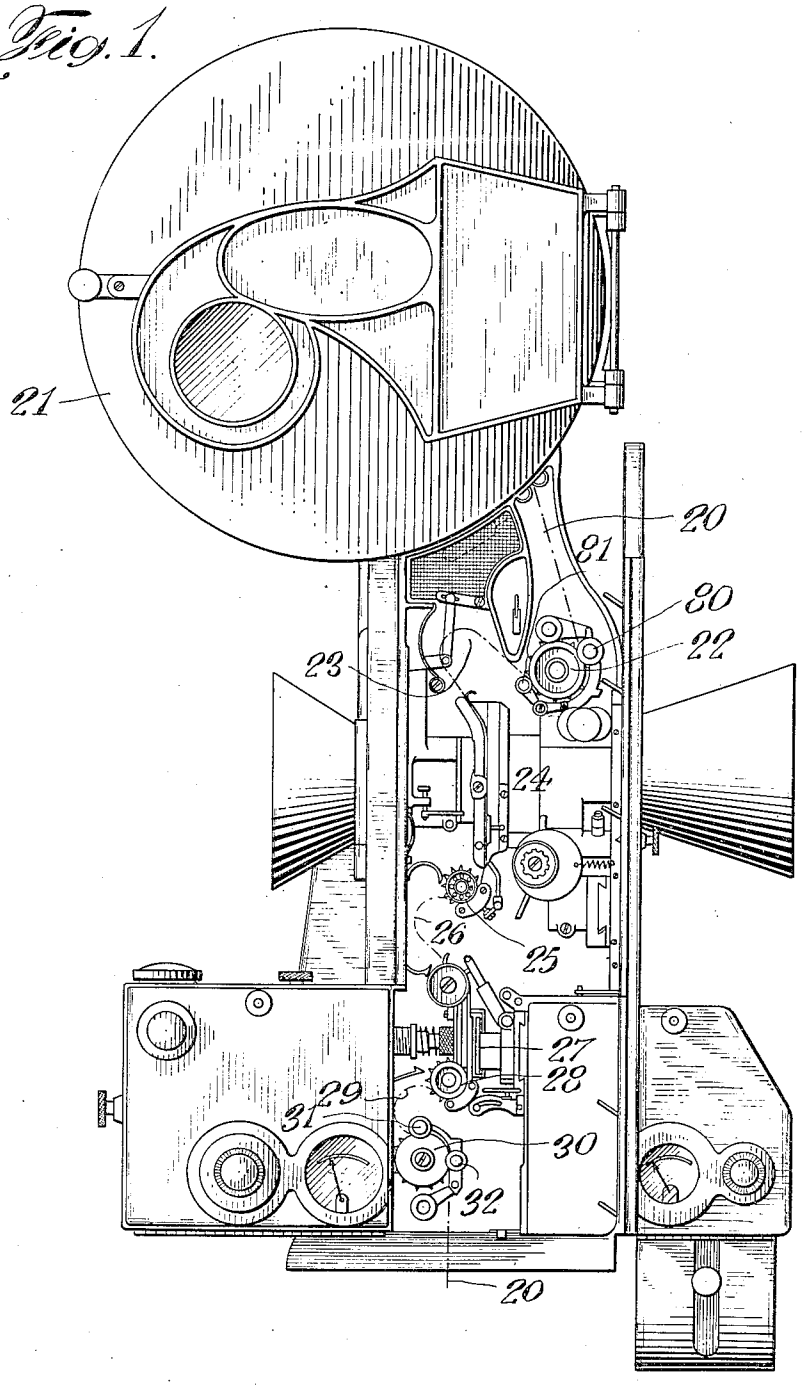
May 1, 1934. L. S. FRAPPIER ET AL 1,957,164

PAD ROLLER MOUNTING

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Fig. 1.




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PAD ROLLER MOUNTING

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Fig. 2.

