June 24, 1930. W. PODROUZEK 1,766,354

COIN CONTROLLED ELECTRIC SWITCH

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Fig. 1.

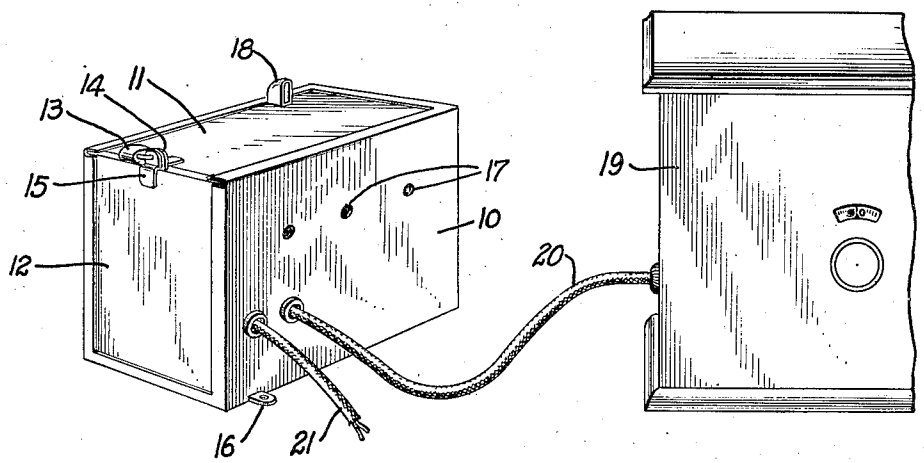
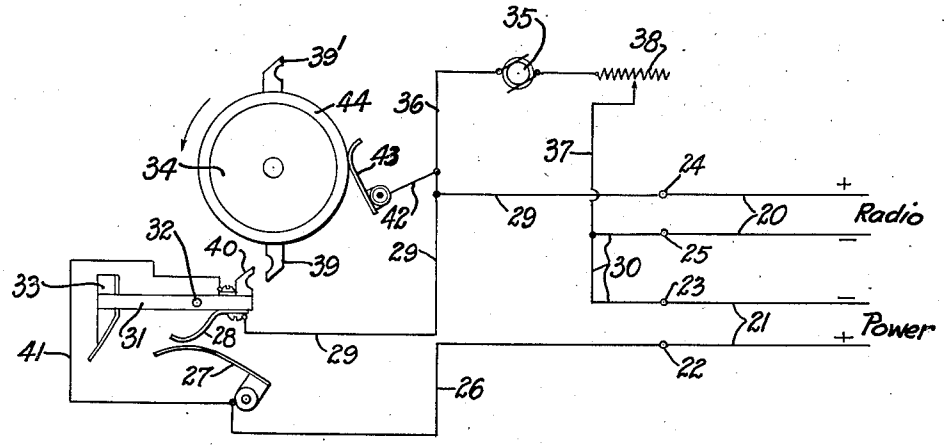


Fig. 2.



