E. H. FRANCIS.

AUTOMATIC CUT-OUT FOR FILM REWINDS.

APPLICATION FILED NOV. 20, 1917.

1,314,055.

Patented Aug. 26, 1919.

3 SHEETS—SHEET 1.

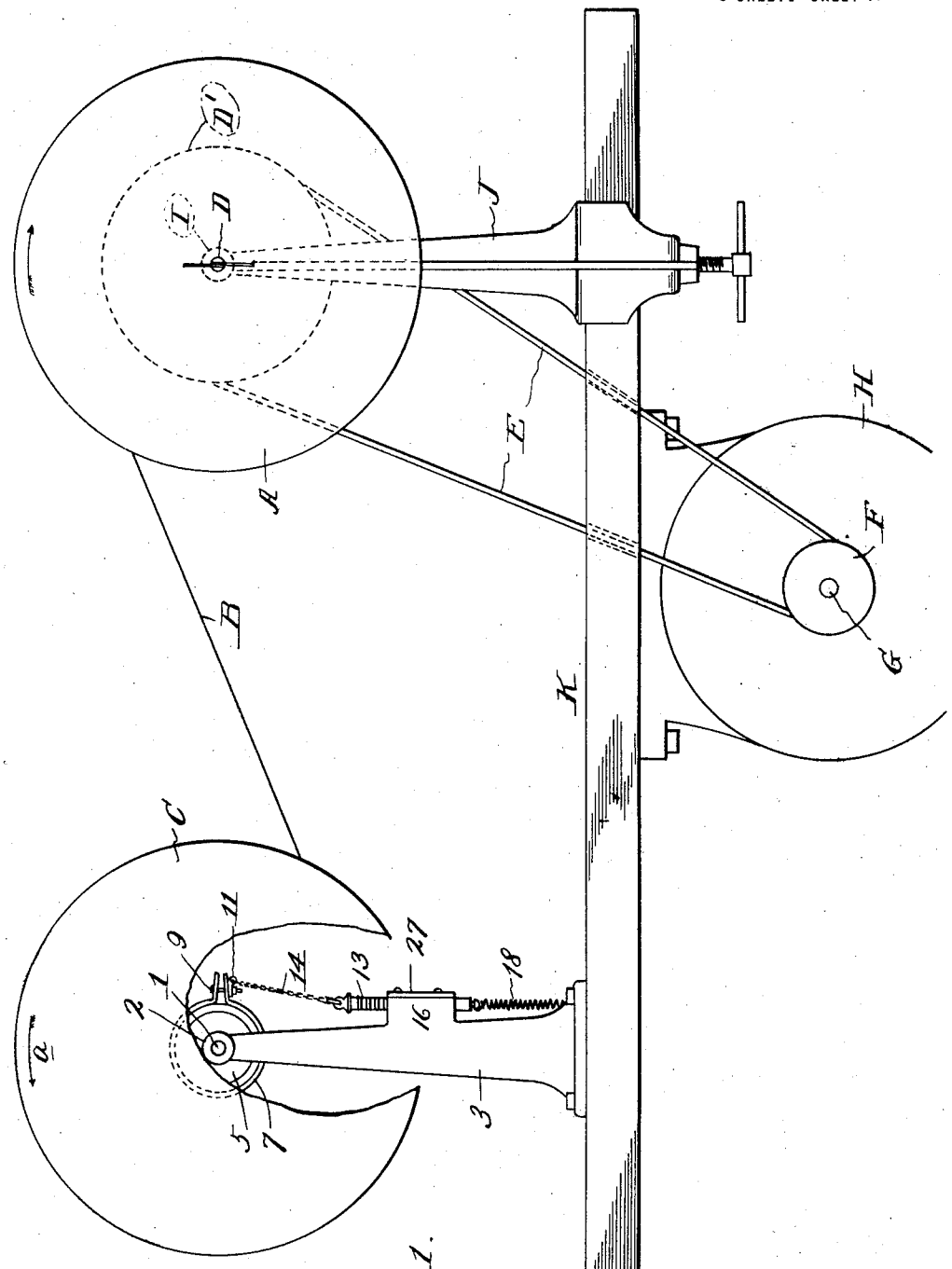


Fig. 1.

WITNESS:

L. J. Fischer

INVENTOR.

Earl H. Francis,

BY

F. G. Fischer,

ATTORNEY.