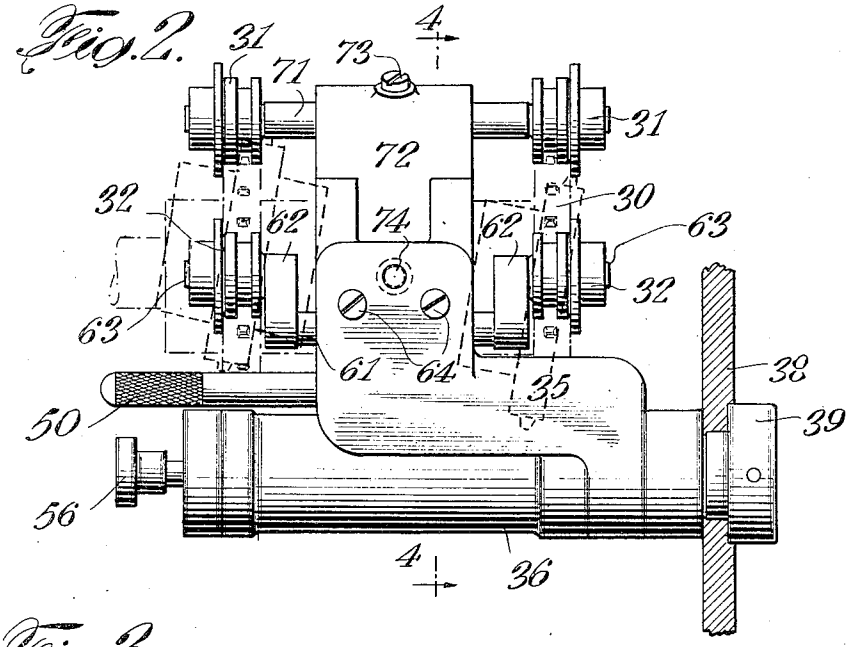



Fig. 3.

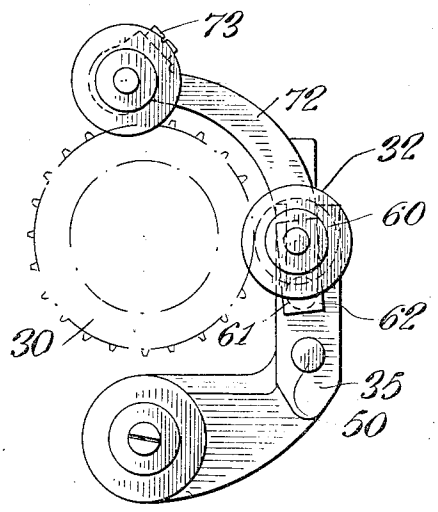
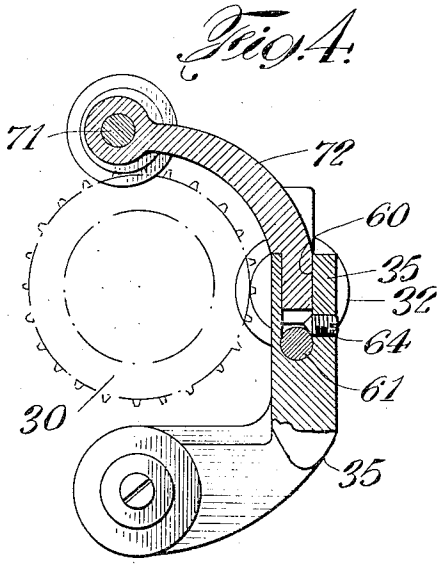



Fig. 4.




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PAD ROLLER MOUNTING

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Fig. 5.

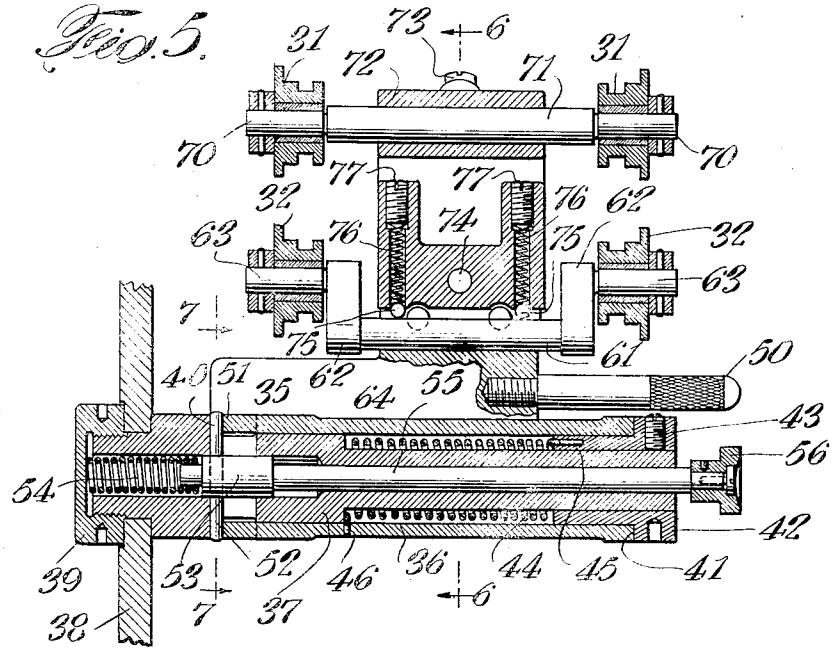
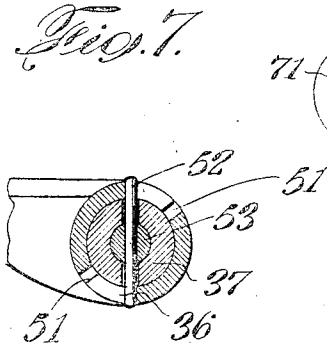



