

M. F. WALKER.
MOTION PICTURE FILM REEL.
APPLICATION FILED MAR. 14, 1918.

1,345,813.

Patented July 6, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

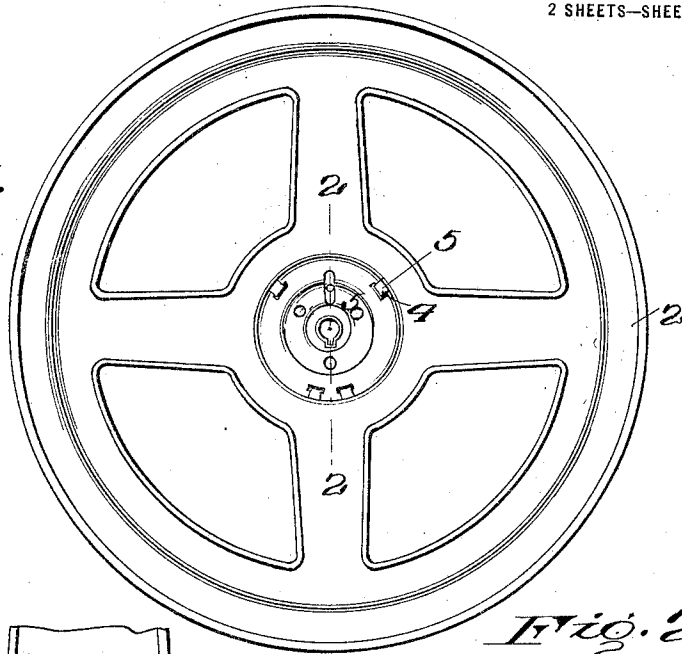


Fig. 3.

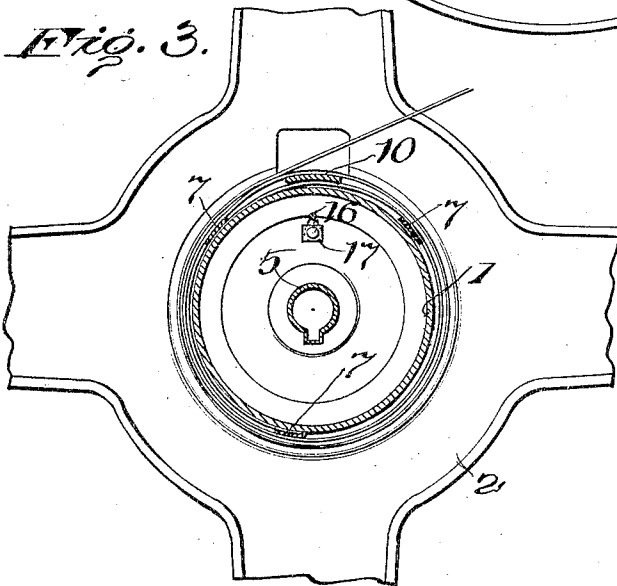
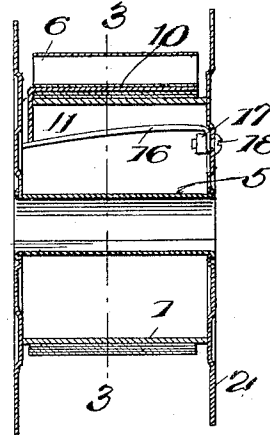


Fig. 2.



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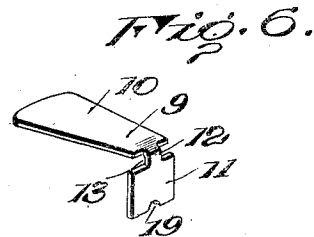
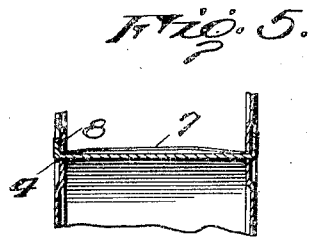
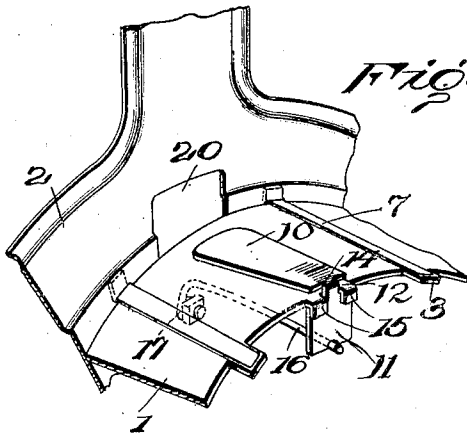
34

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2 SHEETS—SHEET 2.



