W. WENDERHOLD.

AUXILIARY FILM FEED.

APPLICATION FILED JULY 20, 1915.

1,315,355.

Patented Sept. 9, 1919.

3 SHEETS—SHEET 1.

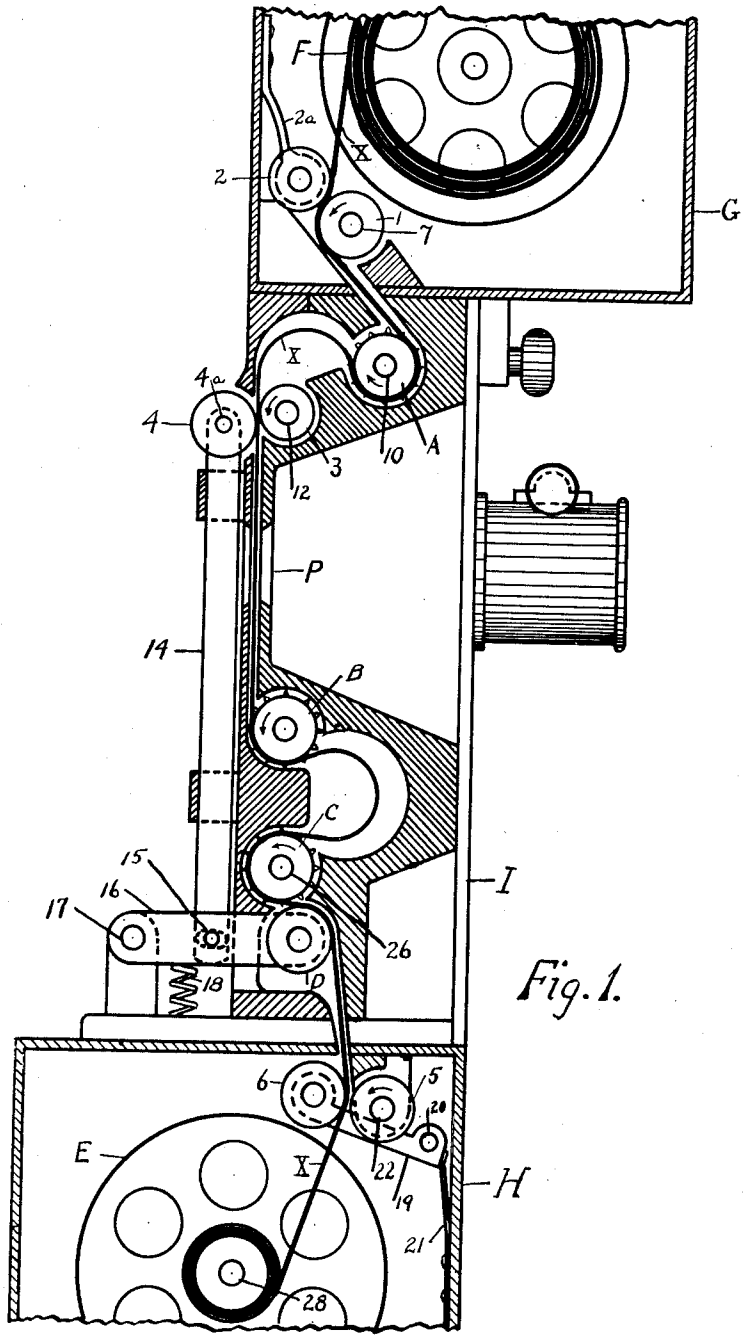


Fig. 1.

