Nov. 18, 1947. J. M. TODD 2,430,893

AUTOMATIC CUT-OUT FOR MOTION PICTURE PROJECTING MACHINES

Filed July 25, 1944

Fig. 1.

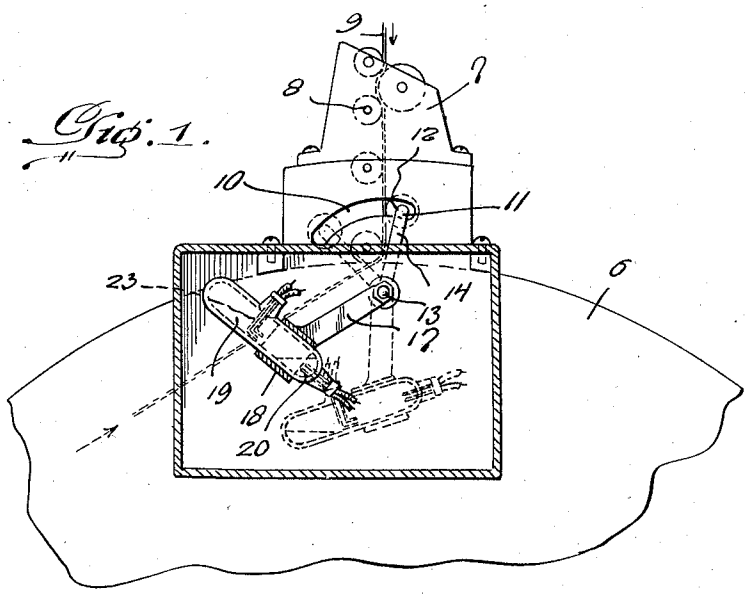


Fig. 2.

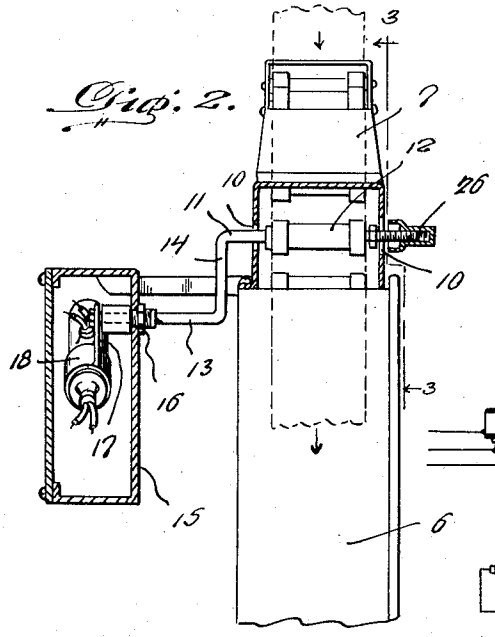


Fig. 3.

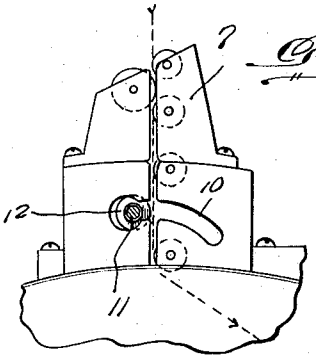
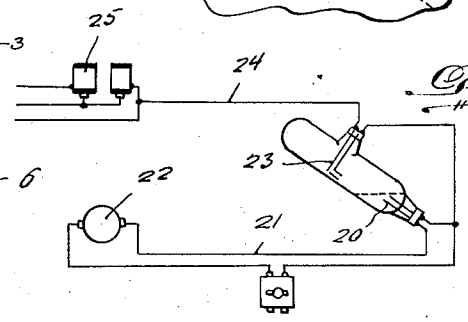


Fig. 4.



Inventor
James M. Todd,

By McMorrow Berman

Attorneys

Patented Nov. 18, 1947

2,430,893

UNITED STATES PATENT OFFICE

2,430,893

AUTOMATIC CUT-OUT FOR MOTION-PICTURE PROJECTING MACHINES

James M. Todd, Newport News, Va.

Application July 25, 1944, Serial No. 546,490

2 Claims. (Cl. 88—17)

1

The present invention relates to new and useful improvements in motion picture projecting machines and more particularly to an automatic cut-out for interrupting the motor of the machine upon a breakage of the film whereby to prevent film fires and other damage to the film.

More specifically the invention embodies the provision of a mercury switch normally maintained in a position for closing the circuit of the motor used for operating the machine and in which the switch is adapted to gravitate into a position for opening the circuit leading to the motor upon a breakage in the film.

The mercury switch also includes contacts in the path of the mercury when the switch is moved into a position for opening the circuit of the motor to close a circuit for the change-over dowser.

A still further object is to provide an apparatus of this character of simple and practical construction, which is efficient and reliable in performance, relatively inexpensive to manufacture and instal in operative position on the motion picture projector, and which is 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 drawing forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary side elevational view of the take-up magazine of a motion picture projector and with the housing for the mercury switch shown in section.

Fig. 2 is a sectional view through the film guide for the magazine and also with the mercury switch housing shown in section.

