

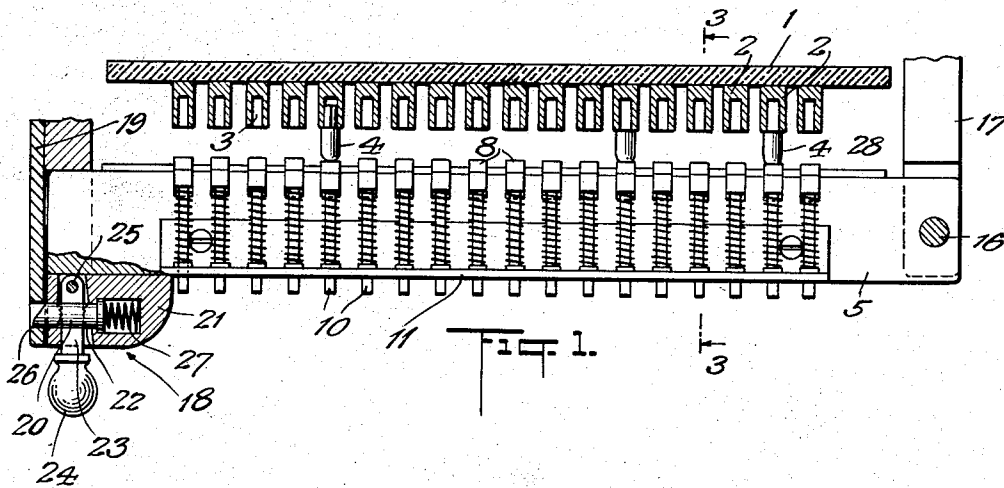
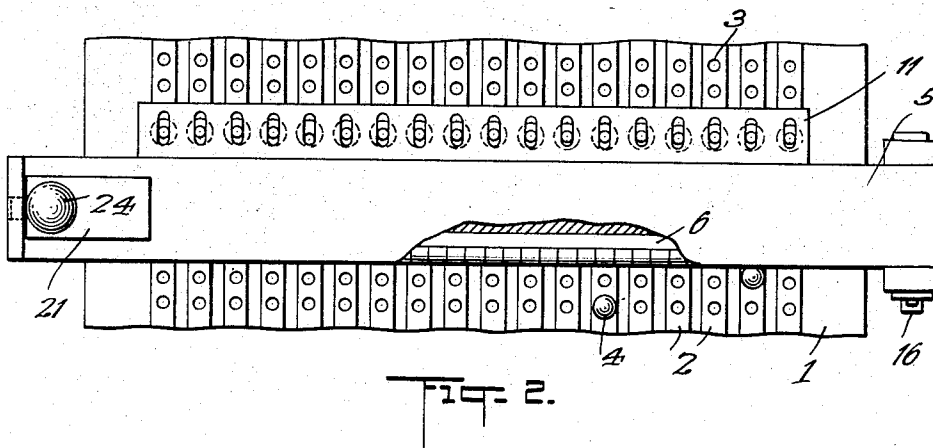
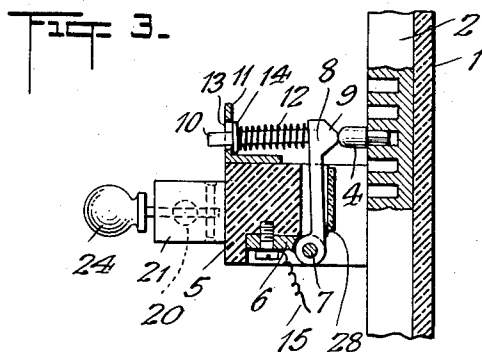
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ELECTRIC CIRCUIT CONTROL

Filed March 24, 1930



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ELECTRIC CIRCUIT CONTROL

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This invention relates to contacting mechanisms for lamp circuits particularly to those of the type utilized in controlling the lamp circuits of a continuous and step film printing machine.

In film printing machines an electrical contacting mechanism is utilized for varying the resistance of electric lamp circuits in accordance with a predetermined time relationship. Certain mechanisms of this type comprise a bank of contacting bars having spaced holes for the reception of contact plugs which plugs may be arranged in any desired pattern on the bank. Contact has been made with these plugs, in accordance with the prior art, by a series of spring pressed buttons positioned in a bar of brass material, which is moved parallel to the face of the contact bank by gravity under control of suitable catch mechanisms, the spring pressed buttons in the bar engaging with the contact plugs as the bar moves downwardly. Trouble has been experienced in creating a perfect contact between the plugs and buttons and it has always been found difficult to keep the friction between the plugs and buttons sufficiently low to permit the bar to fall freely and smoothly without interruption.

It is an object of my invention to provide an improved form of contact means for contacting with the plugs of a contact bank whereby smooth and very free action will always be obtained, while at the same time making an efficient closure of the circuit between the contacts.

