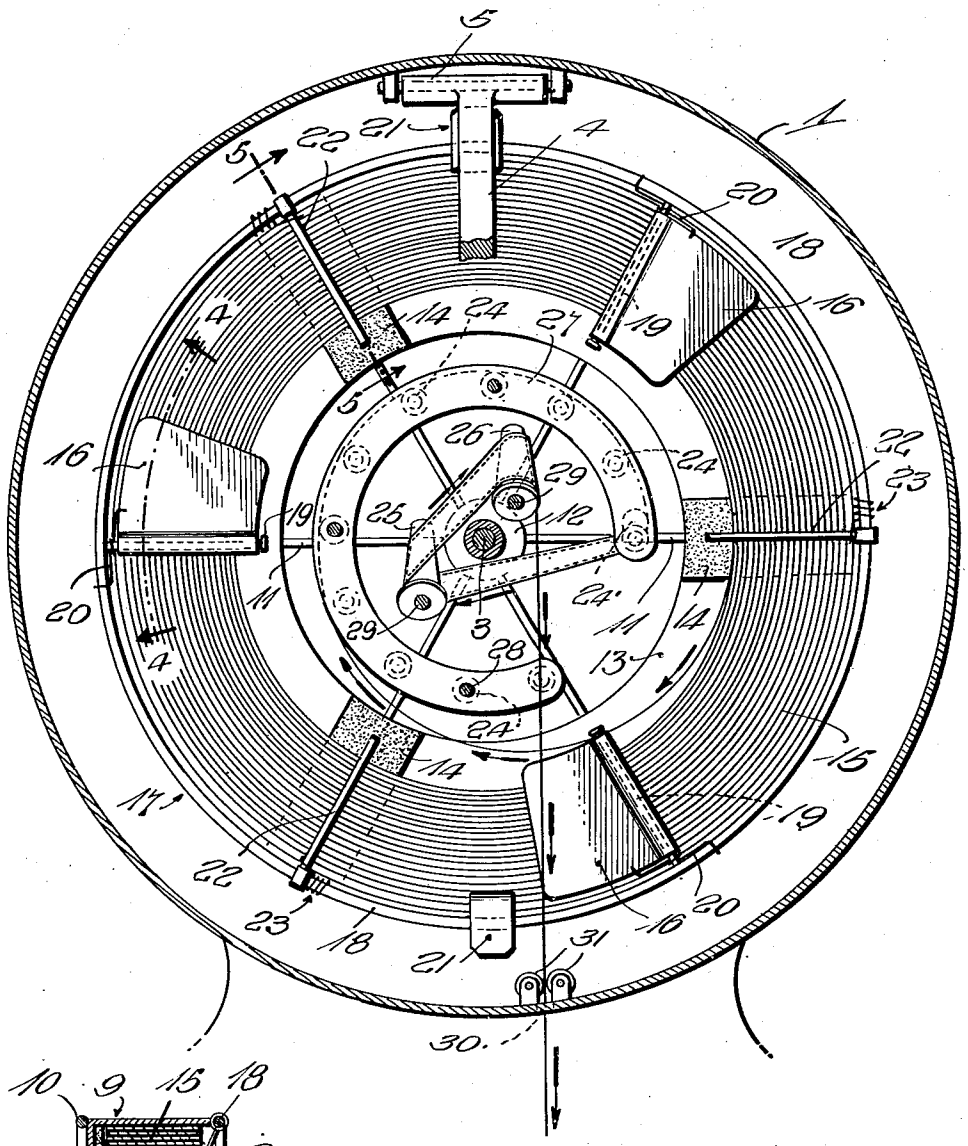
Sept. 9, 1941. J. K. E. SUNELL 2,255,724

MOVING PICTURE PROJECTING MACHINE

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FIG. 1



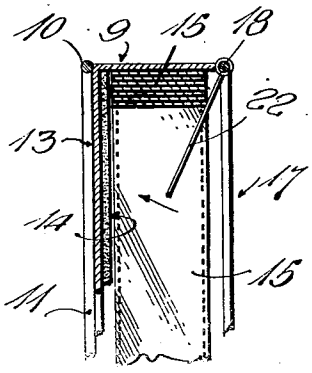


FIG. 5

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MOVING PICTURE PROJECTING MACHINE

