April 27, 1926. 1,582,032

P. S. GAURIAT

MOTION PICTURE APPARATUS

Filed March 15, 1923 3 Sheets-Sheet 1

Fig.1

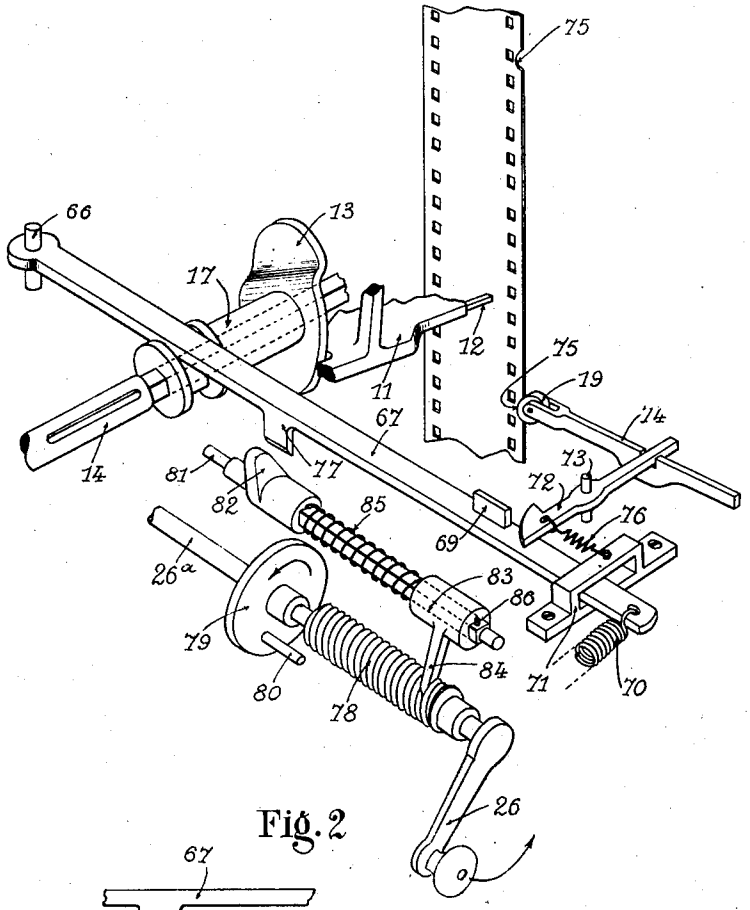
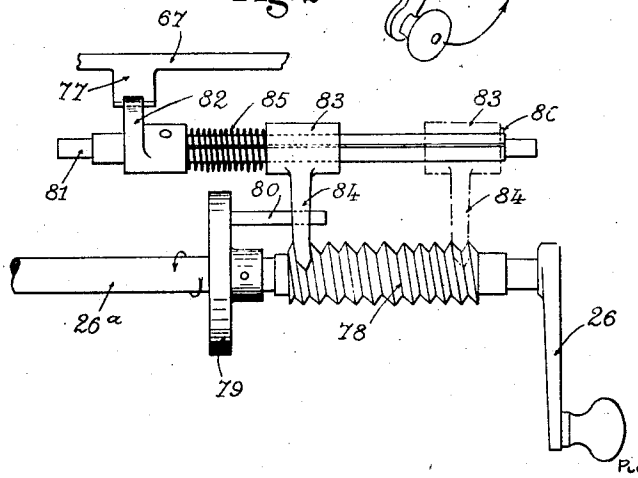


Fig.2



Pierre Sylvain Gauriat
INVENTOR;
By Otto Munn
his Attorney.

