

W. WENDERHOLD.
VARIABLE SPEED MECHANISM.
APPLICATION FILED JULY 20, 1915.

Patented July 13, 1920.
2 SHEETS—SHEET 1.

1,346,357.

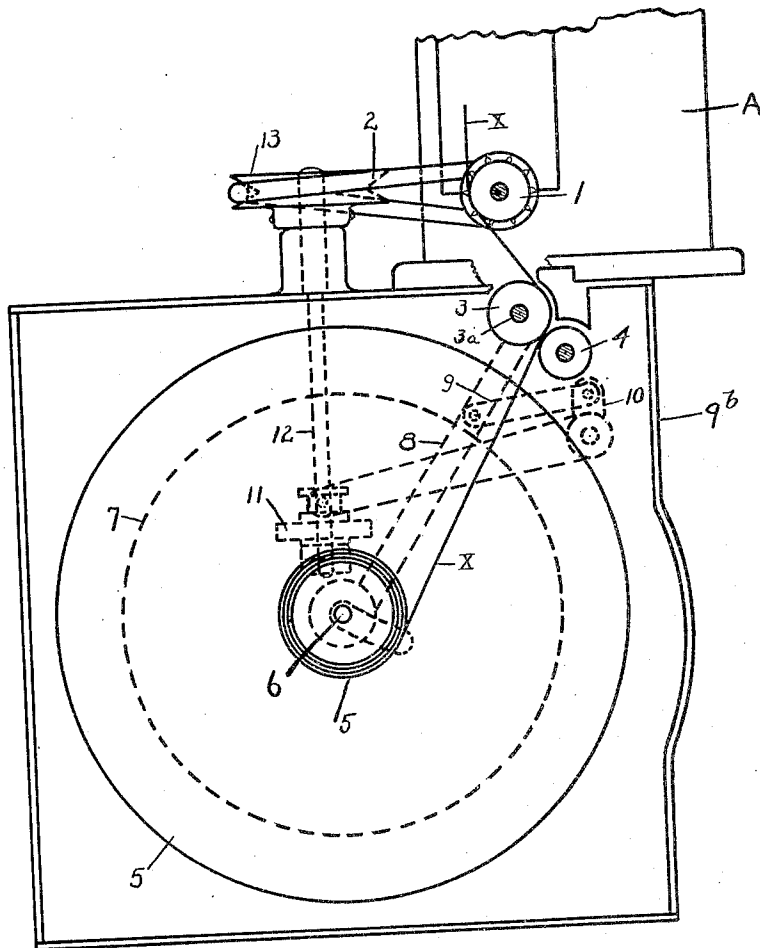


Fig. 1.

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Alfred W. Bynum
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INVENTOR:
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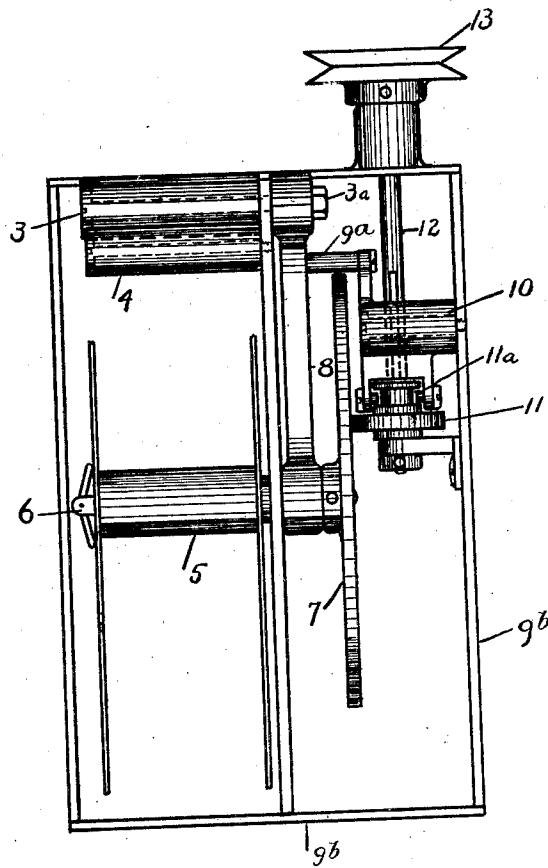


Fig. 2.

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

VARIABLE-SPEED MECHANISM.

1,346,357.

Specification of Letters Patent.

Patented July 13, 1920.

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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 Variable-Speed Mechanism, of which the following is a clear, full, and exact description.

This invention relates to an improvement in variable speed driving mechanisms such as are employed in film winding machines and especially in kinetoscopes or the like.