Inventor:
William Podrouzek
By Frank J. Schnaeder Jr.
Attorney

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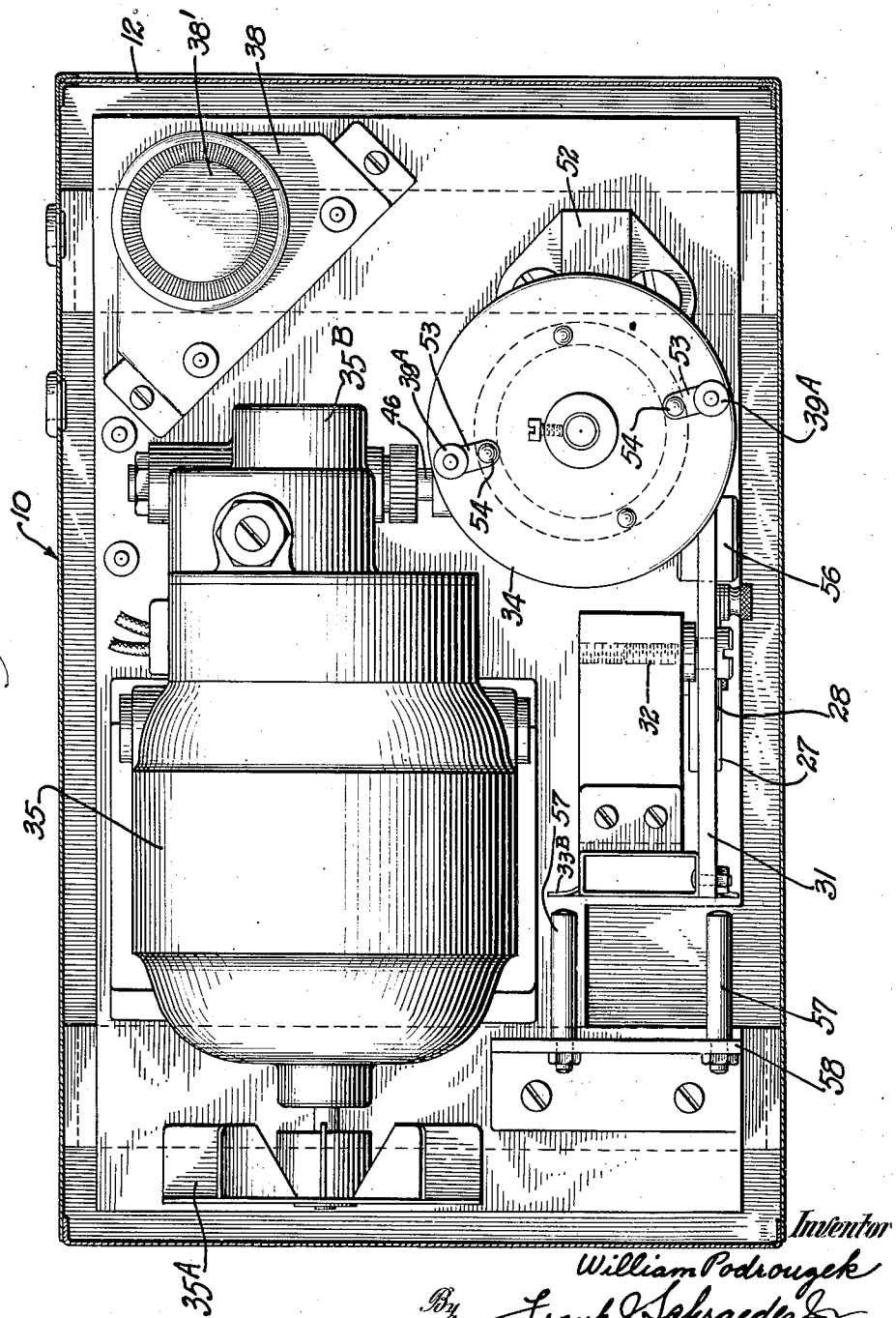


Fig. 3.

Inventor
William Podrouzek
By Frank J. Schraeder Jr.
Attorney

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COIN CONTROLLED ELECTRIC SWITCH

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Fig. 5.

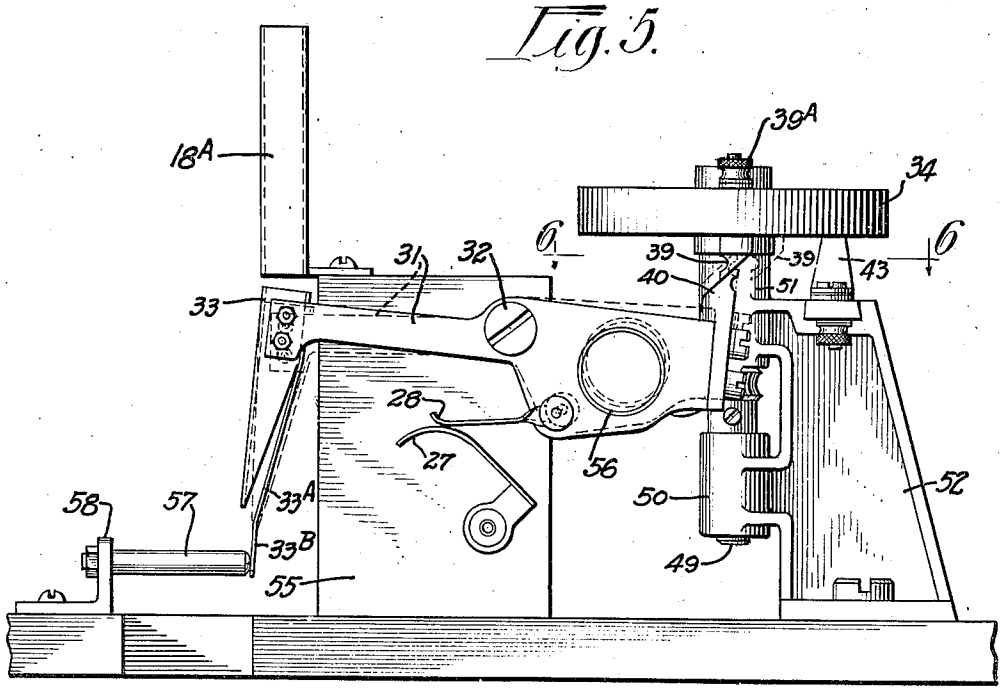
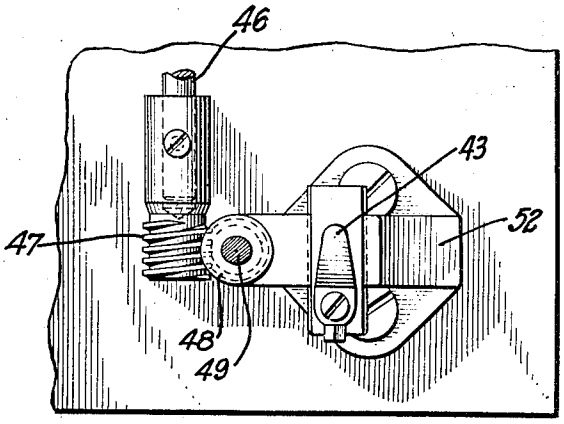


