K. H. BEISWENGER.

TAKE-UP DEVICE FOR MOVING PICTURE FILM REELS.

APPLICATION FILED JAN. 24, 1921.

1,408,249. **Patented Feb. 28, 1922.**

2 SHEETS—SHEET 1.

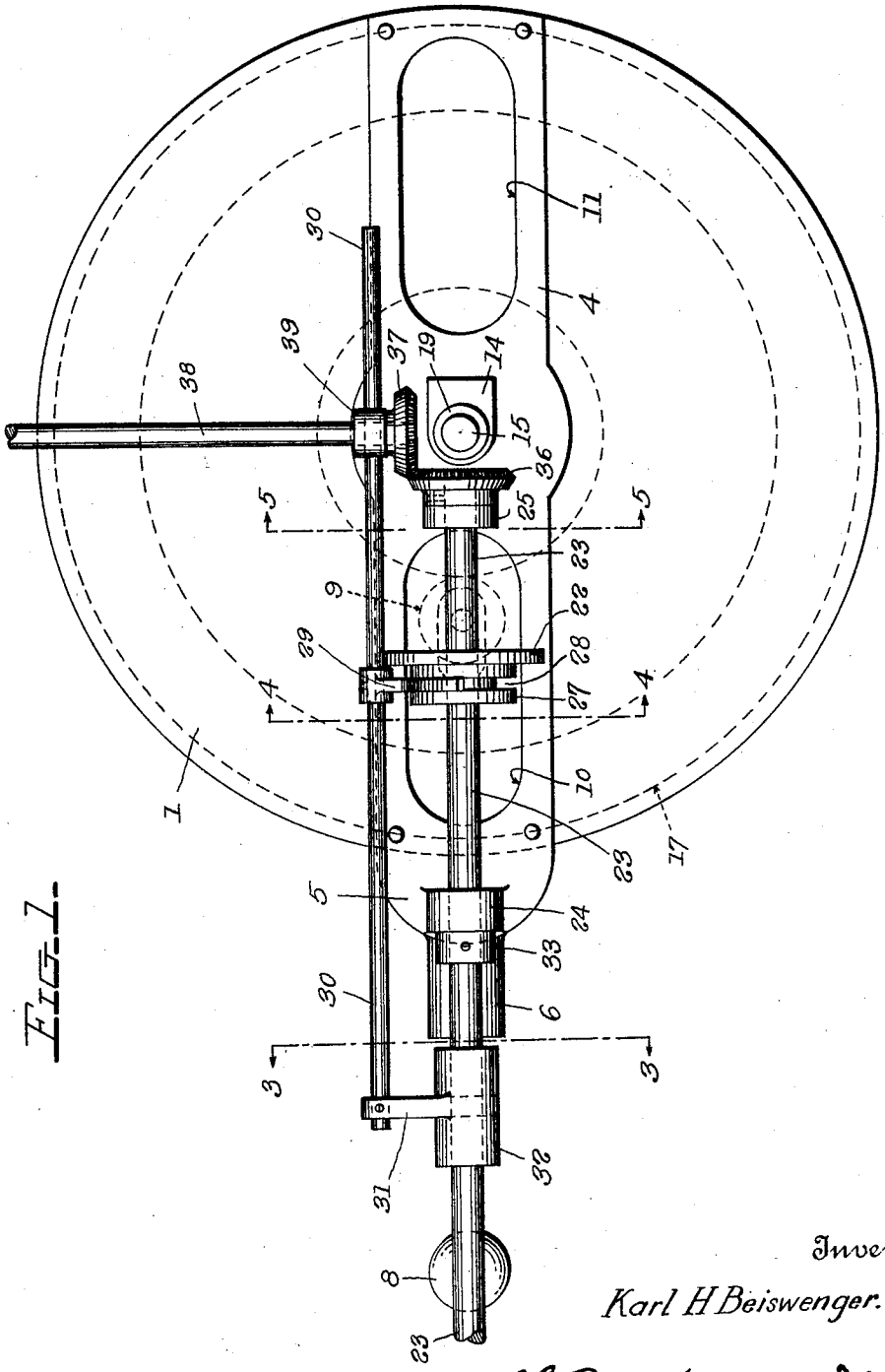


FIG. 1.

