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2,473,074

REEL FOR MOTION-PICTURE FILMS

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FIG. 1

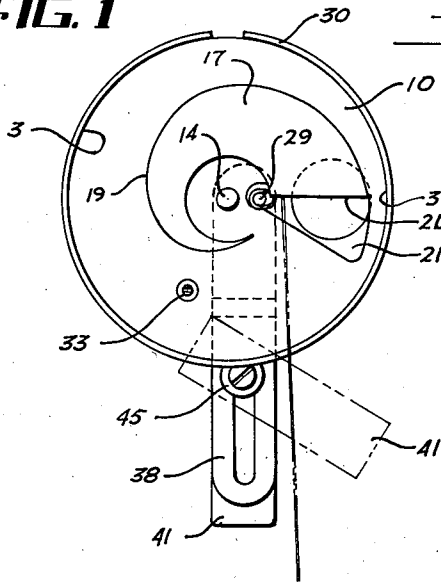


FIG. 2

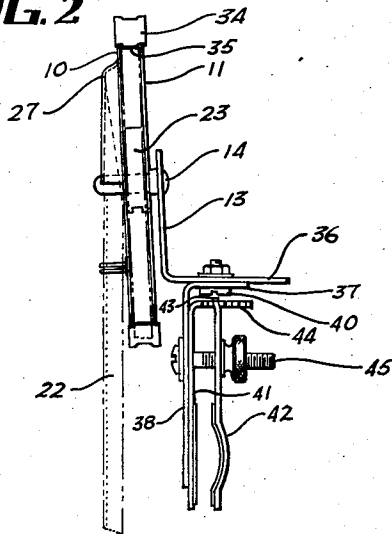


FIG. 4

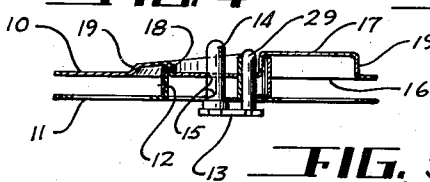


FIG. 3

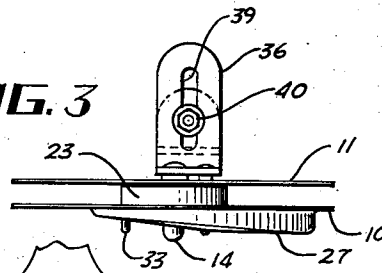


FIG. 5

FIG. 7

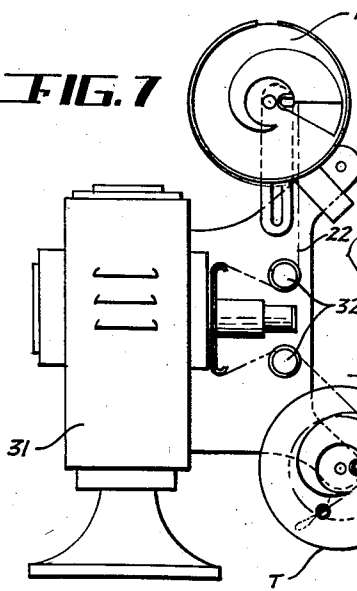
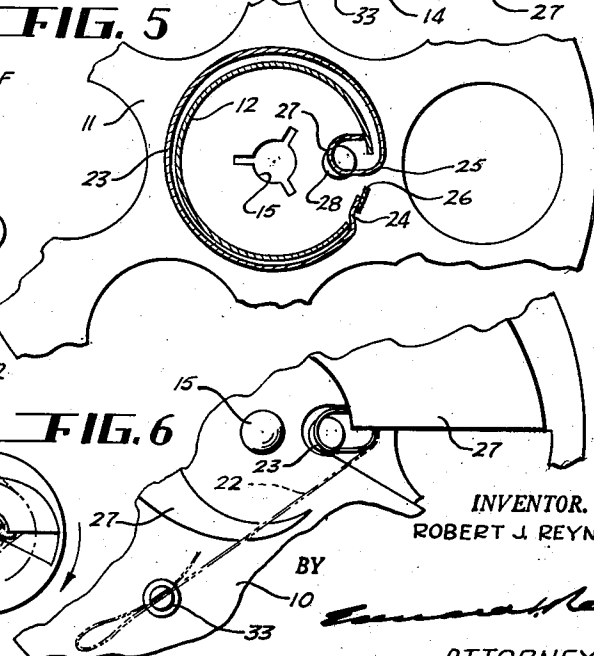


FIG. 6



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REEL FOR MOTION-PICTURE FILMS

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This invention relates to a reel for a motion picture film or the like, and more particularly to a reel from which the inner end portion of a film wound on the reel may be first withdrawn.

