

F. H. FRUDE.
ATTACHMENT FOR MOVING PICTURE MACHINES.
APPLICATION FILED APR. 25, 1912.

1,079,549.

Patented Nov. 25, 1913.

2 SHEETS—SHEET 1.

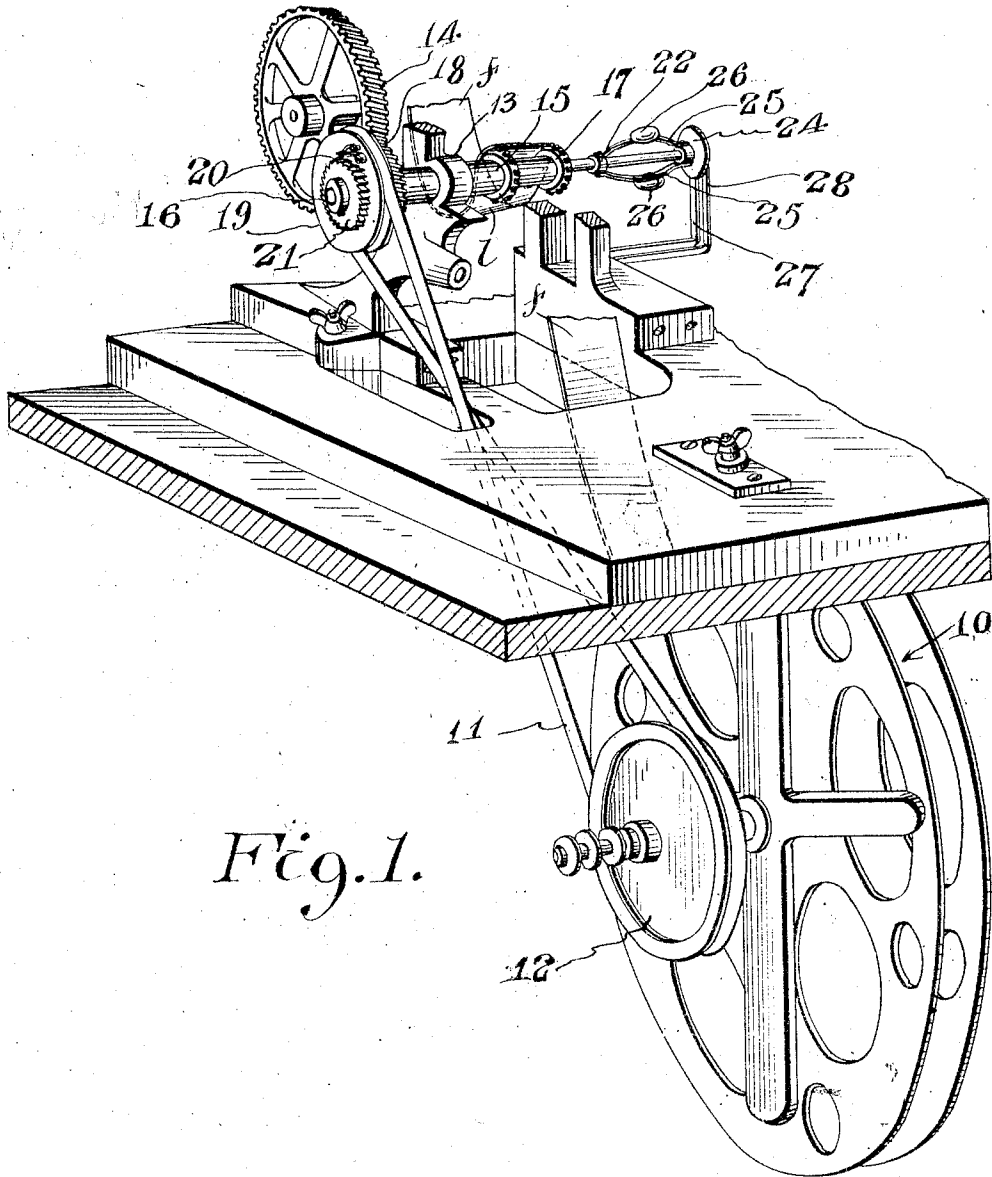


Fig. 1.