Fig. 6.



Inventor:
William Podrouzek
By Frank J. Schraeder Jr
Attorney

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COIN CONTROLLED ELECTRIC SWITCH

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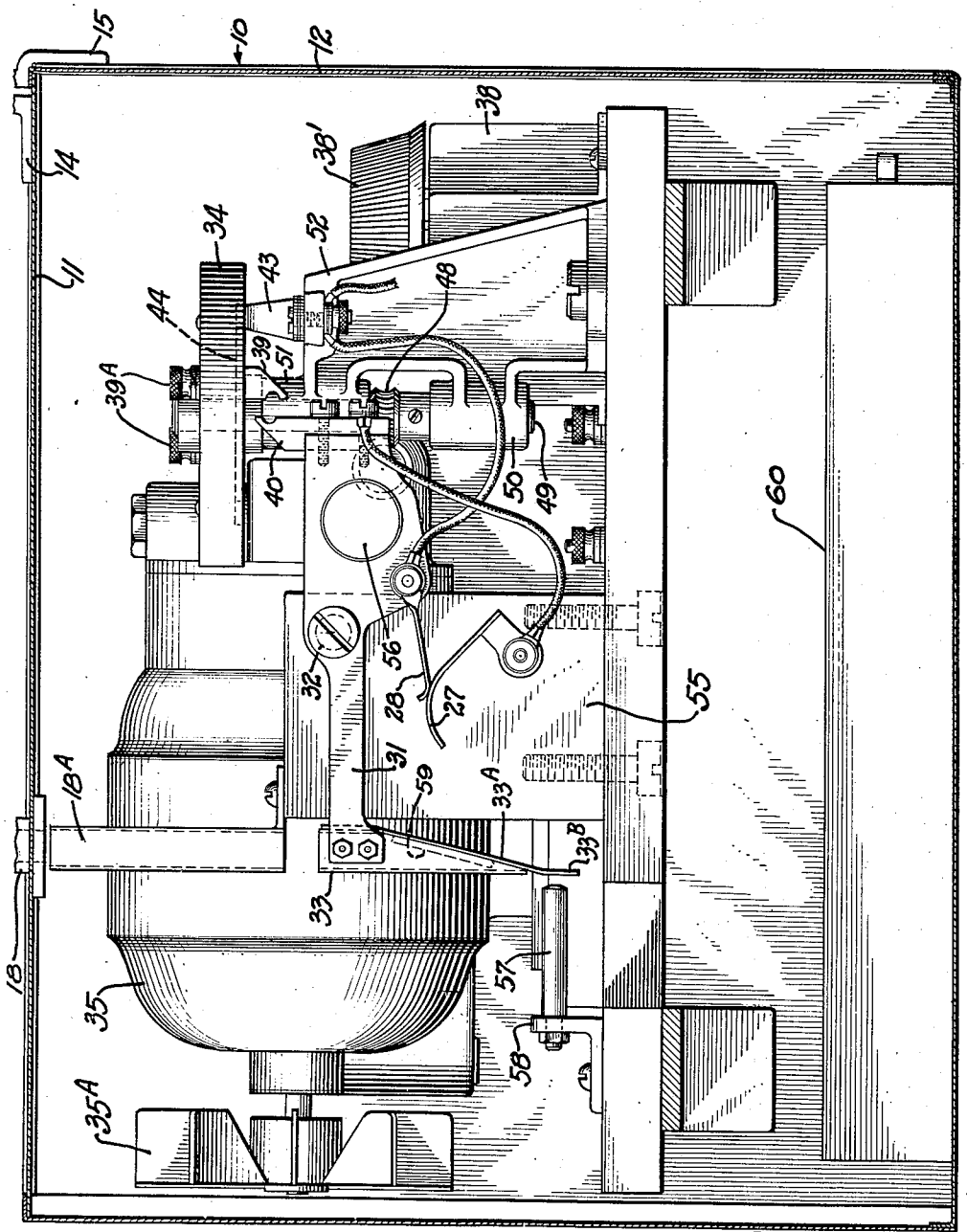


