C. C. & A. W. FAY.

FILM WINDING DEVICE FOR KINETOSCOPES.

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1,194,982.

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Fig. 2.

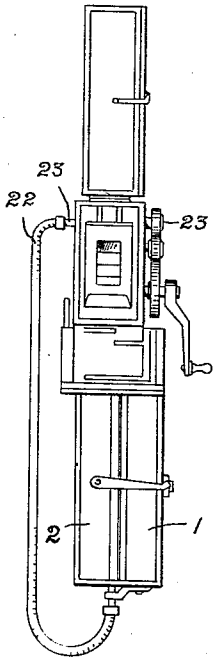


Fig. 1.

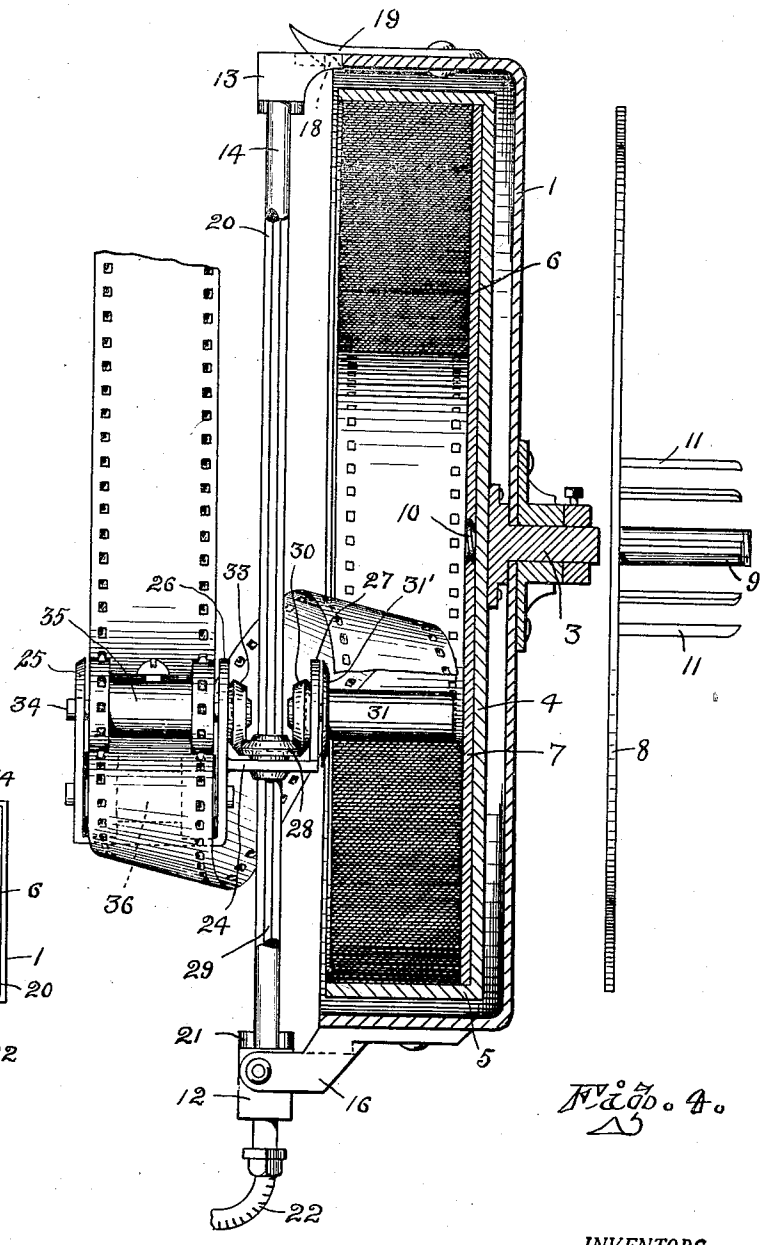


Fig. 3.

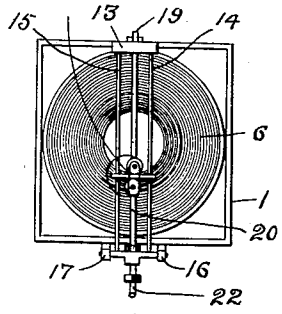


Fig. 4.

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FILM-WINDING DEVICE FOR KINETOSCOPES.

1,194,982. Specification of Letters Patent. Patented Aug. 15, 1916.

Application filed March 9, 1916. Serial No. 83,057.

To all whom it may concern:

Be it known that we, CLARENCE C. FAY and ARTHUR W. FAY, citizens of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented certain new and useful Improvements in Film-Winding Devices for Kinetoscopes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention consists of certain improvements in film winding devices for moving picture machines and relates especially to such devices wherein the film is unwound from the outside of the coil when being fed to the machine and wound up upon the receiving coil from the inside thereof, there being many such known to the art.

