

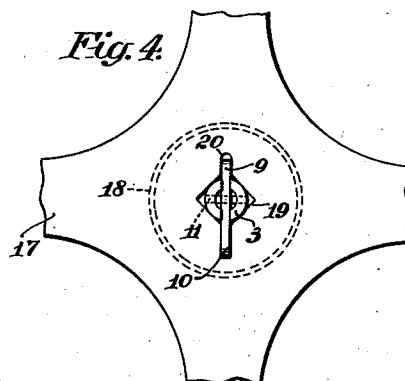
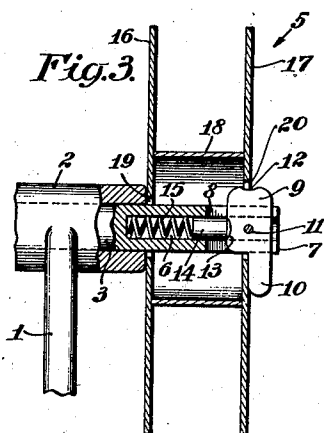
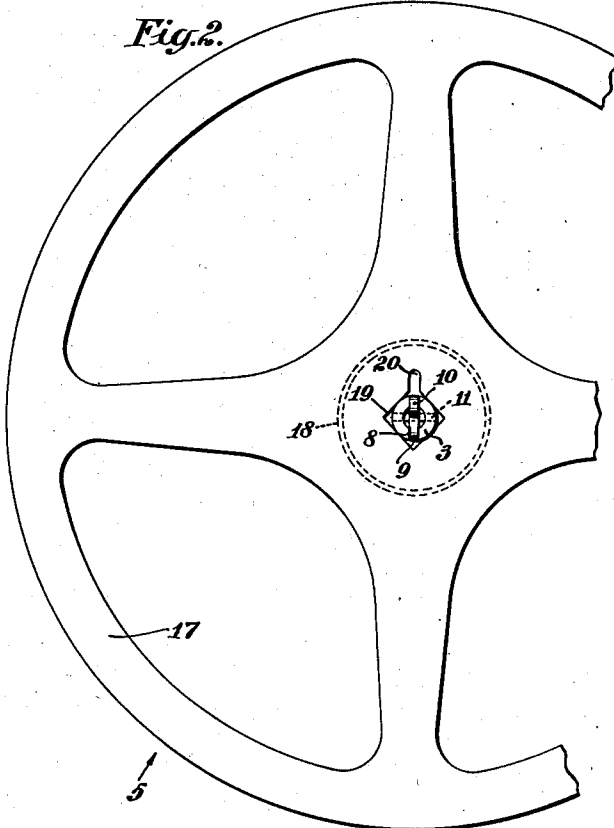
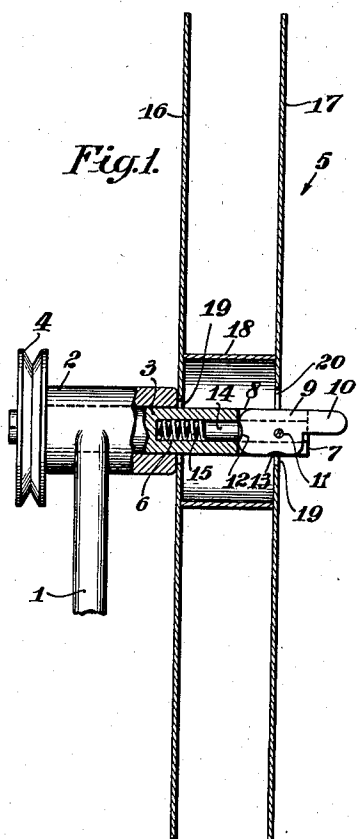
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MOTION PICTURE APPARATUS

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MOTION PICTURE APPARATUS

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This invention relates to motion picture apparatus, and more particularly to film reels and spindle mountings therefor.