E. H. FRANCIS.

AUTOMATIC CUT-OUT FOR FILM REWINDS.

APPLICATION FILED NOV. 20, 1917.

1,314,055.

Patented Aug. 26, 1919.

3 SHEETS—SHEET 2.

Fig. 4.

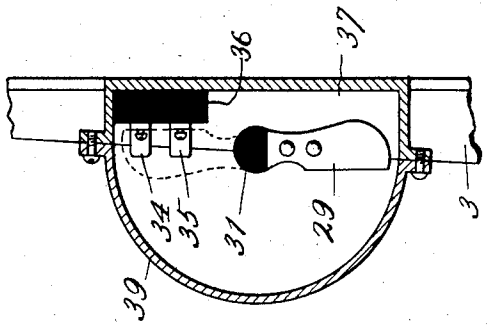


Fig. 3.

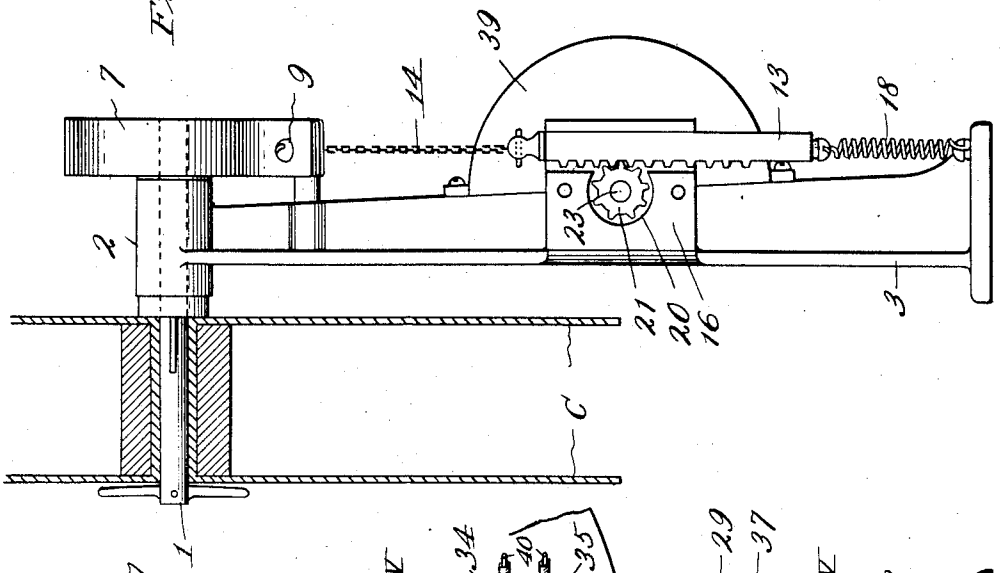
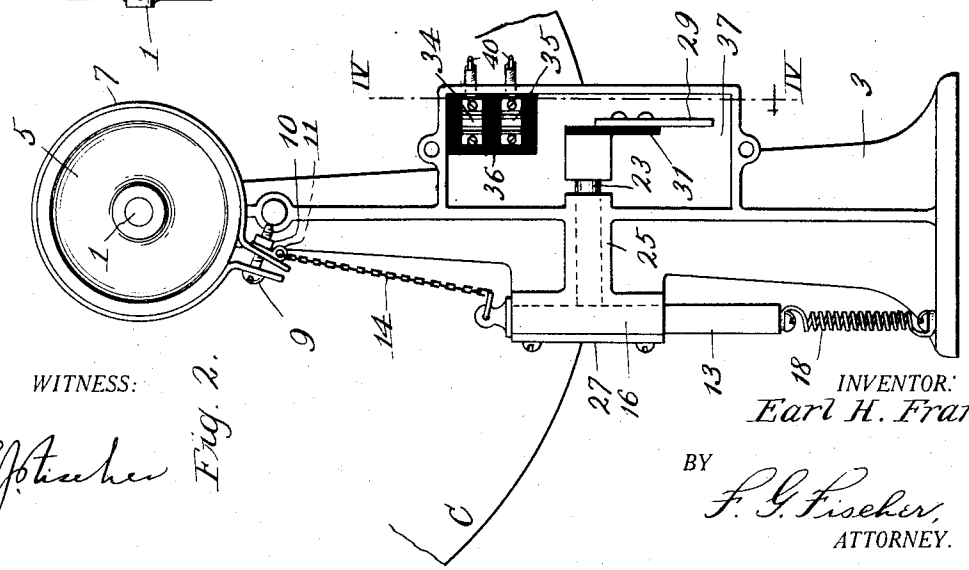


Fig. 2.



