

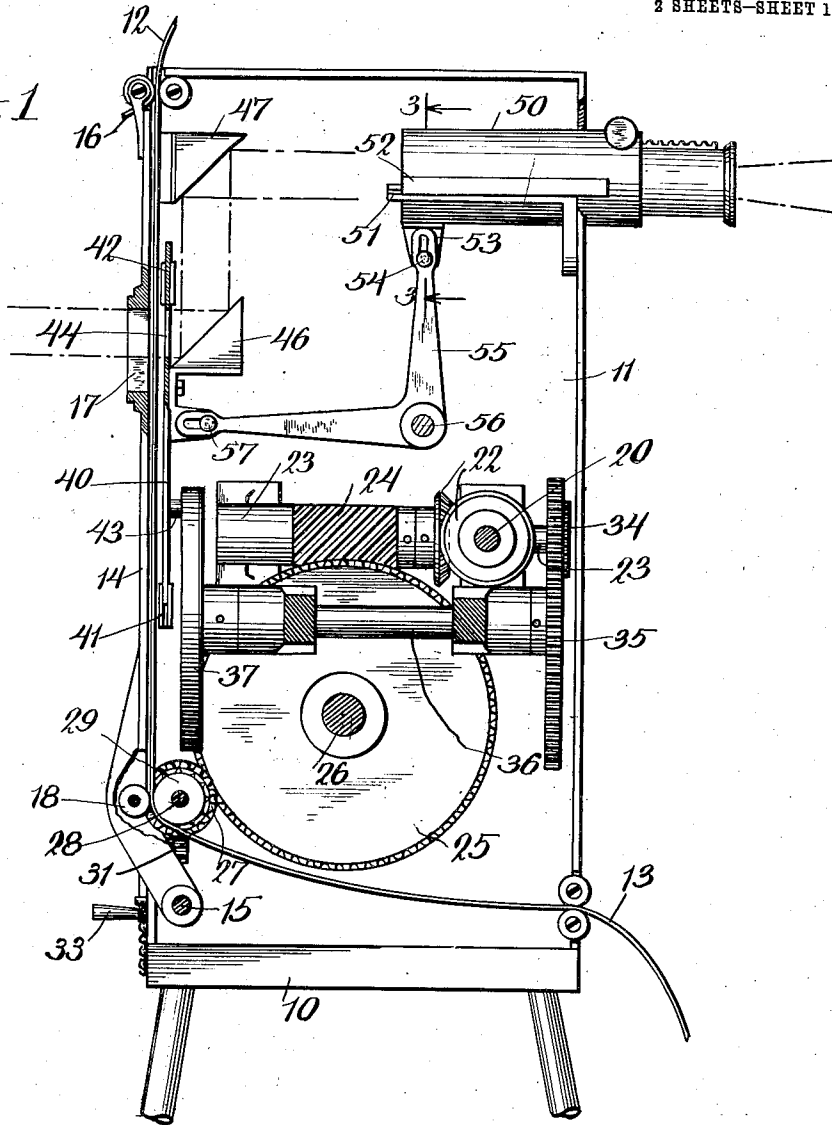
C. R. UEBELMESSER.
MOVING PICTURE MACHINE.
APPLICATION FILED MAR. 26, 1909.

994,043.

Patented May 30, 1911.

2 SHEETS—SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2.

Fig. 2.