Fig. 6.

Fig. 7.



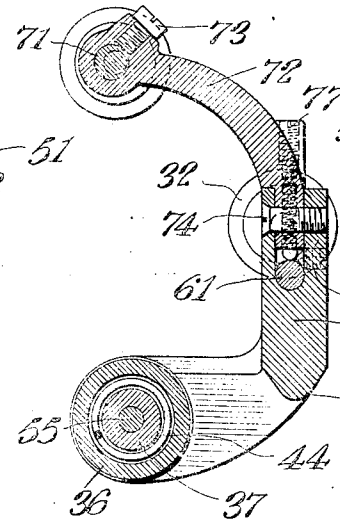
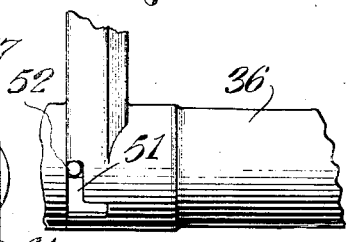




Fig. 8.




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PAD ROLLER MOUNTING

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Fig. 9.

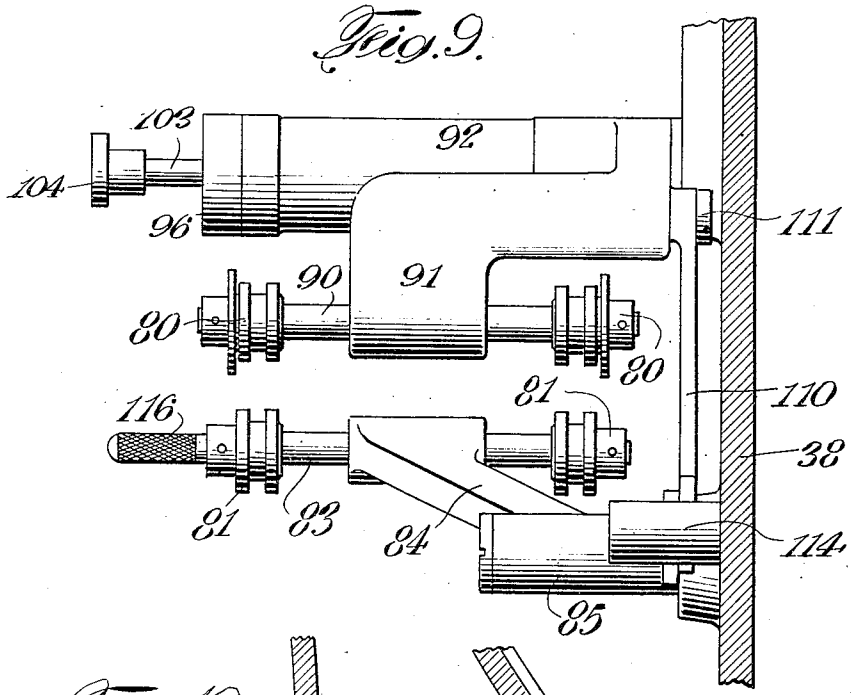
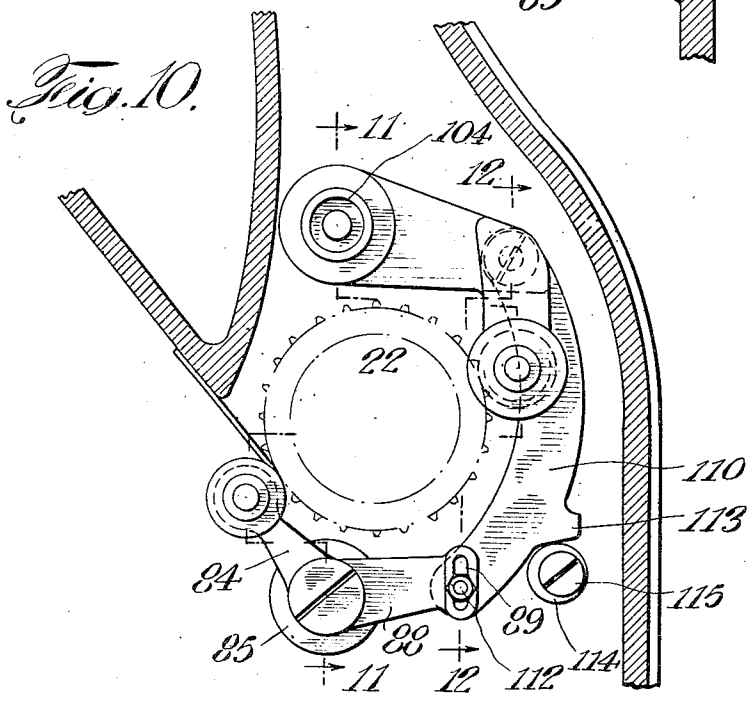



