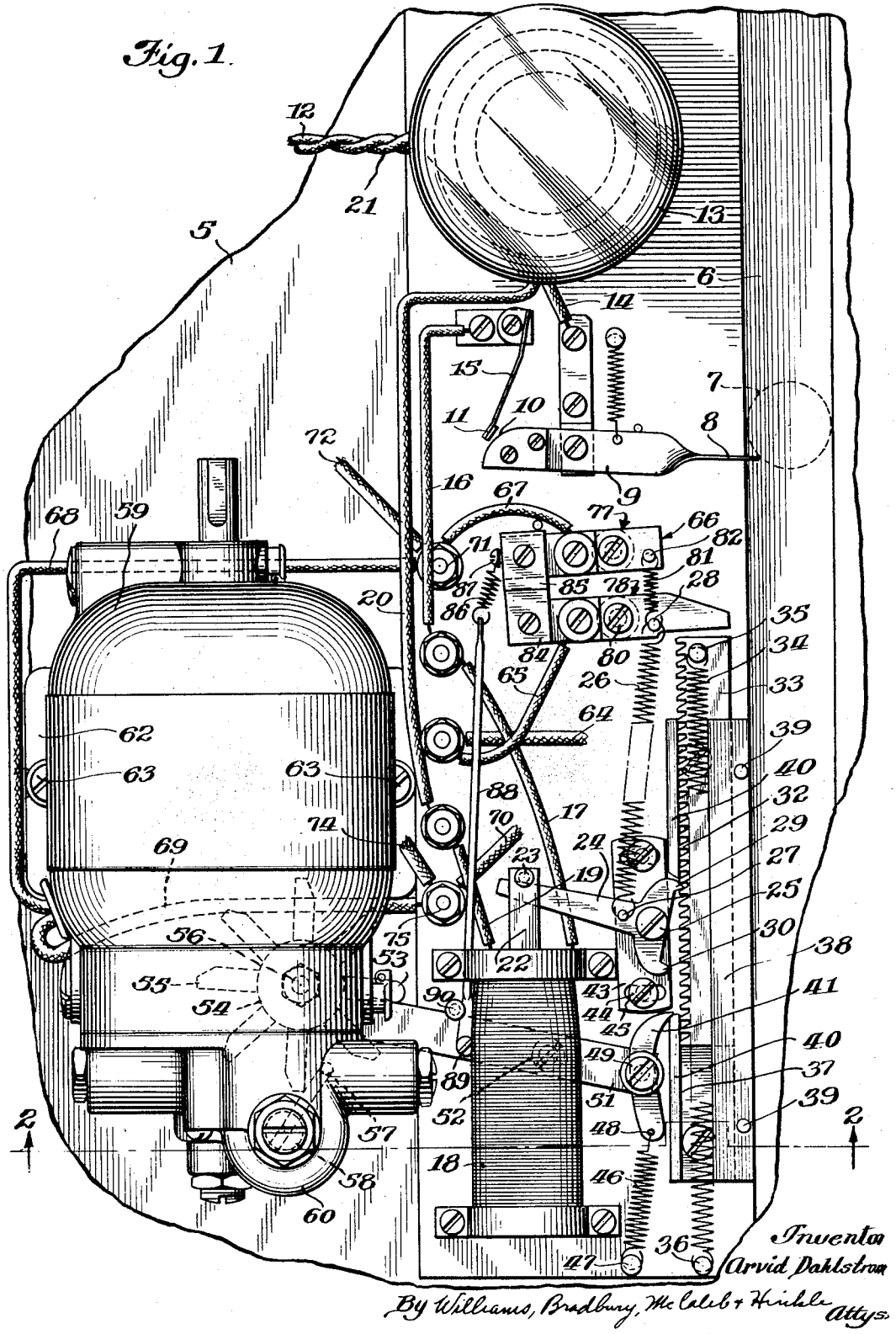
Nov. 14, 1933. A. DAHLSTROM 1,934,914

PREPAYMENT CURRENT DISPENSING DEVICE

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Fig. 1.