April 27, 1926. 1,582,032

P. S. GAURIAT

MOTION PICTURE APPARATUS

Filed March 15, 1923 3 Sheets-Sheet 2

Fig. 3

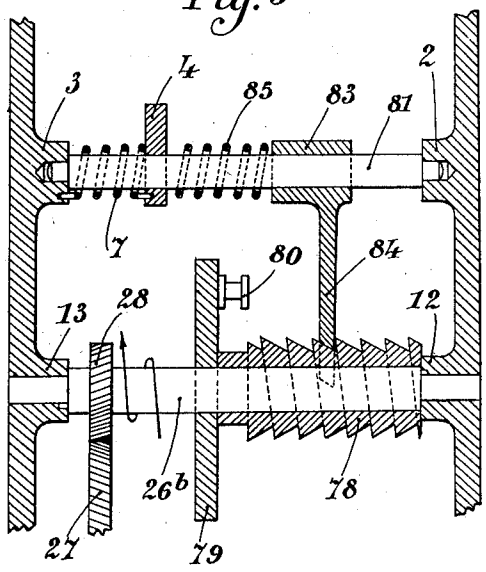


Fig. 4

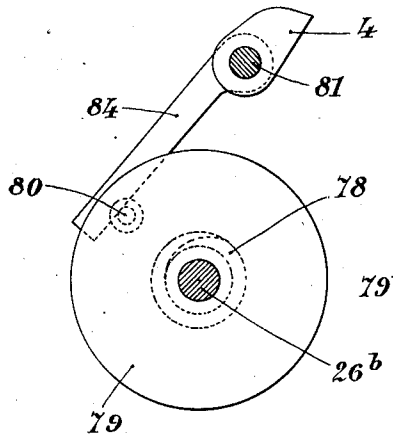
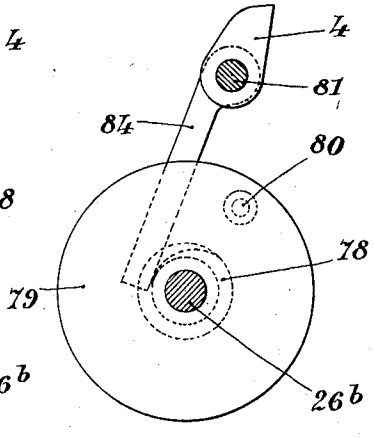


Fig. 5



Pierre Sylvain Gauriat
INVENTOR;
By Otto Munk
his Attorney.

April 27, 1926. 1,582,032

P. S. GAURIAT

MOTION PICTURE APPARATUS

Filed March 15, 1923 3 Sheets-Sheet 3

Fig.6

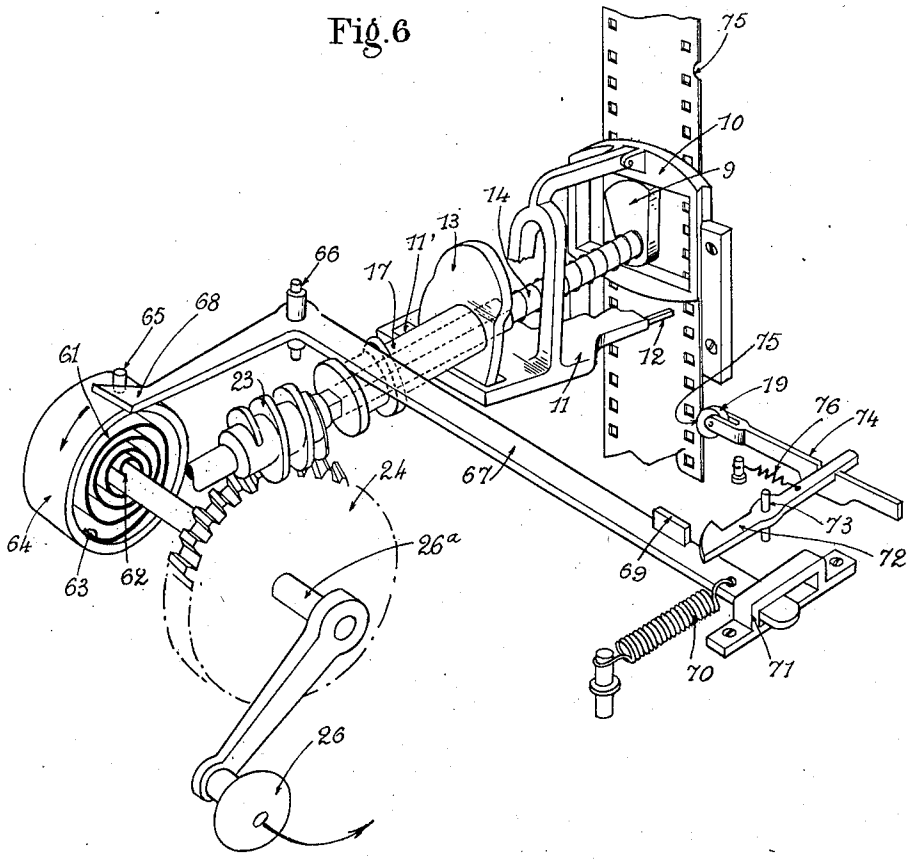
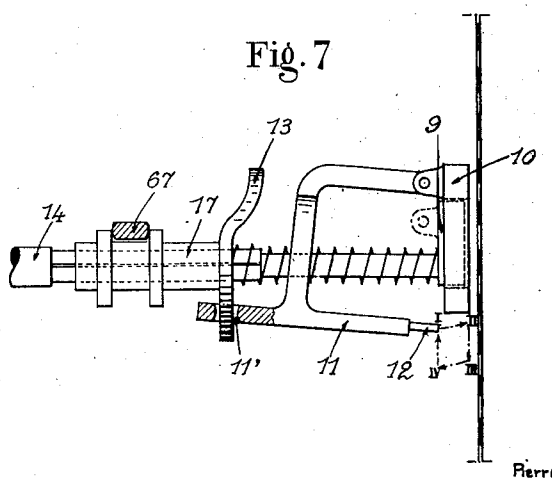


