

June 19, 1934.

H. H. FENNER ET AL

1,963,194

AUTOMATIC START, CHANGE OVER, AND STOP FOR MOVING PICTURE PROJECTORS

Original Filed Sept. 7, 1929

2 Sheets-Sheet 1

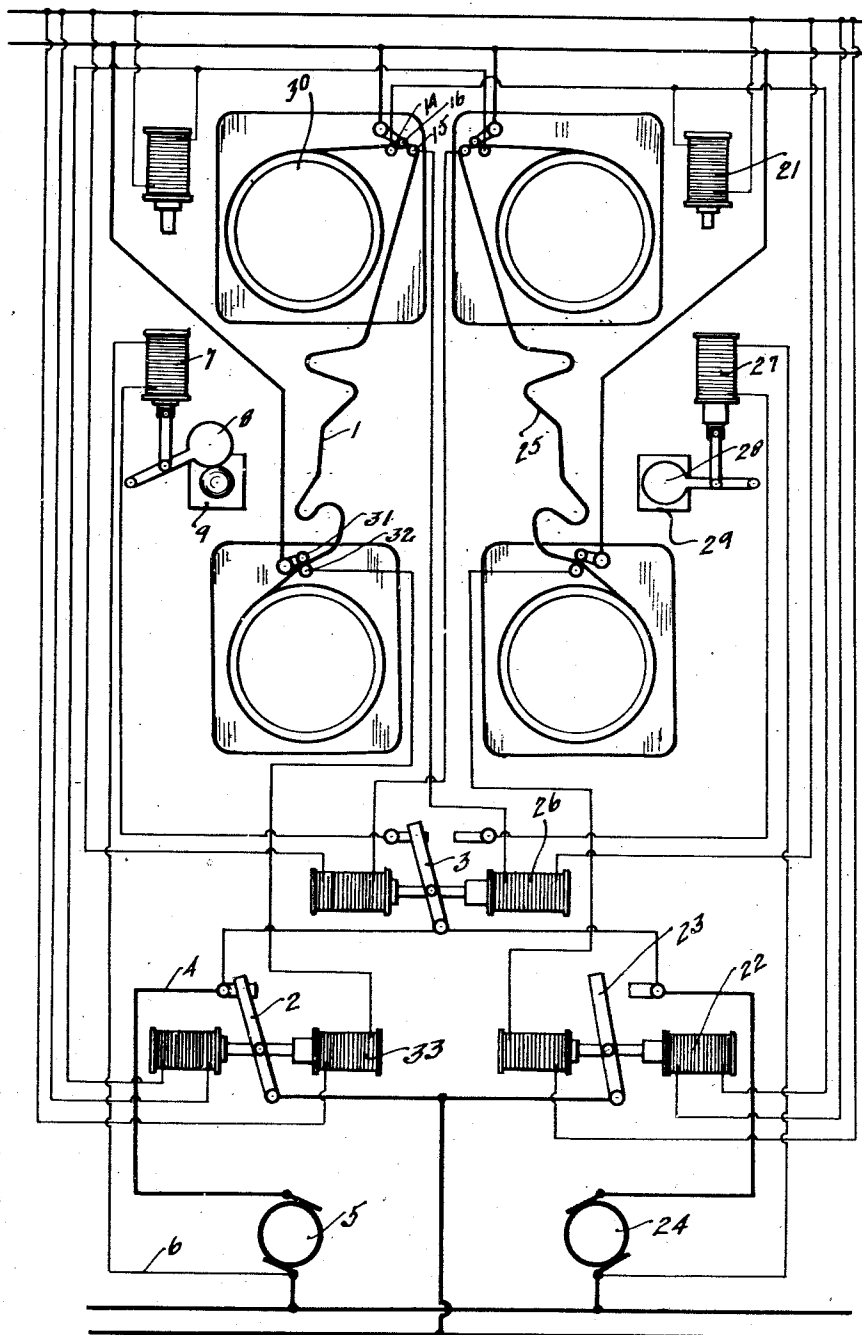


Fig 1

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Fig. 3

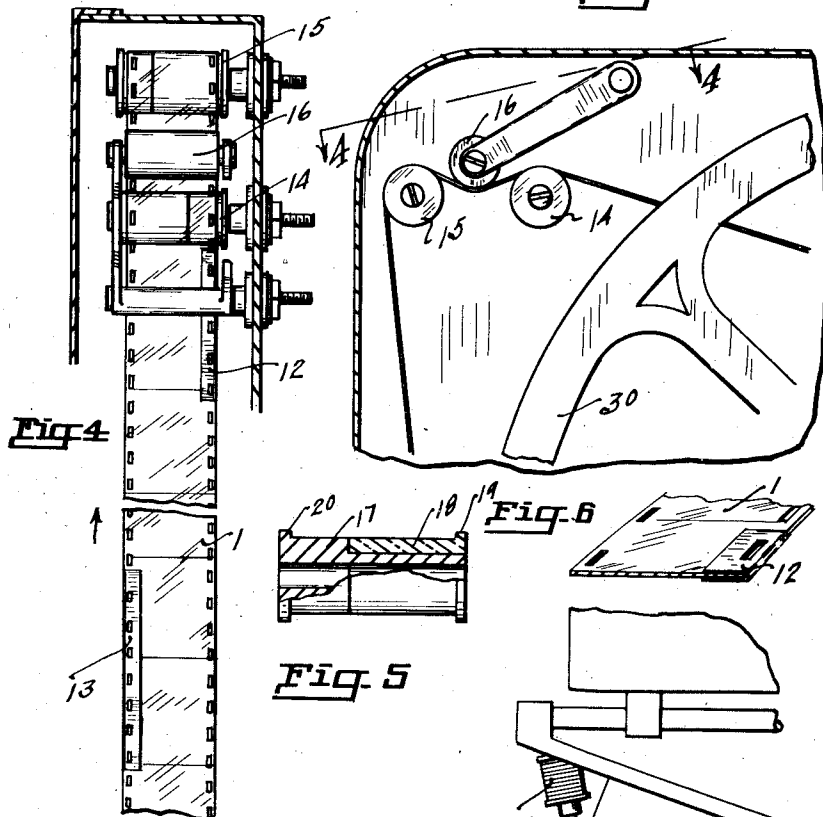


Fig. 4

Fig. 6

Fig. 5

Fig. 7

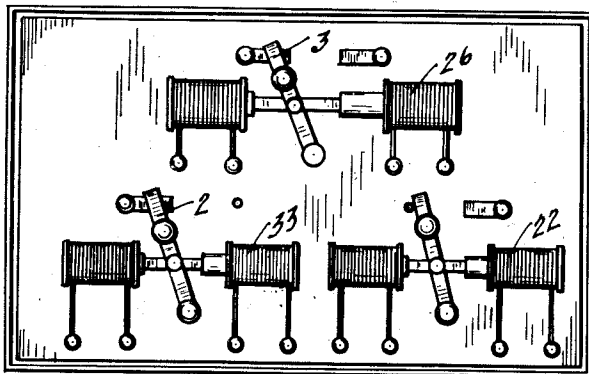


Fig. 2

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UNITED STATES PATENT OFFICE

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AUTOMATIC START, CHANGE OVER, AND
STOP FOR MOVING PICTURE PRO-
JECTORS

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Application September 7, 1929, Serial No. 391,452
Renewed November 20, 1933

1 Claim. (Cl. 88—17)

The purpose and object of our invention is to provide a device that may be used in conjunction with companion projecting machines for moving pictures and has for its primary purpose and object the making of the connection from one reel to the other, and from one projecting machine to the other automatically so that the work of the projecting operator and the details of his work will be reduced to a minimum. It is necessary only for the operator to change the films and turn off the arc light at the end of the projecting operation.

This invention is intended for use in combination with our invention as illustrated by United States patent application, Serial Number 342,352 filed in the United States Patent Office under date of February 25, 1927, Division 7, upon an Automatic stop and change over for moving picture projectors.

One object of our present invention is to automatically start the motor of the second machine in advance of the film reaching the end and to energize the electric circuit passing through the arc lamps used in conjunction with the projecting operation.

A further object of our invention resides in the utilization of electric energy for bringing about the results desired.