Fig. 4.

Inventor:
William Podrouzek
By Frank J. Schraeder Jr
Attorney

Patented June 24, 1930 1,766,354

UNITED STATES PATENT OFFICE

WILLIAM PODROUZEK, OF CHICAGO, ILLINOIS

COIN-CONTROLLED ELECTRIC SWITCH

Application filed October 24, 1929. Serial No. 402,051.

This invention relates generally to coin-controlled electric switches and has particular reference to an improved device operable by coins for controlling the operation of a radio receiving set for a predetermined period of time.

My device may be sold as an accessory for connection to an electrically operated radio or obviously, may be built within the housing or cabinet of a radio receiver as a built-in feature to afford a coin-operated radio receiver which can be installed in public places such as restaurants, hotels and clubs.

One of the objects of my invention is to provide a novel coin-operated electric switch which is so constructed and arranged that a normally open electric circuit may be closed for a predetermined time by the deposit into the device of a coin; the arrangement being such that after the elapse of such predetermined time, the circuit will be automatically restored to normal open condition by the automatic operation of said switch.

Another object of my invention is found in adjustable electrical means for variably controlling the time during which said circuit remains in closed position.

Still another object of the invention resides in the novel details of construction and arrangement of the coin-controlled motor-operated switch for opening and closing said circuit.

A further object of the invention finds embodiment in the means for maintaining the closed position of the switch for a limited time after the release of the coin by the coin-retaining mechanism so as to move the switch into normal open position.

A still further object of the invention is found in the novel construction and arrangement of the coin-operable mechanism which is provided with novel means for retaining and releasing of the coin during the predetermined operation of the switch.

With the above and other objects in view, my invention consists in the novel features of construction and arrangement shown in preferred embodiment in the attached drawings, described in the following specifications and particularly pointed out in the appended claims.

Referring to the drawings:—

Fig. 1, is a perspective view of my improved device embodying my invention, shown connected to a radio receiver which is partly shown.

Fig. 2, is a diagram of the electric circuit employed in the arrangement herein disclosed.

Fig. 3, is a plan view of my invention with the cover of the housing of my device removed to show the parts.

Fig. 4, is a vertical section taken on line 4—4 of Fig. 3, showing the parts in side elevation.

Fig. 5, is a side elevation of the switch and coin-operable mechanism showing the coin-operable mechanism in position after the coin has been released while the switch is still in closed position and just before the switch is moved into open position, by the motor thereof.

Fig. 6, is a cross-section taken on line 6—6 of Fig. 5, showing the motor worm drive for the switch and spring contact.

Referring to Fig. 1, the casing 10 for my improved device is provided with a slidably removable cover 11 and end 12 which are normally held in unremovable position by a lock 13 clasped through the ears 14 and 15 which are respectively secured to the cover 11 and end 12. The base of the casing 10 may be secured in an unremovable position by bolts passed through the base ears 16 and holes 17 may be provided for ventilation in the casing sides. The exposed end of a coin receiving chute is shown by numeral 18. An end portion of a radio receiver is indicated by numeral 19 having a connection with the switch-controlled power line within the casing through the conductor 20. The electric power conductor is indicated by numeral 21.