Fig. 7



Pierre Sylvain Gauriat
INVENTOR;
By Otis Munn
his Attorney.

Patented Apr. 27, 1926. 1,582,032

UNITED STATES PATENT OFFICE.

PIERRE SYLVAIN GAURIAT, OF PARIS, FRANCE, ASSIGNOR TO PATHE CINEMA, ANCIENS ETABLISSEMENTS PATHE FRERES, OF PARIS, FRANCE.

MOTION-PICTURE APPARATUS.

Application filed March 15, 1923. Serial No. 625,237.

To all whom it may concern:

Be it known that I, PIERRE SYLVAIN GAURIAT, citizen of the French Republic, residing at Paris, in the French Republic, have invented new and useful Improvements in Motion-Picture Apparatus, of which the following is a specification.

This invention relates to an automatic mechanical device for starting the film in a motion picture apparatus, after said film has been stopped during a determined lapse of time, said stoppage having been obtained as described in my patent application Ser. No. 534,073, by means of a member in constant contact with the film and which actuates a lever controlling the movement of the cam sleeve of the feeding mechanism for the film, when said contact member engages a notch or perforation provided in the film.

According to this invention said lever, when operated by said contact member, actuates a pivoting arm and brings the same into engagement with means actuated by the driving handle of the apparatus and including a stud, said means permitting said stud to actuate said pivoting arm in the reverse direction after a determined number of revolutions of said handle in order to disengage said arm from said means and to bring back said lever and the cam sleeve in their position corresponding to the normal feeding of the film.

In the accompanying drawings which show by way of example various embodiments of the invention:

Fig. 1 is a perspective view of a first embodiment of the invention, the position shown of the various members being that corresponding to the beginning of the stopping period for the film.

Fig. 2 shows in front view the position of the mechanism shown in Fig. 1 at the moment when the starting of the film is to be again produced.

Fig. 3 is a cross section of a modification of the device shown in Figs. 1 and 2.

Fig. 4 is a side view of one part of the same during the period of stoppage of the film.

Fig. 5 is a view similar to Fig. 4, but when the device is no longer working, i. e. when the film travels normally in the apparatus.

Fig. 6 is a perspective view of a modified form of construction, the device being in the position which corresponds to the stoppage of the film.

Fig. 7 is a side view of a detail.

As it may be seen in Figs. 1 and 2, the feeding of the film is carried out by means of the handle 26 which, through the medium of a gear wheel and worm mechanism, not shown in these figures, rotates on the one hand the cam 9 and on the other hand the cam disc 13 which, by engaging in the slot 11′ of the claw holder 11, provides for the forward and backward motion of the latter which supports the claw or claws 12 according as the perforation of the film is single or double. The cam 9 actuates the movable frame 10 which imparts a vertical movement to the claw holder 11.

In order to stop the feeding of the film, it is simply necessary to cause the sleeve 17 to slide rearwardly along the shaft 14, said sleeve 17 rotating with the said shaft 14, in order to draw to the rear the cam 13 secured to the sleeve 17. In this manner, the claw holder 11 is also pivoted to the rear and the claw or claws 12 cannot engage any more in the perforations of the film, although they still move under the constant action of the cams 9 and 13.