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Fig. 3.

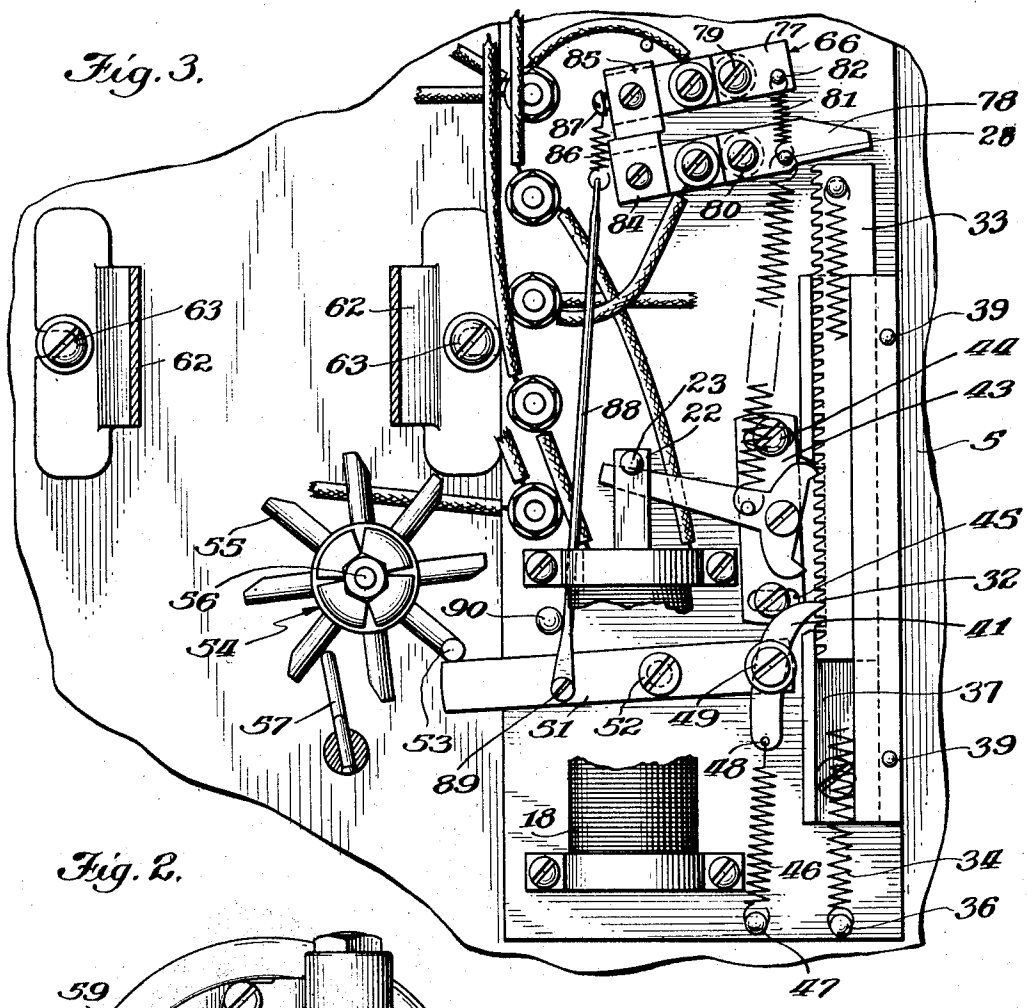
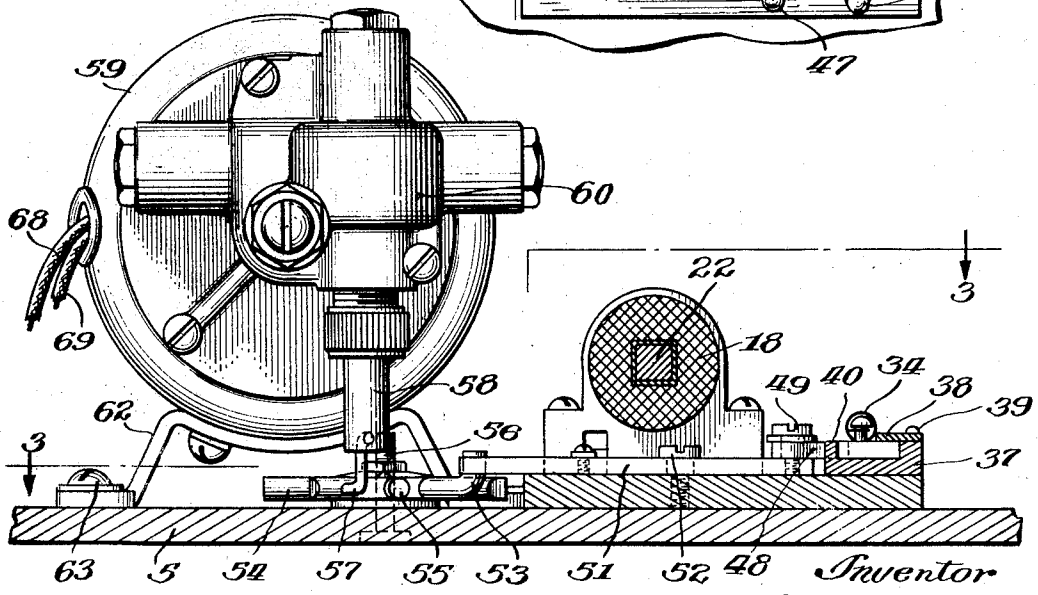


