Oct. 30, 1923. 1,472,628

F. BONK, JR.

AUTOMATIC LOOP SETTER FOR MOVING PICTURE MACHINES

Filed Jan. 27. 1922

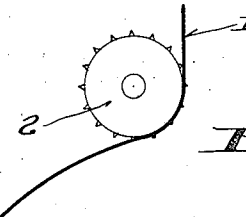


Fig. 1.

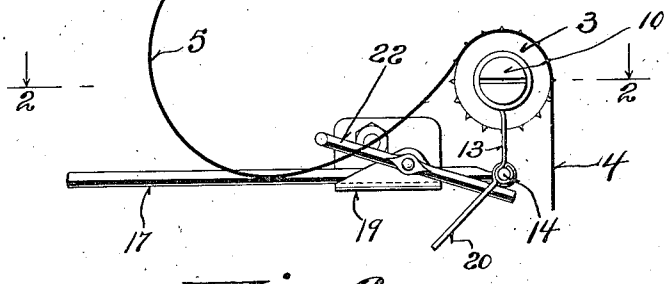


Fig. 2.

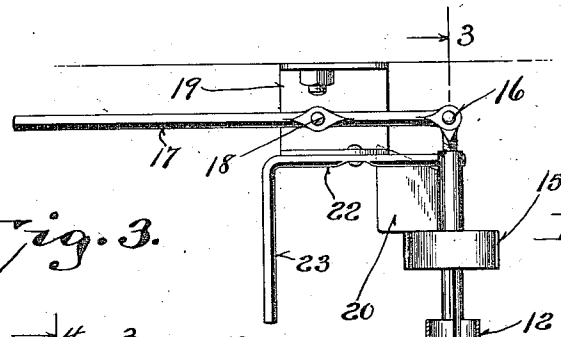
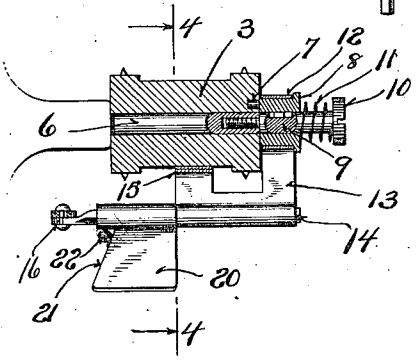
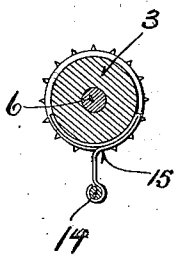


Fig. 3.

Fig. 4.





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UNITED STATES PATENT OFFICE.

FRANK BONK, JR., OF RIPON, WISCONSIN.

AUTOMATIC LOOP SETTER FOR MOVING-PICTURE MACHINES.

Application filed January 27, 1922. Serial No. 532,342.

To all whom it may concern:

Be it known that I, FRANK BONK, JR., a citizen of the United States, and resident of Ripon, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Automatic Loop Setters for Moving-Picture Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to a new and useful improvement for automatically setting a loop in the film of a moving picture machine.

It very frequently happens that the pin holes, by means of which the film is advanced, become torn so that the pins on the roller cease to feed the same when the torn places are reached. When these torn places reach the intermittently driven roller, which draws the film across the projector, that portion of the film ceases to advance while operation of the take-up roll will continue and draw up the loop and the film is then very likely to break and the picture is also likely to become misplaced on the screen.

One important object of my invention is to provide automatic means to relieve this excessive strain on the film, and thereby obviate the possibility of breaking it and the consequent interruption of the picture.

A more specific object of the invention is to provide a clutch for the loop roller, and means for automatically throwing out the same whenever the loop is drawn tight.

A further object of the invention is to provide means whereby a loop may be set at the will of the operator without any interruption of the picture.

With the above and other objects in view, which will be apparent as the description proceeds, the invention resides in certain details of structure which will be fully described in connection with the accompanying drawings, in which:

Figure 1 is a side elevation of my invention applied to a moving picture machine.