In accordance with my invention I obtain the above mentioned objects and advantages by providing a contacting mechanism comprising a pivotally mounted arm carrying at its free end a cam-like contact surface. This arm is mounted on an insulating member with its longitudinal axis substantially parallel to the plane of the contact bank and held in this position by a small spring, which serves to press the arm forwardly against a stop, this stop being so related that the cam-like end of the arm engages the plugs with a wiping contact upon movement of the insulating element holding it. This cam contact rotates the arm against the action of

the spring, whereby free movement of the arm past the plug is permitted. By making the arm relatively long and by properly shaping its cam face to a gentle rise, a very smooth action is obtained that is always uniform and which therefore insures efficient operation of the associated electric circuit.

My invention will be more clearly explained in the following description and the accompanying drawing.

In the drawing, Fig. 1 shows in elevation and partly in section a contacting mechanism embodying my invention.

Fig. 2 is a side elevation partly in section of the device shown in Fig. 1.

Fig. 3 is a sectional view taken along lines 3—3 of Fig. 1.

Referring more particularly to the drawing, reference numeral 1 indicates an insulating plate carrying a series of contacting bars 2. These bars each have a series of holes 3 therein which are adapted to receive removable plugs 4. Positioned parallel with the face of the bank of bars 2 is a support of insulating material 5 having secured to the bottom side thereof a hinge member 6 carrying a plurality of arms 8 pivotally secured thereto at 7, one of said arms cooperating with each of said bars. The free end of each arm has on the side adjacent the bars a cam-like projection 9 and at its rear side has secured a pin 10. This pin passes through a hole 13 in an angle iron or bar 11 which is secured to the insulating support 5. Encircling the pin 10 is a thin coil spring 12 and for preventing the spring from passing through the hole 13 in the angle iron a washer 14 is furnished. The hole 13 is made larger, as by elongation, than the pin 10 in order to permit free movement of the latter as the arm 8 is rocked slightly away from the bar 2 by contact with the plug 4. The arms 8 are held against the forward thrust of spring 12 by a stop member 28 which is fastened to a projection at each end of the support 5. The arms rest against this stop member and are thereby spaced the proper distance with respect to the bars 2 and plugs 4. This arrangement gives a smoother and a more uniformly resilient light spring ac-

tion than can be obtained with a leaf spring or similar arrangement. The angle iron 11 serves the additional function of electrically tying together all of the contact arms 8 thereby insuring a multiplicity of electrical connections between each of the arms 8 and the member 6. In operation when one terminal 15 of circuit to be controlled is connected to the member 6 the other terminal is connected to the various bars 2 through control resistances which are not shown. While the hinge 7 of a single contact arm 8 might be sufficiently conductive for ordinary purposes much more reliable action is obtained by the mechanism disclosed wherein the spring 12 conducts the operating current to the member 11 from whence it is in turn directed to the member 6 through all of the other springs and hinges of the arms in the bank.

The insulating support 5 is pivotally mounted at 16 on a stationary member 17, so that the support and the contactor arms carried thereby may be swung out of engagement with the contact plugs of the bars. For holding the support in its proper operating position a latch 18 is used, which engages with a stationary member 19. This latch comprises a pin or bolt 20 slidably positioned in an aperture in a block 21 attached to the support 5. This pin has therein a slot 22 through which passes a lever 23 having an operating knob 24. The lever 23 is pivotally connected to the block 21 at 25 so that when the knob 24 is moved in a right hand direction, as viewed in Fig. 1, the pin 20 will be withdrawn from the hole 26 in a member 19 thereby permitting the support 5 to be swung away from the bank of bars. A spring 27 is furnished for maintaining the pin 20 in a forward position and edges of the slot 22 are rounded to permit free movement of the lever 23 therein. This latch arrangement is very reliable and is easy to operate. The lever arrangement 23 permits the latch to be opened quickly and easily and yet does not interfere with the smooth action of the latch upon opening and closing thereof.

In contacting banks of this type it is extremely important to have a reliable and quickly operable latching means. It must be quickly operable because adjustments of the bank have to be made from time to time rapidly, and it must be reliable because if the latch does not hold the support 5 as it is swung hurriedly to its closed position, the various electric circuits will not be properly operated, with the result that if the contacting mechanism is used in conjunction with a film printing machine, a large amount of expensive film may be destroyed.

I have disclosed a particular embodiment of my invention merely for the purpose of illustration and it should be understood that various modifications may be made within

the scope of the invention as set forth in the following claim.

What I claim is:

Switching mechanism, comprising the combination of a coordinate array of contacts, the contacts in each row being electrically connected together, and a linear array of contacts relatively movable with respect to said coordinate array of contacts and extending thereacross, and means for supporting said linear array of contacts, comprising a cross-bar of insulating material, each of the contacts supported thereby comprising a pivoted contact member having an inclined contact face for sliding engagement with a linear array of said coordinate contacts, a stop member mounted on said cross-bar and common to said pivoted contacts thereon for limiting the movement of said linear array of contacts toward said coordinate array of contacts, a tail member for each of said pivoted contacts, a spring on each of said tail members for urging said pivoted contacts toward said stop member, and an apertured backbar attached to said crossbar, the apertures in said backbar cooperating with said tail member for guiding purposes and for electrically connecting said pivoted contacts, and an electrical terminal for one of said pivoted contacts.

In testimony whereof, I have signed my name to this specification this 10th day of March, 1930.

ARTHUR ROSS.