Sept. 27, 1932. A. L. V. C. DEBRIE 1,879,844

CINEMATOGRAPHIC VIEW TAKING APPARATUS

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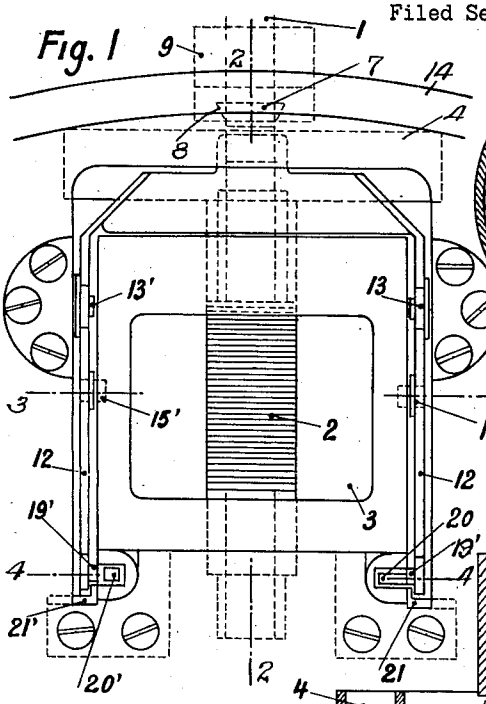


