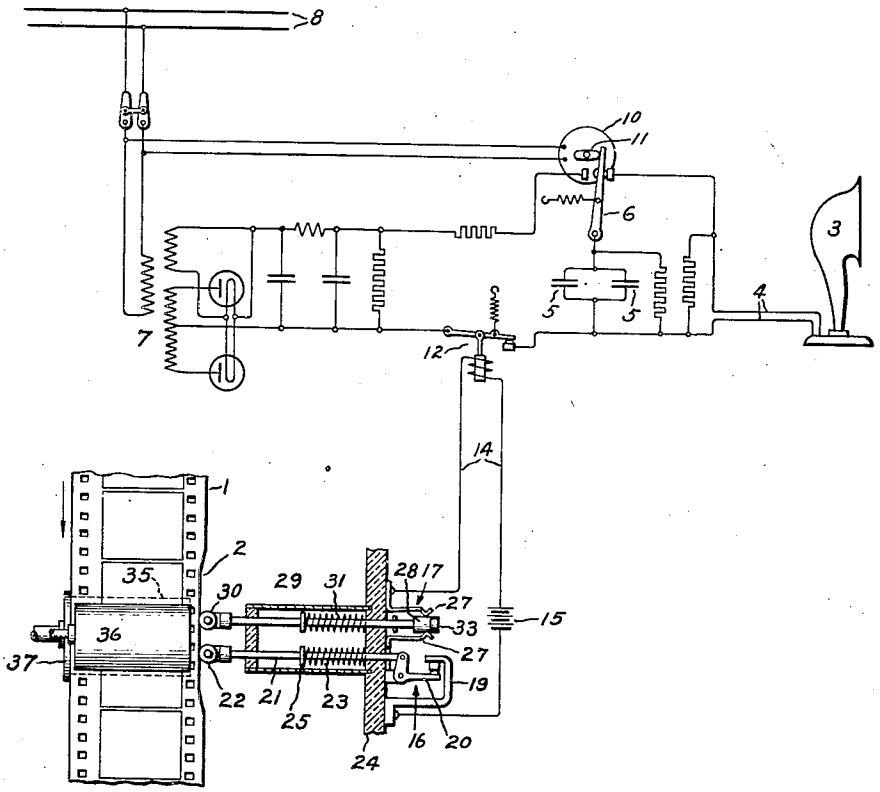
Feb. 11, 1930. J. TSCHOPP 1,747,037

FILM CONTROLLED CONTACT DEVICE

Filed March 5, 1928



Inventor
Jacob Tschopp,
by Charles E. Mullen
His Attorney.

Patented Feb. 11, 1930 1,747,037

UNITED STATES PATENT OFFICE

JACOB TSCHOPP, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

FILM-CONTROLLED CONTACT DEVICE

Application filed March 5, 1928. Serial No. 259,360.

My invention relates to contact devices adapted to be actuated by a moving film. In apparatus for producing motion pictures or for reproducing sounds from film records it is sometimes desirable to operate auxiliary devices such for example as those for producing special noises or sounds under the control of a contact device actuated in response to prearranged irregularities in one edge of the picture or sound record film. Such an arrangement has been used in connection with motion pictures showing rapid fire guns in operation, the picture film having notches in one edge corresponding to the time intervals at which the guns are shown in the picture as being fired and a contact device for controlling the noise making apparatus arranged to be actuated in response to the passage of each notch. A disadvantage of such a device is that in the event of the breakage of the film while the machine is running or when the end of the film is reached, the contact device will be operated and cause an unintentional firing of the guns. It is the object of my invention to provide a contact device of this character which will close a circuit in response to the passage of a pre-arranged notch in the film but which will be inoperative when the film runs out or breaks.

My invention will be better understood from the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