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FIG. 2

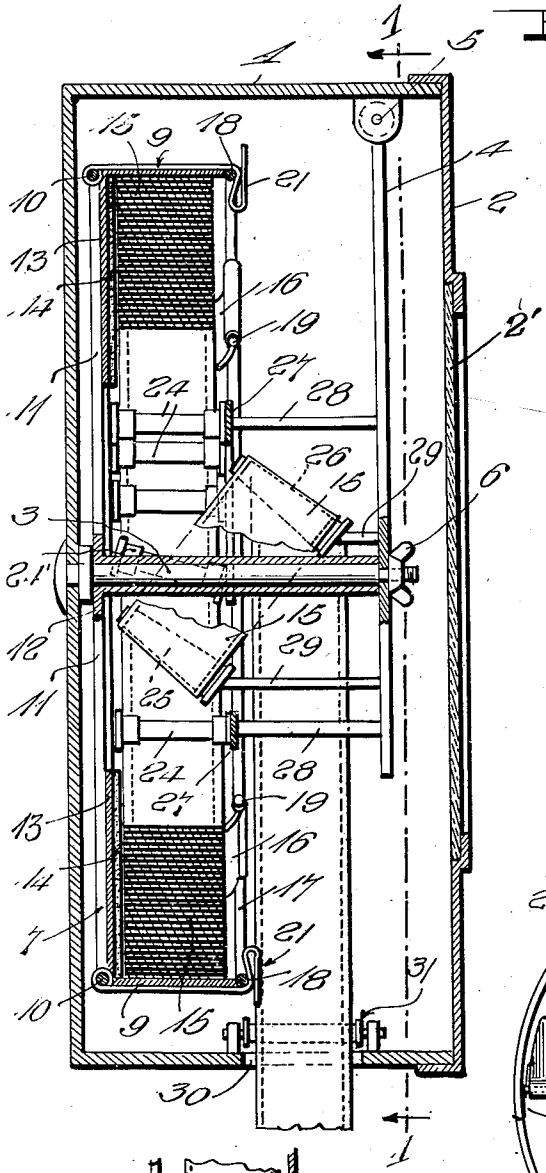


FIG. 3

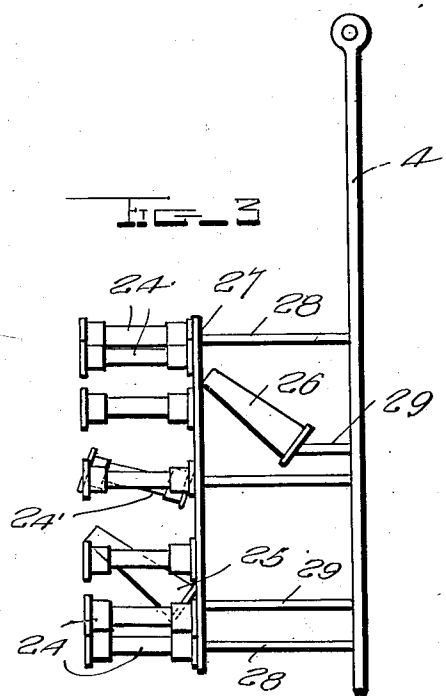


FIG. 6

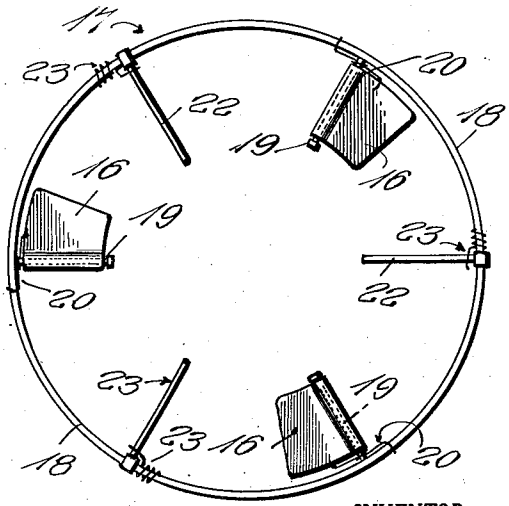
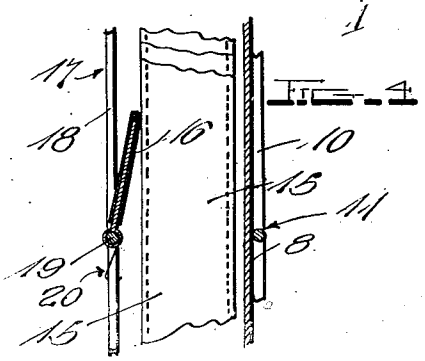