The sliding movement of the sleeve 17 is controlled by an arm 67 pivoting at 66 at one end, and provided at the other end with the tenon 69.

The pawl 72 pivoted at 73 is actuated by the slide 74 provided with a roller 19 rolling upon one edge of the film and which may fall into notches 75 provided in said edge of the film. When the film is stationary, the lever 67 is in contact with its stop-piece 71 limiting its rear motion. A spring 76 secured to the pawl 72 constantly maintains the roller 19 of the arm 74 in contact with the edge of the film.

The shaft 26^a which is supported in two flanges of the apparatus, is rotated by the handle 26 controlling the feeding mechanism as before and is adapted to rotate a screw 78 and a disc 79 which is provided near its edge with a stud 80. On a shaft 81 parallel to the shaft 26^a is keyed a cam 82 which is adapted to meet the tenon 77 of the lever 67, and on the other hand a slide 83, provided with an arm 84 which can engage the

threads of the screw 78, may slide on the shaft 81. A spring 85 urges the slide 83 against the stop-piece 86.

The operation of the device is as follows: The film being in the stopped position, that is, the roller 19 having just fallen into the lateral notch 75 of the film, it will be seen that the lever 67 which is no longer held by the pawl 72 and is urged by the spring 70 will come into contact with the stop-piece 71. In this position, of the lever 67, the claw 12 is disengaged from the perforations of the film and the film is stopped. The slide 83 is in the position shown in full lines in Fig. 1 and in mixed lines in Fig. 2. If the handle 26 is still rotated at the normal speed in the direction of the arrow, the screw 78 will cause the arm 84 and the slide 83 to slide towards the disc 79 while compressing the spring 85, and it thus brings the arm 84 upon the path of the finger 80 (Fig. 2) which in its rotation removes then the arm 84 away from the screw 78 and the shaft 81 is thus rotated.

In this rotation of the shaft 81, the cam 82 meets the tenon 77 of the lever 67 and moves the latter forwards, which brings the claws 12 into engagement with the film, and the latter is started. The wheel 79 still rotating, the stud 80 escapes from the arm 84 of the slide 83 which is then pushed by the spring 85 to its original starting position and ready for a new engagement with the screw 78; this engagement will be effected by the backward motion of the lever 67 when a notch 75, by causing the movement of the slide 74, shall release the tenon 69 from the pawl 72. The lever 67 is then brought back by the spring 70 and the tenon 77 acting upon the cam 82, the shaft 81 will rotate in the reverse sense to the preceding, and the arm 84 will again engage the screw 78 (Fig. 3).

It will thus be seen that the time during which the slide 83 starts from one end to the screw, and comes into contact with the stud 80, is the time which corresponds to the stoppage of the film, in order to obtain the stationary projection of a title or of a fixed image.

Obviously, if, for example for a title, the time of stoppage determined by the length of the screw is not sufficient, it is simply necessary to have upon the film two or three successive images of the same title with corresponding notches in the film; these images will be projected one after the other, and each will stop for the time determined by the length of the screw, thus doubling or tripling the duration of the visibility of the title upon the screen.

Fig. 3 shows, in cross section, a device substantially similar to that above described. In particular, it will be seen in said figure that the two shafts 81 and 26^b, the latter replacing the shaft 26^a of the preceding device, are rotatably mounted in bosses 2, 3, 12 and 13 provided in two flanges of the motion picture apparatus. But the shaft 26^b instead of being directly driven by the driving handle of the apparatus is driven through the medium of the reduction gear 27—28. The finger 4 has a function similar to that of the cam 82 above mentioned and is rigidly secured on the shaft 81, but a coil spring 7, one end whereof is secured to the boss 3 and the other to the finger 4, maintains the finger 4 and consequently the shaft 81 in a determined angular position (Fig. 4), as long as it is not actuated by the lever 67.

The operation of this device is quite similar to that of the above described mechanism.

A further modified form of the device according to the invention is shown in Figs. 6 and 7, the feeding mechanism for the film being the same as that shown in Figs. 1 and 2. But in this case the lever 67 pivoting at 66 is bent at right angle and is provided with a nose piece 68. A flat spiral spring 61 is secured at one end 62 to the shaft 26^a driving the feeding mechanism for the film. The other end 63 of the spring 61 is secured to a barrel 64, which is loosely mounted on the shaft 26^a. The barrel 64 is provided with a stud 65 upon its periphery, and the nose piece 68 is situated on the path of the stud 65 when the film has stopped, i. e. when the lever 67 is in contact with the stop piece 71, position shown in Fig. 6.