In recent years, the use of motion picture apparatus by amateurs has become rather extensive, and various constructions have been proposed for the purpose of preventing the reverse mounting of reels on their spindles. According to one, for example, the spindle reel is made polygonal at its inner portion and circular at its outer portion to accommodate a reel having a spindle opening correspondingly polygonal and circular. With this construction, the reel can, obviously, only be mounted on the spindle when the side thereof having the polygonal opening is first slipped onto the spindle. Other constructions have also been proposed, and, while they may be individually quite satisfactory, the great objection to them collectively is that they are not interchangeable. Consequently, the purchaser of apparatus equipped with one type of spindle is limited to using only reels which can be accommodated by that specific type of spindle, and films wound on reels designed for accommodation on other types of spindles must first be unwound from the latter reels and then rewound on reels which fit the specific apparatus available before the films can be used thereon.

It is the primary object of my invention to provide an improved reel which will fit all types of reel spindles heretofore available in motion picture apparatus of the amateur type and which, therefore, can be used on any one of the many machines now on the market.

Another object of my invention is to provide an improved spindle for especially accommodating my improved reel.

Still another object of my invention is to provide an improved reel spindle with which the reel can have driving engagement only if correctly mounted thereon.

A further object of my invention is to provide an improved reel spindle on which a reel may be positively, although releasably, locked in operating position and against axial displacement from the spindle.

Still a further object of my invention is to provide an improved reel spindle which will only drive the reel when the reel has been properly mounted thereon and locked in position.

It is another object of my invention to provide an improved reel and reel spindle which will be efficient in use and economical of manufacture.

In accordance with my invention, I provide the reel with a spindle opening such that it will fit

both polygonal spindles and cylindrical spindles, and, in addition, provide a slot in one of the side plates of the reel in communication with the spindle opening. At the outer end of my improved spindle, I provide a pivoted latch member so mounted on the spindle that it can be moved to extend into said slot whereby to provide a driving engagement between the spindle and the reel, the latch member being so formed that when it is moved into slot engaging position, it automatically and positively, although releasably, locks the reel to the spindle against axial displacement therefrom.

The novel features of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment, when read in connection with the accompanying drawing, in which:

Figure 1 is a sectional view of my improved reel and spindle with certain parts in elevation and the latch member in non-locking position.

Figure 2 is a front elevation thereof looking from the right in Figure 1.

Figure 3 is a broken view similar to Figure 1 but with the latch member in reel-locking position, and

Figure 4 is a view similar to Figure 2 but also showing the latch in reel-locking position.

Referring to the drawing, wherein like reference characters indicate corresponding parts throughout, there is shown a bracket 1 forming part of a moving picture machine and having at its upper end a bearing 2 in which is journaled a spindle 3 to which power may be supplied from a suitable source (not shown) through a pulley 4. The spindle 3 may be of any desired configuration in cross section beyond the bearing 2 for the reception or mounting thereon of a film reel 5 which will be described hereinafter in greater detail. I have, however, for the sake of illustration only, shown the spindle as being cylindrical throughout.

The spindle is provided with an axial bore 6 and, at the free end 7 thereof, with a slot 8 extending diametrically across the spindle in substantially the plane of the axis thereof and in communication with the bore 6. A latch member 9 having an extension or finger 10 thereon, is pivotally mounted on the spindle 3 within the slot 8 by means of a pin 11, the latch member having a pair of notches 12, 13 in the periphery thereof.

The latch member 9 is of substantially the same width as the diameter of the spindle 3, and should, preferably, be no wider, so that a film reel may be freely slipped onto the spindle when the latch member occupies the position shown in Figure 1. A plunger 14, slidable in the bore 6, is constantly urged into engagement with the periphery of the latch member by a spring 15, the plunger 14 engaging the notch 12 to releasably retain the latch member 9 in non-locking position, or the position shown in Figure 1, and engaging the notch 13 thereof to releasably retain the latch member in locking position, as shown in Figure 2.