In the diagram of the electric circuit shown in Fig. 2, the positive and negative leads of the power conductor 21 are connected to the binding posts 22 and 23 respectively. The positive and negative leads of the conductor 20 for the radio receiver are

respectively connected to the binding posts 24 and 25. A positive lead 26 extends from the post 22 to the stationary switch contact member 27 which cooperates with the movable switch contact member 28 for completing or breaking the circuit through the lead 29 which extends from the member 28 to the post 24 of the positive lead of the radio receiver conductor 20. The negative lead 30 permanently connecting the negative leads of the radio receiver conductor and power conductor between the posts 25 and 23.

The contact member 28 is fixed to the balanced arm 31 which is pivotally mounted at 32 and normally positioned to maintain the circuit just described in open condition with the movable contact member 28 out of contact with the stationary contact member 27.

The pivotally mounted balanced arm 31 is provided with a coin receiver 33 at one end thereof which upon the deposit of a coin therein is adapted, by the weight of such coin, to oscillate the arm 31 about its pivot 32 to cause the member 28 to engage the member 27 to thereby complete the above described circuit.

The coin within the receiver 33 will continue to maintain the circuit just described in closed condition until the coin is released therefrom by the rotating coin-releasing member 34 which is brought into rotation upon the completion of said circuit by a motor 35. The motor circuit consists of a positive lead 36 connecting one terminal of the motor with the lead 29 and a negative lead 37 connecting at one end with the lead 30 and at its other end with the rheostat 38 which is connected with the negative terminal of the motor.

The motor will continue to rotate the member 34 and the shoe 39 which is secured thereto will be brought into engagement with the contact shoe 40 which is fixed to the arm 31 and conductively connected with the positive lead 26 by the lead 41. As the inclined surfaces of the shoes 39 and 40 are brought into engagement the arm 31 will be gradually tilted or oscillated to release the coin from the receiver 33 whereupon the counterweighted arm 31 will be brought to normal position with the circuit open between the contacts 27 and 28, but since the shoes 39 and 40 which are made of electrically conductive material will still be in engagement with each other the motor 35 will continue to rotate the member 34 until the shoe 39 has passed and released itself from contact with shoe 40. The circuit to the motor in such case is maintained by a lead 42 which is connected at one end to the lead 36 at the other end with a spring contact blade 43 which is in continuous engagement with a metallic ring 44.

When the shoe 39 has passed and released itself from contact with shoe 40 the circuit to the motor will obviously be open therebetween and the motor will gradually come to a stop and the circuit to the radio receiver will also be open. To repeat the operation it will be neccesary to deposit another coin into the receiver 33 and this operation will continue as above described until the second shoe 39^{I} is brought into operative engagement with the shoe 40 to again release the coin from the receiver 33 in the manner above described.

Obviously, the member 34 could be provided with only one of said shoes 39 or with two or more of such shoes. The arrangement shown provides for two operations of the device in one cycle of operation or complete rotation of the member 34.

The speed of rotation of member 34, or the period of time during which the radio receiver may be operated, may be varied not only by the number of shoes 39 mounted thereon, but also, obviously, by the setting of the rheostat 38.

Referring now to Figs. 3 to 6 inclusive, the rheostat 38 is provided with an adjusting knob 38^{I} for controlling the speed of the motor 35 which is preferably provided with a cooling fan 35^{A} at one end of the motor shaft and with a suitable speed reducer 35^{B} at the other end of the motor shaft.

The speed reducer shaft 46 is provided with a worm 47 which is in operative mesh with the worm gear 48 rigidly mounted on the vertically deposed shaft 49.

The shaft 49 is rotatably mounted in bearings 50 and 51 of the bracket support 52.

A rotatable coin-releasing disk member 34 of electrically non-conductive material is rigidly mounted upon the upper end of shaft 49. The disk member 34 has imbedded in its underside a metallic ring 44 which is continuously engaged by the spring contact blade 43. The ring 44 acts as a current feed to the shoes 39 and 39^{I} which are also fixed to the underside of the disk member 34 and have shanks extending through the disk to the nuts 39^{A}. The shoe retaining nuts 39^{A} also securely retain the short connectors 53 which connect the shanks of the shoes 39 and 39^{I} to the pins 54 which extend through the disk 34 into contact with the ring 44.

The arm 31 is made of electrically non-conductive material, is pivotally mounted on the screw pin 32 to a block support of electrically non-conductive material indicated by numeral 55.