FIG. 4



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MOVING PICTURE PROJECTING MACHINE

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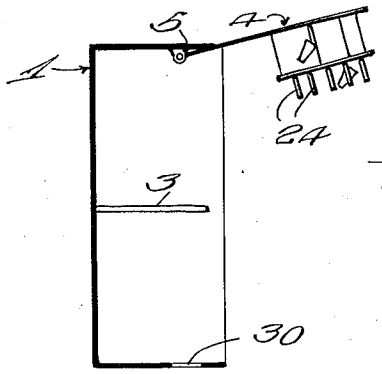
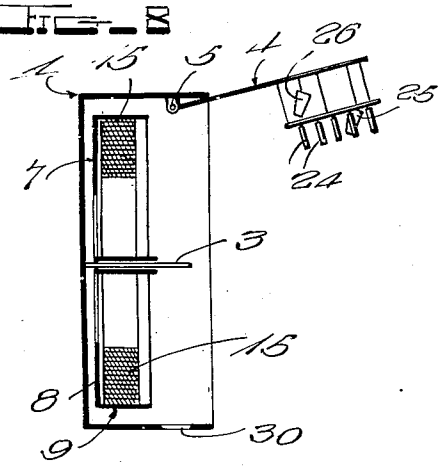
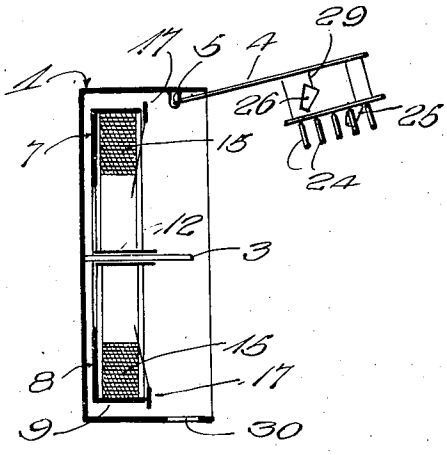


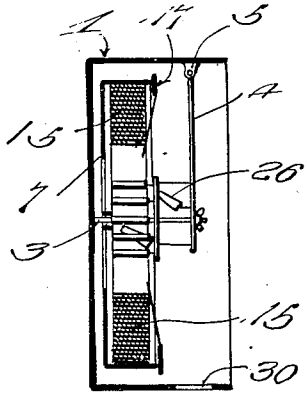
FIG. 7

FIG. 9

FIG. 8







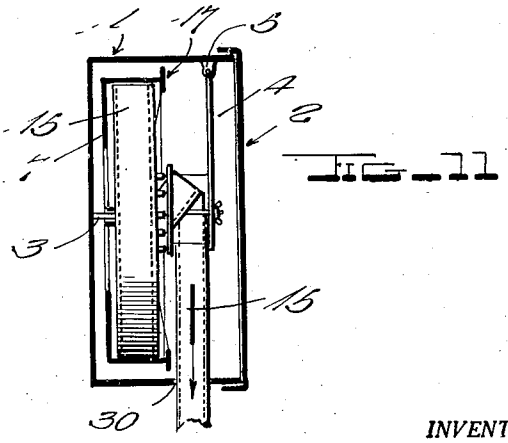


FIG. 11

FIG. 10

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Patented Sept. 9, 1941 2,255,724

UNITED STATES PATENT OFFICE

2,255,724

MOVING PICTURE PROJECTING MACHINE

Joseph K. E. Sunell, Franklin Square, N. Y., assignor of one-half to Emil Nikolaus Nilsson, Franklin Square, New York

Application September 3, 1940, Serial No. 355,244

7 Claims. (Cl. 88—18.7)

This invention relates to moving picture projecting machines and more particularly to improvements in the upper reel upon which the film is wound when initially placed in the magazine of the machine and from which the film is delivered during operation of the projecting machine.

One object of the invention is to provide a reel adapted to have a roll of film so mounted therein that the film may be unwound from the inner convolution of the roll as the reel turns instead of from its outer end. It will thus be seen that when a roll of film has been passed through a projecting machine and wound upon a rewind reel having a removable side portion, the roll of film may be immediately transferred to the upper reel without it being necessary to rewind the film upon a reel which is to be fitted into the upper magazine when the film is again used.

Another object of the invention is to provide a reel having a side section which is so mounted that it can be easily removed when a roll of film is to be applied and returned to its initial position and firmly secured after the film has been applied to the reel.