In the single figure of the drawing which is partly structural and partly diagrammatic, a portion of a motion picture film 1 is shown having the notch 2 in one edge thereof which through contact devices to be described later controls in the present case apparatus to simulate the firing of a rapid fire gun. The apparatus illustrated comprises means for alternately charging a condenser and discharging it into a loud speaker. The loud speaker shown diagrammatically at 3 has circuit connections 4 with the double condenser 5, the switch 6 and the rectifier 7 connected to the alternating current source 8. Operating from the same alternating current source is the motor 10 driving the cam 11 which engaging the switch arm 6 causes the switch alternately to connect the condenser 5 to the charging circuit and to the loud speaker. Control of the loud speaker is effected through the relay 12 in the condenser charging circuit, the winding of the relay being in the control circuit 14. In this circuit is the battery 15 the first contact device 16 and the second contact device 17 arranged in series. Contact device 16 comprises the fixed contact member 19 and the cooperating pivoted contact member 20. Attached to an arm of member 20 is one end of the rod 21 which terminates at the other end in the roller 22 the compression spring 23 being provided between the base 24 and the collar 25 on the rod. Contact device 17 comprises the two springs 27 engaging opposite sides of the movable block 28 carried at the end of the rod 29 which like rod 21 has the roller 30 and has the compression spring 31. The two rollers are spaced apart slightly and both engage the notched edge of the film. The first contact device is adjusted to remain open when there is no notch opposite its roller but too close when its roller drops into a notch. The second contact device has its contact block of such length that the control circuit is not interrupted when its roller drops into a notch but if the roller should move further than the depth of an ordinary notch, the insulation portion 33 on the end of block 28 would open the control circuit at that point. To hold the film firmly in place and to prevent its buckling where it passes the rollers 22 and 30 I have provided the rollers 35 and 36 between which the film is drawn. Roller 35 has the flange 37 to take the thrust of the springs 23 and 31. As the film passes in the direction indicated by the arrow the arrival of each notch 2 causes the control circuit to be closed during the passage of the notch at which time the successive discharges of the condenser 5 into the loud speaker represent the firing of a rapid fire gun, it being understood that the switch 6 is operated at the proper speed for such a simulation. When the film is entirely unwound and

the end passes the rollers 30 and 32 or should the film become broken between the unwinding reel and these rollers and the broken end pass them they will be released successively, first roller 30, then roller 22. This prior movement of roller 30 will cause the control circuit to be opened by contact device 17 before contact device 16 operates to close it, hence there will be no accidental operation of the gun firing mechanism due to the running out of the film or the breaking thereof.

While I have shown and described my invention as arranged to control a noise making apparatus it is to be understood that its use is not limited to such apparatus but has many other applications. It may for example be used when a sound record is being recorded on one film while a motion picture is being projected from another film. In order to be able properly to match up the two films when it is desired to print the two records on a single film the picture film may be provided with one or more notches. The control circuit will then cause the actuation of a shutter in the sound recorder, thus producing photographically on the sound record film an identifying mark corresponding in relative position on the sound record film to the notch on the picture record film.

I have chosen the particular embodiment described above as illustrative of my invention and it will be apparent that various modifications may be made without departing from the spirit and scope of my invention which modifications I aim to cover by the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In combination, a film having an irregular edge, a control circuit, a contact device therein having a controlling member engaging said irregular edge, and a second member engaging said irregular edge constructed and arranged to render said contact device ineffective under predetermined film conditions.

2. In combination, a film having an irregular edge, a control circuit, a contact device therein having a controlling member engaging said irregular edge, and a second contact device in circuit with said first device having a controlling member engaging said edge for rendering the first device ineffective under predetermined film conditions.

3. In combination, a film having an irregular edge, a control circuit, a contact device therein having a controlling member engaging said edge, and circuit controlling means in said circuit having a controlling member engaging said edge for rendering said contact device ineffective on said circuit upon a discontinuance of the film.

4. In combination, a film having notches formed in the edge thereof, a control circuit, a contact device therein having a controlling member arranged to engage the edge of the film whereby the circuit is closed by the passage of a notch, a second contact device in series with said first device having a controlling member also engaging the edge of the film, said second contact device being arranged to remain closed during the passage of the notched film and to open the circuit in response to a cessation of the film.

5. In combination, a film having notches formed in one edge thereof, a control circuit, a contact device for closing said circuit having a spring pressed controlling member arranged to engage the notched edge of the film, a second contact device in series with said first device having a spring pressed controlling member spaced from said first controlling member and arranged to engage the successive portions of the notched edge of the film prior thereto, and means for preventing buckling of the film by said controlling members, said second contact device being arranged to open the control circuit when released by the passage of an end of the film.

6. In combination, means adapted to guide a film having a notched edge, a plurality of contact devices connected in series, operating means for one of said contact devices comprising a member adjacent said guide and adapted to engage the notched edge of said film to cause said device to close in response to the passage of a notch in the film, and operating means for the other of said contact devices comprising a member arranged to engage the notched edge of said film adjacent said first member, said other contact device being constructed normally to remain closed and to be opened by its operating member upon a discontinuance of the film.

In witness whereof I have hereunto set my hand this 3rd day of March, 1928.

JACOB TSCHOPP.