The primary object is to produce such a machine whereby the winding up of the film is automatically governed by the unwinding mechanism and the operation accomplished with as little friction to the film and by as simple a device as possible.

Referring to the accompanying drawings forming part of the application and in which like reference characters indicate like parts: Figure 1 is a vertical cross sectional view through a film magazine equipped with our improved winding device and illustrating the same partly in elevation. Fig. 2 is a diminutive view of the rear elevation of a kinetoscope equipped with the improved mechanism. Fig. 3 is a like view of the front elevation of Fig. 1 showing the relative position of the feeding device to the magazine, and, Fig. 4 is an edge elevation of the removable half of the film reel.

1 represents the ordinary rectangular shaped reel magazine having the cover thereof removed and the film feeding device adjustably attached to the edges thereof. The cover is not illustrated in the drawing except as in Fig. 2, and is there designated by the numeral 2, it being of substantially the same depth as the reel containing portion of the magazine designated as 1, this enlargement of cover being essential inasmuch as the film first enters the cover portion 2 and from thence, by spiral convolutions enters the holder within the magazine 1.

Within the magazine 1 is pivotally mounted at 3 the circular shaped disk 4 having formed integral therewith the annular rim 5 and within which the film 6 is coiled, the annular rim being slightly deeper than the width of the film to admit of the loose disk 7 being slipped therewithin and against the disk 4 before the film is coiled therein. Thus the disk 4 with its rim 5 forms the revoluble receiver holder and the disk 7 together with the removable disk 8 and its coöperating parts form the receiver.

The parts of the disk 8 which coöperate or engage the disk 7 when the former is put in place is the hollow screw threaded spindle 9 which is securely fixed to the center of the disk 8 and designed to be screw threaded within the hole 10 within the disk 7. About the spindle 9 and fixed to the disk 8 are any desired number of spacing members 11 which are designed to extend within the central open space within the coiled film, and which acts as a carriage hub for the film when the filled receiver is removed from the holder, thus assembled.

The feeding mechanism is mounted within a rack comprising the base member 12, a head member 13 and two rods 14 and 15 uniting said base and head members. The rack is pivotally adjustable upon the magazine by the base 12 thereof, being pivotally supported intermediate the brackets 16 and 17 fixed to the under edge of the magazine and in which the rack may be adjusted either to the position at right angles to the face of the magazine, or to the position shown in the drawing, the former position being desirable when manipulating a reel either to or from the magazine. The upper end of the rack may be removably attached to the uppermost edge of the magazine in any desired manner, as for example, the catch 18 formed integral with the head member 13, made to engage the spring dog 19 fixed to the wall of the magazine.

A revoluble longitudinally splined shaft 20 is mounted within the rack, journaled within the head 13 and base 12, and retained longitudinally therein by a suitable set collar 21. The shaft 20 extends through and below the base member 12 and has connected thereto in any suitable manner the flexible shaft 22 which leads from and is operatively attached to the film feed shaft 23 of the kinetoscope, and by which connection the shaft 20 is revolved in unison with the feed shaft 23. Within the pivoted rack comprising the members 12, 13, 14 and 15 is reciprocally mounted the feed carriage, comprising the supporting member 24, hav-

ing rigidly fixed thereto the U-shaped extension 25—26 and the oppositely disposed extension 27. The member 24 has formed therein suitable holes through which the rods 14 and 15 and the shaft 20 extend and by which rods the feed carriage is guided. A beveled gear wheel 28 is mounted within the carriage and upon the shaft 20, it having a key fixed therein which slidably engages the spline or key-way 29 within the shaft 20. This gear on one side, meshes with and drives a similar beveled gear 30, mounted upon a shaft, journaled within and extending at right angles to the extension 27 and carrying a traction roller 31, which rests upon the film 6 as it is coiled within the receiver. The roller 31 is preferably composed of or covered with a resilient material such as rubber and has a flange 31′, rigidly fixed thereto and adjacent the extension 27 for alining engagement with the edge of the film. On the opposite side the gear 28 engages with and drives a like beveled gear 33, fixed to the feed spool shaft 34 and mounted within the U-shaped extension 25—26. The film feed spool 35 is fixed to said shaft and receives motion therefrom, the spool being of the ordinary type used in such machines and having sprockets at both ends thereof which engage corresponding apertures within the edges of the film. Beneath the feed spool 35 and within the extension 25—26 is loosely mounted the cooperating roller 36, the office of which is to keep the film in proper operative engagement with the feed roller, and which arrangement is old in such machines, being practically identical with the primary feeding mechanism of the machine mounted upon the shaft 23. The film is fed to the spool 35, down one side thereof and between it and the roller 36, thence around the roller 36 and in a spiral convolution back toward the incoming portion thereof, and forward again to and around the traction roller 31 which guides it in firm contact with the previously wound film within the receiver. Thus it is seen that the film is received in a positive manner about the spool 35 which operates in perfect unison with the primary feeding device in the kinetoscope and is forced thence about the traction roller 31 which also forcibly operating in unison with the spool 35 by virtue of the beveled gears previously described, and will be positively fed into the receiver. The traction roller 31 will not only guide the film as it enters the reel, but will impart motion thereto by its revolving contact with the film previously wound. As the receiver is filled with film, the traction roller 31 is automatically raised thereupon and which causes the entire feeding carriage with its operative parts to also rise until the entire film is wound within the receiver.

