Nov. 5, 1929. W. F. McLAUGHLIN ET AL 1,734,142

FILM SPLICER AND REWINDER

Filed July 12, 1927 2 Sheets-Sheet 1

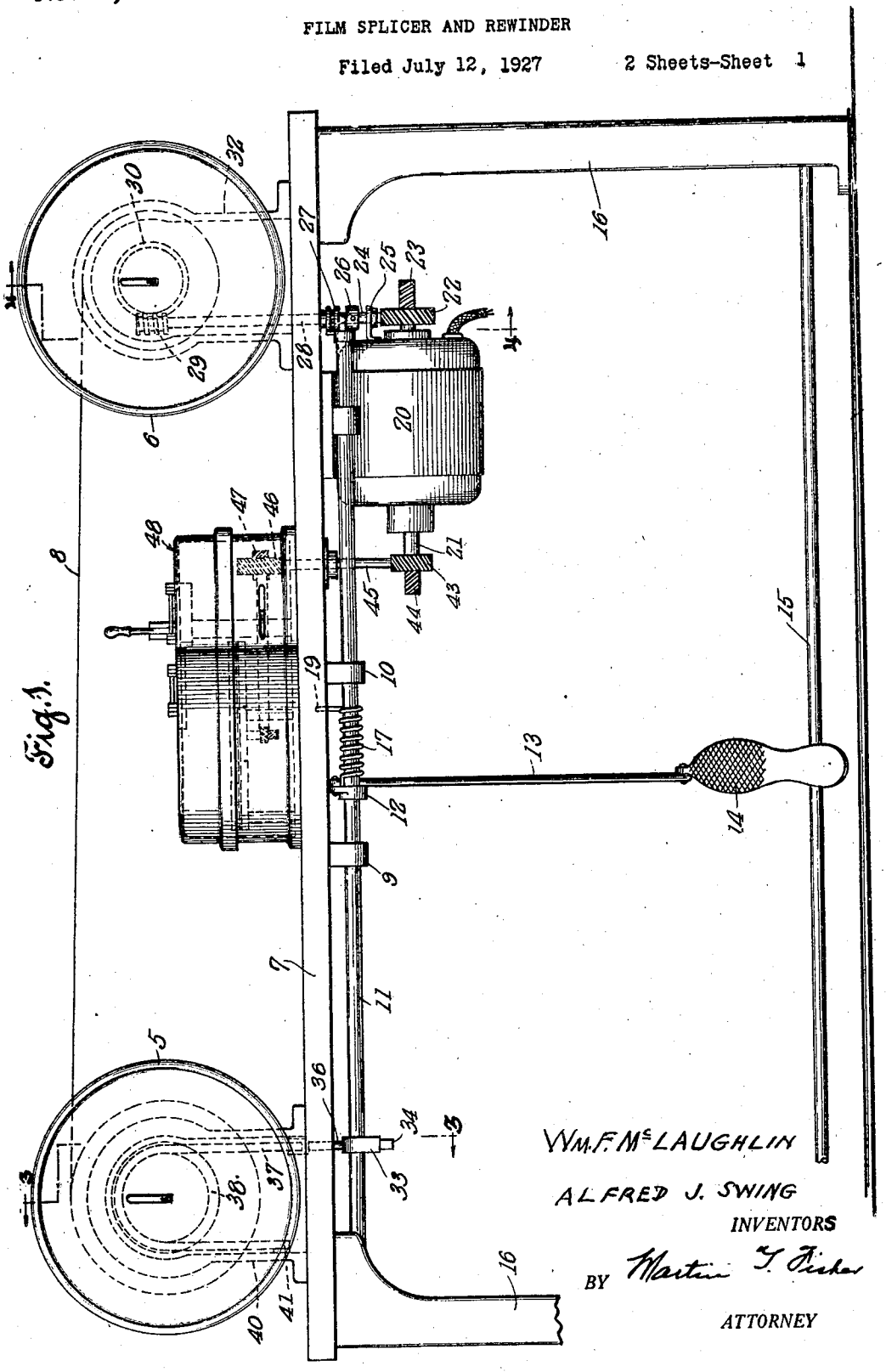


Fig. 1.