The invention consists primarily in the placing of a flexible metallic attachment on the edges of the film, preferably upon oppositely disposed edges, and at different positions upon the film length. This completes the electric circuit through the film for energizing solenoids for actuating switches by the solenoids and for completing the electric circuit through the arc lamps and for starting the motor upon the companion or adjacent projecting machine so that the change over may be automatically and simultaneously made from one projecting machine to the other without delay or attention on the part of the projecting operator.

A further object of our invention is to reduce the fire hazard in the projecting room.

A further object of our invention is to eliminate delay in the projecting room and to produce upon the screen automatically a continuous projection of reels or films so that the patrons of the theatre may witness a continuous performance without the slightest interruption in the change from one reel to the other. This is made doubly important in talking movies where a synchronized relationship is highly essential.

A further object of our invention resides in a simplified construction utilizing electric current

and electric energy for the bringing about of the desired results.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claim, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a diagrammatical layout of our complete assembly.

Fig. 2 is a top, plan view of the associated solenoids for bringing about the desired results to be obtained.

Fig. 3 is a fragmentary, sectional, side view of the spool or wheel from which the film to be projected is unwound illustrating the spools over which the film is drawn and illustrating a tightener engaging the upper side of the film for maintaining the film in intimate contact with the spools over which the same is being wound.

Fig. 4 is a sectional, top view of the mechanism illustrated in Fig. 3 the same being taken on line 4—4 of Fig. 3 looking in the direction indicated.