Fig. 2.



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PREPAYMENT CURRENT DISPENSING DEVICE

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Fig. 4.

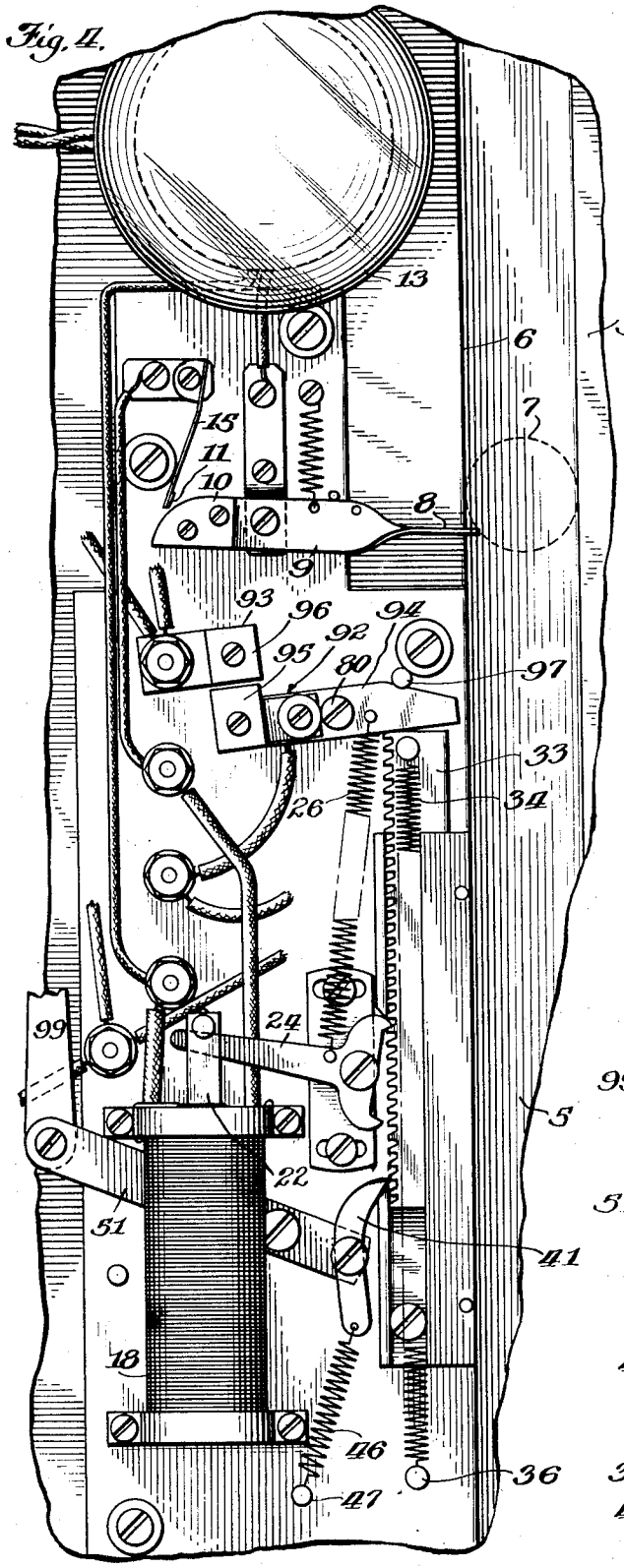
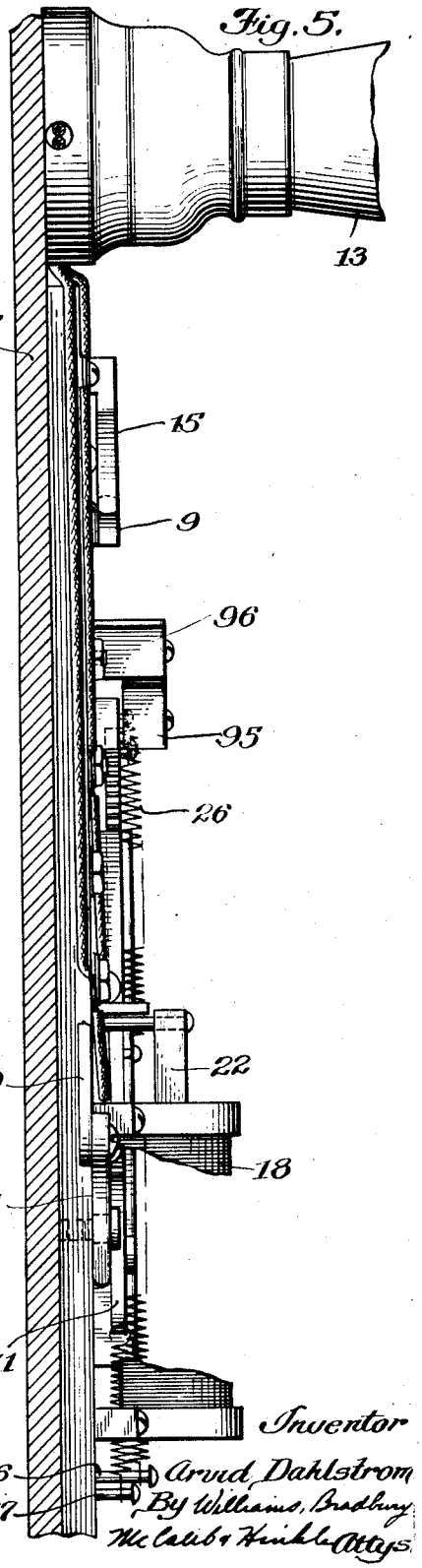


Fig. 5.