Another object of the invention is to provide the reel with means for holding the roll of film in proper position against the peripheral wall of the reel when it is applied thereto and, in addition, provide means for controlling unwinding of the film from its inner end during turning of the reel.

Another object of the invention is to provide an improved arrangement of rollers for guiding the film as it is unwound and for directing the film outwardly from a side of the reel and then downwardly out of the magazine.

Another object of the invention is to so mount the rollers that an arm carrying the rollers may be swung into and out of position to dispose the rollers within the magazine in cooperating relation to the reel and a roll of film carried by the reel.

In the accompanying drawings:

Fig. 1 is a view showing the improved reel and the magazine into which it fits, partially in elevation and partially in vertical section.

Fig. 2 is a transverse sectional view taken vertically through Fig. 1.

Fig. 3 is a view showing the pivoted arm and the rollers carried thereby, in elevation.

Fig. 4 is a fragmentary sectional view taken through the reel parallel to its periphery on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary sectional view taken radially through the reel on the line 5—5 of Fig. 1.

Fig. 6 is a view in elevation of the removable wall of the reel.

Fig. 7 is a diagrammatic view showing the magazine open and the arm swung outwardly therefrom.

Fig. 8 is a similar view showing the main section of the reel disposed within the magazine and a roll of film in the reel.

Fig. 9 shows the removable section of the reel applied thereto.

Fig. 10 shows the arm swung into the magazine and the rollers carried thereby in operative relation to the reel.

Fig. 11 is a view similar to Fig. 10, showing the closure for the magazine applied and the film passing from the reel and out of the magazine.

This improved reel for moving picture film constitutes an improvement over that disclosed in my prior Patent No. 1,541,005, issued June 9, 1925, my name having been legally changed from Joseph K. E. Tervas to Joseph K. E. Sunell.

The magazine 1 is of conventional construction and its closure 2 is removably held in closing relation to the open side of the magazine in any desired manner. A sight opening closed by a glass 2' is formed in the closure 2. A stem or axle 3 extends from the fixed side wall of the magazine centrally thereof and may be of any length and diameter desired. The arm 4 is pivoted to the peripheral wall of the magazine, as shown at 5, and while this arm has been shown pivoted to the upper portion of the magazine, it is to be understood that it may be pivotally mounted at any point desired about the circumference of the magazine. It will also be understood that while the arm has been shown releasably held in its operative position radially of the magazine by a wing nut 6 screwed upon the outer end of the stem 3, other means for releasably securing the arm may be substituted in lieu of the nut.

The reel, which is indicated in general by the numeral 7, has a main section including a fixed side wall 8 and a peripheral wall 9 which is held to the side wall by clamps or in any other desired manner. The side wall of the reel is preferably of spider formation including a rim 10 and a suitable number of spokes 11 extending radially between the rim and a hub 12 which fits snugly about the stem 3 and may be of any desired length. A disc 13 of sheet material fits within the reel against the fixed wall thereof and carries radially extending strips 14 formed of felt and provide to engage a roll of film 15 and serve

as soft abutments to prevent damage to the film. This film is so rolled that its outer diameter permits it to be readily fitted into the reel and the inner diameter of the roll of film is such that a large center opening will be provided and allow the film to be unwound from its inner end as it is fed through the projecting machine and wound upon a rewind reel. By this arrangement, a roll of film upon a rewind reel of the construction shown in my Patent No. 1,541,005, may be removed from the rewind reel in the same condition in which it is wound thereon and thrust into the reel 8 without being first wound upon a reversing reel.

In order to hold the roll of film in proper position against the fixed side wall and the peripheral wall of the reel, there have been provided a suitable number of pressure applying devices 16 carried by the removable section or side wall 17 of the reel. This removable section or side wall consists of a marginal ring 18 of substantially the same diameter as the diameter of the peripheral wall 9 of the reel, and this ring carries spokes or short radially extending rods 19 upon which the pressure applying devices are pivotally mounted. The pressure applying devices may be flat blades or blocks of appreciable thickness and, in order to urge these blades or blocks toward the roll of film, there have been provided springs 20 which are coiled about the rods or stems 19 and have appropriate engagement with the ring 18 and the pressure applying devices 16 to tilt them radially of the reel and cause their free side edges to bear against a side of the roll of film and hold the roll firmly in place, as shown in Figs. 1 and 2. Clips 21, which are carried by the ring 10 of the main reel section, detachably engage the ring 18 of the removable reel section or wall and removably hold same against the peripheral wall of the reel and permit it to be easily removed when a roll of film is to be applied to the reel. After the roll of film has been thrust into place the removable wall or reel section is applied and again secured by the clips.

