May 20, 1947. I. I. MERKUR 2,420,832

REEL END ALARM

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Fig. 1.

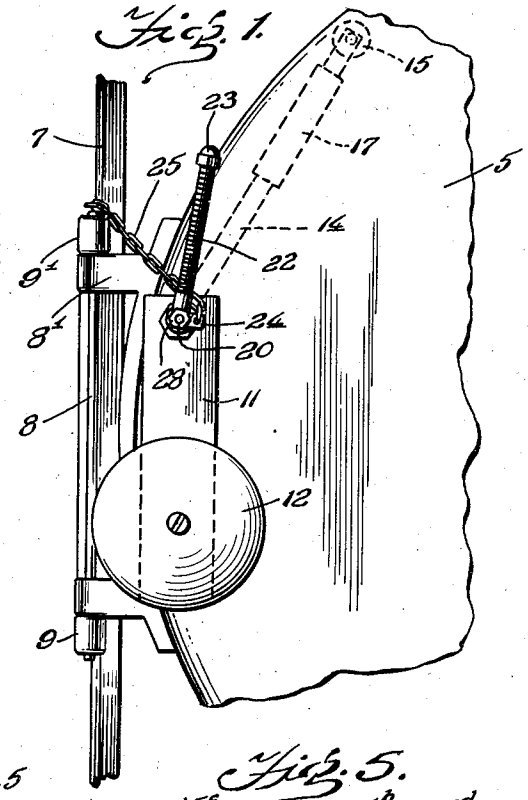


Fig. 3

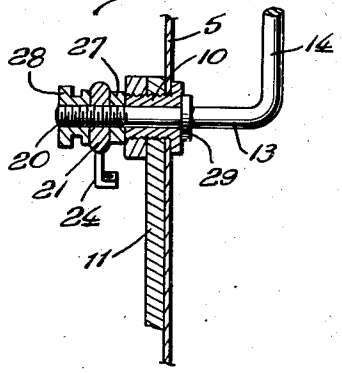


Fig. 6.

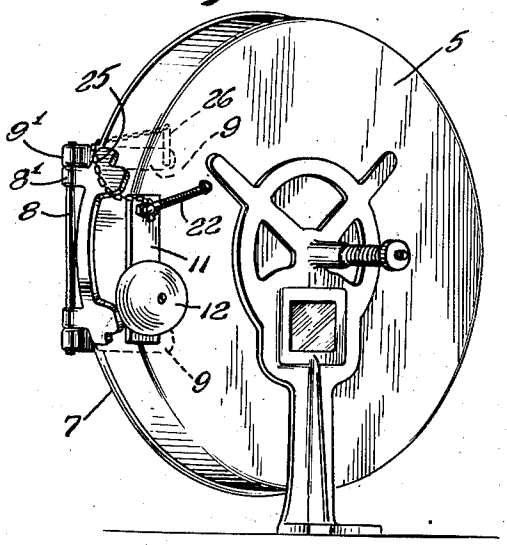
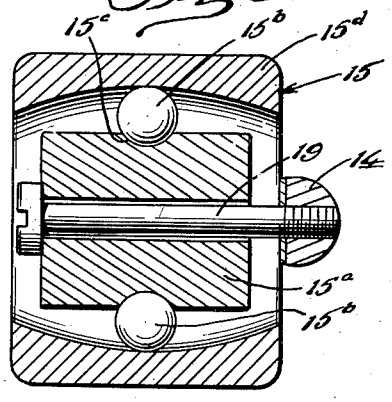


Fig. 5.



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Fig. 2.