Fig. 1

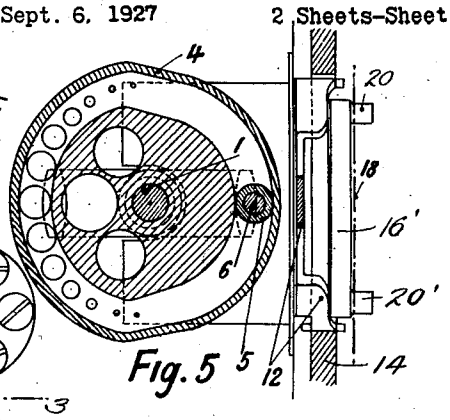


Fig. 5

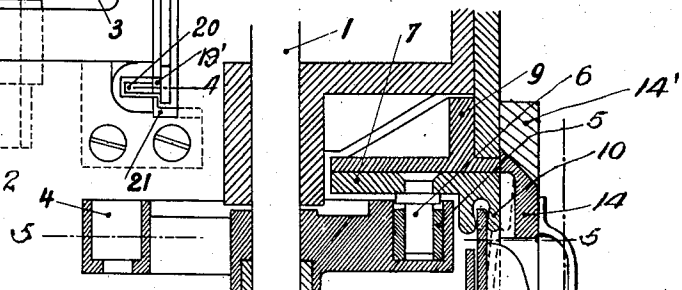


Fig. 2

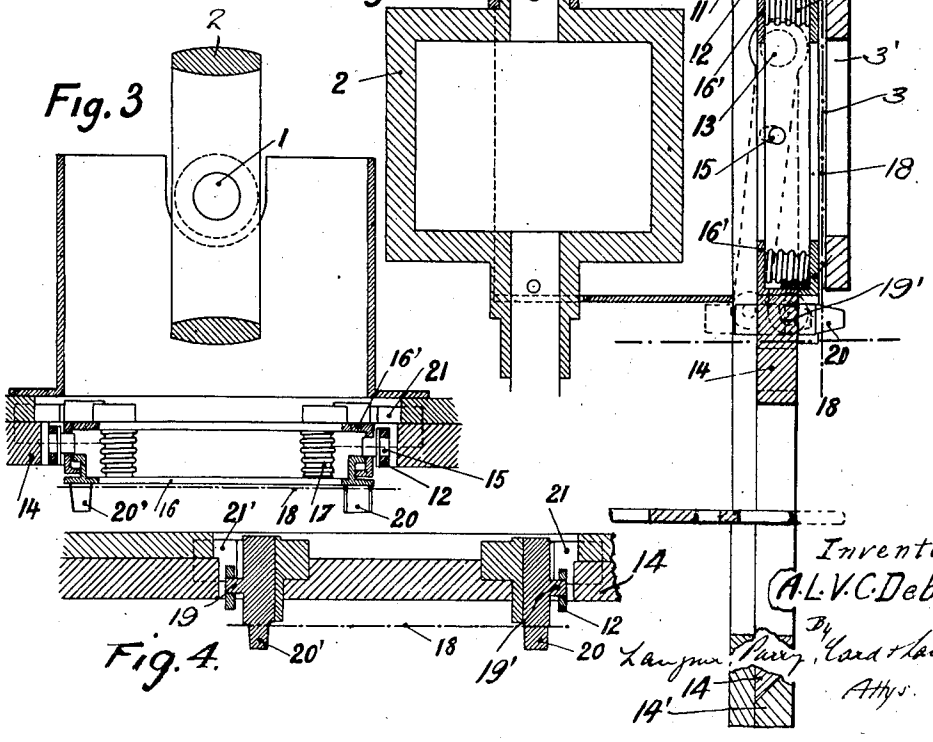


Fig. 3

Fig. 4

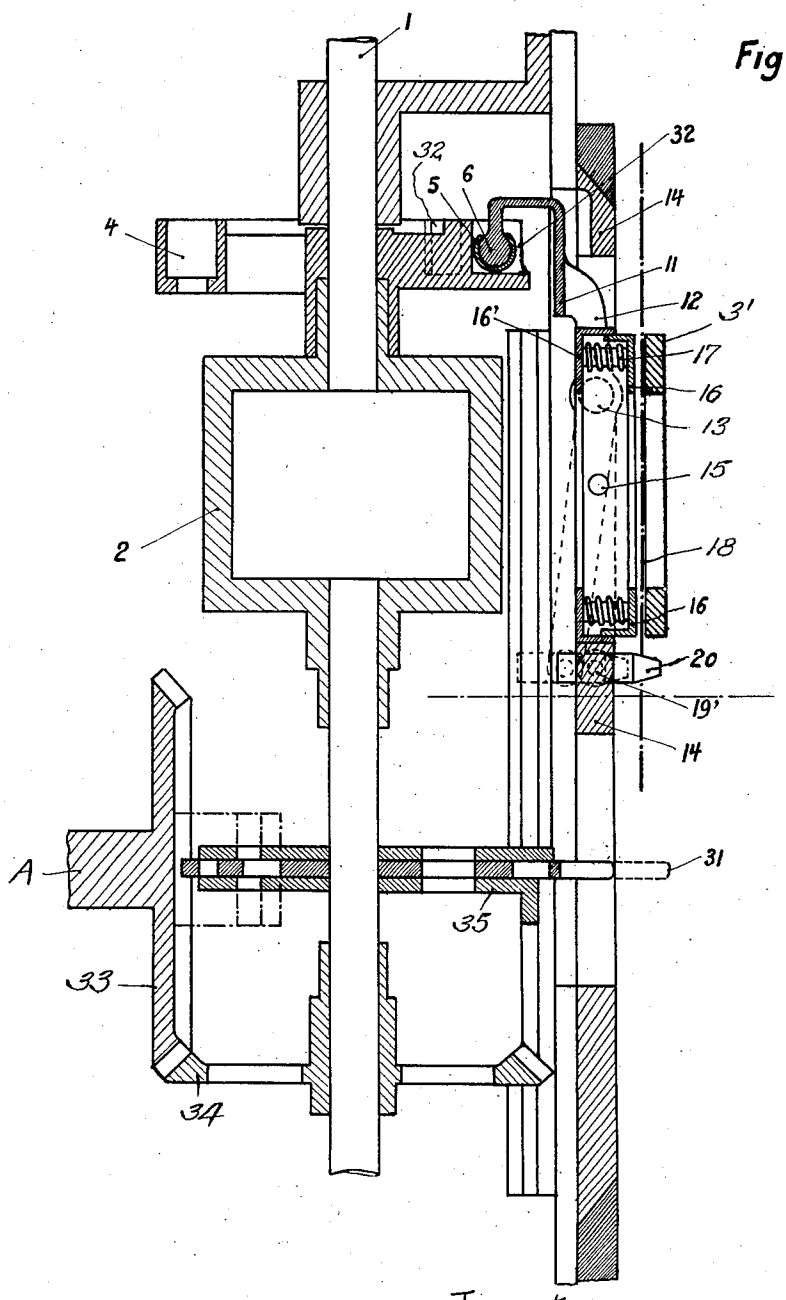
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CINEMATOGRAPHIC VIEW TAKING APPARATUS

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Fig. 6



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UNITED STATES PATENT OFFICE

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CINEMATOGRAPHIC VIEW TAKING APPARATUS

Application filed September 6, 1927, Serial No. 217,861, and in France October 18, 1926.

It is known that in cinematographic view taking apparatuses the film is, whilst it is exposed in front of the view taking aperture, kept in place by registering pins whilst it is held down against this aperture by a pressure plate while it is simultaneously released from the driving claws. The action of the registering pins and pressing plate should cease as soon as the view taking is ended so as to allow the film to be again driven by the claws.

My invention relates to a common control device for the reciprocation of the registering pins and pressure plate, the said reciprocation being positively controlled both for the forward and for the rearward movement of the parts.