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MOSES F. WALKER, OF CADIZ, OHIO.

MOTION-PICTURE-FILM REEL.

1,345,813.

Specification of Letters Patent.

Patented July 6, 1920.

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To all whom it may concern:

Be it known that I, MOSES F. WALKER, a citizen of the United States, residing at Cadiz, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Motion-Picture-Film Reels, of which the following is a specification.

This invention relates to motion picture film reels.

In the exhibition of motion pictures it is customary to employ two projecting machines so that one machine being in operation to project the motion pictures, and the end of the film passing therethrough having been reached, the operator may immediately commence the operation of the second machine so as to avoid interruption or delay in the exhibition of the pictures and in this manner the two machines may be alternately operated so as to reproduce, for example, an entire play without interruption which would otherwise be necessary in order to permit of removal of the magazine reel and the placing in position of the new reel and the threading of the film through the machine. In order that two machines may be successfully employed in this manner, however, it is, of course, essential that the operator know when the end of the film being exhibited has been substantially reached. Although the practice is discouraged, and in some cases prohibited, an operator will ordinarily open the door of the fire-proof magazine, from time to time in order to ascertain the length of film remaining on the magazine or supply reel. Not only is this practice exceedingly dangerous, as the heat from the arc of the projecting machine is liable to set fire to the film, but furthermore, the operator's attention is, to a greater or less extent, detracted from the operation of the machine and he is liable to operate the same either too rapidly or too slowly. It is, therefore, one aim of the present invention to provide, in connection with a film reel of the class described, means which will give audible signal when all but a predetermined length of the film has been unwound from the reel, so that with a little

practice the operator, in the use of the device, may determine almost exactly the number of turns to give the operating crank of the projecting apparatus after hearing the signal and before beginning to turn the crank of the second machine. Therefore not only does the invention discourage the dangerous practice of opening the door of the magazine, but it also presents obvious advantages over certain devices which have been proposed for use and which embody visible indicating means whereby the length of film upon the supply reel may be determined, for in the use of such devices the operator must pay more or less close attention to the indicator.

Another aim of my invention is to provide an audible alarm for the purpose above described which will be so constructed that the operator of the machine may set the same to give signal when all but any desired length of the film has been unwound from the reel. In other words, the invention may be made use of by an operator who desires to be warned when there is, for example, only a foot of film left upon the magazine or supply reel, as equally as well as it may be employed by an operator who desires to be warned when there are three or four feet, for example, of film remaining upon the reel.

In order that a device of this class may be most certain and accurate in its functioning, it is, of course, essential that its actuation be controlled by the unwinding of the film and the present invention, therefore, aims to so construct the device that although it possesses this advantage, it will not be in any manner likely to injure the film or place any undue tension thereon.

Another aim of the invention is to provide novel means for connecting the film end with the hub of the reel, which means will sufficiently securely hold the end of the film to prevent its accidental disengagement when the operation of winding or rewinding is begun and yet will permit of the film end being readily released at the moment when the film is to completely leave the reel.

In the accompanying drawings:

Figure 1 is a side elevation of one form of reel embodying the present invention;

Fig. 2 is a vertical transverse sectional view thereof on the line 2—2;

Fig. 3 is a vertical sectional view taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary perspective view illustrating a portion of the reel, one of the heads thereof being removed;

Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 1;

Fig. 6 is a perspective view of the striker element of the alarm in that form of the invention shown in the preceding figures.