WITNESSES

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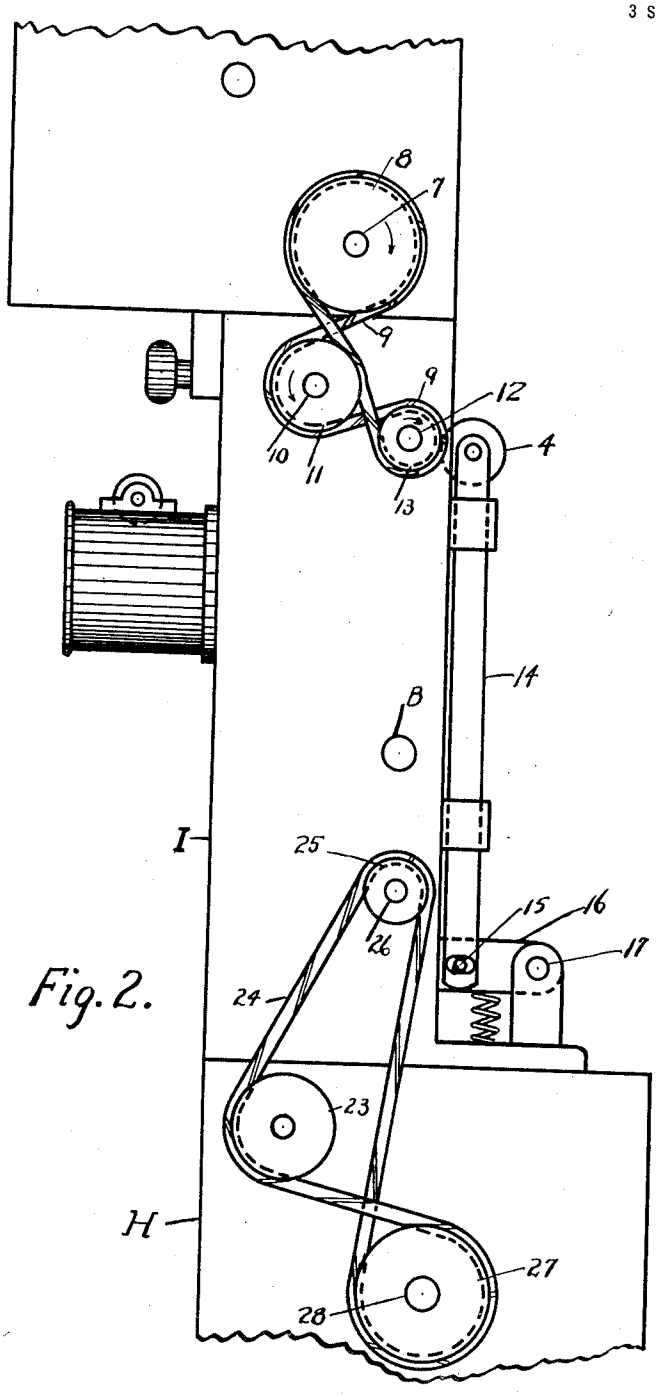


Fig. 2.

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3 SHEETS—SHEET 3.

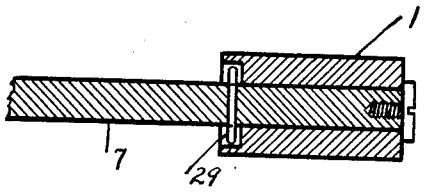


Fig. 3.

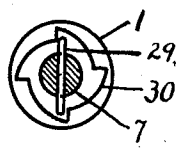


Fig. 4.

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WILLIAM WENDERHOLD, OF NEW YORK, N. Y., ASSIGNOR TO CRU PATENTS CORPORATION, A CORPORATION OF NEW YORK.

AUXILIARY FILM-FEED.

1,315,355. Specification of Letters Patent. Patented Sept. 9, 1919.

Application filed July 20, 1915. Serial No. 40,984.

To all whom it may concern:

Be it known that I, WILLIAM WENDERHOLD, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Auxiliary Film-Feeds, of which the following is a clear, full, and exact description.

This invention relates to motion picture apparatus, and particularly to the means that forward the film through the apparatus when taking or projecting pictures.

The object of my invention is to provide a simple and positive auxiliary film feed at various points in such an apparatus, in addition to the regular usual feed sprockets now being employed for the purpose of facilitating the threading operation and also to improve on automatic threading devices.

Referring to the drawings,

Figure 1 is a vertical section through the entire machine.

Fig. 2 is a rear view of Fig. 1, showing the driving connections of the auxiliary feed shafts.

Fig. 3 is a section through one of the auxiliary feed shafts and roller.

Fig. 4 is a side view of the slip drive in the feed shafts.

The upper film box G in Fig. 1 contains the usual film roll F. In this box G I provide a driven film roller 1 (preferably without teeth), and a yieldable roller 2, under tension, adjacent thereto. The roller 2 is mounted in a spring bracket 2^a. The driven roller 1 is fastened to shaft 7 and mounted in box G, having on its other end a pulley 8 (see Fig. 2) which is driven by belt 9 by rotation of the shaft 10, which is the shaft of the usual upper continuously running feed sprocket carrying pulley 11 (Fig. 2). In operation, the operator having just placed the film roll in G, will take the film end and lay it between rollers 1 and 2, and by pressing roller 2 slightly backward and upon setting the machine in motion the film is pushed forward to the regular feed sprocket A and engaged thereby and guided from sprocket A in the form of a loop to the second auxiliary feed, consisting of rollers 3 and 4. At least one of these rollers (preferably roller 3) is driven at a fixed speed, mounted on shaft 12, and having on the other end of the shaft a belt pulley 13 receiving its rotary power by means of belt 9 from pulley 11 on shaft 10, which is the shaft for the regular upper feed sprocket usually found in a machine of this kind (Fig. 2). The roller 4 is also made to yield, but its position is controlled by the film itself, as it is desirable to have same out of contact with roller 3 as soon as the film has been entirely threaded. To accomplish this I have mounted the roller 4 on shaft 4^a in a sliding bar 14, which is connected with the tension bracket 16 by means of pin 15. The bracket 16 is mounted in a support of the motion picture machine frome I at the pivot point 17. This bracket 16 carries a roller D and is pressed toward the usual lower feed sprocket C by the tension spring 18. By this spring the parts D, 16, 14 and 4 are held in their highest position.