WITNESS:

L. J. Fischer

INVENTOR:

Earl H. Francis,

BY

F. G. Fischer,

ATTORNEY.

E. H. FRANCIS.

AUTOMATIC CUT-OUT FOR FILM REWINDS.

APPLICATION FILED NOV. 20, 1917.

1,314,055. Patented Aug. 26, 1919.

3 SHEETS—SHEET 3.

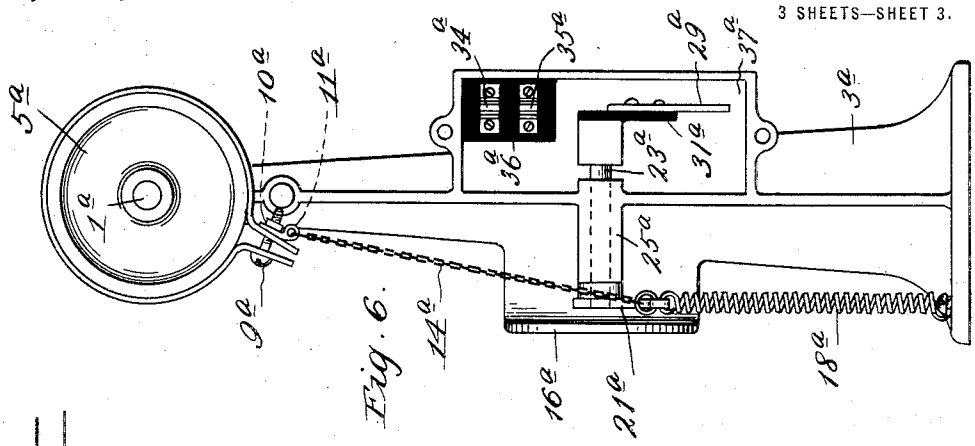


Fig. 6.

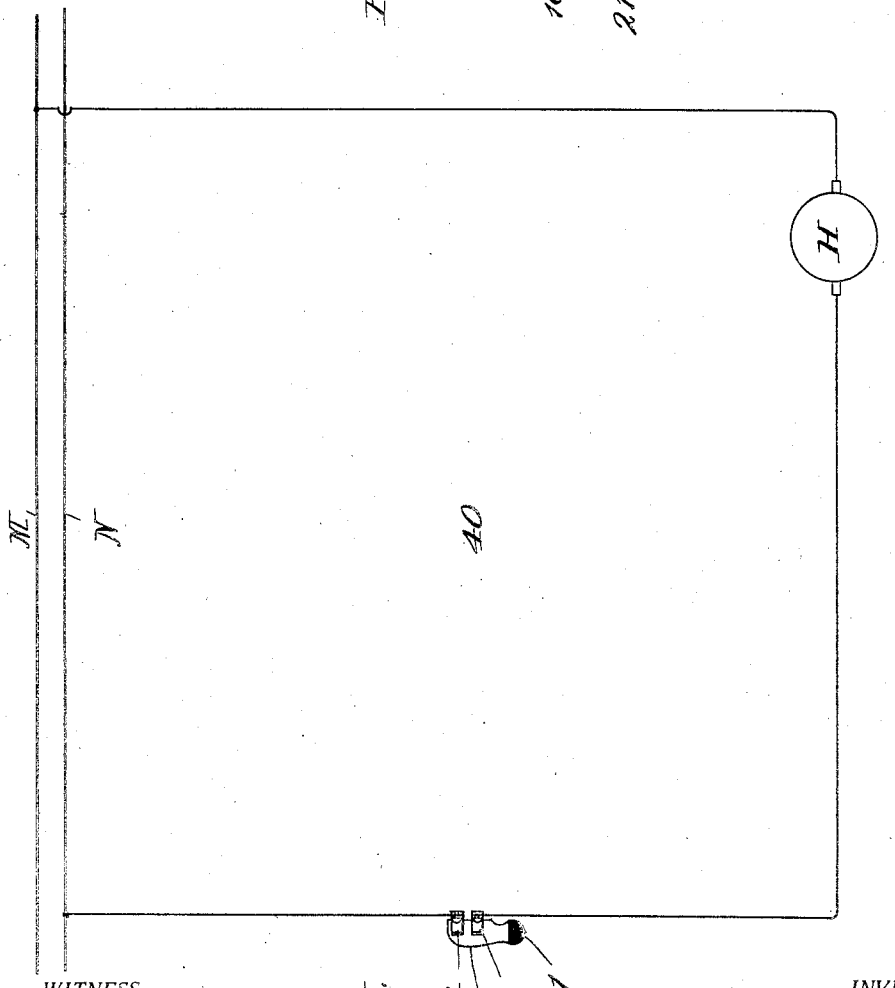


Fig. 5.

