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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Take-Up Reel

We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America of 343 State Street, Rochester, New York 14650, United States of America (Assignees of DAVID LOCKMAN BABCOCK) do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a take-up reel for perforated film and more particularly to an improved take-up reel for a motion-picture projector or the like.

It is well known in the motion-picture projector art to use a take-up reel having a band slidably mounted on a hub and wherein the band is provided with outwardly extending teeth for engaging the perforations of a film fed into engagement therewith. Since the take-up reel is normally driven at a rotational velocity such that the band is travelling faster than the speed at which the film is fed, the film is subjected to a pull or jerk when it initially engages the teeth on the band. The film perforations are prevented from tearing by the slippage that occurs between the band and hub. One of the disadvantages of such prior known reels is that the resistance to turning of the band on the hub varies depending upon what portion of the band is first engaged by the leading end of the film, thus subjecting the film to pulls of difference force. Another disadvantage of some of these prior known reels is that the band has to be constructed to close tolerances in order to fit properly on the hub, and to provide the proper frictional engagement between the band and hub for subjecting a film attached thereto while the reel is rotating to a constant pull no matter where it engages the band.

In accordance with the present invention there is provided a take-up reel for a perforated film, comprising a hub member having a film-receiving portion and, at one end thereof, a

coaxial portion of reduced diameter, an annular clutch disc loosely mounted on said coaxial portion and resiliently urged against the shoulder joining the film-receiving and coaxial portions and a plurality of teeth extending from the annular clutch disc beyond the periphery of the film-receiving portion for engaging the perforations in a film directed into winding relationship with the film-receiving portion of the hub.

In the accompanying drawing:—

Fig. 1 is an exploded elevation of a take-up reel constructed in accordance with one embodiment of the present invention;

Fig. 2 is a side elevation of the hub member shown in Fig. 1;

Fig. 3 is a side elevation of the clutch disk shown in Fig. 1;

Fig. 4 is a side elevation of the spring shown in Fig. 1;

Fig. 5 is an elevation of the reel in its assembled condition; and

Fig. 6 is a side elevation of the reel with a portion thereof broken away to show the leading end of the film attached to the clutch disk.

As illustrated, the take-up reel comprises a hub member 10 having a circular portion 12 of one diameter, and an adjacent circular portion 14 of a greater diameter. An annular shoulder 16 interconnects portions 12, 14. Each side of the hub member 10 is provided with a plurality of protuberances 18 to extend through complementary recessed openings 20 in reel flanges 22, and to extend past the side of the flange. The flanges 22 are rigidly riveted to the hub member 14 by applying pressure to the ends of the protuberances 18, flattening them over the edges of openings 20. Before the flanges 22 are secured to the hub member 10, an annular clutch disk 24 as best seen in Fig. 3 is loosely mounted on hub portion 12 with one side thereof in engagement with shoulder 16. The inner diameter of disk 24 is slightly greater than the diameter of the hub

[Price 4s. 6d.]

portion 12 so that the clutch disk is free to rotate thereon. The outer periphery of clutch disk 24 has a diameter that is substantially equal to the diameter of hub portion 14, and further has a plurality of teeth 26 extending outwardly from the outer periphery. An annular bowed spring 28 as best seen in Fig. 4 is mounted on hub portion 12 and has portions of one side bearing against clutch disk 24, and its opposite side engaging the inner surface of the flange 22. In this position, spring 28 is slightly compressed as seen in Fig. 5 for urging the clutch disk 24 into engagement with the shoulder 16 with a constant, predetermined force. Accordingly, when the reel is rotating and the leading end of a film 30 is fed onto the hub 10 of the reel as seen in Fig. 6, and becomes attached to the teeth 26 on the clutch disk 24, the clutch disk will slip with respect to the faster rotating reel until the rotational velocity of the reel is reduced to match the speed at which the film is being transported thereto. The frictional force between the clutch disk 24 and the hub member 10 is substantially constant no matter what portion of the clutch disk is engaged by the film 30.

WHAT WE CLAIM IS:—

1. A take-up reel for a perforated film comprising a hub member having a film-receiving

portion and, at one end thereof, a coaxial portion of reduced diameter, an annular clutch disc loosely mounted on said coaxial portion and resiliently urged against the shoulder joining the film-receiving and coaxial portions and a plurality of teeth extending from the annular clutch disc beyond the periphery of the film-receiving portion for engaging the perforations in a film directed into winding relationship with the film-receiving portion of the hub.

2. A take-up reel according to claim 1, wherein the clutch disc has an outer periphery of a diameter substantially equal to the diameter of the film-receiving portion of the hub with its teeth extending beyond the periphery thereof.

3. A take-up reel according to claim 2, wherein the hub has a flange secured to both ends thereof and an annular spring is mounted on the coaxial portion of the hub and interposed between the adjacent flange and the clutch disc for resiliently urging the clutch disc against the shoulder.

4. A take-up reel according to claim 1, constructed and adapted for use substantially as hereinbefore described with reference to, and as shown in, the accompanying drawing.

L. A. TRANGMAR B.Sc. C.P.A.,
Agent for the Applicants.

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2. A take-up reel according to claim 1, wherein the clutch disc has an outer periphery of a diameter substantially equal to the diameter of the film-receiving portion of the hub with its teeth extending beyond the periphery thereof.

3. A take-up reel according to claim 2, wherein the hub has a flange secured to both ends thereof and an annular spring is mounted on the coaxial portion of the hub and interposed between the adjacent flange and the clutch disc for resiliently urging the clutch disc against the shoulder.

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