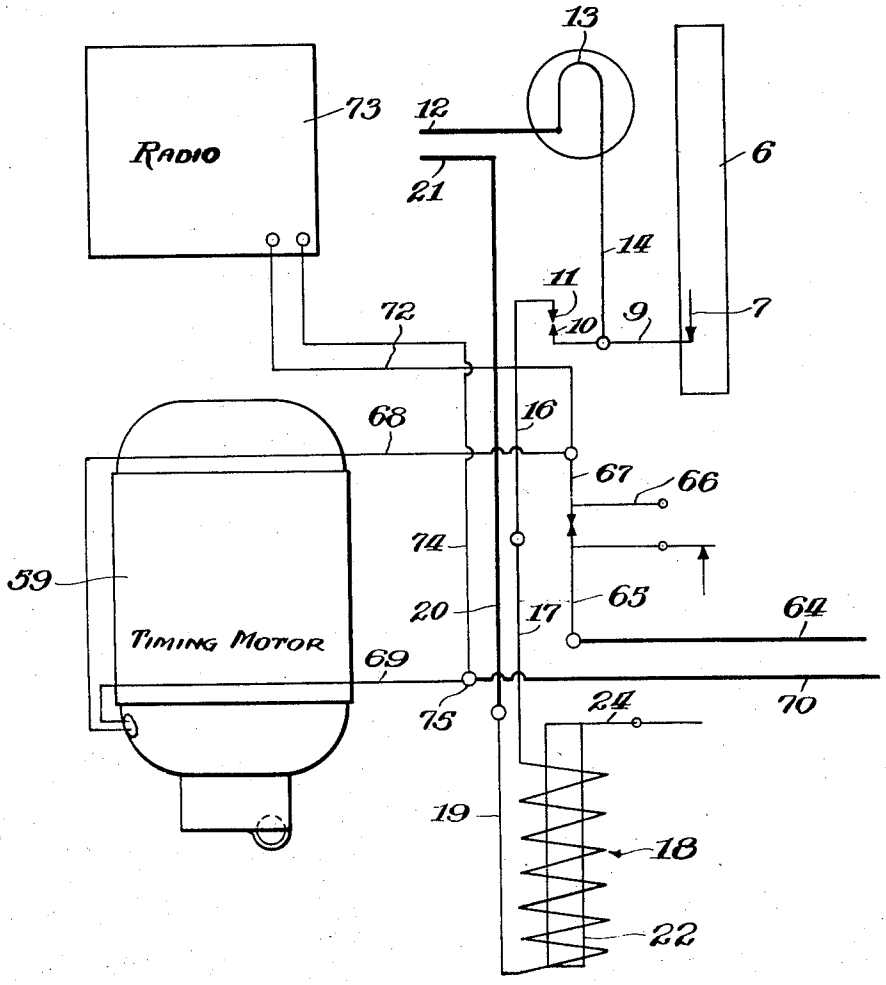
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Fig. 6.



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Patented Nov. 14, 1933 1,934,914

UNITED STATES PATENT OFFICE

1,934,914

PREPAYMENT CURRENT DISPENSING DEVICE

Arvid Dahlstrom, Chicago, Ill., assignor of one-third to Justus P. Seeburg and one-third to Frithiof Landberg, both of Chicago, Ill.

Application May 30, 1930. Serial No. 457,617

4 Claims. (Cl. 161—1)

This invention relates to prepayment devices, and more particularly to devices for controlling the supply of current to electrically operated apparatus, as, for example, to a radio.

An object of this invention is the provision of an improved device adapted upon the insertion of a coin to close a circuit which controls a second circuit from which current is supplied to an electrically operated device and which circuit also includes a motor for opening the said second circuit upon the elapse of a predetermined period of time.

A further object is the provision of such a device in which the time measuring mechanism may be preset so that the time elapsed before the opening of the second circuit after the insertion of the first coin will be multiplied by the number of coins inserted.

A further object of the invention is the provision of an improved coin actuated means of the type specified capable of receiving a plurality of coins and controlling the stopping of the main circuit control motor in accordance with the number of coins inserted.

A further object of the invention is the provision of improved means actuated by a motor to open the current supply circuit after a predetermined period of time.

