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SOUND RECORDING AND REPRODUCING APPARATUS

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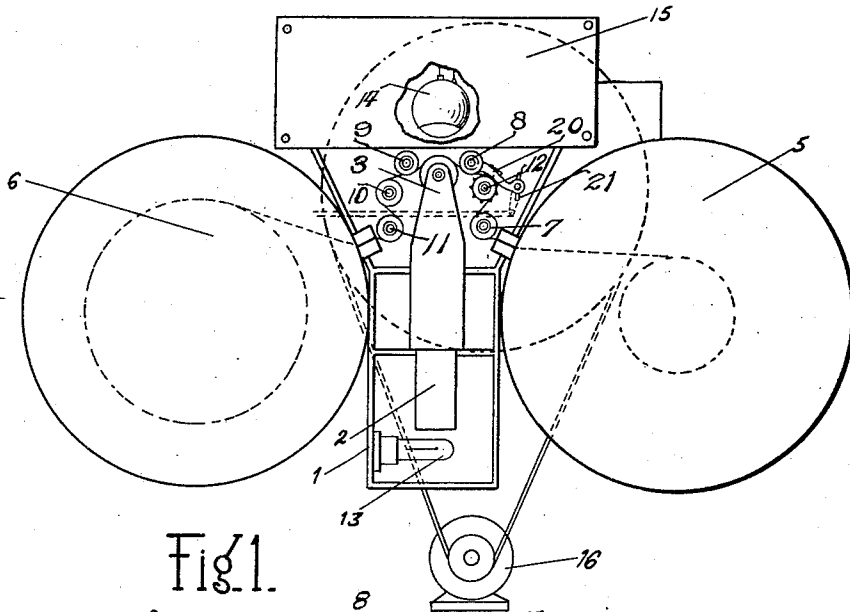


Fig. 1.

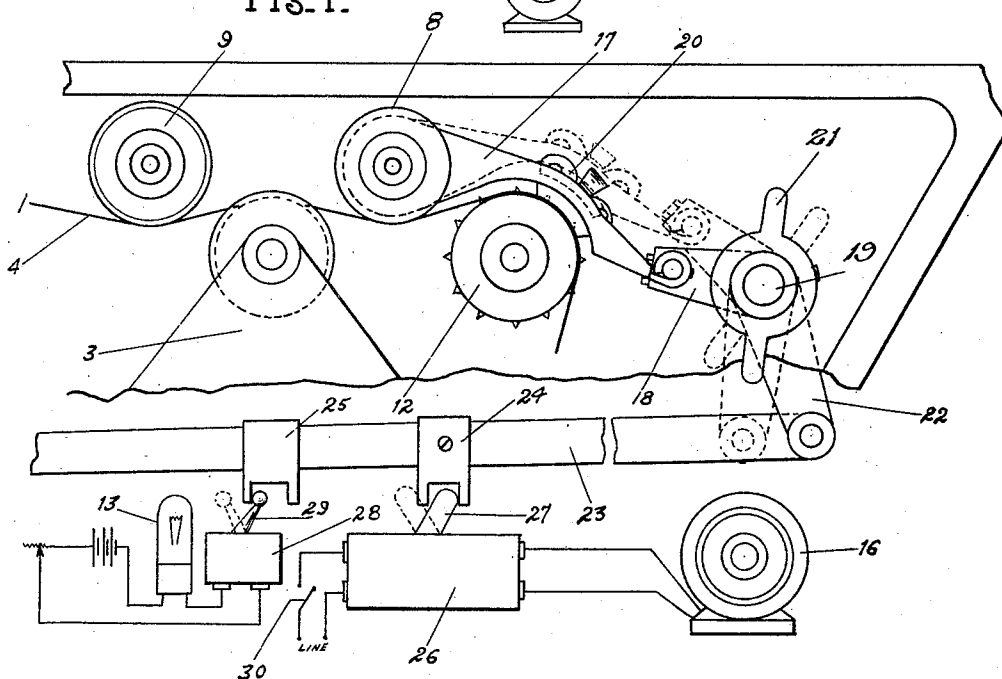


Fig. 2.

