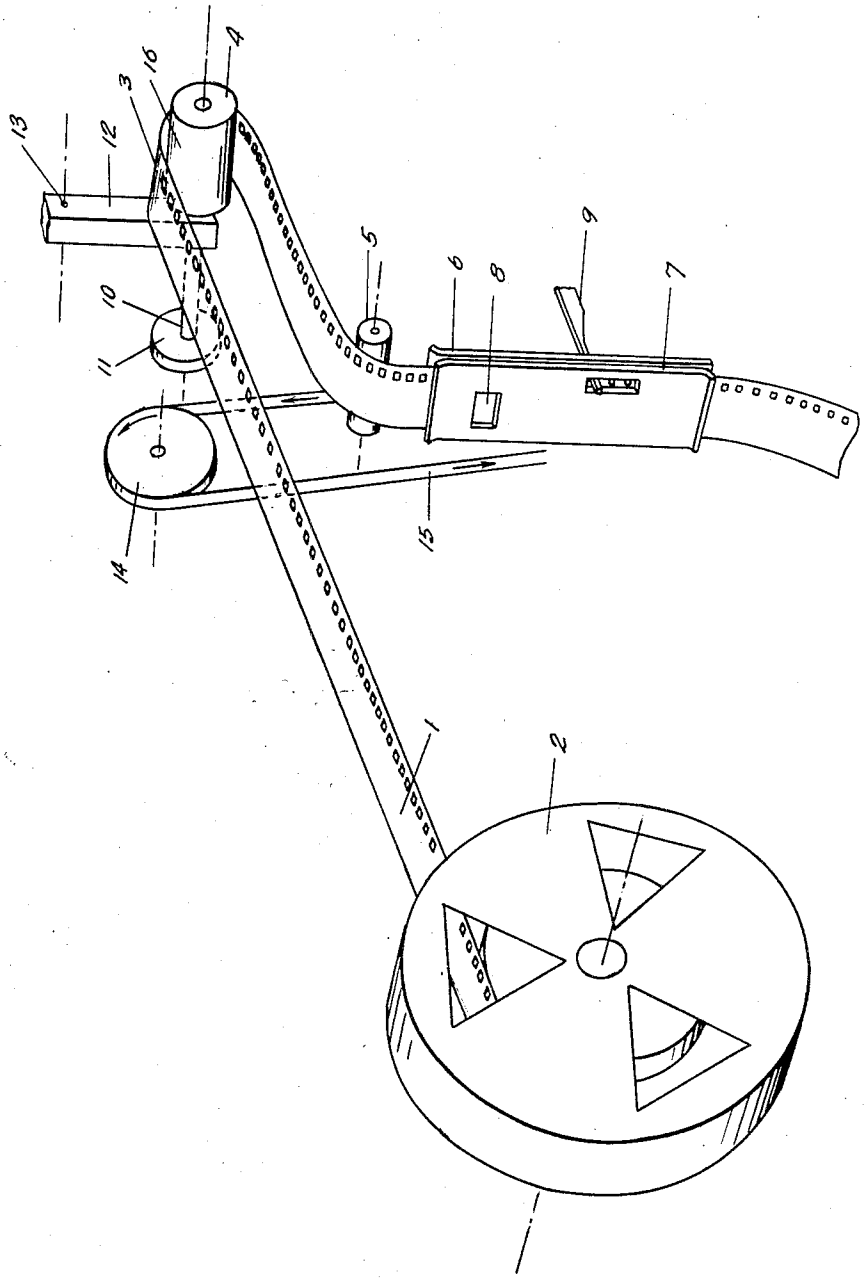
June 10, 1958 H. BERKENHOFF 2,838,304

FILM PROJECTOR

Filed Aug. 9, 1955



INVENTOR.
HEINZ BERKENHOFF

BY Ostrolenk, Faber, Gerb & Soffen
ATTORNEYS

United States Patent Office 2,838,304
Patented June 10, 1958

2,838,304

FILM PROJECTOR

Heinz Berkenhoff, Koln-Holweide, Germany, assignor to Steatit-Magnesia Aktiengesellschaft, Lauf, Germany, a corporation of Germany

