fixed to one of the lugs and having its other end suitably attached to the plate 21. This spring normally acts to sustain the deflector 25 in an inoperative position upon the lens holder as shown in Fig. 1 of the drawings. The other end of the plate 21 is adapted to be engaged by a suitable spring catch indicated at 30 when the deflector is swung to its operative position over the lens 15 to retain said deflector in such position against the action of the spring 29.

From the above description of the deflector 25, it will be understood that one side thereof is open while the other side is closed by the deflecting wall 26, and that the light rays projected through the lens 15 striking the inner inclined face of this wall are bent or deflected through the open side of the deflector when the latter is in the position shown in Fig. 4 of the drawings.

When the machine may be conveniently mounted and arranged with the projection screen in front thereof the deflector 25 is not used and is disposed in its normal position seen in Fig. 1, so that the pictures or images are projected by the light rays through the objective lens 15 and through the opening 11 in the front wall of the casing or cabinet. In some instances, however, it may be possible that the screen cannot be mounted or arranged in front of the machine, but it is necessary to position the same at one side thereof. In such cases the deflector 25 is swung downwardly and inwardly against the action of spring 29 and held in position over the lens by the spring catch 30. Thus, as above stated, the light rays will now be bent or deflected by the inclined wall 26 of the deflector and projected through the opening 8 in one side wall of the casing and upon the screen spaced from said wall. If the screen is arranged at the opposite side of the casing or cabinet, it is only necessary to rotate the lens holder and deflector in the end of the bracket arm 10 through 180 degrees from the position shown in Fig. 2 of the drawings, so that the pictures or images will then be projected through the opening in the opposite side wall of the casing.

In the use of such portable picture projecting machines in hospitals and other institutions, it frequently occurs that the patient cannot, owing to physical disability assume a sitting posture. Nevertheless entertainment may be afforded such patients, as by means of my invention the pictures or images can be projected upon the ceiling of the room. Thus, it is only necessary to rotate the lens holder and deflector through an arc of 90 degrees from the position shown in Fig. 2, to the position illustrated in Fig. 3 of the drawings, whereby the light rays and therefore the pictures or images are deflected upwardly through the opening 9 in the top wall of the casing or cabinet.

From the foregoing description considered in connection with the accompanying drawings, the construction, manner of use and several advantages of my present improvements will be thoroughly understood. It will be seen that by means of a very simple device, I am enabled to project the pictures in a plurality of different directions angularly related to each other, which is capable of easy and quick adjustment for the projection of images or pictures in the selected direction, as the particular condition of each case might require. It will be understood that the manner of adjustably securing the lens sleeve in the holder 14 is not an essential part of my present improvements, and various other means for mounting a lens in said holder might be adopted. Likewise, while I have herein referred to a simple and convenient means for adjustably supporting the lens holder and the deflector, this feature also may be susceptible of considerable modifications. Similarly, although I have in my present disclosure described a preferred construction and mounting of the deflector upon the lens holder, it may also be possible to embody this feature of my improvements in various other alternative structures and accordingly, it is to be understood that in practice I reserve the privilege of resorting to all such legitimate changes in the form, proportion and relative arrangement of the several parts which may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. In combination with a casing for motion picture apparatus having a plurality of angularly related walls each provided with an opening therein through which the pictures or images are adapted to be projected, a lens holder, means for mounting said lens holder for rotative adjustment in coaxial relation with one of said openings, a deflector pivotally mounted upon the lens holder and movable with respect thereto into intersecting relation with the light rays projected through the lens, said lens holder adapted to be adjusted with the deflector in the latter position to deflect the light rays through a selected opening in one of the other walls of the casing, and means for normally sustaining said deflector yieldingly in an inoperative position on the lens holder to permit of the projection of the light rays through said first named opening.

2. In combination with a casing for motion picture apparatus, said casing having angularly related walls each provided with an opening through which the pictures or images are adapted to be projected, a supporting arm fixed to one of the casing walls adjacent the opening therein, a lens holder rotatively adjustable in said arm in coaxial relation with the opening in another wall of the casing, a deflector pivotally mounted upon said lens holder and adapted to be moved with respect thereto into intersecting relation with the light rays projected through the lens, and said lens holder and deflector being adjustable relative to the support to thereby deflect the light rays through a selected opening in one of the other walls of the casing, and a spring yieldingly sustaining said deflector in an inoperative position upon said lens holder.

3. In combination with a lens holder for picture projecting apparatus, a deflecting member, means for adjustably mounting said member upon the lens holder for movement into or out of the path of the light beam in advance of the lens, and a common supporting means for the lens holder and said deflecting member permitting of the adjustment of said member in a path concentric to the lens to selectively position its deflecting surface in any one of a plurality of planes traversing the path of the light beam, to bend the light beam and project the same in a predetermined direction relative to the lens axis.

4. In combination with a lens holder for picture projecting apparatus, a deflecting member pivotally mounted on the lens holder for movement into and out of operative position with respect to the lens and having a deflecting surface traversing the path of the light beam in oblique angular relation to the lens axis when said member is in operative position to bend the light beam and project the same in a predetermined direction, and means for yieldably retaining said member in a normal inoperative position upon the lens holder.

5. In combination with a lens holder for picture projecting apparatus, a deflecting member pivotally mounted on the lens holder for movement into and out of operative position with respect to the lens and having a deflecting surface traversing the path of the light beam in oblique angular relation to the lens axis when said member is in operative position to bend the light beam and project the same in a predetermined direction, means for supporting said lens holder and the deflecting means for rotative adjustment about the axial center of the lens to position the deflecting surface of said member in a predetermined plane across the path of the light beam, and means for yieldably retaining said member in a normal inoperative position upon the lens holder.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

WILLIAM C. READEKER.