A form of execution of the invention is shown by way of example on appended drawings whereof:

Fig. 1 is a front view of the device.

Fig. 2 is a vertical sectional view along line 2—2 of Fig. 1, said view being continued through the film gate.

Fig. 3 is a horizontal section along line 3—3.

Fig. 4 is a horizontal section along line 4—4 and Fig. 5 is a horizontal section along line 5—5 (Fig. 2).

Fig. 6 shows a modification.

The shaft 1 driven by the controlling mechanism and which is vertical in the case illustrated, controls the film-advancing means constituted by the claws 31 shown on Fig. 6. The said shaft is provided with a frame-shaped enlargement 2 (Fig. 2) so as to completely free the view taking aperture in the film gate 3, when it is desired to focus in which case it is sufficient to give the shaft 1 an angular position perpendicular to that shown in Figure 3. A cam 4 provided with a substantially horizontal groove is keyed to the shaft 1. The grooved cam is shown in horizontal cross section on Fig. 5.

In this groove runs a roller 5 pivoting freely round a spindle 6 secured to the carriage 7 bearing a dove-tailed guiding part 8 sliding in the stationary slide 9 whereby the carriage is caused under the action of the rotation of the grooved cam to move reciprocatingly along a straight line in the direction of the optical axis of the apparatus. The carriage 7 bears on its under side a socket shaped part 10 which is engaged by and wherein is held a projection 11 secured to a double lever 12 comprising a crossbar and two lateral arms disposed on either side of the view taking aperture 3 (Fig. 1). This lever is pivotally secured along the horizontal line 13—13′ on the front plate 14.

To the two arms of the lever 12 is pivotally secured along the horizontal line 15—15′ the pressing plate comprising two frames 16—16′ engaging each other for instance through a sliding movement and separated by springs 17, four for instance, which urge the frame 16 slightly away from frame 16′. This device has for object to make the film always bear perfectly against the view taking aperture without crushing it if it is thicker than the standard thickness and without failing to press it at all if it is thinner. Moreover owing to this extensibility of the pressing device it is possible during adjustment to give a greater length to the stroke of the lever 12 so as to compensate for wear of the parts. The two frames 16—16′ are provided in their center with a rectangular opening so as to free the view taking aperture 3 and to allow focusing.

Moreover at the lower part of the lever arms 12 are pivotally secured at 19, 19′, the registering pins 20—20′ which are guided perpendicularly to the film surface in the slides 21—21′ (Fig. 4).

It is apparent that when the cam 4 rotates, driven by the shaft 1, the roller 5 gives the carriage 7 a reciprocating rectilinear movement which causes the lever 12 to swing round its bearings 13—13′. The result is that the registering pins 20—20′ and the pressing device 16—16′ are periodically moved forwards so that the registering pins engage the film perforations 18 and the pressing device 16 comes in contact with the said film, the frame 16′ continuing its forward movement and pressing the springs 17 until the frame 16 presses strongly against the film. The pins and pressing device are then moved rearwards in a positive manner by the return stroke of the carriage 7 and release the film.

The former motion is provided when the driving claws 31 release the film and the second when the clutches 31 reengage the film.

A modified form of execution allowing the carriage 7 and its slide 9 to be omitted, would consist as shown on Fig. 6 in extending part 11 of the lever perpendicularly to the two arms 12 and suitably securing to this extension the roller 5 which in this case should have a spherical shape so that it engages during working the groove of cam 4.

It should be noted that the arrangement, shown in Figure 2 or in Figure 6 may be applied to a large variety of apparatuses, chiefly in apparatuses of the type disclosed in my co-pending application 109,937 filed on May 18, 1926, and now U. S. Patent No. 1,855,128 issued April 19, 1932, comprising a device for focusing on a ground glass. In the said co-pending application and patent a plate of circular shape carrying the film gate and provided with an opening closed by a ground glass angularly disposed with reference thereto is adapted to rotate in its plane in front of the film gate in a manner such that the film is shifted sideways and replaced by the ground glass for focusing purposes. This plate may be easily adapted to the apparatus according to my present invention as shown in Fig. 2 where it may form the plate 14 carrying the lever bearing in its turn the registering pins and pressure plate. In this case the plate 14 is adapted to move in its own plane round its centre. When it is desired to move this plate provided with a ground glass for focusing, part 11 of the lever is disengaged from the socket 10 which remains secured to the carriage 7 in its original position. Thus the plate, lever and parts borne thereby may be moved bodily in a very easy manner.