Application August 9, 1955, Serial No. 527,279

2 Claims. (Cl. 271—2.3)

Subject of the invention is a motion picture projector, particularly a narrow-film projector, having built into its film-feed, devices for compensating jerky feeding of the film. Motion picture projectors of this type, known in the previous art, use sprockets for feeding, the use of which, however, is too costly on narrow-film projectors. The self-elasticity of the film has also been used for feeding heretofore, by looping the film between reel and aperture. For this purpose, a stationary roll, arranged above the aperture, has been used as a means for looping the film. Thereby, however, irregularities, occurring in the film-feeding, proved to have strong and unfavorable reactions on the grapple-claw. Another design provided for the elimination of this disadvantage is a movable roll, mounted on a swing-arm, which, being controlled by a spring, overcame trouble incidences of larger proportions. This arrangement too caused jams on the film reel and affected the grapple-claw in a troublesome way, making the use of reels with long lengths of film impossible.

In accordance with the invention, the above mentioned disadvantages are, on projectors of this type, being eliminated by providing additional means of film-feeding, which, upon occurrence of irregularities, become effective and are controlled by the film-feed.

An exemplified embodiment of the invention is shown in the sketch, which shows the film-feeding in a projector.

In accordance with the invention, there are, in addition to the means of compensation known in the previous art as the swinging roll and the elastic film-loop, other means of film-feeding provided, which become effective upon occurrence of irregularities in film-feeding, and are controlled by the film-feeding operation.

According to the sketch, film 1 is guided from the film reel 2, as a loop 3, over rolls 4 and 5, between film-trap 6 and counterpart 7, past aperture 8, to the take-up reel which is not shown in the sketch. The step by step feeding is effected by a grapple-claw 9. In order to compensate these step by step feeding jerks, the film loop 3 wraps around the roll 4 in such a way as not to impair the self-elasticity of the film loop 3 through the roll 4. Thereby, the loop 3, which tends to be springy, swings in the rhythm of the frequency of pictures, and fully compensates the feeding-step jerks. The roll 4 is mounted torsion-free on one end of shaft 10, while a friction plate 11 is, also torsion-free, mounted on the other end of shaft 10. A lining 16 on the roll 4 increases the friction.

A swing-arm 12, having a stationary axis of rotation 13, supports the shaft 10 on its end which is opposite to the axis of rotation, whereby the swing-arm 12 is being kept in vertical position by its own weight, or the swing-arm 12 may be held in its vertical inoperative position by means of a spring 20. A cable pulley 14, which is continuously operated by the grapple motor or driving means 21, is so arranged within the swing-radius of the arm 12, that the friction plate 11, swung with the arm 12, is coupled with the cable pulley 14. The fact that the drive cable 15 is made of rubber increases the friction.

The pull of the film 1, effected by grapple claw 9, causes the feeding reel 2 to rotate. Due to the weight (particularly when using long films) of the fully loaded feeding reel 2, said rotation is not smooth but jerky. This jerky rotation excites percussions directed against the forward feed of film 1, which tighten the film loop 3 and, on the other hand, through roll 4, make the swing-arm 12 move clockwise out of its vertical inoperative position. Slight jerks are compensated by the effort of swing-arm 12 to return to its inoperative position. Heavier jerks, however, would press the friction plate 11 against the cable pulley 14, which rotates in the direction of the arrow, whereby the friction plate 11, and thereby also the roll 4, are made to rotate clockwise. Roll 4, operated as described, pulls film 1 from the feeding reel and feeds said film 1 to the grapple-claw without tension.

Upon compensation of the jerk, arm 12 returns to its inoperative position due to its own weight.

A particular advantage over devices known in the previous art is the possibility of using spools for long lengths of film on projectors built in accordance with the invention. Furthermore, there will be much less wear and tear of film in these projectors due to the smooth and tension-free feeding of the film to the grapple-claw.

I claim:

1. In a motion picture film projector, a compensating device providing for the smooth feeding of film which comprises a friction roll in the film-feeding path, said roll being mounted on a common shaft with a friction plate, said shaft also being rotatably mounted on a pivotally mounted swing arm; said friction plate being operatively engageable with film driving means upon movement of the axis of the said common shaft responsive to film tension on the said friction roll, and disengageable therefrom when said film tension is relieved.

2. The device as set forth in claim 1 in which the swing arm is resiliently mounted and spring biased so as to normally hold the friction plate disengaged from the film driving means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,258,352	Mehlfelder	Mar. 5, 1918
1,308,354	Heywood	July 1, 1919
1,836,613	Oehmichen	Dec. 15, 1931

FOREIGN PATENTS

41,247	France	Aug. 23, 1932