A further object of the invention is the provision of improved coin actuated means for starting a time control motor adapted to open the current supply circuit after a predetermined period of time.

A further object of the invention is the provision of a coin actuated switch for cutting in the supply current to an electrically operated device and timing means associated with said device for opening the coin actuated switch after a predetermined period.

Other objects and advantages will become apparent from the following detailed description.

In the accompanying drawings,

Fig. 1 is a fragmentary plan view of a panel showing my improved mechanism mounted thereon;

Fig. 2 is a horizontal sectional view of the device taken generally on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary plan sectional view taken on the line 3—3 of Fig. 2 at a subsequent stage in the operation of the device;

Fig. 4 is a view similar to Fig. 1, illustrating a modified form of my invention adapted to be operated without a motor;

Fig. 5 is a side elevation of the parts shown in Fig. 4, showing the panel in section, and other parts broken away to more clearly show other parts;

Fig. 6 is a wiring diagram of my invention as shown in Figs. 1–3 showing portions of the mechanism schematically.

Referring to the drawings, I have illustrated a panel 5 having a coin chute 6 mounted thereon showing a coin 7 therein about to engage an extension 8 on the circuit closer 9 for closing the contacts 10 and 11, the closing of which completes an electric circuit through conductors 12, electric light bulb 13, conductor 14, circuit closer 9, contact element 15, conductors 16 and 17, solenoid 18, conductors 19, 20 and 21, back to the other side of the line or power supply. The closing of this circuit causes the solenoid 18 to become energized and move the armature 22 downwardly. The armature 22 has a pin 23 therein which engages adjacent the inner end of an escapement element 24, which element is pivoted on the screw 25 and is normally urged upwardly or counterclockwise on its pivot by the spring 26 engaging over pins 27 and 28. The escapement element or member 24 is provided with teeth 29 and 30 which are adapted to engage the teeth 32 on the actuating element 33. The element 33 is constantly urged downwardly by a coil spring 34 engaging the pins 35 and 36 and the element 33 is held in position in a channel 37 by a plate 38 partially covering the open side thereof and secured thereto by pins 39. A portion of the flange 40 which guides the teeth of the element 33 is cut away, leaving an aperture through which the teeth 29 of the escapement member and the upper end of the dog 41 gain access to the teeth of the element 33.

The escapement member 24 is mounted on a block 43 which is adjustably secured to the panel 5 by means of screws 44 passing through slots 45 in the plate 43. The dog 41 is normally urged to a substantially vertical position as illustrated in Fig. 3 by means of a spring 46 having one end secured to a pin 47 and the other end passing through an aperture 48 in the depending portion of the dog. The dog 41 is pivoted by a screw 49 to a rock arm 51 pivotally fixed to the panel 5 by a screw 52. The end of the rock arm 51 opposite the dog 41 extends into the path of movement of the upturned pin 53 on the sprocket wheel 54 and is adapted to be moved downwardly thereby to move the dog on the opposite end of the rock arm 51 upwardly into engagement with the teeth 32 and lift the element 33 a distance equal to the width of one tooth upon each revolution of the sprocket wheel 54. The sprockets 55

on the wheel 54 rotate in a plane below the plane of the rock arm 51 and do not engage the same.

The sprocket wheel 54 is rotatably mounted on a bolt 56 and the sprockets 55 are disposed in the path of a pin 57, which depends from a vertical shaft 58 and rotates therewith for causing the sprocket wheel to move an angular distance equal to the distance between adjacent sprockets upon each complete revolution of the shaft 58. The shaft 58 is rotated by the electric motor 59 through the medium of any suitable gear reduction mechanism within the gear casing 60. Since the specific type of gear reduction is no part of this invention, it is not herein specifically illustrated or described.