In the form of execution shown on Fig. 6, it is sufficient for obtaining the same result to provide in a suitable point of the outer wall of the groove of cam 4 an aperture 32 slightly larger than the diameter of the roller, so that when for any reason such as for focusing, the plate 14 similar in all respects to the plate 14 of Fig. 2 is made to rotate in its plane, it will carry with it the registering pins, the pressing device, the lever 12 and the roller which is mounted on the extension 11 of the latter, said roller having previously disengaged the cam 4 in which it moves. The roller will move easily out of the cam 4 and will reenter it reversely when the plate 14 is set back in its original position, the apparatus having been previously stopped in a manner such as will have brought the above-mentioned outer opening in the cam in front of the roller.

The main control shaft A controls in the usual manner through the bevel gears 33 and 34, the reciprocating inward and outward motion of the film driving claws such as 31 in their carriage 35, while the shaft 1 is controlled directly through the bevel gear 34.

What I claim is:

1. A control device for cinematographic apparatuses comprising film-advancing means, a shaft controlling said means, a film gate, a lever adapted to pivot round an axis parallel to the film gate and perpendicular to the direction of motion of the film, registering pins secured to said lever, a part driven by the shaft provided with a cam-shaped groove, a roller guided between the edges of the groove, a mechanical connection between the roller and the lever for positively driving same under the action of the movement of the cam first in one direction and then in the reverse direction, a pressure plate in front of the film gate and means for pivotally securing said pressure plate to the lever along an axis parallel to the pivoting axis of the lever.

2. A control device for cinematographic apparatuses comprising film-advancing means, a shaft controlling said means, a film gate, a lever adapted to pivot round an axis parallel to the film gate and perpendicular to the direction of motion of the film, registering pins secured to said lever, a grooved cam actuated by the shaft, a stationary rectilinear slide, a carriage adapted to reciprocate along said slide, a roller pivotally borne by the carriage and engaging the groove in the cam, means whereby the carriage is adapted to positively impart a rocking motion to the lever in both directions, a pressure plate in front of the film gate, and means for pivotally securing said pressure plate to the lever along an axis parallel to the pivoting axis of the lever.

3. A control device for cinematographic apparatuses comprising film-advancing means, a shaft controlling said means, a film gate, a lever adapted to pivot round an axis parallel to the film gate and perpendicular to the direction of motion of the film, registering pins secured to said lever, a grooved cam borne by the shaft, a pressure plate disposed in front of the film gate and pivotally secured to the lever along an axis parallel to the pivoting axis of the lever, a stationary rectilinear slide, a carriage adapted to reciprocate along said slide, a roller pivotally borne by the carriage and engaging the groove in the cam, and a socket borne by the carriage and in which the lever is adapted to engage loosely.

4. A control device for cinematographic apparatuses comprising film-advancing means, a shaft controlling said means, a film gate, a lever adapted to pivot round an axis parallel to the film gate and perpendicular to the direction of motion of the film, registering pins secured to said lever, a grooved cam actuated by the shaft, means connecting the cam and the lever to positively impart a

rocking motion to the lever in both directions, a pressure plate in front of the film gate comprising two elementary substantially similar frames disposed one behind the other and springs between said frames urging them apart, and means for pivotally securing said pressure plate to the lever along an axis parallel to the pivoting axis of the lever.

5. A control device for cinematographic apparatuses comprising film-advancing means, a shaft controlling said means, a film gate, a plate parallel to and carrying the film gate provided with an aperture registering therewith and adapted to move in its plane round its centre, a lever pivotally secured to the plate along an axis normally perpendicular to the direction of motion of the film, registering pins secured to said lever, a grooved cam actuated by the shaft, a socket in which one end of the lever is adapted to engage loosely, a pressure plate in front of the film gate pivotally secured to the lever along an axis parallel to the pivoting axis of the lever, and means whereby the cam is adapted to positively impart a rocking motion to the socket towards and away from the film gate.

6. A control device for cinematographic apparatuses comprising film advancing means, a shaft controlling said means, a film gate, a plate parallel to and carrying the film gate, provided with an aperture registering therewith and adapted to move in its plane round its centre, a lever pivotally secured to the plate along an axis normally perpendicular to the direction of motion of the film, registering pins secured to said lever, a grooved cam actuated by the shaft, a socket in which one end of the lever is adapted to engage loosely, a pressure plate in front of the film gate pivotally secured to the lever along an axis parallel to the pivoting axis of the lever, a stationary rectilinear slide, a carriage adapted to reciprocate along said slide, and bearing the socket and a roller pivotally borne by the carriage and engaging the groove in the cam.

In testimony whereof I have signed my name to this specification.

ANDRÉ LÉON VICTOR CLÉMENT DEBRIE.