It has been proposed heretofore to provide a reel from which the inner end portion of the film may be first withdrawn and rewound on a take-up reel of a similar character so that the take-up reel may be subsequently used as a feeding reel, thereby eliminating the necessity of rewinding the film from the take-up reel onto a feeding reel. However, such reels, for the most part at least, have been of a more or less complicated and expensive construction and have not been satisfactory in service.

One object of the invention is to provide a reel of this type which is of a simple inexpensive construction and which will give satisfactory service in the hands of non-professional operators.

A further object of the invention is to provide such a reel having simple efficient means for releasing the inner windings of the film for withdrawal from the reel.

A further object of the invention is to provide such a reel in which the inner windings of the film will be automatically released when the reel is mounted in feeding position.

A further object of the invention is to provide a support for such a reel which can be mounted on projectors of various kinds.

Other objects of the invention may appear as the device is described in detail.

In the accompanying drawings Fig. 1 is a side elevation of a reel embodying the invention and its supporting structure; Fig. 2 is an edge view of such a reel and its supporting structure; Fig. 3 is a top plan view of the reel; Fig. 4 is a section taken on the line 4—4 of Fig. 1; Fig. 5 is a section taken through the hub and the film supporting device; Fig. 6 is a side elevation of a portion of the reel, on an enlarged scale, showing the means for anchoring the inner end of the film to the reel when the latter is used as a take-up reel; and Fig. 7 is a side elevation of a projector showing two of the reels mounted thereon and constituting respectively the feeding reel and the take-up reel.

In these drawings there is illustrated one embodiment of the invention, but it is to be understood that both the reel and its supporting structure may take various forms without departing from the spirit of the invention.

In the embodiment here illustrated the reel comprises two side members 10 and 11, prefer-

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ably circular in form, the central portions of which are rigidly connected one with the other by a hub 12. The reel may be mounted on a suitable support in any desired manner. In the present instance a supporting bracket 13 has rigidly secured thereto a stud 14 which extends through alined openings 15 in the side members at the respective ends of the hub. One of the side members, in the present instance the member 10, is provided with an opening 16 through which the inner windings of the film may be laterally displaced as they are withdrawn from the reel. Preferably this opening is enclosed, except for the discharge end thereof, by a housing 17 which in the present instance is formed integral with the side member by pressing outwardly a spiral portion of the latter. The inner circumferential wall 18 of this housing is substantially concentric with the hub and extends into the latter. The outer circumferential wall 19 of the housing extends from a point close to the hub, and in the present instance directly below the axis of the reel, and is spaced from the inner wall 18 progressively increasing distances as it extends about the hub. The side wall of the housing also diverges from the plane of the side member 10, so that the passageway formed by the housing is of a progressively increasing radial width and a progressively increasing depth. At its larger end the side wall of the housing is spaced from the plane of the member 10 a distance slightly greater than the width of the film, and, of course, this larger end of the passageway is open and preferably faces downwardly, as shown at 20. Preferably the opening in the side member 10 extends downwardly a short distance below the open end of the housing, as shown at 21, to avoid interference with the film. Thus it will be apparent that the inner end portion of the film may extend laterally from the reel through the passageway formed in the housing 17 and then downwardly to the projector, as shown in Fig. 2, where the film is indicated by the reference numeral 22. The reel is preferably supported at a slight angle to the vertical to permit the film to move downwardly in a straight vertical line.

Arranged between the side members 10 and 11 is a film supporting device, on which the film is wound with its leading end innermost and which is operable to release the inner windings of the film for free movement with relation to the supporting device. This film supporting device may take various forms but preferably com-

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prises a substantially circular spring 23, one end of which is secured directly to the hub 12, as shown at 24, and which extends about the hub and terminates adjacent the connection 24. The stiffness of the spring is such that it will be retained normally in its expanded condition and will not be materially contracted by the winding of the film thereon. Means are provided for moving the free end of the spring inwardly and thus contracting the spring to release the inner windings of a film wound thereon. In the present construction the free end portion of the spring is provided with a part 25, here shown as integral with the spring, which extends through a slot 26 in the hub and has a substantially U-shaped inner end portion 27 within the hub. At least one of the side members of the reel is provided at the end of the hub with an opening 28 through which an actuating device may be inserted to engage the part 25 and retract the spring. In the present instance both side walls of the reel are provided with openings 28 in line one with the other and approximately in line with the inner end portion 27 of the part 25 of the spring. These openings are adapted to receive an actuating stud 29 having a rounded end portion 30 which when inserted in the openings 28 will enter the U-shaped portion of the spring and move the free end portion of the latter inwardly so as to contract the spring about the hub and thus release the inner windings of the film. Preferably the stud 29 is rigidly mounted on the supporting bracket 13, adjacent the supporting stud 14, so that when the reel is mounted on the stud 14 the stud 29 will enter the openings 28 and thus automatically contract the spring when the reel is mounted on its supporting structure.