While the drawings illustrate two forms of alarm devices for giving audible signal when all but a predetermined length of the film has been unwound from the reel, in both forms of the invention, an element of the mechanism is to be engaged by the film as the film is wound onto the reel and is to be automatically actuated, when all but a predetermined length of the film has been unwound, to provide for the giving of the audible signal.

Referring first to that form of the invention shown in Figs. 1 to 6 inclusive, the reel is illustrated as comprising a hollow cylindrical hub 1 and spaced heads 2. The hub 1 and heads 2 are preferably secured together in assembled relation by providing at the opposite edges of the said hub 1, and at suitable intervals, laterally projecting lugs 4 or tongues 3 which are fitted through slots 4 formed in the heads 2 and are then struck-up in the manner clearly shown in Figs. 4 and 5 of the drawings, for the purpose stated. The heads 2 are further united by a bearing sleeve 5 which extends between the heads and is fitted at its ends through openings formed axially within the heads and riveted down as shown in Fig. 2 of the drawings. This bearing sleeve 5 is, of course, located concentrically with relation to the hub 1 and is designed to fit the usual spindle provided within the fire-proof magazine in which the reel is housed while the film is being unwound therefrom in the operation of the projecting machine. In order that the end of the film, which film is indicated by the numeral 6, may be connected with the hub 1 so as to permit of the film being properly wound upon the reel, one or more clip devices are provided upon the said hub at suitable intervals. Each of these clip devices comprises a strip 7 preferably of resilient metal which strip is disposed to extend longitudinally of the hub 1 and has its ends fitted through the slots 4 and struck-up with the tongues 3 as indicated by the numeral 8 and as clearly shown in Fig. 5 of the drawings. In this manner the strip or strips 7 are securely anchored in place upon the hub and it is

preferable that each strip be slightly bowed outwardly between its ends so as to permit of the ready introduction of the end of the film between the strip and the surface of the hub. The frictional engagement of the end of the film between the outer surface of the hub and the strip 7 will, of course, serve to sufficiently securely connect the end of the film with the hub to permit of proper winding of the film upon the reel and yet when the film has been completely unwound from the reel the end of the film may slip out of engagement with the strip 7 without likelihood of the film being torn or placed under such tension as would be likely to injure the film feeding mechanism of the projection apparatus.

The heads of the reel are, of course, of metal and, therefore, when struck will give off sound, and I take advantage of this fact, in providing for the giving of an audible signal when all but a predetermined length of the film has been unwound from the reel, by providing a striker element which is designed to be automatically actuated, at such time, to strike against one head of the reel to give the said signal. This member which is indicated in general by the numeral 9 is most clearly shown in Fig. 6 of the drawings, and is formed from a sheet metal blank and comprises a film engaging arm 10, a head 11, and a short neck or shank 12 which serves to connect the head 11 with one end of the said arm 10, and which serves also, as will be presently explained, as a pivot for the said arm. The shank 12 is relatively narrow and at least considerably narrower than the head 11 and the end of the arm between which parts it extends so that notches 13 are provided at the opposite sides of the said shank. Furthermore the shank 12 is bent throughout its length so that the arm and head will occupy planes at right angles to each other. In mounting the element above described upon the hub 1 of the reel, the said hub is formed in one edge with a notch 14 to receive the shank 12, and at opposite sides of the notch with lugs 15 which are struck inwardly and which extend into the notches 13. It will be understood that when the striker element has been assembled with the hub of the reel in the manner shown in Fig. 4 of the drawings, the element may be rocked about the shank 12 as a pivot and therefore the arm 10 may be swung to extend across the face of the hub or radially outwardly therefrom. It will also be apparent at this point that if the striker element is quickly swung upon its pivot so as to cause the arm 10 to swing away from the face of the hub, the said arm will strike against the inner face of that head of the reel which is next adjacent the bearing for the shank 12 and this striking of the arm against the head of the reel will,

