Nov. 2, 1926. 1,605,874

E. E. UNDERWOOD

FILM TENSIONING DEVICE

Filed May 4, 1925

FIG. 1.

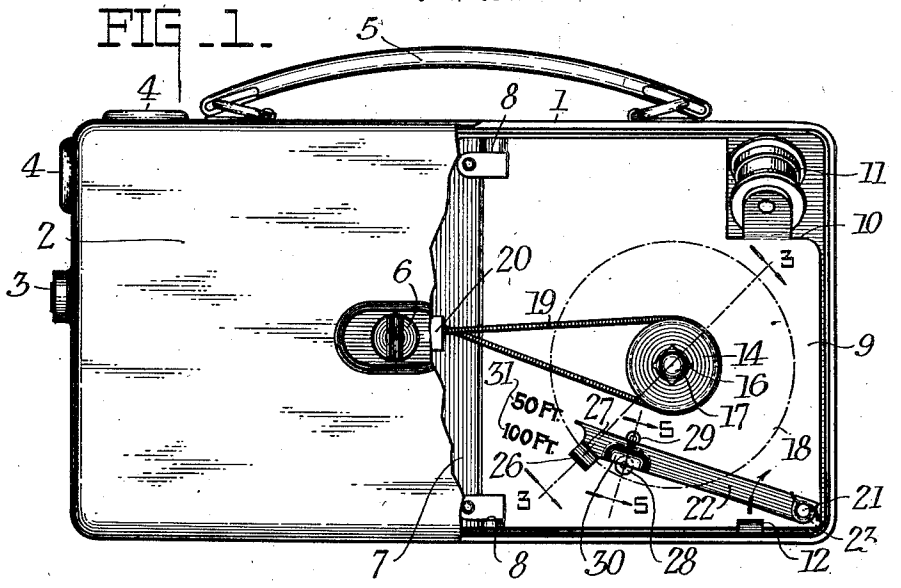


FIG. 2.

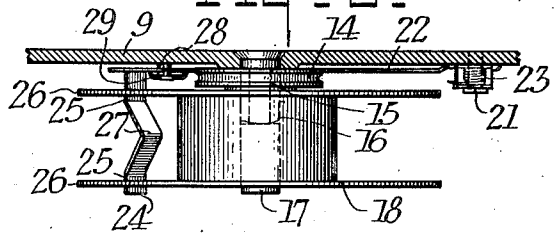


FIG. 3.

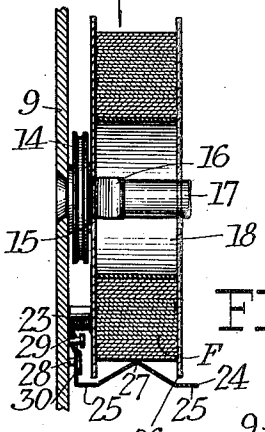


FIG. 4.

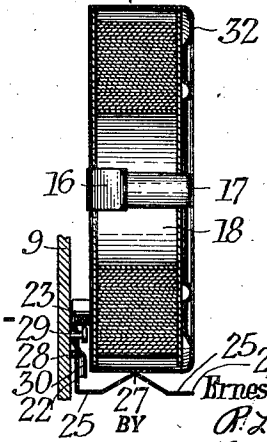
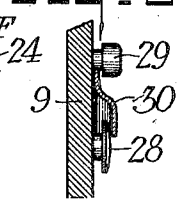


FIG. 5.



INVENTOR,
Ernest E. Underwood
BY
P. L. Stinchfield
N. M. Perrins
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

ERNEST EDWIN UNDERWOOD, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

FILM-TENSIONING DEVICE.

Application filed May 4, 1925. Serial No. 28,005.

This invention relates to motion picture apparatus and more particularly to means preventing accidental loosening or unrolling of a coil of film when the same is completely wound on the take-up reel and is no longer subject to the tension of the mechanism.

A further object is to provide a device for the above purpose which will not act as a brake during the normal operation of the apparatus and which will not interfere with the insertion or removal of a reel. The other objects will appear.

These objects are attained by the use of a spring actuated presser member so situated that it will bear against the outer convolutions of material only when the reel is nearly full, and will not at any time contact the reel itself when the latter is properly seated. The presser is so shaped as to be automatically cammed out of the way when the reel or its protective cover is inserted or removed.

Reference will now be made to the accompanying drawing in all the figures of which the same reference characters designate the same parts:

Fig. 1 is a side view of a camera, with a part of the cover removed to show the improved structure.

Fig. 2 is a plan view of the reel and presser structure.

Fig. 3 is a section on line 3—3 of Fig. 1, with a full reel in place.

Fig. 4 is a similar section with a container member in place over the reel.

Fig. 5 is a section on line 5—5 of Fig. 1.

My invention as illustrated is incorporated in a camera of the type disclosed in Patent No. 1,548,960, granted Aug. 11, 1925, to Adolph Stuber and myself. This comprises a casing 1, having a removable cover 2, along one side, part of which is shown as broken away in Fig. 1. The usual objective mount 3, finder lens mounts 4, handle 5, and latch actuating mechanism 6 for the cover are shown.

In the forward part of the camera is a longitudinal partition 7, to the rear end of which is hinged at 8 a rear swinging partition 9 having its upper rear corner cut away at 10 and carrying an inclined roller 11, over which film may be directed from a reel behind partition 9, which is normally held closed by spring latch 12. Partition 9 has thereon a forwardly extending lug upon which is rotatably mounted pulley 14, carrying the shaft 15 with a square base 16 and round end portion 17, fitting correspondingly shaped openings in reel 18. The pulley, shaft and reel are driven by the spring coil belt 19 passing under the guide 20 to suitable driving mechanism, not shown.