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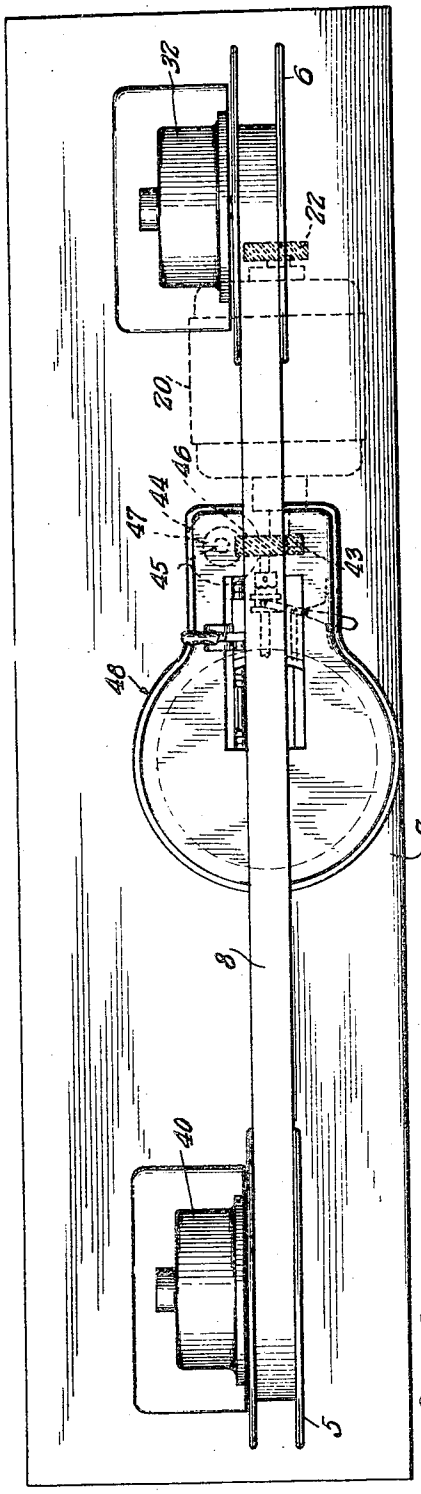


Fig. 2.

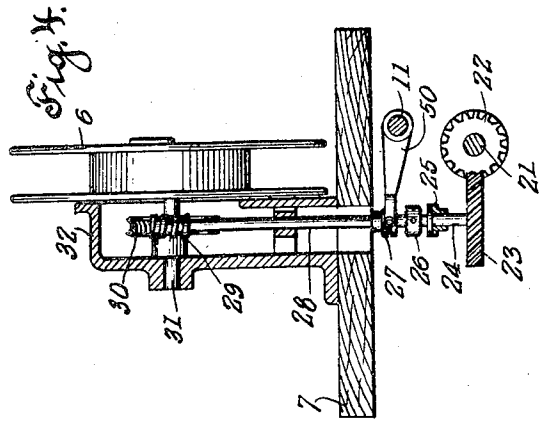


Fig. 4.

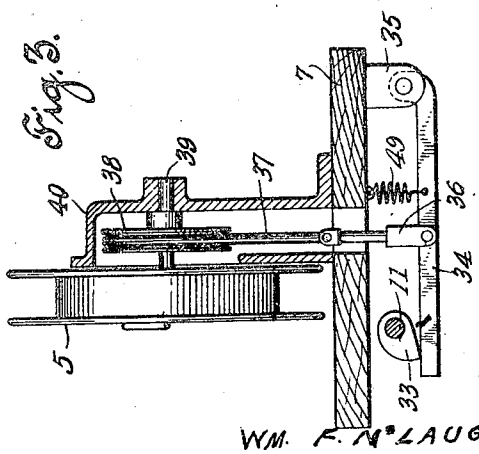


Fig. 3.