Fig. 3 is a sectional view taken substantially on a line 3—3 of Fig. 2, and

Fig. 4 is a diagram of the circuit controlled by the mercury switch.

Referring now to the drawing in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 6 designates a conventional form of take-up magazine for a motion picture projecting machine having a film guide housing 7 rising from the upper portion thereof in which a plurality of guide rollers 8 are journalled and between which the film 9 travels in the direction as shown by the arrow in Figs. 1 to 3 inclusive.

Arcuate slots 10 are formed in the opposite sides of the housing 7 in which a roller shaft 11

2

is freely positioned, the shaft 11 having a roller 12 freely mounted thereon and bearing against one side of the film 9.

The shaft 11 is formed integrally with or connected at one end to a shaft 13 by means of an offset or crank 14, the shaft 13 being pivotally mounted in the rear wall of a mercury switch housing 15 by means of the threaded bushing 16. An arm 17 is secured at one end to the shaft 13 within the housing 15, the arm 17 extending downwardly in an inclined position when the shaft 11 is held in the upper end of the slots 10 by the film. The lower end of the arm 17 is formed with a collar 18 for supporting a mercury switch 19 therein.

One end of the mercury switch tube 19 is provided with a pair of contacts 20 included in a circuit 21 with the motor 22 of the motion picture projecting machine, the contacts 20 being in that end of the mercury tube which is positioned lowermost when the tube is held in its normal operative position as shown by the full lines in Fig. 1 whereby the mercury in the tube will close the circuit for the motor.

Also extending into the tube from the top thereof are a pair of contacts 23 adapted to close a circuit 24 leading to a changeover dowser 25, the contacts 23 being disposed in the path of the mercury in the switch for closing said circuit 24 momentarily when the tube 19 is lowered into the position shown by the dotted lines in Fig. 1, the mercury in the tube passing beyond the contacts 23 to again open the circuit when the tube reaches its lowermost position.

In the operation of the device it will be apparent that as the film 9 is fed through the projector the film will hold the shaft or arm 11 in its upper position as shown in Fig. 1 of the drawing so that the circuit 21 for the motor 22 is closed. However should the film 9 become broken the shaft or arm 11 will be released thereby permitting the mercury tube 19 to gravitate into its lowermost position for interrupting the motor 22 and temporarily closing the circuit for the change-over dowser.

The free end of the arm or shaft 11 is provided with a screw cap 26 forming a knob or handle by means of which the mercury tube switch may be returned to its normal position for the feeding of the film behind the roller 12.

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

Having thus described the invention, what I claim is:

1. In a motion picture projecting machine including an electric motor for driving the film-moving means the combination comprising a main housing for the machine and including opposed arcuately slotted walls, a switch housing supported by and in spaced relation to one of the main housing walls, a rock-shaft journaled in the switch housing and extending toward the main housing, a crank extending from the rock-shaft and through the arcuate slot into the main housing and carrying a roller within the same, manually operable means exterior to both housings and secured to the crank for rocking the shaft, said crank roller being normally engaged by the film holding the crank in a predetermined position, an arm secured to the rock-shaft in the switch housing, a tube supported by the arm and including a pair of contacts connected to said motor and a pool of mercury connecting said contacts when the tube is in normally inclined position due to the engagement of the film with the roller, said tube being moved to a reversely inclined position by gravity upon breaking of the film.

2. In a motion picture projecting machine including an electric motor for driving the film-moving means and also including a change-over dowser for controlling the action of the projection light ray upon the film, the combination comprising a main housing for the machine and including opposed arcuately slotted walls, a switch housing supported by and in spaced relation to one of the main housing walls, a rock-shaft journaled in the switch housing and extending toward the main housing, a crank extending from the rock-shaft and through the arcuate slot into the main housing and carrying a roller within the same, manually operable means exterior to both housings and secured to the crank for rocking

the shaft, said crank roller being normally engaged by the film holding the crank in a predetermined position, an arm secured to the rock-shaft in the switch housing, a tube supported by the arm and including a pair of contacts connected to said motor and a pool of mercury connecting said contacts when the tube is in normally inclined position due to the engagement of the film with the roller, said tube being moved to a reversely inclined position by gravity upon breaking of the film, said tube being also provided with a second pair of contacts connected to the dowser and temporarily connected to one another by the pool of mercury during the gravity-controlled movement of tube from said first inclined position to said reversely inclined position.

JAMES M. TODD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,395,724	Mehl et al.	Nov. 1, 1921
1,769,771	Cornetta	July 1, 1930
1,809,817	Allen et al.	June 16, 1931
1,839,468	Decker	Jan. 5, 1932
2,074,237	Pierce	Mar. 16, 1937
2,047,902	Eitzen	July 14, 1936
2,192,819	Smith	Mar. 5, 1940
1,198,119	Garros	Sept. 12, 1916
1,409,120	Schaffer	Mar. 7, 1922
1,968,250	Frederick et al.	July 31, 1934
2,045,022	Nepo	June 23, 1936
2,124,917	Haliburton et al.	July 26, 1938
1,450,455	Seaman	Apr. 3, 1923
1,958,475	Frappier et al.	May 15, 1934
2,126,108	Haliburton	Aug. 8, 1938