Witnesses:—

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H. A. W. Nathan.

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By Charles C. Cawley

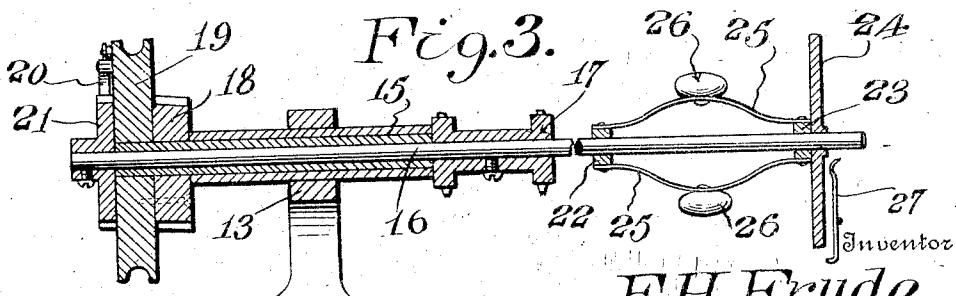
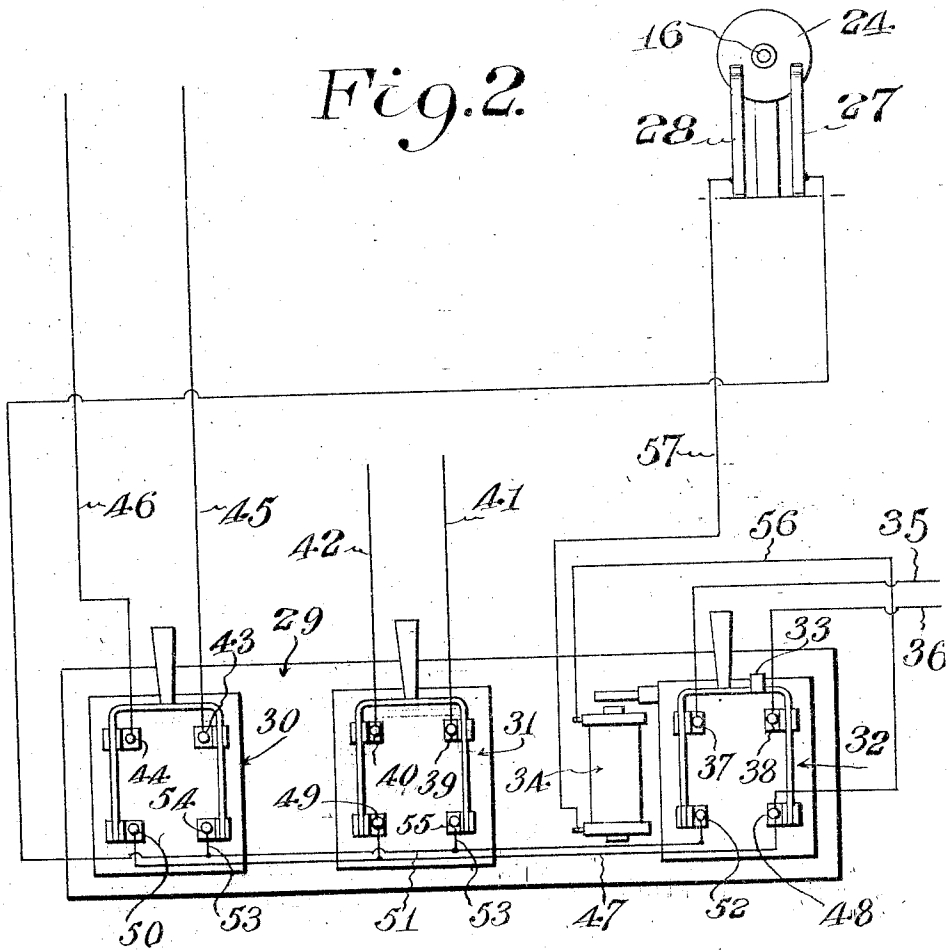
Attorney

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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR MOVING-PICTURE MACHINES.