WITNESS:

L. J. Fischer

INVENTOR.

Earl H. Francis,

BY

F. G. Fischer,

ATTORNEY.

UNITED STATES PATENT OFFICE.

EARL H. FRANCIS, OF KANSAS CITY, MISSOURI.

AUTOMATIC CUT-OUT FOR FILM-REWINDS.

1,314,055. Specification of Letters Patent. Patented Aug. 26, 1919.

Application filed November 20, 1917. Serial No. 202,922.

To all whom it may concern:

Be it known that I, EARL H. FRANCIS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Automatic Cut-Outs for Film-Rewinds, of which the following is a specification.

This invention relates to an automatic cut-out for film rewinds, and my object is to provide means for automatically cutting out the electric circuit of motors employed in driving reels upon which a motion picture film is being rewound from a second reel. By automatically cutting out said circuit, the motor and the rewind reel are stopped without attention on the part of the operator, and possible damage to the film is obviated.

In order that the invention may be fully understood, reference will now be made to the accompanying drawings, in which:

Figure 1 is a side elevation, partly broken away, of a motion picture film rewind equipped with my invention.

Fig. 2 is a side elevation showing important features of the invention.

Fig. 3 is a front elevation, partly in section, of parts disclosed by Fig. 2.

Fig. 4 is a broken, vertical, sectional view on line IV—IV of Fig. 2.

Fig. 5 is a diagram of the motor circuit equipped with my cut-out switch.

Fig. 6 is a side elevation of a modified form of the device.

Referring now in detail to the various parts, A, designates a rewind reel in the act of taking a motion picture film B, from a second reel C. The rewind reel, A, is mounted upon a shaft D, provided with a sheave D′, adapted to be driven through the intermediacy of an endless belt E from a sheave F, fixed upon the drive shaft G of an electric motor H.

The shaft D is journaled in a bearing I at the upper end of a standard J, secured upon a suitable support such as K, to which the motor H may also be secured, as shown. The reel C is mounted upon a shaft 1 journaled in a bearing 2 at the upper end of a standard 3, bolted or otherwise firmly secured upon the support K. The shafts D and 1, have the usual groove and feather connections with the reels A and C, respectively, to rotate the same.

The shaft 1 is provided at one end with a friction wheel 5 encompassed by a friction band 7, the ends of which are drawn toward each other by suitable means, such as a screw 9 and a nut 10, to cause said band 7 to frictionally engage the wheel 5. The screw 9 is provided with an eye 11, which is connected to the upper end of a rack-bar 13 by a cable 14. The rack-bar 13 extends through a guide 16 and is yieldably-connected at its lower end to the standard 3 by a coil spring 18. The guide 16 is carried by the standard 3 and has a recess 20, to receive a pinion 21 intermeshing with the rack-bar 13 and fixedly-mounted upon a shaft 23 journaled in a bearing 25, carried by the guide 16. A face plate 27 is removably-secured to the guide 16, so that access may be readily had to the rack-bar 13 and the pinion 21.

In addition to the pinion 21, the shaft 23 is provided with a switch blade 29, insulation 31 being interposed between said switch blade 29 and the shaft 23. The switch blade 29 is adapted to engage contacts 34 and 35, which, like the switch blade 29, are arranged in a compartment 37 on the standard 3. The compartment 37 is provided with a removable cap 39, so that access may be had to the switch members.

The contacts 34 and 35 are fixed to insulation 36 and connected to two ends of a motor circuit 40 (Fig. 5), containing the motor H and connected to a suitable source of supply, such as main circuit wires M and N.