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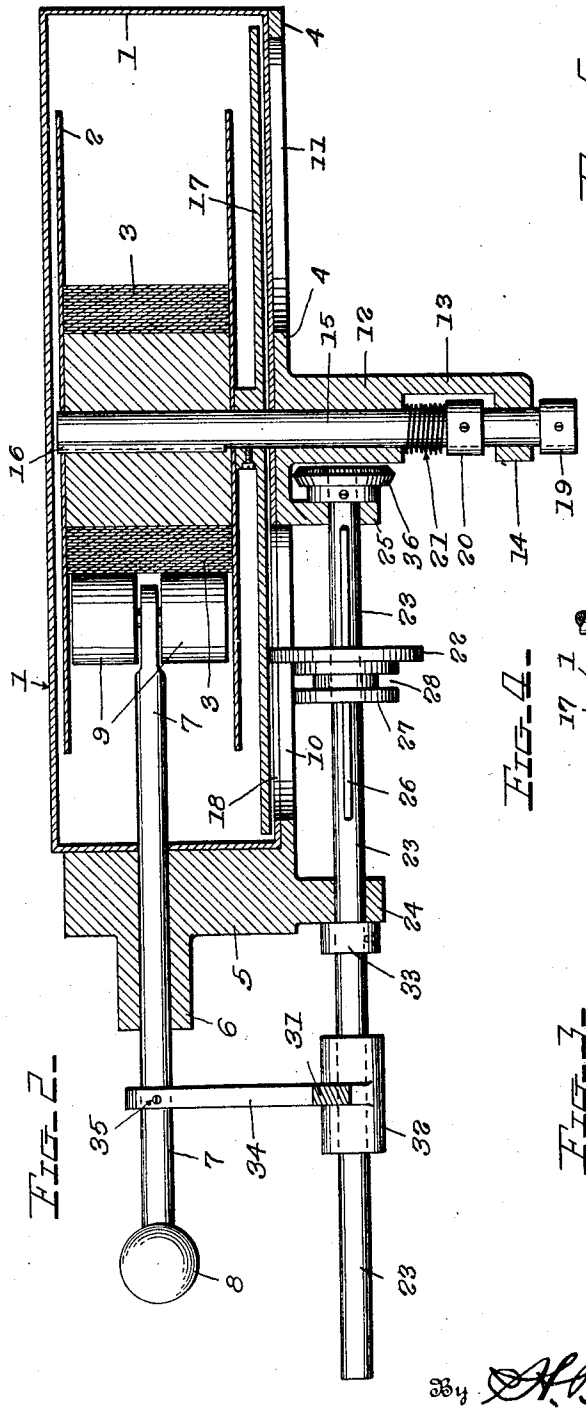


Fig. 2.

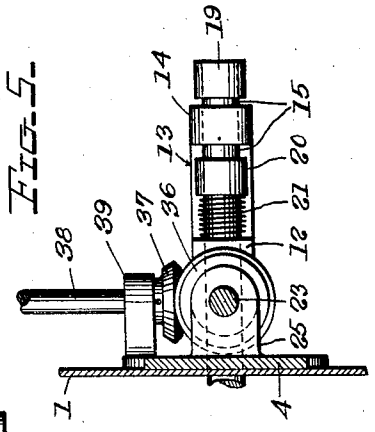


Fig. 5.

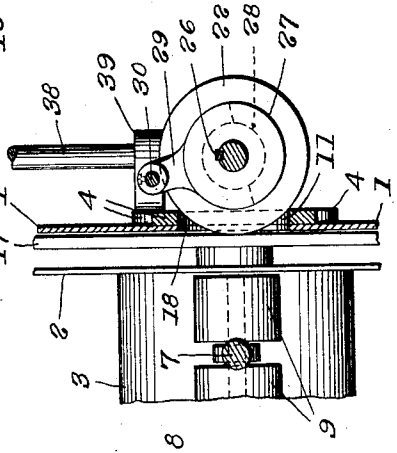


Fig. 4.

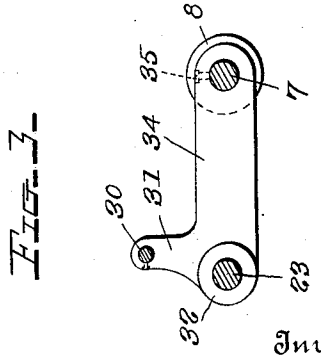


Fig. 3.

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UNITED STATES PATENT OFFICE.

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TAKE-UP DEVICE FOR MOVING-PICTURE-FILM REELS.

1,408,249. Specification of Letters Patent. Patented Feb. 28, 1922.

Application filed January 24, 1921. Serial No. 439,619.

To all whom it may concern:

Be it known that I, KARL H. BEISWENGER, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Take-up Devices for Moving-Picture-Film Reels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved take-up device for use in connection with a reel to have a strip of moving picture film wound thereon and one object of the invention is to provide a device which will control the speed of rotation of the reel or spool upon which the film is being wound, the speed of rotation gradually changing and becoming slower as the film is wound thereon.

Another object of the invention is to provide a device of the character described which is so constructed that it may be mounted externally of the casing to receive the drum or reel, a sliding disk being provided for extending through the slot in the casing and engaging a disk carried by the drum mounting shaft.