The object of my invention is to reduce the driving speed of a film roll as the film roll increases in diameter, and I intend to control the variable speed shift by the increasing weight of the film roll as the film is wound thereon.

Referring to the drawings,

Figure 1 is a side view showing the magazine containing the film reel and also part of the kinetoscope.

Fig. 2 is a perspective view of the device without the kinetoscope.

As is well known to those skilled in the art, the film X is delivered to the winding mechanism from a lower feed roller 1 in the kinetoscope A, and generally from the axis of said roller a belt 2 (or chain) is utilized to drive the film take up device. The film X coming from feed roller 1, passes between guide rollers 3 and 4, and thence to the film take up reel 5, see Fig. 1, upon which the film is to be wound. This take up reel is mounted upon a shaft 6, upon which shaft is mounted a friction plate 7. The shaft 6 with the reel 5 and friction disk 7 mounted thereon is carried in the end of an arm 8 which is pivotally mounted at its other end upon the shaft 3^a upon which the roller 3 is mounted. Pivotaly connected to the arm 8 at a point intermediate the ends thereof is one end of a link 9. The other end of link 9 is pivotally connected to the short arm of a bell crank lever 10 which is pivotally mounted at its angle upon a stud 9^a suitably journaled in the frame work 9^b. The free end of the long arm of bell crank lever 10 carries stud 11^a which engages in an annular groove in the stem of a friction pulley 11 mounted to slide longitudinally upon but to rotate with a shaft 12 suitably journaled in the frame work. On shaft 12 is mounted a drive pulley 13 which is driven by means of a belt 2 from a convenient driv-

ing point within the motion picture machine A.

The relation and leverages of arm 8 and bell crank 10 and link connection 9 between said arm 8 and the short arm of bell crank 10 are so disposed and proportioned, combined with the friction of the friction pulley 11 against the surface of friction disk 7 as to normally cause the arm 8 and with it the reel shaft 6, and reel 5 carried thereby, to be held in any desired initial position before the film is reeled upon the reel. As the film is reeled upon the reel the diameter of the roll of film upon the reel increases, thereby necessitating a change in the relative speed at which the take up reel is driven. As the reel increases in size the weight carried by the arm 8 increases, and this increase in weight gradually overcomes the resistance of the friction exerted by the driving friction disk 11 upon the face of disk 7, as well as the balanced leverages of link 9 and bell crank 10, thereby causing the reel as it increases in size and weight to gradually descend, thereby rocking arm 8 downwardly and shifting the driving friction pulley 11 toward the periphery of the friction disk 7 and hence varying the speed at which the latter is driven.

It is obvious that the device can be altered to suit the various requirements without departing from the principles thereof.

What I claim as my invention is:

1. In a film winding device having a variable speed drive controlled by the weight of the film reel consisting of a rotatable film reel support carried by a pivotally mounted lever, a friction disk mounted on said reel support, a friction pulley in contact with said disk, a lever secured to said pulley to control the position of the same, said lever being operatively connected with the first mentioned lever and said first mentioned lever being operated by the weight of the film reel substantially as described.

2. In a film winding device, a roll of film carried on a shaft, a driven member mounted on said shaft, said shaft being mounted in a lever, a second lever connected with a shiftable driving pulley, said driving pulley operating the first mentioned driven member, operative connections between the two levers adapted to shift the position of the driving pulley relatively to the driven member, to vary the speed of the reel by the

increasing weight of the accumulated film on the film shaft, and said levers arranged to balance on their pivot point.

3. In a film winding device a pivotally mounted supporting frame, a shiftable driving pulley mounted in said frame, a lever carrying a reel shaft, a film reel mounted on said shaft, a driven disk on said shaft, connecting links between said lever and the shiftable driving pulley for the purpose of varying the speed of said reel shaft by the weight of the film reel on said lever.

4. In a film winding device a reel shaft mounted in a pivotal arm bracket adapted to be moved by the increasing weight of the reel, a variable friction drive for said reel shaft comprising a driven disk and a shiftable pulley for said friction drive, levers interposed and connected with the arm bracket and the shiftable pulley for the purpose of

controlling the speed of the reel shaft by the movement of said arm bracket and its weight.

5. In a film winding device, the combination with a pivotally mounted film take-up reel, of means actuated by the increasing weight of the film thereon for moving said take-up reel about its pivotal support as the film is wound thereupon, and means controlled by the movement of said reel about its pivotal support for controlling the speed of rotation of said reel.

Signed at New York city, N. Y., this 9th day of July, one thousand nine hundred and fifteen.

WILLIAM WENDERHOLD.

Witnesses:

ALBERT H. T. BANZHAF,
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