The motor 59 may be of any well known type and preferably a substantially constant speed motor such as induction motors, the details of which form no part of this invention. To avoid shock and vibration the motor 59 is preferably mounted on a slightly resilient support 62 secured to the panel 5 by screws 63. Current for the operation of the motor 59 is received through the supply conductor 64, conductor 65, circuit breaker 66, conductors 67 and 68. Thence from the motor the current passes through conductor 69 back to the supply in conductor 70. Current to be vended is received at the binding post 71, passes through conductor 72 to a radio or the like 73, and back through conductor 74 to the binding post 75, from which it passes to the supply 70.

The circuit breaker 66 comprises arms 77 and 78 which are pivotally mounted by screws 79 and 80. Adjacent the outer ends of the arms 77 and 78 is fixed a coil spring 81 which engages pins 82 and 28 for urging the outer ends of the arms toward each other. On the opposite ends of the arms are secured contact elements 84 and 85, preferably consisting of carbon blocks, which contacts are normally held into firm engagement by a spring 86 engaging over a pin 87. The lower end of the spring 86 passes through the upper end of a rod 88, the lower end of which is pivoted to the rock arm 51 by a screw 89.

The upward movement of the end of the rock arm 51 adjacent the sprocket wheel 54 is limited by a pin 90. As the rock arm oscillates it moves with it the rod 88, which through the force of the spring 86 draws downwardly the inner ends of the circuit breaker arms, retaining the contact elements in firm engagement although permitting them to slide relative to each other. If, therefore, the arm 51 is oscillated by the pin 53 and the spring 46, the motor circuit through the circuit breaker is maintained closed and does not become opened until the dog 41 has raised the actuating element 33 upwardly a sufficient distance to engage the arm 78 of the circuit breaker and prevent the upward oscillation of the contact 84 when the inner end of the arm 77 moves upwardly through the force of the spring 81 as the force of the rod 88 drawing the spring 81 down is released. By this arrangement a sudden breaking of the circuit through the motor and through the radio or the like receiving current from the motor circuit is effected.

In the operation of my invention, assuming the circuit breaker to be open, a coin is dropped through the chute 6, closing the contacts 10 and 11, which permits current to flow through the solenoid 18 and oscillate the escapement member 24 to permit the actuating element 33 to move downwardly one notch. Thereupon the motor circuit is closed through the circuit breaker, and since the radio receives its current from the motor circuit it simultaneously begins to utilize current, which utilization may continue until a predetermined time has elapsed in which the motor has rotated the sprocket wheel through one complete revolution through the medium of the suitable gear reduction mechanism and has oscillated the arm 51 to raise the dog 41 into contact with the actuating element 33, which is raised into substantial engagement with one arm of the circuit breaker. As the arm 51 is released by movement of the pin 53 beyond the inner end thereof, the circuit breaker shown in Figures 1 and 3 is snapped to open position, thereby cutting off current to the motor and to the radio.

The modified form of my invention shown in Figs. 4 and 5 is generally similar in most details to the form shown in Figs. 1 to 3 except that no motor and star wheel is required in this form of the invention. The circuit breaker 92 is slightly different, comprising a fixed arm 93 and a pivoted arm 94. The arm 94 is normally urged in a clockwise direction about the pivot pin 80 by the spring 26 and thereby the contacts 95 and 96, which are preferably carbon blocks, are normally held in firm engagement but may be disengaged by a similar actuation of the element 33 whereby the arm 94 is engaged and rotated in a counterclockwise direction about the pivot pin 80 until it engages the stop member 97. Actuation of element 33 is accomplished by engagement by the dog 41 on the end of rock arm 51. A lever 99 attached to the opposite end of rock arm 51 may be connected with an electrically operated clock mechanism and is adapted at predetermined times to be reciprocated, thus causing rock arm 51 and dog 41 to engage the toothed portion of element 33 to function in the same manner as the previously described form. By the use of the type of circuit breaker 92 shown in this form of the invention, a snap action in the breaking of the circuit is not effected, such as in the preferred form of my invention but the mechanism is considerably simplified and the elimination of the motor mechanism makes this form of the invention much more economical.