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SOUND RECORDING AND REPRODUCING APPARATUS

Application filed July 31, 1929. Serial No. 382,568.

This invention relates to improvements in sound recording and reproducing apparatus, the principal object of the invention being to provide means for rendering the motors and recording or reproducing lamp inoperative while the film is being threaded through the apparatus.

Other objects and advantages of the invention will appear as the description proceeds.

In the drawings accompanying this specification,

Figure 1 is a diagrammatic side view of a portion of a reproducing apparatus embodying the features of the present invention; and

Figure 2 is a fragmentary side view, on an enlarged scale, showing the features of the invention in greater detail.

The same characters of reference designate the same parts in both figures of the drawings.

Referring to the drawings, 1 designates a housing in which is disposed a lens assembly 2 and a roller film support 3 for the passage of light rays to the film 4 as described in my copending application Serial No. 360,871, filed May 6, 1929. On opposite sides of the housing 1 are disposed a take up reel 5 and a supply reel 6, whereby the film is caused to travel over the roller film support and past its light station. The system of guide rolls 7, 8, 9, 10 and 11 and sprocket 12 is the same as that shown and described in my copending application Serial No. 382,564 filed July 31, 1929.

In Figure 1 the apparatus is illustrated as a reproducing apparatus, and for this purpose a reproducing lamp 13 is shown in the housing 1, the rays from which lamp are focused by the lens assembly 2 on the film as it passes over the roller film support whereupon said rays, modulated by their passage through the photographic record carried by the film, are caught by a photo electric cell 14 whereby they are translated into electrical impulses and transmitted to a suitable amplifier 15 and loud speaker (not shown) in the usual manner. The motor for operating the film moving elements is designated 16.

The present invention relates primarily to the provision of means whereby when the film is being threaded through the apparatus the

current to the motor as well as to the reproducing or recording lamp is automatically cut off so that the motor and lamp will be inoperative during the threading operation. To this end a curved link 17 is mounted at one end on the shaft of the guide roller 8, said link being pivotally connected at its opposite end to a bifurcated arm 18 secured on a shaft 19 mounted for rotation in bearings disposed in parallel relation with the sprocket 12. The link 17 carries a shoe 20 which, during the operation of the device engages over the sprocket 12 and thereby maintains the film in proper engagement with said sprocket. When a film is to be threaded through the apparatus, however, it is necessary to raise the shoe out of its film engaging position, shown in full lines, to the position shown in dotted lines in Figure 2, and for this purpose the shaft 19 is provided with finger pieces or levers 21 whereby the shaft may be readily rocked to carry its arm 18, and with it the end of the shoe-carrying link 17, from one position to the other. In order to throw the motor and recording or reproducing lamp out of operation when the film is being threaded and to bring them back into operation after the threading is completed, a second arm 22 is secured on shaft 19, which arm is pivotally connected to one end of a slidable rod 23, on which are secured a pair of bifurcated lugs 24 and 25. The circuit to the motor includes a switch box 26, from which a pivoted switch operating lever 27 projects to a position between the bifurcations of lug 24, and the circuit to the lamp includes a switch box 28 from which a pivoted switch operating lever 29 projects to a point between the bifurcations of lug 25. It will thus be readily seen that when the shaft 19 is rocked so as to carry the link 17 from one position to the other the slidable rod 23 will, by means of the lugs 24 and 25 shift the switch levers 27 and 29. The switches are so arranged that when the link 17 is in its raised position shown in dotted lines in Figure 2, both of the switches will be open, and when the link is in its normal, operative position shown in full lines, both switches will be closed so that current will be supplied to the lamp and motor.

It is desirable, however, that, after the threading is completed and before the motor again starts to operate, the operator have an opportunity to inspect the apparatus to see that it is ready to function and to make sure that the lamp is burning properly. For this reason, a manually operable switch 30 is included in the motor circuit, so that, with this switch open, the motor will remain inoperative even though the switch lever 27 has been thrown to circuit-closing position by the lug 24. The switch 30 may be so constructed that when the lug-operated motor switch lever 27 is thrown into circuit-breaking position, the switch 30 is also opened and will remain open when the switch-lever 27 is returned to circuit closing position. This may be accomplished in a number of different ways, which it is believed are perfectly obvious.