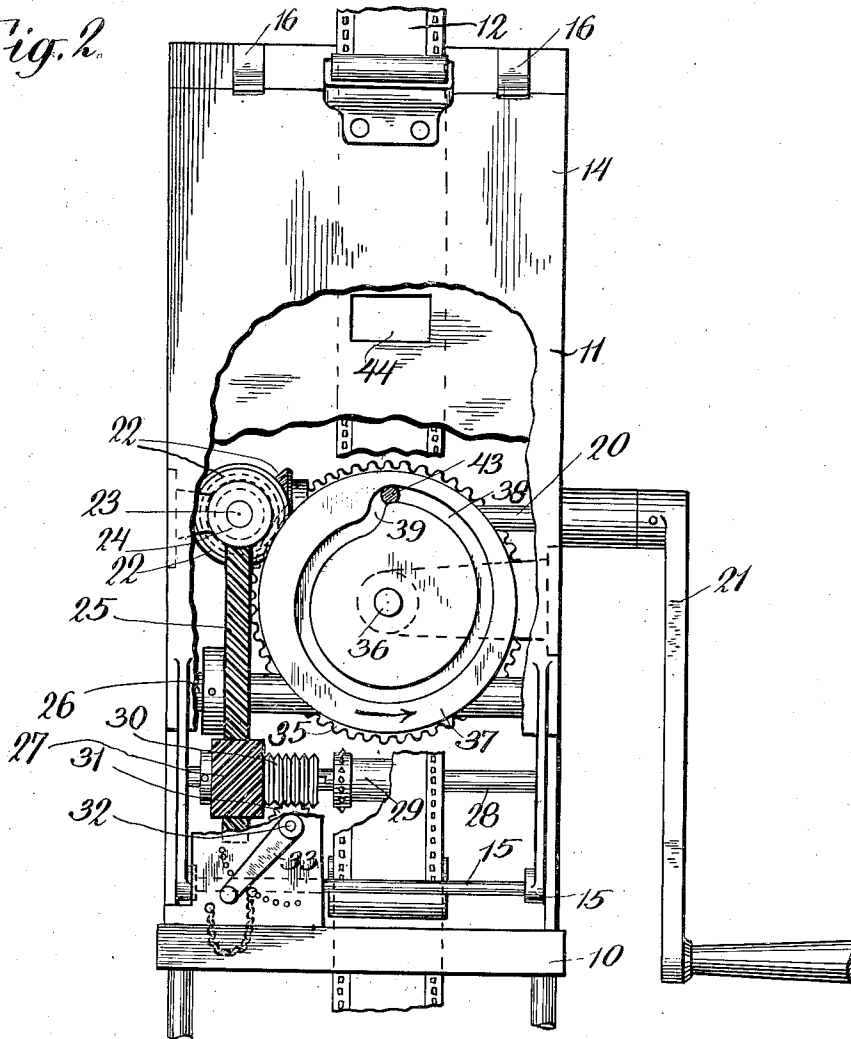
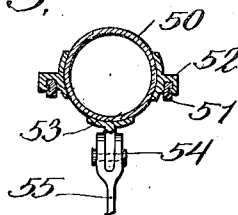


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MOVING-PICTURE MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES R. UEBELMESSER, a subject of the Emperor of Germany, and a resident of the city of New York, in the county and State of New York, United States of America, have invented certain new and useful Improvements in Moving-Picture Machines, of which the following is a specification.

My invention relates to moving picture machines which may be used for taking or for projecting a series of pictures in successive poses, and its object is to improve upon apparatus of this character.

I will describe my invention in the following specification and point out the novel features thereof in the appended claims.

Referring to the drawings, Figure 1 is a sectional side elevation of a moving picture machine made according to my invention. Fig. 2 is a sectional end elevation of this apparatus. Fig. 3 is a partial sectional end elevation of a portion of the apparatus, the section being taken on the line 3—3 of Fig. 1 but the lever and a part of the lug with which it is connected are not sectioned.

Like characters of reference designate corresponding parts in all of the figures.

10 designates the base or standard upon which the apparatus is mounted.

11 is the frame or casing of the machine which supports certain of its mechanism and incloses its working parts.

12 designates the film at the point at which it is brought into the machine. It is carried down over the rear of the casing and led off at 13 to a suitable receiving reel. The film may be guided through a channel formed in the tilting back 14 which is pivoted to the lower portion of the casing at 15. 16 is a spring-catch for holding this back in position. The tilting back is provided with an orifice 17 which has a width approximately equal to that of the pictures which are on the film, or to be taken thereon, and of a vertical height somewhat greater than that of such pictures.

At 18 a roller may be pivoted to the back to hold the film against a driving spool 29 which will be pointed out later.

20 designates the driving shaft of the apparatus which may be driven by any suitable power. In the drawings I have shown

it arranged to be manually rotated by means of a crank 21.

At 22 a pair of bevel gears, which transmit the rotation of the driving shaft to an auxiliary shaft 23, are shown. Keyed to this auxiliary shaft is a worm-gear 24. The worm-gear 24 is in mesh with and arranged to drive a gear 25 which is rotatably supported upon a shaft 26. This gear is in mesh with a pinion 27 which is slidably splined to a shaft 28 upon which is affixed the film-driving spool 29. The teeth of this gear and pinion are set at an angle for a purpose which I shall presently set forth. It is obvious from the above that the rotation of the main shaft 20 will be imparted to the driving spool 29, but not necessarily at the same rate. The film may be provided with the usual perforations along its edges into which projections on the driving spool enter to drive the film with a continuous longitudinal movement. The roller 18 prevents the film from slipping away from engagement with the driving spool.

30 designates a grooved collar which is affixed to or is an integral part of the pinion 27. A spur-gear 31 meshes with the grooves in the collar 30. This gear is affixed to a shaft 32, the outer end of which is provided with an adjusting handle 33 on the outside of casing 11. It may be seen that a partial rotation of this shaft 32 will cause the collar 30 and the pinion 27 to be slid along the shaft 28 in one direction or the other. This sliding movement of the pinion 27 will cause a partial rotation of the shaft 28 in relation to the shaft 26 on account of the angular disposition of the pinion teeth. The driving spool 29 may thus be rotated a desired amount for the purpose of bringing the pictures upon the film into register with certain parts of the apparatus. In this connection it is to be noted that this partial rotation of the driving spool may be made while the gear is either at rest or rotating. It is preferable to make the face of the pinion 27 somewhat wider than that of the gear 25 to provide for this sliding movement.