1,079,549.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK H. FRUDE, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Attachments for Moving-Picture Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in film actuated switch governors for moving picture machines, and the object of my invention is to improve the construction and increase the efficiency of devices of the above described character.

A further object of my invention is to provide a device of the character described so constructed that it may be applied directly to the shaft by means of which the take up reel is driven and upon which the last of the film actuating sprockets is keyed, and a still further object of my invention is to provide means for accomplishing this and at the same time maintain the film loop as in the usual construction.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings which show a preferred embodiment of my device and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawings, Figure 1 is a perspective of my improved device applied to a conventional type of moving picture machine. Fig. 2 is a diagrammatic view showing the switch wiring of my device and its relation to the wiring of the machine. Fig. 3 is a central longitudinal section of my device.

Referring more specifically to the drawings in which similar reference numerals designate corresponding parts throughout, 10 designates the take up reel which is driven by a belt 11 passed over the pulley 12 and ordinarily over a pulley carried by a shaft journaled in a bearing 13, driven by the gear 14 of the machine and upon which is keyed the last of the film carrying sprockets.

My invention consists in enlarging the

bore of the bearing 13 to receive a bearing forming sleeve 15 in which the shaft 16 is journaled, said shaft being provided intermediate its length with a film carrying sprocket 17 which is secured against rotation on the shaft in any preferred manner. Journaled upon the sleeve 15 is a gear 18 which meshes with the gear 14 of the picture machine proper and also journaled upon this sleeve and secured to the gear 18 so as to revolve therewith is a pulley 19 over which the drive belt of the take up reel 10 is passed. It will thus be seen that the take up reel will be driven directly from the machine in the customary manner but that its driving will in no way affect the movement of the film sprocket 17, other than indirectly through pull exerted upon the film by the winding of the film upon the take up reel. It will further be seen that as the film *f* is wound upon the take up reel the rate at which it is drawn from the machine will constantly increase unless the movement of the film is in some way retarded and that this increase will result in the taking up of the customary film loop *e* between the intermittent movement of the machine and the take up reel. To avoid this and at the same time leave the shaft 16 free to rotate at a slower rate of speed than the gear 18 I have provided the pulley 19 with a spring pressed pawl 20 which engages with a ratchet wheel 21 keyed upon one end of the shaft 16, said pawl and ratchet being so arranged that in normal condition the pawl is constantly in engagement with the ratchet and therefore locks the shaft 16 against rotation at a higher rate of speed than that at which the gear 18 and pulley 19 revolve, thus maintaining the film loop. At the same time it will be seen that should the film break between the sprocket 17 and the take up reel the shaft 16 will cease rotating; the pawl 20 running idly over the ratchet as the pulley continues to revolve. It will also be seen that, should the film break at any point between the intermittent movement mechanism and the sprocket 17 the film would be wound until the broken end reached the sprocket when further rotation of the shaft 16 would cease.

Keyed upon the shaft 16 adjacent the sprocket 17 is a collar 22 and slidably mounted upon the shaft and in spaced relation to this collar is a sleeve 23 terminating at its outer end in a disk 24. A plurality of spring arms 25 connect this collar and sleeve and are provided intermediate their length with weights 26 whereby the collar and sleeve together with the weighted spring arms form a centrifugal governor, the construction being such that when the shaft 16 is rotating the disk 24 is drawn in toward the sprocket 17 while when the shaft is stationary the disk engages against spaced contact brushes 27 and 28 which are carried by the frame of the machine and properly insulated therefrom.