Fig. 10.




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PAD ROLLER MOUNTING

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Fig. 11.

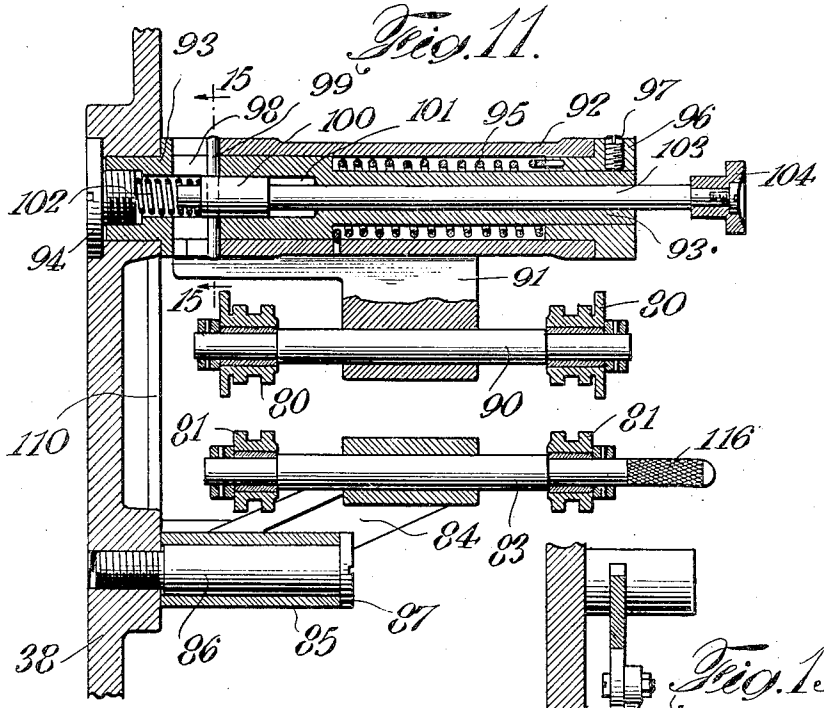



Fig. 13.

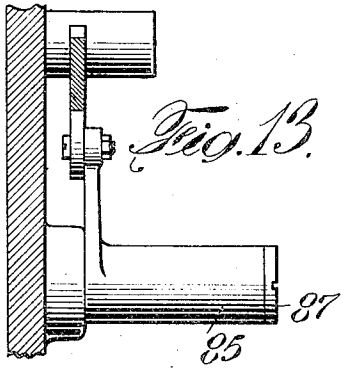



Fig. 12.