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UNITED STATES PATENT OFFICE

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FILM SPLICER AND REWINDER

Application filed July 12, 1927. Serial No. 205,172.

This invention relates to devices for winding motion picture films upon reels and more particularly to such winding devices in which means are provided for mending or splicing breaks and ragged edges in such films.

The object of our invention is to provide a reeling device which may be instantly stopped upon the detection of a break or defect in the film.

A further object is to provide a splicing or mending apparatus, positioned adjacent the winding reels and the films being wound thereon such mending or splicing apparatus being convenient for instant use when desired.

A further object is to provide means for operating the film winding mechanism and the splicing device by a single power unit such as an electric motor.

Other objects and advantages will appear in the detailed description which follows taken in connection with the accompanying drawings in which:

Fig. 1 is a front elevation of my winding apparatus showing the relative position of the splicing device.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 shows details of a braking device used in my winding apparatus, and is a section along line 3—3 of Fig. 1.

Fig. 4 is a section taken along the line 4—4 of Fig. 1.

Referring to Fig. 1, winding reels 5 and 6 are shown mounted upon a table 7. The motion picture film 8 is unwound from reel 5 and is wound upon reel 6.

A shaft 11 is mounted in journals 9 and 10 which are attached to the under side of the table 7. Rigidly fixed to the shaft 11 is a rocker arm 12 having pivoted thereto a link 13 extending downwardly and being pivotally connected to the foot pedal 14. The foot pedal 14 is pivoted upon shaft 15 mounted on the supports 16.

Mounted about the shaft 11 is a torsion spring 17, one end of which is connected with the rocker arm 12 and the other end 19 is held against movement by the table 7.

Consequently it will be seen upon a downward movement of the link 13 the shaft 11 will be rotated against the resistance of the torsion spring 17 and as soon as pressure is relieved from the foot pedal 14 the torsion spring 17 will rotate the shaft 11 to cause the rocker arm to assume its normal elevated position.

Mounted to the under side of the table 7 is an electric motor 20 having a shaft 21. Mounted on the shaft 21 is a helical gear 22 in mesh with another helical gear 23 horizontally mounted on the vertical shaft 24 which is rotatably mounted in the bearing 25. Fixed to the shaft 24 is a clutch member 26; in alignment with the shaft 24 is a second vertical shaft 28 having slidably mounted thereon, adjacent the shaft 24, a clutch member 27.

At the upper end of the shaft 28 is mounted a worm 29 in mesh with the worm gear 30, fixedly mounted on the shaft 31, which is rotatably mounted in bearings in the casing 32. The winding reel 6 is mounted on the shaft 31 to rotate therewith.

Referring to Fig. 3 there is shown mounted upon the shaft 11 a cam member 33 which engages a lever 34 to move the latter downwardly when the shaft 11 rotates in a counter-clockwise direction.

The lever 34 is pivotally mounted on lugs 35 which are mounted on the underside of the table 7. Pivotally secured to the lever 34 is a link 36 to which is connected a brake band 37 which passes over a brake-drum 38 and is fixedly connected to a part of the casing 40 at 41. The brake drum 38 is mounted on a shaft 39 journalled in the casing 40 and also mounted on the shaft 39 to rotate therewith is the unwinding reel 5.

Referring to Fig. 1, it will be seen that the shaft 21 is also provided with a helical gear 43 in mesh with another helical gear 44, the latter being fixedly connected to a vertical shaft 45 which has mounted on its opposite end a helical gear 46 in mesh with a helical gear 47 for driving the mending or splicing device shown generally at 48. This mending or splicing device may be of any of the standard types but preferably of the type described in our pending application, Serial Nos. 179,419 filed March 20, 1927, or 205,171 filed July 12, 1927.