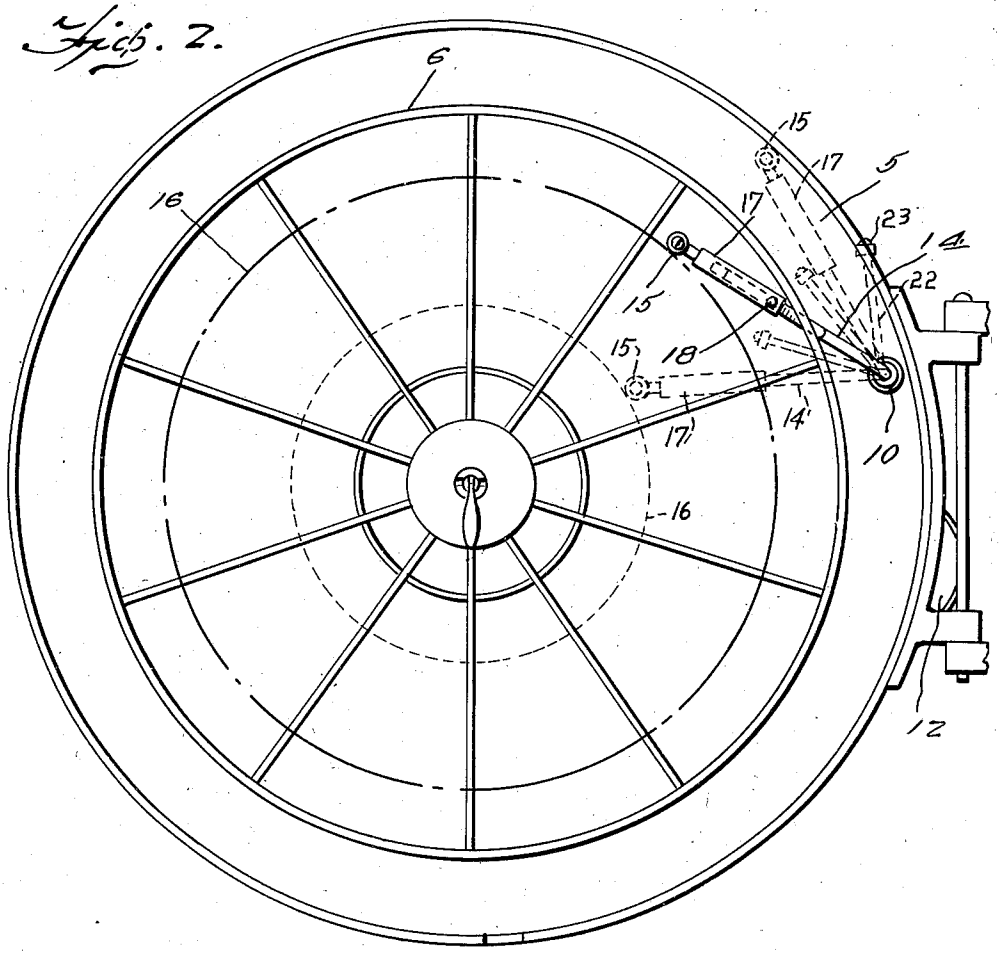
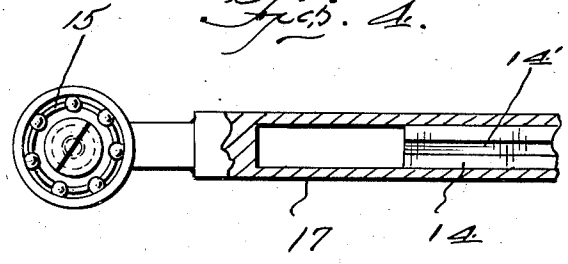


Fig. 4.



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REEL END ALARM

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4 Claims. (Cl. 116—67)

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The present invention relates to reel end alarm designed particularly for use with reels of motion picture films, and has for its primary object to provide a signaling device in the form of a bell with which a clapper is engageable and controlled by a gravity-actuated arm arranged to ride on the roll of film in a manner to sound an alarm when the unwinding of the film has reached a predetermined point.

An important object of the present invention is to provide a reel end alarm of this character in which the gravity-actuated arm and clapper are moved out of operative position to prevent interference of the device with the removal of the reel from the reel holder.

A further important object of the invention is to provide a spring arm for the clapper to improve the effectiveness of the device.

An additional object and advantageous feature of the invention is to provide a roller bearing on the free end of the gravity-actuated arm which contacts the roll of film to prevent injury of the film through contact thereof by the arm.

A still further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in performance, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout and in which:

Figure 1 is a fragmentary rear elevational view of the reel holder with the door open and showing the alarm in position thereon.

Figure 2 is a view in elevation of the inside of the reel holder showing different positions of the gravity-actuated arm and clapper.

Figure 3 is a fragmentary detail of the mounting for the pivoted end of the gravity-actuated arm.

Figure 4 is an enlarged detail of the free end of the gravity-actuated arm and with parts broken away and shown in section.

Figure 5 is a sectional view of the roller at the free end of the gravity-actuated arm, and

Figure 6 is a rear perspective view of the reel holder showing the door in closed position.

Referring now to the drawings in detail, wherein, for the purpose of illustration, I have disclosed a preferred embodiment of the invention, the numeral 5 designates a conventional form of motion picture film reel holder having the reel

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6 rotatably supported therein in the usual manner, one side of the holder being provided with a door 7 hingedly mounted on a pin 8, the hinge structure including the spaced parallel arms 9 secured to the outer surface of the door.

An opening is formed in the holder 5 adjacent its hinged edge and in which a bushing 10 is secured.

Attached to the bushing is a plate 11 to which a bell 12 is secured.

Freely journaled in the bushing 10 is the angular upper end 13 of a gravity actuated arm 14 adapted to extend radially inwardly with respect to the reel 6 and is provided with a ball bearing roller 15 at its free inner end adapted to ride on the outer periphery of the roll of film 16, the arm being supported in an upwardly inclined position, as shown to advantage in Figure 2 of the drawing, so as to gravitate downwardly during the unwinding of the roll of film.

The arm 14 is formed with a hollow extension 17 slidably mounted on the arm and secured in longitudinally adjusted position thereon by a set screw 18, engaged in a groove 14' of the arm whereby to adjust the length of the arm and at the same time to prevent turning of the sections of the arm.