Another object of the invention is to so construct this device that the shaft carrying the disk and drum may be slidably as well as rotatably mounted and the shaft engaged by a spring which will move the shaft longitudinally to hold the disk thereof in tight engagement with the movable friction wheel or disk upon the driven shaft carried by the device.

Another object of the invention is to provide a device of the character described in which the initial speed of the drum may be controlled by adjustment of the friction disk which engages the disk mounted within the casing.

Another object of the invention is to provide a device which will be simple in construction and very efficient in operation.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation showing the improved device in use.

Figure 2 is a longitudinal sectional view through the structure of Fig. 1.

Figures 3, 4 and 5 are fragmentary sectional views taken along the line 3—3, 4—4 and 5—5 of Fig. 1.

This device is to be mainly positioned outside the casing 1 in which the spool or drum 2 for receiving the film 3 is placed. The device is provided with a bearing bracket 4 having a cross head 5 at one end which extends transversely of the casing and is provided with a neck extension 6 to receive the plunger 7 which extends through this neck and head and through an opening in the casing into the interior thereof. The plunger is provided at its outer end with an enlargement or head 8 and at its inner end is connected with the axle of a roller 9, the roller being a double roller and positioned upon opposite sides of this plunger and adapted to engage the film which is wound upon the hub of the drum 2. The bracket has its end portions provided with slots 10 and 11 and intermediate its length has been provided with a sleeve 12 which terminates in a neck extension 13 carrying at its outer end, a head or bearing 14. The shaft 15 for the spool or drum 2 is mounted in the neck and head 14 and is permitted of rotary and sliding movement. The drum is removably mounted upon the inner end portion of this shaft and is held thereon by means of a key 16 so that the shaft and drum will rotate together. A disk 17 is firmly mounted upon the shaft within the casing adjacent the wall thereof which has been provided with a slot 18 for registering with the slot 10 and it will thus be seen that when this disk is rotated, rotary movement will be transmitted to the shaft and drum. A head or bushing 19 is provided at the outer end of the shaft 15 and an abutment collar 20 is mounted upon the shaft between the sleeve 12 and bearing 14 for engagement by a spring 21 which is mounted upon this shaft as shown in Fig. 2. This spring normally moves the collar 20 toward the head or bearing 14 and since this collar is rigid upon the shaft, the shaft will be yieldably held against movement in an opposite direction and the disk 17 will be held in tight contacting engagement with a friction disk 22 which is slidably mounted upon a shaft 23 journalled in bearings 24 and 25 of the bearing bracket. This disk 22 is held against rotary movement upon the shaft 23 by means of a key 26, but may slide freely thereon and is provided with a shoulder extension 27 having a groove 28 formed therein to receive the fork 29 which is securely but releasably and thus adjustably mounted upon a rod. This rod 30 is secured in an opening formed in an up-

standing ear 31 carried by a sleeve 32 which is releasably secured upon the shaft 23 beyond the abutment collar 33 which is releasably secured thereon and adapted to engage the bearing 24 and prevent longitudinal movement of this shaft in one direction. An arm 34 extends from the sleeve 32 and is provided with an opening through which the plunger 7 will pass, the arm being secured against longitudinal movement upon this plunger 7 by a screw or other releasable fastener 35. A bevel gear or pinion 36 is mounted upon the shaft 23 between the bearing 25 and the sleeve 12 and this bevel gear meshes with a co-operating bevel gear or pinion 37 at the lower end of a driving shaft 38. This driving shaft 38 is journaled in a bearing 39 of the bearing bracket and when the shaft 38 is rotated, rotary movement will be transmitted to the shaft 23.

When this device is in use, the disk 17 is rigidly secured upon the shaft 15 within the drum housing 1 and the plunger 7 and the roller 9 engage the hub upon which the strip of film 3 is to be wound. The fork 29 will be fixed upon the rod 30 so that the disk 22 will be positioned to engage the disk 17 at the proper point when starting to wind the film upon the hub of the spool or drum and the arm 34 will be tightened upon the plunger 7. The spring 21 through engagement with the collar 20 moves the shaft 15 to hold the disk 17 in tight frictional engagement with the disk 22. As the shaft 38 rotates from an upper drum not shown, the rotary movement is transmitted to the shaft 23 and through the medium of the disks 22 and 17, the lower spool or drum rotates. As the film winds upon this lower spool or drum, the thickness of the film wound upon the hub thereof increases and the plunger 7 gradually moves outwardly. This outward movement of the plunger causes the sleeve 32 to slide longitudinally upon the shaft 23, and as this sleeve or carrier moves, the rod 30 also moves longitudinally of the shaft. Since the fork is rigid upon this rod 30, the disk 22 is moved towards the outer periphery of the disk 17 and since the disk 17 is driven from the disk 22, the speed at which the disk 17 and drum 2 rotates, will gradually become slower. It will thus be seen that the drum or spool 2 will at all times be rotated at the proper rate of speed to wind the film upon the spool as it moves from the upper spool not shown. Therefore, there will be no slack in the film and further there will be no excessive strain or stretching applied to this strip of film. It will thus be seen that a strip of film may be wound from an upper spool upon the lower spool without danger of the film being torn or otherwise damaged.