In use two identical reels, F and T, are mounted on a projector 31, as shown in Fig. 7, where the reel F functions as the feeding reel and the reel T functions as the take-up reel. The film 22 is withdrawn through the lateral opening 16 in the side member 10 and passes from the discharge passage downwardly about suitable guides 32, across the path of the projected light, in the usual manner, and extends between the peripheral edges of the side members of reel T and is so connected with the reel T that the end portion thereof will rotate with the latter and thus cause the film to be wound on the take-up reel with its leading end innermost. This attaching means may be of any suitable character, but preferably the leading end of the film is passed through the lateral opening in the side member 10 of the take-up reel and is inserted in a slotted stud 33 on the side member 10 in such a manner as to firmly anchor the end of the film. Thus when the film has been run and wound on the reel T that reel can be removed and mounted on the supporting stud 14, and the film is then ready for rerunning. Obviously, the feeding reel may be removed, when empty, and the take-up reel with the rewound film thereon immediately mounted in feeding position and the feeding reel mounted in take-up position, or the rewound reel may be laid aside until it is desired to again run the same.

It is also desirable that a closure be applied over the peripheral edges of the side members to prevent the outer windings of the film from passing beyond the edge of the reel. For this purpose I prefer to provide a resilient split band 34 adapted to be sprung about the reel and having a depressed intermediate portion 35 to hold the same against lateral displacement.

The supporting member 13 for the reel may, of

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course, be built into and form a part of the projector, but the supporting structure for the present reel is of such a character as to enable the reel to be mounted on the frames of various types of projectors. To this end the supporting bracket 13 has, in addition to the upright member which carries the stud 14, a laterally extending member 36 which is mounted on the laterally extending upper end portion 37 of an arm 38. To permit of a wide range of adjustment of the bracket 13 the member 36 thereof is provided with a longitudinal slot 39 and a bolt 40 extends through an opening in the part 37 and the slot 39, thus enabling the bracket to be adjusted lengthwise of the member 36 and about a vertical axis with relation to the arm 38, and to be rigidly clamped in any adjusted position. The arm 38 is carried by a clamping device by means of which it may be secured to the frame of a projector. As here shown the clamp comprises two substantially parallel arms 41 and 42 having at their lower ends frame engaging parts and having their upper ends pivotally connected one with the other, as by a lug 43 on the arm 42 extending through one of a series of openings in the laterally extending part 44 of the clamping arm 41. A bolt 45 extends through the arm 38 and both clamping arms and is provided with a thumb nut 46 whereby the clamping arms may be firmly clamped against a part of the projector frame and the arm 38 adjusted about the axis of the bolt 45 and clamped in its adjusted position.

While I have shown and described one embodiment of my invention, I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A reel for a motion picture film comprising laterally spaced side member and having means whereby it may be mounted on a supporting structure and held against rotation, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a normally extended retractible film supporting device mounted between said side members adjacent the center of the reel and on which the film is wound, and means controlled by the mounting of the film on said supporting structure for retracting said film supporting device and thereby releasing the inner end portion of the film for free movement with relation to the reel.

2. A reel for a motion picture film comprising laterally spaced side members and having means whereby it may be mounted on a supporting structure and held against rotation, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a normally extended retractible film supporting device mounted between said side members adjacent the center of the reel and on which the film is wound, and retracting means including a part carried by said supporting structure and arranged to engage a part of said film supporting device and retract the latter when said reel is mounted on said supporting structure.

3. A reel for a motion picture film comprising laterally spaced side members, one of which has an opening to receive a reel supporting member and a second opening spaced from the first-mentioned opening, a normally extended retrac-

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tible film supporting device mounted between said side members and extending about both of said openings in said side member and having a part substantially in line with the second of said openings, and a supporting structure for said reel including a supporting member to extend through the first-mentioned openings and a second member to extend through said second opening and engage said part of said film supporting device and retract the latter when said side member is moved onto said supporting member, the other of said side members having an opening through which the inner end portion of a film wound on said supporting device may be withdrawn.

4. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on a supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a normally expanded radially yieldable film supporting device mounted between said side members and extending about said connecting means, and means controlled by the mounting of said reel on said supporting structure for retracting said film supporting device and thereby releasing the inner winding of said film for movement with relation to said film supporting device.

5. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on a supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a normally expanded radially yieldable film supporting device mounted between said side members and extending about said connecting means, said film supporting device having an inwardly extending part, and an actuating member supported independently of said reel and arranged to engage a part of said film supporting device and retract the latter when said reel is mounted on said supporting structure.

6. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on a supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn to unwind the film while it is supported on said reel, a normally expanded resilient member extending about said connecting means between said side walls and on which the film is wound, and operable means for contracting said resilient member to release the inner windings of said film for unwinding movement with relation to said resilient member.

7. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn to unwind the film while it is supported on said reel, a normally expanded resilient member extending about said connecting means between said side walls and on

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which the film is wound, said resilient member having a part the inward movement of which will contract said resilient member and release said film for unwinding movement with relation thereto, and one side member having an opening to receive a device for imparting inward movement to said part of said resilient member.

8. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on a supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a normally expanded resilient member extending about said connecting means between said side walls and on which the film is wound, and means controlled by the mounting of said reel on said supporting structure to contract said resilient member and release the inner winding of said film for movement with relation thereto.

9. A reel for a motion picture film comprising laterally spaced side members and means for connecting the same one with the other adjacent the centers thereof, and having means whereby it may be mounted on a supporting structure, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn to unwind the film while it is supported on said reel, a substantially circular spring extending about said connecting means and having separated end portions one of which is fixed with relation to said connecting means, the resilience of said spring retaining the same normally in an expanded condition in which the film is wound thereon, and means for moving the other end of said spring inwardly to contract the spring and release the inner winding of said film for unwinding movement with relation to said spring.

10. A reel for a motion picture film comprising laterally spaced side members, a tubular hub connecting said members one with the other, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a substantially circular film supporting element extending about said hub and having one end thereof connected with said hub, the major portion of said element being normally supported in spaced relation to said hub, a part within said hub and connected with said element to move said major portion thereof toward said hub and thus release the inner winding of a film supported thereon for movement with relation to said element, and means for actuating said part to so move said element.

11. A reel for a motion picture film comprising laterally spaced side members, a tubular hub connecting said members one with the other and having an opening in the circumferential wall thereof, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a film supporting spring extending about said hub and having separated ends one of which is connected with said hub, the major portion of said spring being normally spaced from said hub, a part connected with said spaced portion of said spring and extending through said opening in said hub, and means for actuating said part to contract said spring and release the inner winding of a film supported thereon.

12. A reel for a motion picture film comprising

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laterally spaced side members, a tubular hub connecting said members one with the other and having an opening in the circumferential wall thereof, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a film supporting spring extending about said hub and having separated ends one of which is connected with said hub, the major portion of said spring being normally spaced from said hub, a part connected with said spaced portion of said spring and extending through said opening in said hub, one of said side members having an opening at the end of said hub to receive a device for actuating said part and contracting said spring to release the inner winding of a film supported thereon.

13. A reel for a motion picture film comprising laterally spaced side members, a tubular hub connecting said members one with the other and having an opening in the circumferential wall thereof, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a film supporting spring extending about said hub and having separated ends one of which is connected with said hub, the major portion of said spring being normally spaced from said hub, a part connected with said spaced portion of said spring and extending through said opening in said hub, a supporting structure for said reel, and an actuating member carried by said supporting structure and adapted to enter said hub through said opening and to actuate said part to contract said spring and release the inner winding of a film supported thereon.

14. A reel for a motion picture film comprising laterally spaced side members, a tubular hub connecting said members one with the other and having an opening in the circumferential wall thereof, one of said side members having an opening through which the inner end portion of a film wound on said reel may be withdrawn, a film supporting spring extending about said hub and having separated ends one of which is connected with said hub, the major portion of said spring being normally spaced from said hub, the spaced end portion of said spring having a part extending inwardly through the opening in said

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hub and provided within the latter with a substantially U-shaped portion, one of said side portions having in line with said hub two openings, a supporting structure, a stud carried by said structure and adapted to enter said hub through one of said openings and to support said reel, and a second stud carried by said structure and adapted to enter said hub through the other of said openings and having a tapered end to engage the U-shaped portion of said spring and contract the latter to release the inner portion of a film supported thereon.

15. A reel for a motion picture film comprising two laterally spaced side members having means whereby they may be mounted on a supporting structure, a normally expanded radially yieldable film supporting element supported between the central portions of said side members, and means for contracting said film supporting element to release the inner winding of a film wound thereon, one of said members having a laterally offset portion forming an outlet passage for the inner winding of a film wound on said film supporting element, the inner peripheral wall of said offset portion being substantially concentric with said film supporting element, and the outer wall thereof being spaced progressively increasing distances from said inner wall, and the larger end of said passage being open on the exterior of said side member.

ROBERT J. REYNOLDS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,062,460	Hannan	May 20, 1913
1,081,039	Hamann	Dec. 9, 1913
1,679,715	Fish	Aug. 7, 1928
1,823,245	Wittel	Sept. 15, 1931
1,946,604	Wittel	Feb. 13, 1934
2,019,857	Hoover	Nov. 5, 1935

FOREIGN PATENTS

Number	Country	Date
441,609	France	May 30, 1911
4,196	Australia	Sept. 25, 1931