Unwinding of the film from its inner end must be controlled and, in order to accomplish this, there have been provided a number of fingers 22. These fingers are formed from strips of resilient metal and are of such length that their inner ends extend beyond the inner periphery of the roll of film, as shown in Fig. 2. Outer ends of the fingers are pivoted to the ring 18 and are engaged by springs 23 which urge the fingers inwardly toward the roll of film so that their free portions engage side edge portions of the film as it is unwound from the roll and guide its movement in an unwinding direction. These fingers also serve to prevent the film from unwinding too freely and, since they are pivotally mounted at their outer ends and urged inwardly by their springs, they will adapt themselves to the decreasing inner diameter of the roll as the film is unwound.

As the film is unwound it must be guided out of the reel through the open center of the removable wall or section thereof. To do this, there have been provided a special arrangement of rollers 24, 25 and 26. The rollers 24 are rotatably carried by a substantially ring-shaped carrier 27 which is mounted inwardly of the arm 4 by rods or other suitable members 28. The rollers 24 are arranged in a circular path, as shown in Fig. 1, and as the film is unwound during rotation of the reel, it follows these rollers until it reaches the end roller 24', from which it extends toward the hub 12 and engages the roller 25. The roller 24' is pitched at an incline so that there will be no danger of creasing the film or fraying the edges thereof as the film is directed toward the roller 25. The two rollers 25 and 26 are rotatably mounted on rods stems 29 carried by the arm 4 and are pitched at the incline shown in Figs. 1, 2 and 3, so that after the film has been engaged with the roller 25, it may be extended diagonally out of the open center of the reel and then engaged with the roller 26 and passed downwardly in the magazine between the reel and the arm 4 and out through the outlet opening 30 in the peripheral wall of the magazine. Rollers 31 are provided to guide the film through the opening 30.

In order to mount the improved reel in the magazine 1 and apply a roll of film thereto, the steps illustrated in Figs. 7 through 11 are followed. The magazine is opened, as shown in Fig. 7, and the arm 4 swung outwardly to inoperative position. The reel is then applied to the axle or stem 3, as shown in Fig. 8, with the section or wall 17 removed, and the roll of film thrust into the reel directly from the rewind reel upon which it has been wound during showing of a picture. This is accomplished by separating the two sections of the rewind reel and disposing the reel section carrying the film in front of the reel 7 in such position that the roll of film may be shifted in its rolled condition directly from the rewind reel into the reel 7. The roll of film fits snugly in the reel 7 with its inner periphery spaced from the stem an appreciable distance. The removable wall of the reel section 17 is then applied, as shown in Fig. 9, and secured, and when this reel section is applied and secured the blades or blocks 16 will have frictional engagement with the confronting side face of the roll of film to hold it in place and the free end portions of the fingers 22 will engage the inner peripheral edge of the roll of film and prevent undesired loosening and unwinding of the inner convolutions of the roll of film. The arm 4 is then swung into the magazine, as shown in Fig. 10, and the rollers will occupy the central portion of the reel about the hub of the reel 7 and be surrounded by the roll of film. The inner end portion of the film is then loosened somewhat and moved into engagement with rollers 24 and, as it engages the end roller 24', it is passed inwardly between spaced ends of the carrier 27 and, after engaging the roller 25, it is lead outwardly from the open central portion of the reel and engaged with the outer roll 26. The film is then directed downwardly between the reel and the arm and out through the opening 30 and passed through the light box and connected with the rewind reel in the usual manner. The closure 2 for the open side of the magazine is then applied and the projecting machine is loaded and ready for use.

Since the film is drawn from its inner end during operation of the projecting machine and wound upon the rewind reel in the usual manner, it is always ready for replacement in the reel 7 without being reversed before being transferred from the rewind reel to the reel 7, thus saving the time and trouble incident to reversely winding the film and also saving wear on the film. It will be understood that the rollers will be so formed that the portion of the film bearing the picture will not have direct contact with the rollers.