I claim:

1. A structure of the character described comprising a bearing bracket having a side extension at one end, a driven shaft rotatably carried thereby and extending longitudinally of the bracket, a drum carrying shaft carried by said bracket and extending transversely of the bracket, a relatively small friction disk slidable upon said driven shaft and held against rotation thereon, a relatively large friction disk carried by said drum shaft and engaging the disk of said driven shaft, a drum engaging plunger slidably carried by the side extension of said bracket and extending longitudinally of the driven shaft, a sleeve slidable upon said driven shaft, an arm extending from said sleeve and rigidly engaging said plunger, a second arm extending from said sleeve, a rod carried by said second arm and extending longitudinally of said driven shaft, a fork carried by said rod and engaging the friction disk of said driven shaft to impart movement to the disk when said plunger is moved longitudinally, and a driving shaft in operative connection with said driven shaft.

2. A structure of the character described comprising a casing having a radial slot in one wall, a bearing bracket having a slot registering with the slot of said casing, a driven shaft rotatably carried by said bracket, a friction disk slidable upon said driven shaft, a drum shaft rotatably and slidably carried by said bracket and extending into said casing for rotatably mounting a drum therein, a disk upon said last mentioned shaft within said casing and engaged by and rotated from the disk of said driven shaft, resilient means yieldably holding the drum carrying shaft against sliding movement to retain the disks carried thereby in frictional engagement with the disk of the driven shaft, and means for imparting sliding movement to the disk upon said driven shaft including disk-engaging means and a plunger slidably carried by said bracket and having operative connection with said disk-engaging means, said plunger extending into said casing for engaging film wound upon a drum mounted upon the drum-carrying shaft within said casing.

3. A structure of the character described comprising a casing having a slotted wall, a bracket carried by said casing and having a slot registering with the slot of said casing, a drum shaft rotatably carried by said bracket and extending into said casing to rotatably mount a drum therein, a disk upon said shaft within said casing, a plunger slidably carried by said bracket and extending into said casing for engaging film wound upon the hub of said drum, a driven shaft rotatably carried by said bracket, a friction disk slidable upon said driven shaft and engaging the disk of said drum shaft, a carrier slidable upon said drum shaft and connect-

ed with and moved by said plunger, a rod carried by said carrier and extending longitudinally of the driven shaft, a fork carried by said rod and engaging said disk upon said driven shaft, and a driving shaft having operative connection with said driven shaft.

4. A structure of the character described comprising a reel housing having a radial slot in one wall, a bearing bracket extending centrally across the slotted side of said housing and having a head extending transversely across the housing, the bracket having a slot registering with the slot of said housing, a shaft rotatably and slidably carried by said bracket and extending centrally through said housing, a disk carried by said shaft within said housing, a driving shaft, a driven shaft rotated from said driving shaft, a disk slidable upon said driven shaft and extending through said registering slots for engaging the disk within said housing, resilient means moving said first mentioned shaft to hold the disk thereof in frictional engagement with the disk of the driven shaft, and means for moving the disk of the driven shaft upon the same including a plunger slidably passing through the head of said bracket and into said casing for engaging material wound upon the hub of a drum carried by the first mentioned shaft.

5. A structure of the character described comprising a reel housing having a radial slot in one wall, a bearing bracket carried by said housing and having a longitudinally extending slot registering with the slot of said housing, said bracket having a head at one end extending transversely of said housing, a shaft journaled in said bracket at the center of said housing and extending into the housing and slidable longitudinally, a disk and a reel upon said shaft within said housing, a driven shaft rotatably carried by said bracket and extending longitudinally thereof, a friction wheel slidable longitudinally upon said driven shaft and extending through the slots of the bracket and housing an engaging said disk, means yieldably holding the first mentioned shaft against sliding movement and retaining the disk in tight engagement with said friction wheel, a driving shaft having operative connection with said driven shaft, a carrier slidably mounted upon said driven shaft, a rod carried by said carrier and extending parallel to said driven shaft, a fork carried by said rod and engaging said friction disk, a plunger connected with said carrier and slidably passing through the head of said bracket into said housing, and a roller carried by the inner end of said plunger for engaging a film wound upon the hub of said reel.

In testimony whereof I have hereunto set my hand.

KARL H. BEISWENGER.

Witnesses:

HELEN S. CARTER,

HUGO A. BEISWENGER.