My present invention consists in the employment of the mechanism above described as a circuit closer for a circuit adapted when closed to cut off the source of power and light from the machine and so stop the same upon the breaking of the film. I have therefore illustrated diagrammatically in Fig. 2 a series of circuits together with their switches by means of which the stopping of the machine and the cutting off of its light may be accomplished by the closing of a circuit through my circuit closer.

Referring more specifically to Fig. 2 of the drawings 29 designates the switch board upon which are mounted the double knife switches 30, 31 and 32, all of which are of the usual or any preferred type with the exception of the switch 32 which is provided with a spring catch 33 adapted to be actuated to automatically release and open the switch upon the energizing of an electromagnet 34. The feed wires 35 and 36 are connected to the binding posts 37 and 38 of the switch 32. Connected to the binding posts 39 and 40 of the switch 31 are wires 41 and 42 which lead to the motor of the machine which motor, is not shown, and connected to the binding posts 43 and 44 of the switch 30 are wires 45 and 46 which lead to the arc light, also not shown, by which the pictures are projected. A wire 47 connects the binding post 48 of the switch 32 with the binding posts 49 and 50 of the switches 31 and 30 respectively while a wire 51 connects the binding post 52 of the switch 32 with the contact brush 27 of my circuit closer, said wire being connected by branch wires 53 with the binding posts 54 and 55 of the switches 30 and 31 respectively. A wire 56 connects the binding post 48 of the switch 32 with one terminal of the electromagnet 34 while a wire 57 connects the other terminal of the electromagnet with the brush contact 28 of my circuit closer.

From the foregoing description the operation of my improved device will be apparent. Presuming the switches closed and the machine in operation, the switch 32 having been

held manually closed until sufficient speed had been obtained to open my circuit breaker, the film is drawn from the machine by the take up reel over the sprocket 17, revolving the shaft 16 which is held against too rapid movement as previously described by the engagement of the pawl 20 with the ratchet 21. Any breaking of the film between the intermittent mechanism of the machine and the take up reel will then permit the shaft 16 to stop thus closing the circuit through my circuit closer and the electromagnet, energizing the magnet and so causing it to open the switch 32 and cut off the current to the motor and light thus preventing further injury to the film.

From the foregoing description it will be apparent that I have provided a simple and effective means for applying a circuit closer of the centrifugal governor type to the conventional form of picture machine without necessitating any marked changes in the structure of the machine itself.

It will of course be understood that I do not wish in any way to limit myself to the specific wiring and arrangement of switches shown and described as my invention relates wholly to the circuit closer and the manner in which it is applied to the picture machine, the circuits and switches being included merely to illustrate the manner of operation of my device.

What I claim is:—

1. In a device of the character described, the combination with a projecting apparatus for moving pictures and an actuating means therefor, including an electric circuit, of a take up reel, a driving mechanism for said reel, a rotatable shaft carrying a sprocket over which the film passes to the reel, means coacting between the reel driving mechanism and the shaft for limiting the speed of rotation of the shaft, and means operable by the stopping of the shaft for breaking the electric circuit.

2. In a device of the character described, the combination with a projecting apparatus for moving pictures and actuating means therefor, including an electric circuit, of a sleeve, a gear and pulley rotatable on said sleeve and locked to each other, means for rotating said gear, a take up reel, means operable by said pulley for rotating said reel, a shaft journaled in said sleeve, a sprocket keyed on said shaft over which the film passes on its way to the reel, a ratchet carried by said shaft, a pawl carried by the pulley and engaging with said ratchet to limit the speed of rotation of the shaft, and means operable by the stopping of the shaft for breaking the electric circuit.

3. In a device of the character described, the combination with a projecting apparatus for moving pictures and actuating means therefor, of a shaft, a sprocket on said shaft

over which the film passes, a take-up reel, means for actuating said take up reel, means for limiting the speed of rotation of the sprocket shaft irrespective of the pull of the film upon the sprocket, and means operable by the stopping of the shaft to render the actuating means inoperative.

In testimony whereof, I affix my signature, in presence of two witnesses.

FRANK H. FRUDE.

Witnesses:

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T. J. DYKE.