In operation, when it is desired to wind the film 8 upon reel 6, the operator depresses the foot pedal 14, causing the link 13 to move downwardly and pulling the arm 12 therewith to cause the shaft 11 to rotate.

The rotation of this shaft 11 will cause the cam 33 to rotate in a clockwise direction thus allowing the lever 34 to rise by the action of the spring 49 and release the brake on the reel 5, thus permitting the reel 5 to move freely. At the same time rotation of the shaft 11 will cause the shifting arm 50 mounted on shaft 11 (shown in Fig. 4) to shift the clutch 27 into engagement with the clutch 26, thus causing the shaft 28 and the corresponding gears to rotate when the motor 20 is running.

It will therefore be seen that when the pedal 14 is depressed the winding reel will be caused to rotate and pull the film 8 from the reel 5 which has been released by the same movement of the pedal 14.

While the winding operation is in progress, the operator allows the film 8 to pass through his fingers so that he may readily detect any break or fault in the film. Upon the detection of any break or fault, he quickly removes the pressure from the pedal 14 which will permit the spring 17 to rotate the shaft 11 in a counterclockwise direction, which movement will disconnect the clutches 26 and 27 to cause movement of the reel 6 to stop, and at the same time the rotation of the shaft 11 in the counterclockwise direction causes the cam 33 to move in the same direction to move the lever 34 downwardly to pull on the brake band to break the reel 5 from movement.

The film is thus stopped instantly upon the detection of a fault and the fault may then be remedied by the splicing machine shown at 48, the splicing machine being at all times connected with the motor 20.

Although the foregoing is descriptive of the preferred embodiment of the invention, minor changes may be made without conflicting with the scope of the claims hereto appended.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In combination, a winding reel, an unwinding reel, a motor for driving the winding reel, a brake for stopping the unwinding reel, a film splicing apparatus located between the two reels, means operatively connecting the film splicing apparatus with the motor, and means controlled by a foot pedal, for throwing the brake into action on its reel at the same time the motor is disconnected from its reel, and vice versa.

2. In combination, a winding reel, an unwinding reel, a motor for driving the winding reel, a brake for stopping the unwinding reel, a film splicing apparatus located between the two reels, a shaft extending to points respectively adjacent the two reels, means operatively connecting one end of the shaft with the brake, and clutch means controlled by the other end of the shaft for connecting and disconnecting the motor with the winding reel, and means for manually controlling said shaft.

3. In combination, a table, a winding reel, an unwinding reel, a brake therefor, the reels being positioned on the table with a working space therebetween, a film splicing device on the table positioned in said working space, a motor underneath the table, means connecting the motor to the film splicing device, means connecting the motor to the winding reel, for operating the film splicing device and the winding reel respectively, and a controlling shaft underneath the table for applying the brake to the unwinding reel and simultaneously disconnecting the motor from the winding reel, and also for releasing the brake and operatively connecting the motor to the winding reel.

4. In combination, a table, a winding reel, an unwinding reel, a brake therefor, the reels being positioned on the table with a working space therebetween, a film splicing device on the table positioned in said working space, a motor underneath the table for operating the film splicing device and the winding reel, a controlling shaft underneath the table for applying the brake to the unwinding reel and simultaneously disconnecting the motor from the winding reel, and also for releasing the brake and operatively connecting the motor to the winding reel, and operator-controlled means below the table for actuating said shaft, whereby both hands of the operator are left free for repairing the film.

5. In combination, a winding reel, an unwinding reel, a film splicing device positioned between the two reels, a motor having a driving shaft one end of which serves to drive the film splicing device and the other end of which serves to drive the winding reel, a brake for the unwinding reel, and means for alternately throwing the brake and the motor into operative relationship with the unwinding and winding reels, respectively.

In testimony whereof we have affixed our signatures.

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