of course, produce a metallic sound which will serve as an audible signal. In order to cause quick movement of the striker element and cause its arm 10 to strike with sufficient force against the head of the reel to give a signal sufficiently loud, a wire spring 16 is formed at one end with an eye 17 which is secured in any suitable manner, as for example, by a bolt or rivet 18 to the other head of the reel, and this spring extends transversely within the hub 1 with its free end located in the path of movement of the outer end edge of the head 11 when the striker element is swung upon its pivot. In order to prevent relative displacement of the spring and head, the said edge of the latter is formed with a notch 19 in which the said free end of the spring engages. The spring 16 is so tensioned and positioned that should the striker element 9 be swung upon its pivot 12 a short distance so as to move its head 11 slightly out of the vertical position, the spring will act to quickly and forcibly complete the swinging movement of the said striker element. In the use of this form of the invention, the end of the film is engaged with the clip member 7 and a greater or less length of the film is wound upon the reel depending upon the length of time which the operator desires shall elapse between the giving of the audible signal and the complete unwinding of the film from the reel. When the desired point has been reached in the winding of the film upon the reel, the operator will insert a finger through an opening 20 provided in the head of the reel opposite the head which is to be acted against by the striker element, and will swing the arm 10 downwardly until it lies flat across the film. In thus moving the arm 10, the head 11 will, of course, be swung from a position lying against the inner side of the hub 11, to a position radial to the hub as shown in Figs. 2 and 4 and, of course, against the tension of the spring 16. The winding of the film is then completed and the reel is ready for introduction into the magazine. As the film is unwound from the reel in the operation of the projecting apparatus and as that point in the length thereof is approached at which point the signal is to be given, the film will first uncover the striker arm 10, and immediately subsequently the film will, in unwinding from the hub, lift the arm 10 a short distance whereupon the spring 16 will immediately act to swing the striker element upon its pivot and cause the arm 10 to strike against the head of the reel and give audible signal to the operator that the said point in the length of the film has been reached. In order that minimum strain will be imposed upon the film in lifting the arm 10 and in order that the arm may be more speedily actuated by the film, it is preferable

that the lateral edges of the arm diverge in the direction of the free end of the arm so that these edges do not extend directly parallel to the axis of the hub but obliquely with relation to the said axis.

Having thus described the invention, what is claimed as new is:

1. The combination with a film reel, of means carried thereby and controlled through the unwinding of the film to give audible signal when all but a predetermined length of the film has been unwound.

2. In a film reel, signal means carried by the reel and comprising coacting sound and striker elements and means also carried by the reel for actuating the striker element, the striker element being arranged to be actuated automatically when all but a predetermined length of the film has been unwound from the reel.

3. The combination with a film reel one head of which constitutes a sounding element, of a striker element for coaction with the said head of the reel and including a film engaging arm, and means for actuating the said element.

4. In a film reel, a hub, heads carried thereby, one of said heads constituting a sounding element, and a striker element mounted upon the hub and including a film engaging arm designed in inactive position to extend across the hub and when actuated to be swung into engagement with the said head when released.

5. In a film reel, a hub, heads carried thereby, one of said heads constituting a sounding element, a striker element mounted upon the hub and including a film engaging arm designed in inactive position to extend across the hub and when actuated to be swung into engagement with the said head when released, and a spring for moving the said striker element to cause such swinging movement of the arm thereof.

6. In a film reel, a hub, a head carried by the hub and constituting a sounding element, a striker element including an arm designed to extend across the film wound about the hub, the said striker element being pivotally mounted at the inner end of the said arm and further including a head extending into the hub, and a spring within the hub coacting with the said head and constituting means for swinging the striking element upon its pivot when the arm is moved outwardly from the hub through the unwinding of the film.

7. In combination with a film reel and a film strip wound thereon, of means normally held inoperative across the film strip by the wound strip and releasable by the unwinding of said strip for signaling the approach toward the end of said strip, said means movable from across the strip to permit further unwinding thereof.

8. A film reel comprising a hub and film-guiding flanges carried thereby, and signal means carried by the reel and adapted to be releasably held between the flanges by a film strip but movable from across the film strip upon the unwinding of the latter.
9. A film reel comprising a hub and film-guiding flanges carried thereby, a signal arm pivoted at one end for swinging from an inoperative, hub-parallel position to an operative radial position, and a spring for urging the arm to the operative position.

In testimony whereof I affix my signature.

MOSES F. WALKER. [L. S.]