Pivoted at 21 to partition 9 is an arm 22 which is pressed by spring 23 in the direction indicated by the arrow. At the free end of this arm is an outwardly turned flange 24 the end portions 25, which are opposite to the flanges 26 of reel 18 being perpendicular to the arm 22, and the intermediate portion 27, opposite the space between the flanges being bent or bowed inwardly toward the reel.

Two lugs 28 and 29 are placed on partition 9, the outer one 28 being so positioned that when the inner edge of arm 22 is spring pressed against it the portions 25 will be held out of contact with the edges of flanges 26 while the projection 27 will extend inwardly between the flanges of a reel designed for use with the camera. In practice two sizes of reels are provided for use with fifty and one hundred feet of film respectively, and in order to adapt the structure for use with either, the lug 28 is made short and the arm 22, which is of resilient sheet material may be sprung around it and will then engage lug 29. The arm is bent out at 30 so that when used with the smaller reel it will clear lug 28. Suitable legends 31 are placed on the partition 9 to direct the user.

In use, the arm is positioned in contact with the lug corresponding to the size reel to be employed, and the reel is then positioned on the shaft. As it is pushed on, the edge of the flange will engage projection 27 and cam it to one side so that the reel can pass. When properly seated it will be out of contact with the arm member. The camera is used by passing film from a reel behind partition 9, over pulley 8, through the film advancing mechanism, not shown, and back to reel 18, which is driven by the friction belt 19 to take up the film. The arm member does not act as a brake, being out of contact. When the film has been run through the camera it will fill or nearly fill the reel.

It has been a difficulty heretofore that, when the tail end of the film and its pro-

tective strip, if any, have passed entirely through the camera and have been disengaged from the mechanism, the coil will no longer be under tension, but will have a tendency to loosen or unwind like a clock spring. In my improved camera, however, the projection 27 between flanges 25 contacts the outer convolutions resiliently as the operation nears completion and prevents the unloosening. The user then opens the camera and places half of a "pill box" type of container or magazine 32 on the reel, in the manner described in Patent 1,510,738, granted to John G. Capstaff on Oct. 7, 1924. The edge of the container cams the projection 27 out of the way so that it is seated over the reel as shown in Fig. 4. The reel and its cover are then removed together.

The upturned part of the presser arm constitutes a member which, as a whole, is parallel to the shaft and is spring pressed toward it, and is held by an abutment at a distance from the shaft greater than the radius of the corresponding flange reel, but which has a projection extending between the flanges.

It is to be understood that the structure herein disclosed is by way of example and that I contemplate as within the scope of my invention all such modifications and equivalents as fall within the appended claims.

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

1. In a motion picture apparatus, means for advancing film therethrough, a wall, a shaft carried on said wall for supporting and turning a film reel to wind up film thereon, a member pivoted to said wall and spring pressed radially of such a reel, and having a portion overhanging the periphery of such a reel, and an abutment limiting the movement of such member whereby it will contact a coil of film wound on such a reel only when it attains a definite size.

2. In a motion picture apparatus, means for advancing film therethrough, means for supporting and turning a film reel to wind up film thereon, a member spring pressed radially of such a reel, and a plurality of abutments, the member being adapted to be selectively positioned so that a selected abutment may limit its movement, whereby the member will contact a coil of film wound on such a reel when it attains a selected size.

3. In combination with a reel of definite predetermined dimensions and having spaced flanges, of a camera having means for advancing a film therethrough, a shaft adapted to fit the reel, means to turn the shaft to wind film thereon, a member parallel to the shaft and spring pressed toward the shaft, an abutment adapted to position said member at a distance from the shaft, greater than the radius of the flanges, and a projection on said member adapted to extend between the flanges of a reel positioned on the shaft.

4. In combination with a reel of definite predetermined dimensions and having spaced flanges, of a camera having means for advancing a film therethrough, a shaft adapted to fit the reel, means to turn the shaft to wind film thereon, a member parallel to the shaft and spring pressed toward the shaft, an abutment adapted to position said member at a distance from the shaft, greater than the radius of the flanges, and a projection on said member adapted to extend between the flanges of a reel positioned on the shaft, said projection having inclined sides whereby it will be automatically retracted by engagement with the reel when the latter is moved lengthwise of the shaft to and from its position thereon.

5. The combination with a reel of definite predetermined dimensions and having spaced flanges, of a motion picture apparatus means for advancing a strip of film therethrough, a support adapted to fit the reel, means for turning the reel when on said support to wind up film thereon, a movable spring pressed member having a portion adapted to extend between the flanges of the reel when seated on the support, and means for limiting the movement of said member so that it extends only slightly into the space between the flanges and is out of contact with the reel when seated on the support.

6. The combination with a reel of definite predetermined dimensions and having spaced flanges, of a motion picture apparatus means for advancing a strip of film therethrough, a support adapted to fit the reel, means for turning the reel when on said support to wind up film thereon, a movable spring pressed member having a portion adapted to extend between the flanges of the reel when seated on the support, and means for limiting the movement of said member so that it extends only slightly into the space between the flanges and is out of contact with the reel when seated on the support, said member having a cam portion whereby it will be automatically retracted by engagement with the reel, when the latter is moved to and from its position thereon.

Signed at Rochester, New York this 29th day of April 1925.

ERNEST EDWIN UNDERWOOD.