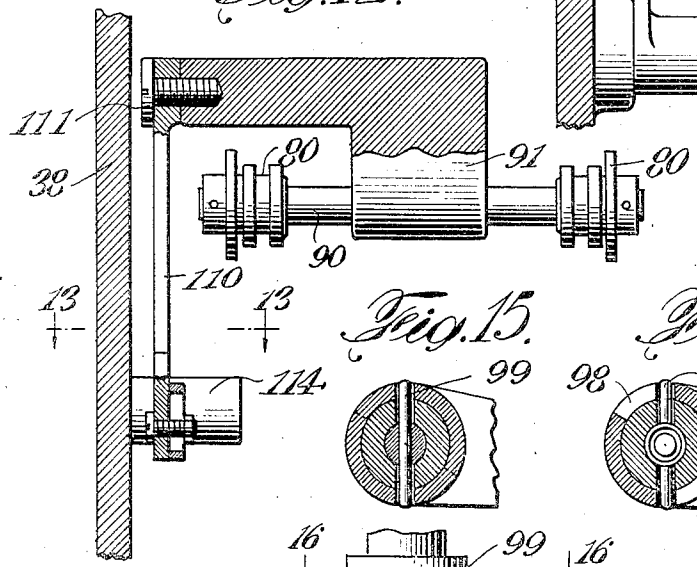


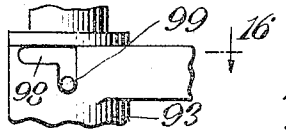

Fig. 15.




Fig. 16.




Fig. 14.




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Patented May 1, 1934 1,957,164

# UNITED STATES PATENT OFFICE

1,957,164

## PAD ROLLER MOUNTING

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Application June 3, 1929, Serial No. 370,398

10 Claims. (Cl. 271—2.3)

This invention relates to motion picture projection machines, and more particularly to a new and improved pad roller mounting therefor.

The invention provides a pad roller for the feed sprocket of a projection machine which is so mounted as to permit pivotal movement of the feed sprocket and at the same time to hold the film in contact therewith. A simplified means is also provided for releasing the pad roller from contact with the sprocket and for locking the roller in released position.

It is an object of the invention to provide a pad roller mounting which may be simply and quickly operated and which may be securely held in either engaging or releasing position with respect to the sprocket.

A further object is to provide a pad roller mounting for use in conjunction with the feed sprocket of a projection machine which is capable of permitting pivotal movement of the feed sprocket in response to variations in the line of travel of the film.

A further object of the invention is to provide an improved lock and release for the pad roller mounting whereby the insertion or removal of the film is simplified.

The above objects and others which will be apparent as the nature of the invention is disclosed are accomplished by mounting the pad roller upon a pivoted arm which is normally held by a spiral spring in engaging position with respect to the sprocket. The arm is provided with means whereby it may be readily gripped by the operator and forced into open position in which it is automatically locked. Means are provided for releasing the lock by simple movement of the hand after which the spiral spring operates to again bring the roller into engagement with the sprocket.

Pivotal movement of the sprocket is permitted by mounting a pad roller at a point on the sprocket the tangent to which is parallel to the plane of movement of the sprocket. A second pad roller is displaced by approximately 90° with respect to the first roller and is pivotally mounted whereby it may follow the pivotal movement of the sprocket. A single means is employed for controlling the position of both of said rollers whereby the manipulation thereof during the operation of the machine is simplified.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a side elevation of a projection head showing the location of the pad roller and of the feed sprocket;

Fig. 2 is a side elevation of the lower pad roller mounting;

Fig. 3 is an end elevation thereof;

Fig. 4 is a section taken on the line 4—4 of Fig. 2;

Fig. 5 is an elevation partly in section of the pad roller mounting showing the locking mechanism and release;

Fig. 6 is a section taken on the line 6—6 of Fig. 5;

Fig. 7 is a section taken on the line 7—7 of Fig. 5;

Fig. 8 is an enlarged detail of the locking mechanism;

Fig. 9 is a side elevation of the upper pad roller mounting;

Fig. 10 is an end elevation thereof;

Fig. 11 is a section taken on the line 11—11 of Fig. 10;

Fig. 12 is a section taken on the line 12—12 of Fig. 10;

Fig. 13 is a section taken on the line 13—13 of Fig. 12;

Fig. 14 is an enlarged detail view of the locking mechanism;

Fig. 15 is a section taken on the line 15—15 of Fig. 11; and

Fig. 16 is a section taken on the line 16—16 of Fig. 14.