The reel 5 comprises a pair of spaced, circular side plates 16 and 17 connected together by a tubular hub member 18. Each of the plates 16 and 17 is provided, substantially centrally thereof, with a spindle opening 19, the openings 19 being in axial alignment with each other and with the hub 18. These openings may be of any configuration which will permit the reel to be freely mounted on the spindle 3. Since the moving picture machines now on the market employ both round and polygonal spindles, I have shown the spindle openings 19 as being polygonal so that the reel will fit both types of spindles. For example, the openings 19 may be made square with the sides of the squares substantially equal in length to the cross sectional diameter of the spindle 3. Thus, when the reel is mounted on the spindle, the sides of the squares are tangent to the surface of the cylindrical spindle. At the same time, the reel may, of course, be mounted on a spindle of square cross section having the same dimensions as the sides defining the openings 19.

Communicating with the opening 19 in the outer side plate 17 of the reel is a slot 20 which extends from one corner of the opening 19 in extension of the diagonal. The slot 20 is arranged to accommodate the wider end of the latch member 9, and, when the reel 5 is mounted on the spindle 3 and the latch member is moved into the slot 20, as shown in Figures 3 and 4, a driving engagement is effected between the spindle and the reel. At the same time, the extension or finger 10 of the latch member is moved down into engagement with the side of the plate 17 whereby the reel becomes locked against easy axial displacement from the spindle. To remove the reel from the spindle, however, it is merely necessary to raise the finger 10 away from the side of the plate 17 against the action of the spring 10 until the latch member 9 has been turned back to non-locking position, whereupon the reel may be easily slipped off from the spindle.

From the foregoing, it will be apparent that I have provided an improved reel which can be accommodated on any of the standard projectors now on the market, as well as an improved reel mounting for especially accommodating my improved reel. My improved reel and mounting are not only applicable to moving picture cameras and projectors, but also to film rewinding apparatus, and they are of especial value in connection with sound picture films where it is essential that the films be wound upon and unwound from the reels in a certain predetermined relation with respect to the sound reproducing system. Since,

in my improved apparatus, only the side plate 17 has the slot 20 therein and the reel can only have a driving engagement with and be locked on the spindle if mounted thereon with the plate 17 on the outside, it is apparent that no error can be made in the operation of the machine and, therefore, the danger of operating the machine with the reel incorrectly mounted thereon is entirely eliminated.

Although I have shown and described but one specific embodiment of my invention, I am fully aware that many modifications thereof are possible. For example, the finger 10 may be provided with an offset for extending into and cooperating with an opening in the plate 17 whereby to provide driving engagement between the spindle and reel additional to that illustrated. Also, if desired, the finger 10 may be twisted through 90° whereby to provide greater surface contact between the finger and the side plate 17. Moreover, the openings 19 may be made of other configurations than that shown, it being essential only that they be of such shape as to render the reel possible of being accommodated on any of the standard spindles now on the market. My invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

I claim as my invention:

1. A film reel mounting comprising a spindle having an axial bore and a slot extending diametrically thereacross at one end thereof in communication with said bore, a latch member pivotally mounted in said slot and having a pair of notches therein, said latch member being movable to and from non-locking and locking positions, and said member, when in non-locking position, permitting the mounting of a reel on said spindle and, when in locking position, simultaneously locking the reel on said spindle against axial displacement therefrom and providing a driving engagement between said spindle and said reel, and means including a plunger movable in said bore, said plunger being adapted to engage one of said notches for retaining said latch member in non-locking position and being adapted to engage the other of said notches for retaining said latch member in locking position.

2. A film reel mounting comprising a spindle having an axial bore and a slot extending diametrically thereacross at one end thereof in communication with said bore, a latch member pivotally mounted in said slot and having a pair of notches therein, said latch member being movable to and from non-locking and locking positions, and said member, when in non-locking position, permitting the mounting of a reel on said spindle and, when in locking position, simultaneously locking the reel on said spindle against axial displacement therefrom and providing a driving engagement between said spindle and said reel, means including a plunger movable in said bore, said plunger being adapted to engage one of said notches for retaining said latch member in non-locking position and being adapted to engage the other of said notches for retaining said latch member in locking position, and means urging said plunger into notch engaging position.