COIN CONTROLLED ELECTRIC SWITCH OPERATING MECHANISM

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Aux's.
This invention relates to coin controlled switches for the electric motors of driven machines such as washing machines, and is an improvement of the mechanisms described in the patents to Harrison & Chafey No. 1,562,421, September 17, 1925, and Goggins No. 1,578,655, March 30, 1926.

The object of the invention is to provide improvements in mechanism of this class, wherein coin controlled means is employed for switch closing and in turn is under the control of the driven machine for a required time interval when the switch is automatically opened after the desired period of operation of the machine.

The improved mechanism is shown in the drawing wherein:

Figure 1 is a view in elevation showing the motor switch and coin controlled mechanism for operating the switch.

Fig. 2 is a plan view of the mechanism shown in Fig. 1.

Fig. 3 is a sectional detail taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional detail taken on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of the switch operating arm.

The general features of the construction to which this invention relates include a pair of switch elements which are resiliently urged toward closing position but are normally separated by an insulated switch opening arm.

The switch operating arm is pivotally mounted upon a ratchet wheel and has a relative movement with respect to the ratchet wheel so that, under coin control, it may be shifted away from the switch elements permitting the latter to close and remain closed for a measured period. The switch elements control the circuit of a motor for the driven machine and the latter in turn operates the ratchet wheel by a step-by-step motion until it has made a complete revolution carrying the switch controlling arm back to its initial position where it separates the switch elements.

The switch operating mechanism, as illustrated, is mounted on a plate 1 to which is secured, through the angle 2, a face plate 3. A coin chute 4 is secured to the plate 3 and receives coins through an opening in the face plate and registering therewith. A plunger 5 extends through the face plate and its function is to permit manual operation of the switch control means after the coin has been deposited in the chute 4.

The face plate 3 is also provided with an indicating device 6 in the form of a dial carried by a shaft 7 extending through plate 3 and driven by beveled gears 8, one of which is fast to a shaft 9 which also carries a driven ratchet wheel 10. The purpose of the indicating dial is to show at any time the extent or period of operation of the driven machine.

The ratchet wheel 10 is driven the distance of one tooth for each rotation of a ratchet wheel 11 by a pin 12 carried by the latter. The ratchet wheel 11 in turn is driven by a reciprocating link 13 of the motor driven machine, not shown. Link 13 is pivoted to an arm 14 which carries a pawl 15 for operating the ratchet wheel 11.

A switch operating arm 16 is pivoted at 17 to the ratchet wheel 10. Arm 16 may oscillate on the pivot 17 between the stop pins 18 and 19 on the ratchet wheel. The switch operating arm 16 is made from insulating material and its end 20 normally separates the spring switch elements 21.

The switch operating arm 16 may be rocked to the right (Fig. 1) around the pivot 17 through the action of a slide 22 carried by the plunger 5 provided a coin has been dropped into the chute 4. When so operated the end 20 of the switch operating lever passes downwardly from between the switch arms 21 permitting the latter to move into contact. This motion of the switch operating arm 16 is limited by pin 19.

When a coin is deposited in the chute 4 it comes to rest in the position indicated at 29 (Fig. 1), its edge, at one side, resting upon a pin 24 carried by the arm 16 and at the opposite side bearing against the end of slide 22. When the slide 22 is pushed inwardly it rolls the coin upwardly upon the pin 24 and the coin comes into contact with the fixed shoulder 25 on the chute 4. Further inward movement of the slide 22 forces the coin be-
bsequent to the fixed shoulder 25 and the pin 24. The pin 24 and its supporting arm 16 are thus forced downwardly around the pivot 17 a sufficient distance to cause the end 20 of the switch operating lever 16 to pass out from between the switch arms 21. The coin then drops clear of its coacting mechanism into a coin box, not shown. When the plunger 5 is released, it and the slide 22 to which it is attached are returned to normal position by the spring 26.

The closing of the switch arms 21 results in the operation of the driven machine and reciprocation of link 18 and the pawl 15 operated thereby. For each rotation of the ratchet wheel 11 the pin 13 thereof moves the ratchet wheel 10 one tooth space until the latter has made a complete rotation at the end of which time the pin 18 on the ratchet wheel 10 forces the switch controlling arm 16 between the switch elements 21 and thus opens the circuit. Backward rotation of the ratchet wheel 10 is prevented by the spring retaining element 27 carrying a pin 28 for engaging the teeth of the ratchet wheel.

The plunger 5 cannot be operated during the operation of ratchet wheel 10 as the latter carries a flange 29 which is in the path of a pin 30 on the slide 22 except when the ratchet wheel 10 is in its normal position as shown in Fig. 1 when an opening 31 in the annular flange 28 is in line with pin 30.

A coin inserted into chute 4 during the operation of the machine will be stopped by a tongue 32 extending through a slot 33 in the side of the chute. This tongue is bent inwardly from a resilient arm 34 and is normally out of the path of a coin because the switch operating arm 16 bears against the inclined end 35 of arm 34. The arm 34 is supported at its opposite end on a screw 36. When the switch operating arm 16 is lowered by the action of a coin on the pin 24 thereof, it moves away from the inclined end 35 of the spring arm 34 allowing the latter to move toward the chute 4 where its lug 32 is in position to stop a coin.

In the operation of the mechanism a coin inserted into the chute 4 slides down the same until stopped in the position 23, by a pin 24 and the inner edge of slide 22. The operator then pushes the plunger 5 inwardly causing the slide to engage the coin and roll it upwardly around pin 24 until the edge of the coin abuts the fixed shoulder 25. Then further motion causes the coin to bear downwardly upon the pin 24 rocking the switch control lever 16 downwardly around pivot 17 and away from the bent beveled end 35 of the spring arm 34, which moves inwardly so its lug 32 blocks the coin chute passage. At the same time the lever 16 moves from between the switch arms 21 which spring together and close the circuit. The ratchet wheel 11 is then driven by a step-by-step motion during the operation of the driven machine. After each revolution of ratchet 11 pin 13 thereon moves the ratchet wheel 10 through the distance of one tooth space. The switch operating arm 16, which is pivoted to the ratchet wheel 10 at the pivot 17, is carried around with the ratchet wheel until the latter has made a complete rotation when pin 18 thereon forces the switch operating arm 16 between the two contact elements 21, whereby the circuit is opened and the spring arm 34 restored to normal position.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

1. A coin controlled switch operating mechanism of the class described, a pair of contact elements resiliently urged toward each other, a switch controlling arm normally holding said contact elements separated, a wheel mounted for rotation on a fixed axis, said switch controlling arm being pivoted on said wheel eccentric to said axis, coin controlled means for rocking said switch controlling arm around its pivotal connection with said wheel and out of engagement with said contact elements, a fixed shoulder, said coin controlled means including a manually operable member arranged to cause an inserted coin to bear between said switch controlling arm and said shoulder, and means for imparting a rotational motion to said wheel and thereby restoring said switch controlling arm into normal relation with said contact elements.

2. In a coin controlled switch operating mechanism, of the class described, a support, a coin chute having a slot in one side, an arm mounted on said support having a tongue in registration with said slot, a pair of contact elements resiliently urged toward each other, a switch controlling member normally holding said contact elements separated, means on said arm engageable by said switch controlling member out of engagement with said contact elements and simultaneously releasing said arm to close the passage of said chute.

Signed at Wausau, this 23d day of May, 1928.

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