Like reference characters denote like parts in the several figures of the drawings.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawings more in detail, the invention is shown as applied to a projection head of a motion picture projection machine in which (Fig. 1) a film 20 is passed from upper magazine 21 around upper feed sprocket 22, upper loop 23, picture film gate 24, intermittent sprocket 25, intermediate loop 26, sound film gate 27, continuous sprocket 28, lower loop 29 and lower feed

sprocket 30, to the lower film magazine (not shown).

The feed sprockets 22 and 30 are preferably of the self-aligning type and are adapted to be pivotally moved to compensate for variation in the direction of the film feed.

The particular type of projection head or feed sprocket forms no part of the present invention and accordingly will not be set forth in detail. A type of projection head and feed sprocket with which the invention may be employed is shown in the copending application of Frappier and Boecking, Serial No. 303,162, filed August 31, 1928 for Improvements in projection machine.

Pad rollers 31, 32 are mounted in contact with feed sprocket 30 and are pivotally secured to the projection head as shown more in detail in Figs. 2 to 8. The mounting for said pad rollers comprises a bracket 35 terminating in a rotatable sleeve 36 which is mounted on stud 37 secured in frame 38 of the projection head in any convenient manner. Sleeve 36 (Fig. 5) is held in position between shoulder 40 of stud 37 and shoulder 41 of plug 42 which is rigidly secured to said stud as by set screw 43. Spiral spring 44 is mounted in a recess between stud 37 in sleeve 36. One end of said spring is secured to plug 42 as by pin 45 and the other end thereof is secured to sleeve 36 as by pin 46. Said spring is so positioned as to exert a force for normally holding pad rollers 31 and 32 against feed sprocket 30.

For removing said rollers out of contact with feed sprocket 30 a handle 50 is provided which is mounted on bracket 35 in any readily accessible position. For locking the pad rollers out of engagement with sprocket 30 a pair of bayonet slots 51 are formed in the end of sleeve 36. Pin 52, secured in plunger 53, is slidably carried in a suitable bore in stud 37 and cooperates with said slots 51. Said pin is held in engagement with slots 51 by spring 54 which is seated in a recess in stud 37 and is held between plunger 53 and cap 39. Shaft 55, terminating in a finger release 56, is slidably mounted in stud 37 and controls the position of plunger 53.

When bracket 35 is rotated into such position that pin 52 engages the longitudinal portion of slots 51, spring 54 will force said pin into said slot moving shaft 55 and finger release 56 outwardly. Pin 52 thereupon locks bracket 35 against rotational movement until the same is released from the longitudinal portion of slots 51 by transverse pressure on release 56 which again compresses spring 54 and removes pin 52 from engagement with said slots. Sleeve 36 is then rotated, due to the action of spring 44, to bring rollers 31 and 32 into engagement with sprocket 30. Pin 52 then assumes the position with respect to said sleeve shown in Figs. 7 and 8.

Bracket 35 terminates in a slotted end 60 in which shaft 61 is carried. Shaft 61 is secured to cranks 62 which carry studs 63 on which pad rollers 32 are mounted. Shaft 61 is securely held in the desired position with respect to bracket 35 by means of set screws 64 which are passed through said bracket into engagement with said shaft.

Pad rollers 31 are mounted on studs 70 formed as a portion of shaft 71. Studs 70 are preferably mounted eccentrically with respect to said shaft whereby the position of said pad rollers 31 may be adjusted by rotating said shaft. Shaft 71 is secured in member 72 by means of set screw 73 which is threaded in said member into engagement with said shaft. Member 72 is pivotally mounted in the slotted end of bracket 35 as by screw 74. Said member is free to move about said screw 74, but is resiliently held in a central position by means of balls 75 (Fig. 5) which are engaged by springs 76 held in suitable recesses in said member 72. The tension of springs 76 may be adjusted by screws 77 (Figs. 5 and 6) which are readily accessible for adjusting purposes. Pad rollers 31 and 32 are preferably held on studs 70 and 63 by means of oilless bearings which may be formed of any suitable material, such as "bearium" metal.