Fig. 5 is a sectional, side view of one of the spools over which the film is being withdrawn, the same showing a part of the spool formed of a metallic outer surface and the remainder of an insulated outer surface.

Fig. 6 is a perspective, sectional view of a portion of the film illustrating a metallic element placed upon the film at one edge of the same.

Fig. 7 is a fragmentary, sectional, side view of one of the solenoid attachments adapted for being actuated when the film reaches a predetermined distance from the end of the film.

Like reference characters refer to like parts throughout the several views.

The diagrammatical layout illustrated in Fig. 1 shows the film 1 as being projected. The motor control switches 2 and 3 have been closed manually. Switch 2 controls the motor circuit 4 that flows through and energizes the motor 5. The circuit 6 passes through and energizes solenoid 7 when the circuit is open and actuates the shutter 8 allowing the film to be projected through the lens 9. Switch 3 may be closed in order that this circuit through the solenoid 7 will be completed. The switches are illustrated as at the initial starting of the reel. The switch lever 10 illustrated in Fig. 7, through manual manipulation, completes the circuit thus supply-

ing the initial electric current passing through the arc light on the initial or starting section of the reel being projected as illustrated as film 1. We have shown in Fig. 4, the film near the end, in which two metallic sections 12 and 13 are placed, preferably upon oppositely disposed edges of the reel of the film 1 and the same being placed in spaced relationship upon the film. The section 12 is illustrated as passing over electric terminals 14 and 15 and is held in contact with the terminals by a tightener 16. The electric terminals 14 and 15 are in the form of cylindrical sections, as illustrated in Fig. 5 wherein the body portion of the electric terminal spool is made of suitable metallic material with an insulating band 18 disposed about a portion of the outer surface of the body element. The same is made in the form of a shrouded pulley having bands 19 and 20 disposed at oppositely disposed ends of the spool in order that the film may be trained and maintained in alignment upon the respective spools. The spool 16 is all metallic. When the metallic portion 12, disposed upon the film, engages between the spools 14 and 15, an electric circuit will be closed and in the closing of the circuit, the solenoid 21 is energized, also the solenoid 22 is automatically energized and the switch 23 is automatically manipulated by the solenoid to pass the electric current through the motor 24. The closing of the circuits is preparatory to the projecting of the film 25 disposed upon the companion and adjacent projecting machine. Disposed upon the film 1 and in spaced relationship with the metallic circuit closure 12 is the metallic circuit closure 13 which is disposed at practically the full end of the film. The completing of the electric circuit by the passing of the metallic element 13 disposed upon the film 1 completes the circuit by the passing of the same through the spool 15 and the tightener 16 and in doing so, the solenoid 26 is energized and the switch 3 completes the circuit through the solenoid 27 thereby opening the shutter closure 28 of the lens 29 and the light rays from the arc are permitted to pass through the lens 29. Film 25 is a continuation of film 1 and is synchronized so that it passes the lens 29 as the final projection of film 1 is completed and the projecting is carried on as a continuous projection without interruption. Simultaneously therewith the mechanisms associated with the projections from film 1 are automatically stopped by the throwing of the switch 3 that breaks the circuits. The throwing of the switch 3 breaks the shunt circuit of the solenoid 7 and the automatic closure 8 drops down over the lens 9. The final withdrawal of the film 1 from the spool 30 completes the cir-

cuit through the contact points 31 and 32 and solenoid 33 is energized and the switch 2 is actuated thereby breaking the circuit that passes through the projecting motor 5.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claim which follows.

What we claim is:

In apparatus of the class described, the combination of a pair of motion picture projecting machines having film reels associated therewith, a driving motor for each of said machines, operating switches for said motors, said motors and switches being embraced in a single main electric circuit, lens dowers arranged for coaxing engagement with the lens of each projecting machine, solenoids coaxing with each of said dowers and adapted to position the dowers into and out of alignment with said lenses, a switch actuated by solenoids and adapted to direct current to either of said dower actuating solenoids, solenoids associated with the motor switches and adapted to open or close either or both of said motor circuits by the opening or closing of said switches, a group of contact rollers adjacent each of said film reels and normally held apart and insulated by the passage of the film therebetween, all of said solenoids and rollers being embraced in subsidiary circuits, one of said rollers in one machine being embraced in the circuit embracing one of the solenoids associated with the motor switch of the opposite machine, another of said rollers in the said one machine being embraced in the circuit embracing one of the solenoids associated with the switch adapted to direct electric energy to the dower actuating solenoid, the rollers adjacent the companion reel in the said one machine being embraced in a circuit embracing one of the solenoids associated with the motor switch of the same one machine, metallic strips formed on opposite edges of said films near their ends and adapted to pass through and progressively cause electrical contact between all of said rollers in one machine at a time to progressively start the motor in the opposite machine, lift the dower in said opposite machine out of alignment with its corresponding lens, drop the dower in the said one machine over its corresponding lens and finally open the motor circuit in the said one machine.

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