Having thus described the invention, what is claimed is:

1. In combination with a projecting machine magazine, a reel rotatably mounted in the maga-

zine and having a removable side section formed with an open central portion, means for holding a roll of film in the reel with its inner periphery in position for unwinding of the film from its inner end and passage of the unwound film outwardly through the open center of the removable reel section, resilient fingers for engaging the roll at the inner periphery thereof and controlling unwinding of the film, and rollers mounted for movement into and out of position for guiding unwinding of the film and directing the film outwardly through the open central portion of the removable reel section and toward an outlet in the magazine.

2. In combination with a magazine of a moving picture projecting machine, a reel rotatably mounted in the magazine and having a removable side section open at its center, pressers carried by the movable reel section and urged inwardly for frictionally engaging a face of a roll of film and holding the roll in the reel against the peripheral wall thereof with an open central portion of the roll of film in cooperating relation to the open center of the removable reel section whereby the film may be unwound from its inner end, yieldable members carried by the removable reel section for controlling unwinding of the film, an arm mounted for movement into and out of normal position, and rollers carried by said arm with certain of the rollers extending into the reel through the open center of the removable reel section for engagement by unwinding film and other rollers in position for guiding the unwinding film outwardly from the reel laterally thereof and toward an outlet formed in the magazine.

3. In combination with a magazine for a moving picture projecting machine, a reel rotatably mounted with said magazine and having a side section removably mounted and open at its center, means for holding a roll of film in the reel in position for unwinding of the film from its inner end during turning of the reel, an arm pivotally mounted in the magazine for swinging movement towards and away from the reel transversely thereof into and out of operative position, rollers carried by said arm for extending into the roll through the open center of the removable reel section when the arm is in its operative position, and other rollers carried by the arm diagonally of the first rollers for engaging the unwinding film and directing the film outwardly from the reel and toward an outlet of the magazine.

4. In combination with a magazine for a moving picture projecting machine, a reel rotatably mounted within said magazine and having a side section removably mounted and open at its center, means for holding a roll of film in the reel in position for unwinding of the film from its inner end during turning of the reel, an arm pivotally mounted in the magazine for movement laterally thereof towards and away from the removable reel section into and out of operative position disposing its free end portion opposite the open center of the removable reel section, a substantially circular mounting member having supporting means carried by the free end portion of said arm and holding the mounting member in spaced relation to the inner face of the arm, rollers carried by said mounting member and extending laterally therefrom into the reel through the opening of the removable reel section for engaging film as it is unwound from the roll, and other rollers carried by the arm and extending laterally therefrom toward the reel diagonally of the first rollers and surrounded by the first rollers for engagement by film and directing the unwound film out of the reel and toward an outlet formed in the magazine.

5. A reel for moving picture film comprising a main section open at one side and having a fixed side wall and a peripheral wall, a sleeve extending from the fixed side wall for fitting about an axle and rotatably mounting the reel, a disc in the main reel section fitting against the fixed side wall thereof, cushions carried by said disc for engaging a confronting side edge face of a roll of film mounted in the reel, a removable reel section detachably carried by the main reel section and open at its center, means for frictionally engaging a roll of film and holding the roll in position for unwinding of the film from its inner end, and means for yieldably engaging the roll of film at the inner periphery thereof and controlling unwinding of the film.

6. A reel for moving picture film comprising a main section open at one side and having a side wall at its other side and a peripheral wall, a removable reel section constituting a removable side wall for the reel, the removable side wall being open at its center, means for releasably holding the removable wall in engagement with the peripheral wall of the reel, stems carried by and extending radially of the removable wall, pressure applying devices pivoted on said stems and extending laterally therefrom circumferentially of the reel, and springs urging the pressure applying devices inwardly of the reel for engaging a confronting side face of a roll of film in the reel and holding the roll in position for unwinding of the film from its inner end.

7. A reel for moving picture film comprising a main section open at one side and having a side wall at its other side and a peripheral wall, a removable reel section constituting a removable side wall for the reel, the removable side wall being open at its center, means for releasably holding the removable wall in engagement with the peripheral wall of the reel, pressure applying devices extending radially of the removable wall and yieldably urged inwardly for frictional engagement with a confronting side face of a roll of film in the reel and holding the roll in position for unwinding of the film from its inner end, and fingers for controlling unwinding of the film consisting of strips of resilient material pivoted at their outer ends to the periphery of the removable wall and extending radially of the reel, the fingers being of a length adapting them to engage the inner periphery of a roll of film and being urged inwardly for frictional engagement with the film.

JOSEPH K. E. SUNELL.