Jan. 22, 1935. A. L. V. C. DEBRIE 1,988,980

SAFETY CLOSING CIRCUIT DEVICE FOR PREVENTING STUFFING IN CINEMATOGRAPHIC APPARATUS

Filed Dec. 4, 1931

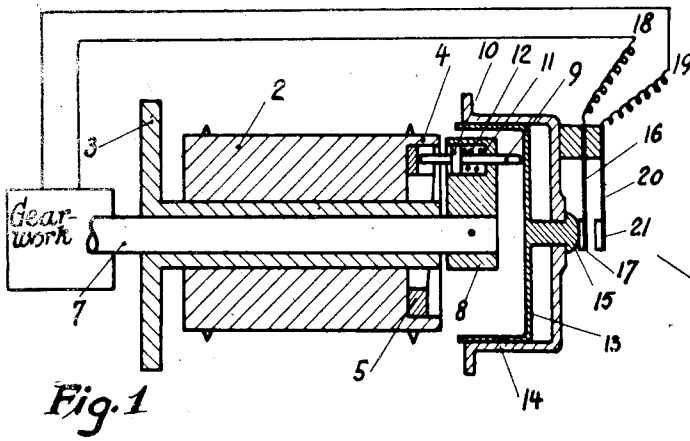


Fig. 1

Fig. 2

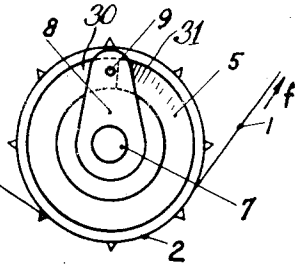
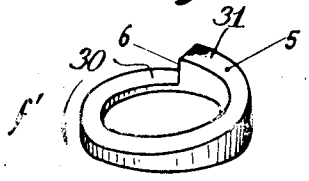


Fig. 3



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Patented Jan. 22, 1935 1,988,980

UNITED STATES PATENT OFFICE

1,988,980

SAFETY CLOSING CIRCUIT DEVICE FOR PREVENTING STUFFING IN CINEMATOGRAPHIC APPARATUS

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Application December 4, 1931, Serial No. 579,057
In France January 8, 1931

1 Claim. (Cl. 200—52)

My invention has for its object a safety device applicable to cinematographic apparatuses and adapted to prevent the classical mishap termed "stuffing" i. e. an accumulation of the film in a point of its path, owing to fortuitous accident at this point while the film continues being unwound behind said point.

This device is chiefly characterized by the fact that the film when, for any reason it ceases being driven causes the displacement of a part which establishes a mechanical or electric contact, which contact has for its effect to stop the feed of the film either by putting the apparatus out of gear while the motor continues to rotate, or by breaking the feed circuit of the motor.

A form of execution of the invention adapted to a view taking apparatus and intended to prevent stuffing at the entrance of the magazine-box containing the take-up reel is shown by way of example in accompanying drawing wherein:

Fig. 1 is a longitudinal vertical cross-sectional view of the device.

Fig. 2 is an end view thereof.

Fig. 3 is a perspective view of one of the parts of the arrangement.

In Figs. 1, 2 and 3, 1 designates the film drawn along in the direction of the arrow *f* (Fig. 2) towards the film take-up device and passing over the toothed drum 2 rotating freely round the support 3 secured to the apparatus. One of the terminal surfaces of the drum 2 is provided with a recess 4 wherein is disposed a circular slope 5 surrounding the hub of the support and the height of which considered in the direction of the drum axis increases gradually up to a projection 6 forming a stop (Fig. 3). The lower part of said slope is indicated in Figures 2 and 3 by reference number 30 and the higher by 31.

Through the hub of the support 3 passes a spindle 7 controlled by the control gear of the apparatus. To the end of this spindle is keyed an arm 8 through which a finger 9 passes slidingly. This finger is provided with a shoulder or reinforcement 10 adapted to move in a hollow recess 11 of the arm 8 and a spring 12 bearing on one hand against the bottom of the recess 11 and on the other against the shoulder 10, urges constantly the finger 9 against the slope 5. To the side opposed to this slope, the finger 9 moves, without meeting it normally, in front of a circular plate 13 which may slide in the direction of the axis of the finger 9 inside a cylindrical guide 14 secured to the apparatus. The plate 13 is provided with a projecting stud 15 bearing against a spring blade 16, carrying a contact 17 of tungsten for instance said contact being connected through a current feed wire 18 with one pole of a current supply. The second pole of the supply is connected through a wire 19 with a second blade 20 disposed in front of the blade 16 and at a small distance therefrom and carrying a tungsten contact 21.

The operation is as follows:

At the start the apparatus is so adjusted that finger 9 bears on the lower part 30 of the circular slope 5 (the reason therefor shall be explained further); when the apparatus works, the film is drawn constantly along by the frictional winding operation in the direction of arrow *f* (Fig. 2) and thus drives the toothed drum 2 which rotates anticlockwise; the motor and central gear drives spindle 7 arm 8 and finger 9 also anticlockwise, and as long as the apparatus works normally the angular speed of drum 2 is equal to that of spindle.

Let us assume now that for any reason the film be driven to an insufficient extent, and consequently have a tendency to stuff; the angular speed of drum 2 shall slacken and become slower than that of spindle 7 which remains unchanged; thus, relatively to each other, drum 2 and circular slope 5 integral therewith on one hand, and on the other hand spindle 7, arm 8 and finger 9 shall behave as if drum 2 being motionless spindle 7 continues to rotate anticlockwise; it should be obviously the same if the motion of the film was quite stopped; in said conditions finger 9 shall turn on slope 5 in the direction of arrow *f'* (Fig. 3) passing consequently from the low part 30 thereof to the highest part 31 and being urged toward the right of Fig. 1 against the action of spring 12. During this movement, the finger 9 abuts against the plate 13 and urges it towards the right inside the guide 14. The stud 15 on the plate 13 acts on the blade 16 and closes thus the contact 17 and 21. The circuit from the supply of energy being closed, the current is sent into an electromagnet not shown which breaks the motor feeding circuit. This explains why, at starting, finger 9 ought to be on the lower part 30 of circular slope 5, since, if it was on the higher part 31 thereof, the motor being braked, should be unable to start.

Of course the movement of the plate might also as stated previously, provide the disconnection of the apparatus from the driving motor.

If for any reason the speed of the film increased and had for its effect to impart to drum 2 an angular speed greater than that of spindle 7, all should behave in the opposite way, viz as if the

drum being considered as remaining motionless spindle 7 should rotate clockwise; in such a case the finger should abut against projection 6, and both members, spindle 7 and drum 2 should from that moment rotate exactly with the same angular speed.

What I claim is:

In combination with the electrically controlled gearwork of a cinematographic apparatus, a safety device comprising a spindle controlled by said gearwork, a drum freely mounted on said spindle and adapted to be rotated by the film as it progresses, a gradually rising slope raised on one of the terminal surfaces of the drum and the lower and higher parts of which are connected through a radial stop surface, an arm keyed to the spindle in front of said slope, a finger parallel to the spindle slidingly held in said arm, a spring urging same against the slope of the drum, a plate perpendicular to the spindle adapted to slide parallel to said spindle and against which the finger abuts when the drum lags behind the rotation of the spindle, a switch the operation of which is responsive to the plate being pushed backwards by the finger, means for connecting said switch with the gearwork.

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