In practice, when one end of the film B is connected to the rewind reel, A, for the purpose of winding said film thereon, the motor H is started by manually turning the reel, A, until the switch blade 29 is swung into engagement with the contacts 34, 35, which operation closes the motor circuit 40. As the motor rotates it drives the reel A, which in turn takes the film B, from the reel C. As the film B unwinds from the reel C the latter is rotated in the direction of the arrow *a*, Fig. 1. As the reel C rotates it drives the shaft 1 and the friction wheel 5 therewith, which latter carries the friction band 7 from the position disclosed by Fig. 2, to the position disclosed by Fig. 1, causing it to pull the cable 14 upwardly and raise the rack-bar 13 which is held in such position against the action of the retractile spring 18. After all of the film B has been unwound from the reel C and thus ceases to rotate the latter, the tension on the spring 18 is relieved and

it instantly pulls the rack-bar 13 downwardly, which through the intermediacy of the intervening parts, rocks the switch blade 29 out of engagement with the contacts 34, 35, thus interrupting the motor circuit 40. This stops the motor H and the rewind reel A, so that the latter will not continue to rotate and possibly injure the film B by throwing the free end thereof outwardly by centrifugal force into violent contact with the support K.

In the modified form disclosed by Fig. 6, the construction and operation is similar to that of the preferred form as indicated by similar numerals with exponents applied to corresponding parts, the chief difference residing in a crank arm 21^a which is substituted for the pinion 21 and the rack-bar 13 of the preferred form. Said crank arm 21^a is fixed upon a shaft 23^a and is adapted to be drawn upwardly by the cable 14^a or drawn downwardly to the position disclosed by Fig. 6, through the intermediacy of the retractile spring 18^a. When the crank arm 21^a is drawn upwardly it rocks the shaft 23^a and causes the switch blade 29^a to swing into engagement with the contacts 34^a and 35^a. A guide 16^a carried by the standard 3^a, serves to keep extraneous objects out of the path of the crank arm 21^a, so that the rocking movement thereof will not be accidentally checked and thus interfere with the opening or closing of the motor circuit.

Other modifications falling within the spirit and scope of the appended claims may also be employed.

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

1. The combination with a rewind reel, a second reel from which a film is to be taken by said rewind reel, and a motor and its circuit for driving the rewind reel, of a switch for controlling the motor circuit, a rockable member upon which said switch is fixed, a pinion fixed to said rockable member, mechanism controlled by one of the reels to rotate said pinion in a direction to close the switch, and means to cause said mechanism to open the switch after the film has been unwound from the second reel.

2. The combination with a rewind reel, a second reel from which a film is to be taken by said rewind reel, and a motor and its circuit for driving the rewind reel, of a switch for controlling the motor circuit, a rockable member upon which said switch is fixed, a pinion fixed to said rockable member, a rack for rotating said pinion, mechanism controlled by one of the reels to actuate said rack in a direction to effect closing of the switch, and means connected to the rack to have the same to effect the opening of the switch after the film has been unwound from the second reel.

3. The combination with a rewind reel, a second reel from which a film is to be taken by said rewind reel, and a motor and its circuit for driving the rewind reel, of a switch for controlling the motor circuit, a rockable member upon which said switch is fixed, a pinion fixed to said rockable member, a rack to actuate said pinion, friction means controlled by one of the reels to move said rack in a direction to effect the closing of the switch, and means for moving the rack in an opposite direction to effect the opening of the switch after the film has been unwound from the second reel.

4. The combination with a rewind reel, a second reel from which a film is to be taken by said rewind reel, and a motor and its circuit for driving the rewind reel, of a switch for controlling the motor circuit a rockable member upon which said switch is fixed, a pinion fixed to said rockable member, a rack to actuate said pinion, a friction wheel driven by the second reel, a friction band encompassing said friction reel and operably-connected to the rack to cause the same to effect the closing of the switch while the film is being taken from the second reel, and resilient means to actuate the rack and cause it to effect the opening of the switch after the film has been unwound from the second reel.

5. The combination with a rewind reel, a second reel from which a film is to be taken by said rewind reel, and a motor and its circuit for driving the rewind reel, of a switch for controlling the motor circuit, a rock-shaft upon which said switch is fixed, a stand embodying a bearing for said rock-shaft and a compartment for the switch, mechanism controlled by the second reel to rotate said rock-shaft in a direction to close the switch, and resilient means coacting with said mechanism to open the switch after the film has been unwound from the second reel.

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

EARL H. FRANCIS.

Witnesses:
F. G. FISCHER,
L. J. FISCHER.