In the operation of the projection machine, pad rollers 31 and 32 are normally held by spring 44 in engagement with feed sprocket 30. Pad rollers 31 are free to pivot about screw 74 to permit pivotal movement of sprocket 30. Since rollers 32 are mounted on a tangent to the direction of movement of said sprocket the pivotal movement of said sprocket is not impeded thereby. Pad rollers 31 and 32 may be brought out of engagement with sprocket 30 by grasping handle 50 and rotating bracket 35 about stud 37 whereby pin 52 is brought into locking position with respect to slot 51. For releasing the pad rollers and again permitting them to come into engagement with sprocket 30 it is only necessary to exert pressure on release 56 thereby bringing pin 52 out of engagement with slot 51, as above pointed out.

It is to be noted that the above described mounting for the pad rollers provides a simple adjustment by means of which rollers 31 and 32 may be adjusted with respect to casting 35. Rollers 31 are adjusted by rotational movement of shaft 71, whereas rollers 32 are adjusted by rotating shaft 61 in casting 35. The two shafts are locked in their adjusted positions by screws 73 and 64 respectively. By utilizing oilless bearings for the pad rollers, the presence of oil in close proximity to the film is avoided. This is an important feature in projection machines inasmuch as the projection film would be damaged by contact with oil.

The mounting for pad rollers 80 and 81, which cooperate with the upper feed sprocket 22, is shown in Figs. 9 to 16. Roller 81 is mounted on a shaft 83 which is secured in bracket 84. Bracket 84 is provided with a sleeve 85 which is journalled on stud 86. Said stud is threaded into frame 38 and secures sleeve 85 between said frame and shoulder 87 formed thereon. Bracket 84 is extended beyond sleeve 85 to form lever 88 having an elongated slot 89 therein for a purpose to be described.

Roller 80 is carried on shaft 90 which is secured in bracket 91 forming an extension of sleeve 92. Sleeve 92, as shown more in detail in Fig. 11, is mounted on stud 93 which is secured in frame 38 as by nut 94. Spring 95 is secured on a recess between stud 93 and sleeve 92, one end of said spring being secured to cap 96 and the other end thereof being secured to said sleeve. Cap 96 is attached to stud 93 by set screw 97. Sleeve 93 is provided with bayonet slots 98, as shown in Figs. 14, 15 and 16, to cooperate with pin 99 carried on plunger 100 which is slidably mounted in a bore 101 in stud 93. Pin 99 is urged into engagement with the longitudinal portion of slots 98 by spring 102 which is seated in stud 93 between cap 94 and plunger 100. Shaft 103, secured to plunger 100, extends through stud 93 in sliding engagement therewith and is provided with a finger release 104.

Spring 95 normally holds roller 80 in engagement with sprocket 22. When bracket 91 is ro-

tated to bring roller 80 out of engagement with said sprocket, the longitudinal portions of slots 98 come into engagement with pin 99. Said pin is then brought into engagement with said slots by means of spring 102 and locks bracket 91 against further movement. Pin 99 may be released from said slots by longitudinal pressure on finger release 104, thereby permitting spring 95 to again bring said bracket into engagement with the sprocket.

Link 110 is pivotally secured to bracket 91 as by screw 111 and is provided with a bolt 112 which engages slot 89 of lever 88. Link 110 is also provided with a shoulder 113 which is adapted to bear against stud 114. Stud 114 is adjustably secured in frame 38 by means of screw 115 which is carried eccentrically therein. Shaft 83 is extended to form a handle 116 by means of which the position of the pad rollers may be controlled.

Spring 95, previously pointed out, normally holds roller 80 in engagement with sprocket 22. Link 110 which is secured to bracket 91, cooperates with lever 88 for causing pivotal movement of bracket 84 for holding roller 81 in engagement with said sprocket. The movement of link 110 is guided by shoulder 113 contacting with stud 114.

When bracket 84 is pivotally moved about stud 86 in response to pressure applied to handle 116, link 110 is moved upwardly by lever 88 and also forces roller 80 out of engagement with sprocket 22. When the rollers are thus brought out of engagement with the feed sprocket, they are locked by pin 99 cooperating with slots 98 in the manner above pointed out. They may be then released by pressure on release 104 whereby spring 95 will again bring both rollers into engagement with said sprocket.