It will of course be obvious that the device herein described is equally applicable for use in recording or reproducing apparatus.

I claim:—

1. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, and a driving motor, rotatable means for causing a film to travel past said light station, a light sensitive element at said station for receiving the film modulated light, shiftable means for normally retaining said film in engagement with said rotatable means, means for shifting said retaining means into and out of operative position, and means actuated by said shifting means to control the motor and lamp circuits.

2. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, rotatable means for causing a film to travel past said light station, a light sensitive element at said station for receiving the film modulated light, shiftable means for normally retaining said film in engagement with said rotatable means, means for shifting said retaining means into and out of operative position, switches in the motor and lamp circuits, and means actuated by said shifting means to close and open said switches when the retaining means is in operative and inoperative position respectively.

3. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, a sprocket adapted to engage a film and cause it to travel past said light station, a light sensitive element at said station for receiving the film modulated light, a shiftable shoe normally engaging said film and retaining it in engagement with said sprocket, means for shifting said shoe into and out of operative position, and means actuated by said shifting means for opening

the motor and lamp circuits when the shoe is in its inoperative position.

4. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, means for moving a film past said light station, a light sensitive element at said station for receiving the film modulated light, shiftable means for normally retaining said film in engagement with said moving means, means for shifting said retaining means out of operative position, switches in the motor and lamp circuits, a slidable rod having means for opening and closing said switches, and means carried by said shifting means for operating said rod.

5. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, means for moving a film past said light station, a light sensitive element at said station for receiving the film modulated light, a pivoted link having means for engaging said film and normally retaining it in engagement with said moving means, means for rocking said link on its pivot out of operative position, and means actuated by said rocking means for opening the motor and lamp circuits when the link is in inoperative position.

6. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, means for moving a film past said light station, a light sensitive element at said station for receiving the film modulated light, shiftable means for normally retaining said film in engagement with said moving means, a rockable arm pivotally connected to said retaining means and adapted to shift the same out of operative position, means for rocking said arm, and means actuated by said rocking means for opening the motor and lamp circuits when the retaining means is in inoperative position.

7. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, rotatable means for causing a film to travel past said light station, a light sensitive element at said station for receiving the film modulated light, shiftable means for normally retaining said film in engagement with said rotatable means, means for shifting said retaining means into and out of operative position, switches in the motor and lamp circuits, and a slidable member actuated by said shifting means and having means for closing and opening said switches when the retaining means is in operative and inoperative position respectively.

8. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, a sprocket adapted to engage

a film and cause it to travel past said light station, a light sensitive element at said station for receiving the film modulated light, a pivoted link having a shoe adapted to engage said film and normally retain it in engagement with said sprocket, a rockable arm pivotally connected to said link and adapted to shift the same into and out of operative position, means for rocking said arm, switches in the motor and lamp circuits, a slidable member pivotally connected with said arm-rocking means thereby to impart reciprocatory motion to said slidable member, and bifurcated lugs carried by said slidable member and adapted to engage said switches thereby to open and close the same at each complete reciprocation of the slidable member.

9. In sound recording and reproducing apparatus, the combination of a light station, a lamp for supplying light at said station, a driving motor, a sprocket adapted to engage a film and cause it to travel past said light station, a light sensitive element at said station for receiving the film modulated light, a pivoted link having a shoe adapted to engage said film and normally retain it in engagement with said sprocket, a rockable arm pivotally connected to said link and adapted to shift the same into and out of operative position, means for rocking said arm, switches in the motor and lamp circuits, a slidable member pivotally connected with said arm rocking means thereby to impart reciprocatory motion to said slidable member, bifurcated lugs carried by said slidable member and adapted to engage said switches thereby to open and close the same at each complete reciprocation of the slidable member, and a separate manually operable switch in the motor circuit.

In testimony whereof, I affix my signature.
FREEMAN H. OWENS.