Now, as the free end of the film arrives in the rollers 3 and 4, it is caught by them and pushed forward past the aperture P and arrives at the regular usual intermittent feed sprocket B and caught by it and guided in the shape of a loop to the usual lower feed sprocket C and around it past the roller D, and then to the lower film roll box H, and is caught between another auxiliary feed 5 and 6, and is fastened and rolled up by the film reel E. As soon as this winding takes place a pull is exerted on said film between the film reel E and the feed sprocket C. Consequently, this action pulls roller D downward and the parts 16, 14 and 4^a in unison. Therefore, the auxiliary feed rollers 3 and 4 have no longer any effect upon the film X.

The rollers 5 and 6 are preferably mounted near the periphery of the film reel E. One of these rollers is yieldably mounted in bracket 19, pivotally connected with pin 20 and receives tension from the spring 21. The roller 5 is mounted on shaft 22, which carries on its other end a pulley 23 (see Fig. 2), which is driven by means of belt 24 and receives its rotation from pulley 25, which is mounted on the usual continuously driven shaft 26, carrying the usual lower continuously running feed sprocket C. The pulley 25 and belt 24 also drive the lower film reel E by pulley 27 on shaft 28.

As shown in Fig. 3, the shaft 7 carries a pin 29. This pin is loosely mounted in said shaft and engages the clutches 30 in the roller 1. This allows the roller freedom of

rotation in one direction. Any of the usual ratchet devices can be used.

I prefer to arrange the speed of feed rollers 1 and 2 so that the film is forwarded at a slower speed than feed sprocket A will forward same, in order that a little tension always exists in the film between A and rollers 1 and 2. I also prefer to allow the rollers 1 and 2 freedom of rotation in a forward direction, as shown in Figs. 3 and 4. I also prefer the same arrangement in all the auxiliary feed rollers 1, 3 and 5, and in fact in every auxiliary roller which is driven. The secondary rollers 2, 4, and 6 receive their rotation by contact from the driven rollers 1, 3 and 5.

I prefer to drive the auxiliary roller 3 at higher speed than the regular feed sprocket for the reason that the loop in the film between it and the feed sprocket A is a little too large and must be reduced, therefore this auxiliary feed is just oversped a trifle to forward the film a little faster to the intermittent sprocket B than it is delivered by the feed sprocket A. This is a very important feature.

The auxiliary rollers 5 and 6 facilitate the threading of the film in the lower take-up magazine. These auxiliary feeds are very useful in every apparatus that manipulates a film strip.

What I claim as my invention is:

1. In a motion picture machine, the combination with a film reel, of a film feeding roller, an aperture for said machine, an auxiliary feed roller interposed between said aperture and said film feeding roller, and means for coincidently driving said rollers at different speeds from the same source of power.

2. In a motion picture machine, having a continuously running feed sprocket, an aperture and an intermittent feed sprocket, an auxiliary feed mounted in between said continuously running feed sprocket and said aperture, consisting of at least one driven roller and a yieldably mounted guide roller adjacent thereto for the purpose of reducing the amount of slack in the film between the continuous feed sprocket and the intermittent sprocket.

3. In a motion picture machine, having a continuously running feed sprocket and an intermittent feed sprocket, an auxiliary film feed interposed between the aforesaid feed sprockets, consisting of a driven roller and a second roller mounted in a yieldable frame, and the action thereof controlled by the film to render said auxiliary feed inoperative or operative at a predetermined period.

4. In a motion picture machine having a loop in a film between two feed sprockets, an auxiliary feed to engage the film to reduce the size of said loop before the film is engaged by the second sprocket, said auxiliary feed consisting of two rollers, at least one of said rollers being driven, and driving means therefor and at least one of said rollers being mounted upon a movable member, said movable member being connected with a yieldable bracket, said yieldable bracket carrying a roller, said roller in contact with the film and operated by the tension of the film substantially as described.

5. In a motion picture machine, the combination with an aperture and film feeding devices in the path of travel of the film through said machine, means for applying a tension to said film on the inlet side of said aperture, and means controlled by the tention of the film on the outlet side of said aperture for controlling said first mentioned means.

6. In a motion picture machine, the combination with an aperture and film feeding devices in the path of travel of the film through said machine, a fixed and a yieldable roller located in the path of travel of said film on the inlet side of said aperture, a fixed and a yieldable roller located in the path of travel of said film on the outlet side of said aperture, and connections between said yieldable rollers whereby the position of inlet yieldable roller is controlled by the tension on the outlet yieldable roller.

Signed at New York city, New York, this 17th day of June, one thousand nine hundred and fifteen.

WILLIAM WENDERHOLD.

Witnesses:
F. F. Weiss,
Robert Richter.