It is to be noted that rollers 80 and 81 are mounted at diametrically opposite points with respect to sprocket 22 and contact with said sprocket on tangents which are parallel to the line of movement of the axis of the sprocket. Accordingly the sprocket is free to move pivotally to compensate for the variations in the direction of feed of film 20. Rollers 80 and 81 are preferably mounted on shafts 90 and 83 respectively, by means of oilless bearings of any desired type, as for example "bearium" metal, in order to prevent oil from coming in contact with the film.

It is to be noted that the pad roller construction shown in Figs. 9 to 16 affords a simple and convenient mounting whereby two rollers may be operated with a single movement. Handle 116 serves to release both of said rollers from contact with the sprocket to permit the film to be inserted. When released they are both locked by the mechanism above described and may again be brought into contact with the feed sprocket by pressure on the single release member 104.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. In a projection machine, a feed sprocket rotatable about a tiltable axis, a pad roller contacting with said sprocket, means for mounting said roller with a tiltable axis, whereby the axis of rotation thereof is continuously parallel to the axis of rotation of said sprocket.

2. In combination with a projection head, a movable bracket pivotally secured thereto for movement about an axis, a pad roller support pivotally mounted in said bracket for movement about an axis normal to said first mentioned axis, a pad roller rotatably carried in said support for movement about an axis parallel to the first axis, and resilient means for limiting the movement of said support with respect to said bracket.

3. A support for a pad roller comprising a bracket having a tubular sleeve associated therewith, a stationary member, means for pivotally mounting said sleeve on said stationary member, means for resiliently holding said sleeve in a given position with respect thereto and locking means comprising a pin slidably carried in said stationary member and engaging a slot in said sleeve for securing said sleeve in a second position.

4. A support for a pad roller comprising a bracket having a tubular sleeve associated therewith, a stationary member, means for pivotally mounting said sleeve on said stationary member, means for resiliently holding said sleeve in a given position with respect thereto and locking means comprising a pin slidably carried in said stationary member and engaging a slot in said sleeve for securing said sleeve in a second position, and means for releasing said locking means for permitting said sleeve to return to its first position.

5. In combination with a projection head, a sprocket, a pad roller associated therewith, a bracket supporting said pad roller and having a tubular sleeve, means for mounting said sleeve for rotational movement, a spring located within said sleeve for normally holding said roller against said sprocket, means for rotating said sleeve for bringing said roller into disengaged position, means for locking said roller in disengaged position, and means for releasing said locking means.

6. In combination with a projection head, a sprocket, a pad roller associated therewith, a bracket supporting said pad roller and having a tubular sleeve having a bayonet slot, means for mounting said sleeve for rotational movement, a spring located within said sleeve for normally holding said roller against said sprocket, means for rotating said sleeve for bringing said roller into disengaged position, a pin carried by said stationary member and slidable with respect thereto, said pin cooperating with said bayonet slot, and means for normally holding said pin in engagement therewith whereby said sleeve is locked in disengaged position.

7. In combination with a projection head, a sprocket, a pad roller associated therewith, a bracket supporting said pad roller and having a tubular sleeve having a bayonet slot, means for mounting said sleeve for rotational movement, a spring located within said sleeve for normally holding said roller against said sprocket, means for rotating said sleeve for bringing said roller into disengaged position, a pin carried by said stationary member and slidable with respect thereto, said pin cooperating with said bayonet slot, and means for normally holding said pin in engagement therewith whereby said sleeve is locked in disengaged position, and a finger release for moving said pin longitudinally, whereby said pin becomes disengaged from said slot and permits said pad roller to be brought into engagement with said sprocket.

8. In combination with a sprocket, a pair of pad rollers cooperating therewith and spaced approximately 90° around the periphery thereof, and means for mounting one of said rollers for

pivotal movement about a tiltable axis, means for normally holding said rollers in engagement with said sprocket and means for locking said rollers out of engagement therewith.

9. In a projection head, a sprocket, a pair of pad rollers associated therewith, independent means for pivotally mounting said rollers on said projection head, resilient means for normally holding one of said rollers against said sprocket and a link pivotally interconnecting the mountings of said rollers, whereby they are simultaneously brought into engagement or disengagement with said sprocket.

10. In a projection head, a sprocket, a pair of pad rollers associated therewith, independent means for mounting said pad rollers, links interconnecting said mountings whereby said mountings are caused to move as a unit, resilient means secured to one of said mountings for normally holding one of said rollers against said sprocket, and a handle secured to the other of said mountings whereby the position of said rollers may be controlled.

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