The ball bearing roller 15 is mounted on the outer end of the extension 17 by means of a transverse pin 19 and the roller bearing is of a self-adjusting type so that the periphery of the roller will at all times bear flatly against the surface of the film to prevent the edges of the roller from cutting into the film and thus avoid injury thereto while the film is being unwound. The ball bearing roller assembly includes a hub 15a journaled on the pin 19 having the ball bearings 15b partially recessed in a groove 15c in the periphery of the hub about which the outer race or roller 15d is rotatably and rockably mounted. The race is adapted to rock on the hub to prevent edges of the ball bearing assembly from cutting the film.

The end of the angular inner end of the arm 13 is threaded, as shown at 20, and threaded thereon is a collar 21 to which a coil spring 22 or similar spring member is attached, the outer end of the spring having a head 23 thereon forming a clapper adapted for striking the bell 12. A lug 24 projects radially from the collar 21 and to which one end of a chain or similar flexible member 25 is attached, the chain being trained over a collar 27 which functions as a pulley adjacent the collar 21, and the chain then extending upwardly over the upper edge of the hinge bracket 8' carried by the reel holder 5 and then

behind the hinge bearing 9' on the upper hinge arm 9, which is attached to the door 7, as shown in Fig. 1, the chain having its opposite end detachably engaged with a plate 26 secured behind one of the arms 9 at the outer surface of the door 7. A nut 28 secures the collars on the threaded end of the arm 13 and a flange 29 on the arm prevents sliding movement of the arm in the bushing 10.

In the operation of the device and with the door 7 in its closed position, the free end of the arm 14 will be arranged to ride on the film 16, as shown in Figure 2, and with the clapper 23 raised above the bell 12 as shown by dotted lines in its intermediate position. As the film 16 is unwound, the arm 14 will be lowered into its lower dotted line position, thereby moving the clapper 23 downwardly as shown in its lower dotted line position, into a position for engaging the bell 12 after the film has been unwound to a predetermined point to permit the roller 15 to clear the film whereupon the clapper will gravitate to strike the bell a sharp blow.

Upon an opening movement of the door 7, a pulling force will be exerted on the chain by reason of its engagement with the fixed hinge bearing 9' and the chain having one end trained over the collar 27 as a pulley and connected to the lug 24 of the collar will raise the arm 14 as well as the clapper 23 as shown in their upper dotted line positions so as to permit free removal of the reel 6 for replacing the film.

It is believed the details of construction, operation and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

What I claim is:

1. A reel end alarm for motion picture film and comprising a bell adapted for mounting on the reel holder, a clapper for the bell, an arm connected to the clapper, and a self adjusting ball bearing roller rockably journaled on the free end of the arm positioned to ride on the film during unwinding movement of the latter and adapted to maintain the periphery of the roller in flat contact with the surface of the film, said arm being released by the roll of film for free downward swinging movement of the arm and clapper upon a predetermined reduction in the diameter of the roll of film during its unwinding action, and said bell being disposed in the path of said clapper.

2. A reel end alarm for motion picture film and comprising in combination a reel holder having a swinging door, a bell secured to the holder, a clapper pivoted on the holder, an arm connected to the clapper and having a self-adjusting ball bearing roller rockably journaled on the free end of the arm positioned to ride on the film during unwinding thereof, and adapted to maintain the periphery of the roller in flat contact with the surface of the film, said arm being released by the roll of film for free downward swinging movement of the arm and clapper upon a predetermined reduction in the diameter of the roll of film during its unwinding action and said bell being disposed in the path of the clapper, and a flexible member connecting the clapper and arm to the door for raising the clapper and arm upon opening movement of the door.

3. A reel end alarm for motion picture film and comprising in combination a reel holder having a swinging door, a bell secured to the holder, a clapper pivoted on the holder, an arm connected to the clapper and having a free end adapted to ride on the film during unwinding thereof, said arm and clapper being released by the roll of film for free downward swinging movement upon a predetermined reduction in the diameter of the roll of film during its unwinding action and said bell being disposed in the path of the clapper, and a flexible member connecting the clapper to the door and extending upwardly from the clapper to exert an upward pulling force on the clapper for raising the clapper and arm upon opening movement of the door.

4. In combination with a reel holder having a hinged door of a reel end alarm comprising a bell secured to the outside of the holder adjacent its hinged edge, a clapper on the outside of the holder in a position for striking the bell, an arm on the inside of the holder having a gravitating free end adapted to ride on the outer edge of a roll of film in the holder, a shaft formed on the other end of the arm and journaled in the holder forming a pivoted support for the arm, means for securing the clapper to the shaft for uniform movement of the clapper and arm, a crank member attached to and extending radially from the shaft, a flexible member having one end attached to said crank member and extending upwardly and over the door hinge, and means for attaching the other end of the flexible member to the back of the door for raising the clapper and arm upon an opening movement of the door, said arm and clapper being supported in a raised position by a roll of film in the holder and adapted to gravitate to cause a striking of the bell by the clapper upon an unwinding of the film to a point reducing the diameter of the roll of film sufficiently to remove the film from the path of downward movement of the arm.

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