Figure 2 is a sectional plan view taken on the line 2—2 of Figure 1.

Figure 3 is a vertical transverse section on the line 3—3 of Figure 2, and

Figure 4 is a sectional detailed view on the line 4—4 of Figure 3.

Referring more specifically to the drawing, the numeral 1 designates a film which passes over the intermittently driven pin roller 2, and the normally constantly driven pin roller 3 passing therefrom downwardly as indicated at 4 to the take-up roll on which it is wound.

In order to prevent any strain on the film between the intermittently driven roller and the constantly driven roller and in order to prevent disarrangement of the picture, a loop 5 is normally maintained between the rollers 2 and 3.

The roller 3 is mounted on the driven shaft 6 and is caused to rotate therewith, in the present instance, by the pin 7 which normally engages the recess in the end of the roller. The pin 7 is carried by the clutch member 8, which is keyed to the extension 9 which is secured to the shaft 6. The extension 9, in the present instance, is formed with a head 10, and the coil spring 11 is carried on the extension between the head and the clutch member 8 and normally holds the pin in engagement with the recess in the roller. The clutch member 8 is controlled by a collar 12 carried by the yoke 13 which is secured to the spindle 14. A bracket 15 is formed on the yoke 13 and bears against the roller 3 with sufficient pressure so that when the clutch releases the roller, the latter will cease to rotate, the pressure of the brake 15 being sufficient to overcome the pull exerted by the take-up roll which is frictionally driven.

The end of the spindle 14 is pivotally connected at 16 to one end of a lever 17, which is intermediately pivoted at 18 on a bracket 19 attached to the side of the machine. Thus it will be seen that the operator by swinging the lever at 18 may at any time shift the clutch and set the loop without in any way interfering with the movement of the picture.

A cam plate 20 is also attached to the spindle 14 and has an inclined edge 21 with which the rock arm 22 is normally engaged. The rock arm has a laterally projecting portion 23 around which the loop passes.

In the event that the holes are torn so that the roller 2 fails to feed the film across the projector, the roller 3 will continue to draw on the loop until the latter is drawn tight around the laterally projecting portion 23 of the rock arm. Further movement of the roller 3 will rock the arm 22 downwardly along the inclined edge 21 of the cam plate, and will move the spindle 14 longitudinally and automatically disengage the clutch

member 8 from the roller 3. It is to be noted that the arm 23 is engaged by the inner side of the loop 5 only when the loop is shortened a predetermined amount. Normally, the film passes free of the arm 23, and therefore unnecessary contact with the film is normally avoided.

From the above description it will be obvious that when the loop is drawn tight, the clutch will be thrown out before any damage occurs to the film. It will also be obvious that the loop may be reset almost instantaneously, and sometimes without any one in the audience noticing anything unusual.

While I have shown and described one specific form in which my invention may be embodied, it will be obvious that many minor changes may be made in the structural details without departing from the spirit of the invention, as claimed.

I claim as my invention:

1. In a moving picture machine, a roller over which the loop of the film advances, a drive shaft on which the roller is mounted, a clutch for connecting the roller to the shaft to rotate therewith, means for automatically shipping the clutch when the size of the loop reaches a predetermined minimum, and means for functionally engaging said roller to stop it when the clutch is slipping.

2. In a moving picture machine, a roller over which the loop of the film advances, means for automatically stopping the rotation of the roller when the size of the loop is reduced to a predetermined minimum, and manually operable means for preventing the rotation of the roller without stopping the operation of the machine while a new loop is being set.

3. In a moving picture machine, a roller over which a loop of film advances, a drive shaft on which the roller is mounted, a clutch for connecting the roller to the shaft to rotate therewith, means for normally holding the clutch in engagement, means for automatically shipping the clutch when the size of the loop reduces a predetermined minimum, and manually operable means for holding the clutch out of engagement while a new loop is being set.

In testimony that I claim the foregoing I have hereunto set my hand at Ripon, in the county of Fond du Lac and State of Wisconsin.

FRANK BONK, Jr.