It will be evident that with this form of the invention a combined time-controlling and actuating mechanism may be installed with very little effort in many amusement devices which are already on the market.

From the foregoing description it will be very evident that a plurality of coins may be deposited at the same time, each coin energizing the solenoid 18 and through the medium of armature 22 and escapement element 24, element 33 will be stepped down a corresponding number of steps and the time period until the circuit is broken will be correspondingly increased, that is, each coin passed through the chute 6 will add to the minimum predetermined time before the circuit is broken an equal period of time which the motor or other timing element will be required to operate before the current to the radio is cut off.

It will be understood by those skilled in the art that various changes and modifications may be made for accomplishing the objects of this invention and I desire to avail myself of such modifications as come within the scope of the appended claims.

I claim as my invention:

1. In an apparatus for vending a time limited electric current, an electric circuit including a solenoid, means for closing said circuit, a second electric circuit including a motor and a circuit breaker, means actuated by said solenoid for

effecting the closing of said second circuit, mechanism for opening said circuit breaker after a predetermined time interval, comprising an actuating element, a dog engageable with said actuating element for lifting the same, a rock arm mounted for oscillation and supporting said dog on one end, means operated by said motor for oscillating said rock arm at predetermined intervals of time means for biasing said circuit breaker away from said actuating element while said actuating element is being lifted by said dog, and means for subsequently causing contact between said circuit breaker and said actuating element to operate said circuit breaker.

2. In an apparatus for vending a time limited electric current, an electric circuit including a solenoid, means for closing said circuit, a second electric circuit including a motor and a circuit breaker, means actuated by said solenoid for effecting the closing of said second circuit, mechanism for opening said circuit breaker after a predetermined time interval, comprising an actuating element, a dog engageable with said actuating element for lifting the same, a rock arm mounted for oscillation and supporting said dog on one end, means operable by said motor engaging the opposite end of said rock arm to oscillate the same at predetermined intervals of time, a rod operatively connected to said circuit breaker and mounted on said rock arm and actuated thereby for biasing said circuit breaker away from said actuating element while said actuating element is being lifted by said dog, and means for subsequently causing contact between said circuit breaker and said actuating element to operate said circuit breaker.

3. In an apparatus for vending a time limited electric current, an electric circuit including a solenoid, means for closing said circuit, a second electric circuit including a motor and a circuit breaker, means actuated by said solenoid for effecting the closing of said second circuit, mechanism for opening said circuit breaker after a predetermined time interval, comprising an actuating element, a dog engageable with said actuating element for lifting the same, a rock arm mounted for oscillation and supporting said dog on one end, means operable by said motor operably engaging the opposite end of said rock arm to oscillate the same at predetermined intervals of time, said circuit breaker comprising two indivually pivoted arms, means for oscillating said arms away from said actuating element while said actuating element is being moved by said dog, and means for moving said circuit breaker into contact with said actuating element when released to operate said circuit breaker.

4. In an apparatus for vending a time limited electric current, an electric circuit including a solenoid, means for closing said circuit, a second electric circuit including a motor and a circuit breaker, means actuated by said solenoid for effecting the closing of said second circuit, mechanism for opening said circuit breaker after a predetermined time interval, comprising an actuating element, a dog engageable with said actuating element for lifting the same, a rock arm mounted for oscillation and supporting said dog on one end, means operable by said motor operably engaging the opposite end of said rock arm to oscillate the same at predetermined intervals of time, said circuit breaker comprising two arms individually pivoted intermediate their ends, a rod on said rock arm resiliently connected to one of said arms of said circuit breaker to oscillate said breaker away from said actuating element during the lifting movement thereof and resilient means for suddenly moving said circuit breaker toward said actuating element to be opened thereby.

ARVID DAHLSTROM.