Under these conditions, by turning the handle 26 mounted upon the shaft 26^a controlling the mechanism, the stud 65 of the barrel 64 comes into contact with the nose 68 of the lever 67. The reaction spring 70 being stronger than the spring 61, it will be seen that the barrel 64 is held stationary by its stud 65 in spite of the rotation of the shaft 26^a which winds up the spring 61 of the barrel 64 until the spiral turns of the said spring are pressed against each other.

It is easily understood that at this moment, the coupling between the shaft 26^a and the barrel 64, which was flexible at the beginning of the movement, becomes rigid, and for this reason the shaft 26^a now actuates the barrel 64. In this movement, of the barrel, the stud 65 impels the nose 68 of the lever 67, which will pivot at 66 and move the sleeve 17 forward, thus again producing the driving of the film, since the claws 12 may now engage the perforations of the latter.

Under these conditions, the notch 75 leaves the roller 19 and the slide 74 is moved backwards, thus causing the pawl 72 to pivot on 73, and the stud 68 having been moved forward together with the lever 67, said stud engages the pawl 72 and the lever

67 is held in the position corresponding to the feeding of the film, until a next notch 75 engages with the roller 19.

It will thus be seen that the lapse of time during which the film is stopped will depend upon the length of the spiral spring 61 contained in the barrel 64, and that in order to again engage the lever 67, it is necessary to turn the operating handle 26 a number of revolutions required for completely winding up the spring. The time required for the complete winding up of the spring is the same as that of the stoppage of the film, and during this time the handle 26 is turned at the normal speed, the whole mechanism being still in movement.

It is obvious that constructional modifications may be brought to the device herein described, without departing from the principles of the invention.

It must be noted, that the described devices which are shown, as affording to start the film in a motion picture apparatus, after a determined time of projection of one image, may also be used in a more general manner, in all the mechanisms wherein similar working conditions are stipulated, i. e. in which it is wanted to start automatically after a determined time of stoppage, a movable member which has been previously automatically stopped, as for instance in certain clockworks, gear operated devices for staircase lighting, in automatic distributers, etc.

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

1. A motion picture apparatus comprising a driving shaft, a feeding member adapted to impart to the film an intermittent feeding movement, means operatively connecting said feeding member to said driving shaft, a contact member in constant contact with the film, means controlled by said contact member for temporarily disengaging the feeding member from the film, and means operated by said driving shaft for reengaging automatically said feeding member with the film after a determined number of revolutions of said driving shaft.

2. A motion picture apparatus comprising a driving shaft, a feeding member adapted to impart to the film an intermittent feeding movement, means operatively connecting said feeding member to said driving shaft, a spring controlled cam adapted to periodically disengage said feeding member from the film, a pivoted lever adapted to hold the cam in its operative position for driving the film, a contact member in constant contact with the film, means controlled by said contact member for actuating backwards said lever and said cam whereby the feeding member is temporarily disengaged from the film, and means operated by said driving shaft for actuating forwards said lever and said cam after a determined number of revolutions of said shaft, whereby said cam is brought back to said operative position.

3. A motion picture apparatus comprising a driving shaft, a feeding member adapted to impart to the film an intermittent feeding movement, means operatively connecting said feeding member to said driving shaft, a spring controlled cam adapted to periodically disengage said feeding member from the film, a pivoted lever adapted to hold the cam in its operative position for driving the film, a contact member in constant contact with the film, means controlled by said contact member for actuating backwards said lever and said cam whereby the feeding member is temporarily disengaged from the film, a rotating screw actuated by said driving shaft, a rotatable auxiliary shaft, a pivoting arm slidably mounted on said shaft and at right angle with said screw, yielding means for maintaining said auxiliary shaft and pivoting arm in a determined angular position, said shaft being adapted to be rotated in one direction by said lever in order to bring said arm into engagement with one end of said screw, a stud carried by the opposite end of the screw and adapted to rotate said arm in the opposite direction whereby said lever and said cam are brought back to their operative positions and yielding means for returning said arm to its initial position on said auxiliary shaft.

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

PIERRE SYLVAIN GAURIAT.