34 is a pinion affixed to the auxiliary shaft 23 and in mesh with a gear 35 on a shaft 36. 37 is a cam also affixed to shaft 36 and arranged to rotate therewith. This cam is constructed with a groove which is shown in

Fig. 2 and designated by the numerals 38 and 39.

40 is a reciprocatory member vertically guided at 41 and 42 by brackets affixed to the casing 11. 43 is a pin projecting from this member into the cam groove above pointed out. The reciprocatory member is constructed to form a diaphragm having an orifice at 44 of approximately the size and form of one of the film pictures. Directly opposite this orifice and supported upon the reciprocatory member is a reflector 46 such, for example, as a mirror or prism with its reflecting surface set preferably at an angle of 45° to its line of movement. Directly above this reflector is a similar stationary reflector 47 which is supported by the casing 11 of the machine with its reflecting surface parallel with that of the reflector 46.

50 designates a lens holder which may be suitably supported by the casing 11 by means of some such arrangement as that shown in Figs. 1 and 3, in which 51 designates stationary guides and 52 brackets affixed to the lens holder and fitting over the guides. By this arrangement the lenses may be moved together in a direction parallel with their axes.

53 is a lug affixed to the lens holder and arranged to carry a pin 54.

55 is a bell-crank lever which is pivoted to a stationary point at 56. One arm of this lever is connected with the lens holder, and its other arm is connected with the reciprocatory member 40 at 57. It is evident that by this mechanism the vertical reciprocation of the member 40 may be imparted in a horizontal direction to the lens holder so that the distance from the surface of the reflector 46 to the lens or lenses may be kept constant.

I will now describe the operation of this apparatus, when it is used for projecting pictures.

The film is placed between the orifices 17 and 44. By the simple manipulation of the adjusting handle 33 it may be moved until one of the pictures thereon registers with the inner orifice 44. When light is passed through the film the light rays will take some such paths as those indicated by broken lines and will be reflected through the lenses in holder 50 so that the picture may be projected upon a screen or other surface. Now a rotation of the shaft 20 will cause the film to be drawn downward with a continuous movement. At the same time the portion 38 of the cam groove, acting through pin 43, will cause the reciprocatory member 40 with its orifice 44 and reflector 46 to be moved downward in unison with the film. If the mechanism for sliding the lens holder is used the lens holder will at the same time be drawn inward. The projected picture upon the screen will therefore re-

main stationary. When the film has been drawn down a distance approximately equal to the width of one of the pictures the portion 39 of the cam groove will engage the pin 43 and cause the reciprocatory member to be quickly raised until its orifice and reflector are in alinement with the next succeeding picture on the film. This upward movement may be made as quickly as desired as it is obviously merely a matter of proportioning the two parts of the cam groove to obtain the desired proportion of downward and upward movements in each cycle of operation. When the bell-crank lever 55 is used this upward movement of the member 40 will push the lens holder out again to its first position so that the focus will be maintained. With this machine the use of a shutter is not necessary, although, of course, one may be added if desired.

When this apparatus is used as a camera only such changes as will be obviously apparent to one skilled in the art need be made. By way of suggestion, some of these obvious changes are the addition of a shutter over the lens and the provision of a light tight inclosure for the sensitized film. The cam 37 may also be modified to suit the new conditions.

This invention I believe to be basically new, and the appended claims are intended to cover the invention broadly and are not to be interpreted to be limited to the exact mechanisms which I have described as an illustration of one of the manners in which the invention may be carried into effect.

What I claim is.—

1. In a moving picture machine, a single fixed reflector, a movable reflector, and means for intermittently moving the movable reflector toward the fixed reflector and from said fixed reflector in unison with a film and in a line parallel with the path of movement of the film.

2. In a moving picture machine, means for imparting a continuous movement to a film, a single fixed reflector, a movable reflector, and means for reciprocating the movable reflector with one of its movements of reciprocation in unison with the movement of the film in a line parallel with the path of movement of the film.

3. In a moving picture machine, a lens, means for imparting a continuous movement to a film, a reflector, means for reciprocating said reflector with one of its movements of reciprocation in unison with the movement of the film, and means for maintaining a constant distance between the lens and said reflector.

4. In a moving picture machine, a lens, means for imparting a continuous movement to a film, a single fixed reflector, a movable reflector, means for intermittently moving the movable reflector in unison with

the film away from the fixed reflector in a line parallel with the path of movement of the film, and means for maintaining a constant distance between the lens and the movable reflector.

5 5. In a moving picture machine, a stationary reflector, a movable reflector arranged to be reciprocated toward and away from the stationary reflector, a lens arranged to
10 be reciprocated toward and away from the

stationary reflector and means for reciprocating the movable reflector and the lens.

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

CHARLES R. UEBELMESSER.

Witnesses:

ELLA TUCH,

LEONORA GIBSON.