It is understood that the receivers are of the proper size to receive a given film and allow to remain sufficient hub space therein for the final manipulation of the feeding device and the introduction of the spacing members upon the removable disk 8 of the receiver. When the film is wholly coiled within the holder, the upper end of the rack is disengaged from the magazine by raising the dog 19 and allowed to swing down out of the way of the removal of the receiver with its burden.

From the foregoing it is evident that when a film is first started within the holder, the feeding device will be in its lowermost position upon the rack, and the traction roller 31 contacting the lowermost inner edge of the holder, ready to engage the film and revolve the holder. It is evident also that as the diameter of the circle engaged by the traction roller 31 is reduced by the incoming film, the speed of the holder will be increased and the traction roller 31 will automatically govern same as it is controlled by the revolving of the shaft 23 of the primary feeding device.

While we have shown a specific form of receiver and as being composed of two parts, such constrction forms no part of our present invention and any suitable form of receiver desired may be used.

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

1. The combination with a kinetoscope having film feeding means, of film winding means, comprising a suitable holder, a receiver disk within the holder, a shaft extending diametrically across the holder, a traction roller on one side of the shaft, receiving power therefrom, extending within the holder and revolving same by engagement with the film therein, a spool on the opposite side of the shaft driven thereby and feeding the film to the traction roller and means for operating the shaft spool and roller in unison.

2. A film winding device for kinetoscopes, comprising a magazine, a revoluble holder within the magazine, a receiver disk within the holder, a vertically disposed shaft extending diametrically across the face of the holder, pivotally attached to the lower edge of the magazine and removably attached to the upper edge thereof, means operated by the shaft for forcibly engaging the film and coiling it within the receiver, and means at the pivotal end of the shaft for revolving same.

3. A film winding device of the character described, comprising in combination a magazine, a holder, a receiver disk, a revoluble splined shaft, pivotally carried by the magazine, a reciprocal carriage carried by the shaft, a feeding spool in the carriage

on one side of the shaft, a traction roller in the carriage on the opposite side of the shaft, and means for operating the shaft, spool and roller in unison.

4. In a film feeding device of the character described, the combination with a magazine, a holder and film receiving means, of a vertically disposed splined shaft carried in a rack upon the magazine, a reciprocal carriage carried by the rack and about the shaft, and means whereby a film is engaged on one side of the rack and by spiral convolutions fed to the holder on the opposite side of the rack and means for revolving the shaft at one end thereof.

5. In a film feeding device of the character described, the combination with a magazine, a holder and film receiving means, of a vertically disposed splined shaft, carried in a rack pivoted upon the magazine, a reciprocal carriage mounted within the rack, two revoluble film engaging members carried by the carriage, one on either side of the shaft, operated thereby and in line with each other and means at the pivoted end of the rack and connected with the shaft for imparting motion thereto.

6. A film winding device for kinetoscopes, comprising in combination, a magazine, a revoluble holder, a receiver disk carried by the holder, and against which the film is wound, a shaft extending diametrically across the holder, and supported within a rack pivotally fixed to the magazine, a vertically reciprocal carriage guided by the rack and surrounding the shaft, a roller mounted upon the carriage, on one side of the shaft and extending within the holder, a spool mounted upon the carriage, on the opposite side of the shaft and designed to positively engage the film whereby the latter is fed to the spool and coiled within the holder, both the spool and roller being positively driven by the shaft and means at one end of the shaft for driving it.

7. In a film winding device of the character described the combination with a magazine, a holder and film receiving means, of a vertically disposed rack pivotally fixed to the magazine, a splined shaft mounted within the rack, a carriage mounted within the rack and surrounding the shaft, two alined shafts upon opposite sides of the splined shaft, and operated in opposite directions by the splined shaft, a positive film feeding spool on one of the alined shafts and a film engaging roller upon the opposite shaft, and means for revolving the splined shaft.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

CLARENCE C. FAY.
ARTHUR W. FAY.

Witnesses:
WILLIAM FAY,
ARTHUR THOMAS.