One end of the arm 31 is slightly enlarged and provided with a weight 56 to normally retain such arm in balanced position with the circuit closing spring contact 28 normally spaced from the contact 27.

The coin-receiver 33 comprises a tube-like

body of rectangular cross-section with two opposite ends formed triangularly and with one side 33A bent angularly to form a spring closure for its bottom. The lower end of the side 33A is provided with a pair of spaced integral extensions 33B which are adapted to engage the abutment pins 57 which are adjustably screw-mounted in the angle 58.

A coin 59 shown deposited within the coin-receiver 33 in Fig. 4. When the coin 59 is deposited in the receiver 33, the balanced arm 31 will be tilted by the weight of such coin 59 and the contact member 28 will be brought into engagement with the member 27 to close the motor circuit as well as the power circuit to the radio receiver, as above stated.

The motor 35 through its driving connections will rotate the member 34 continuously until the shoe 39 or 39I engages the shoe 40 to reversely tilt the arm 31. During the tilting of the arm 31 by the engagement of the shoe 39 with the shoe 40, the opposite end of arm 31 will be gradually raised and during such movement, the extensions 33B will be brought into abutment with the pins 57 and the side 33A will be gradually flexed to provide an opening for the gravity discharge of the coin held therewithin. The coin will fall between the prongs 33B and pins 57 into the coin tray 60 and after the shoe 39 has passed and released the shoe 40, the arm 31 will be swung to normal balanced position with the circuit broken between the contacts 27 and 28 and also between the shoes 39 and 40.

An additional coin deposited into the chute opening 18 will be passed through the guide tube 18A into the receiver 33 and the operative condition of the circuits and radio receiver will again be re-established for the predetermined time required for the shoe 39 (or 39I) to again break such circuit.

It may again be brought out that when the circuit is broken between the contacts 27 and 28 during the tilting of the arm 31 and release of the coin, the circuit is temporarily still closed through the contacting shoes 39 and 40 and is finally broken (or opened) only upon the release of the shoe 40.

I claim:

1. The combination with an electric power circuit of a radio receiver, of a coin-operated switch for controlling the electric power to said receiver, said switch comprising a motor, a member rotatable by said motor, a shoe carried by said rotatable member, a pivotally mounted device having a coin receiver and an abutment, and a pair of circuit closing contacts adapted to be brought into contacting position to close the power circuit to said motor and said radio receiver upon the tilting of said device by the deposit of a coin in said receiver, said motor being operative upon the closing of said power circuit to rotate said member with said shoe into engagement with said abutment to thereby tilt said device in opposite direction to release the coin from said receiver to thus open the circuit to said motor and radio receiver between said circuit closing contacts.

2. The combination with an electric power circuit of a radio receiver of a coin operated switch as embodied in claim 1, and including electrical connections for said shoe and said abutment, whereby said motor and said radio receiver will continue to be energized by said power circuit for a period of time during the contact of said shoe with said abutment, after the circuit is opened or broken between said circuit closing contacts and until said shoe has been moved out of engagement with said abutment.

3. A coin-operable switch for controlling the periodic electrical energization of electrically operated instrumentalities, comprising an electric power circuit, a motor, a member rotatable by said motor, a rheostat for said motor for adjustably controlling the speed of said rotating member, a shoe carried by said rotatable member, an oscillatably mounted arm having a coin-receiver on one side of its oscillating center and an abutment on the other side of its oscillating center, a normally open circuit closer adapted to be brought into closed circuit position upon the deposit of a coin into said coin-receiver to tilt said arm in one direction whereby the electrically operated instrumentality will be energized by said power circuit with said motor simultaneously energized to cause a rotation of said rotatable member, said rotatable member being adapted to move said shoe into engagement with said abutment and to gradually tilt said arm in the opposite direction to thereby move said circuit closer into open circuit position, and means for releasing said coin from said coin-receiver during the tilting of said arm in the opposite direction.

4. A coin-operable switch as embodied in claim 3, and including said shoe and said abutment of electrically conductive material, and electrical connections for said shoe and said abutment arranged to continue to energize said motor and said instrumentality for a period of time during the contact engagement of said shoe with said abutment after said circuit closer has been moved into open circuit position and until said shoe has been moved out of engagement with said abutment.

5. A coin-operable circuit closer, and in combination, a normally open circuit, a pivotally mounted arm, a coin-receiver mounted on one end of said arm, said coin-receiver having a resilient gate, said arm be-

ing tiltable in one direction upon the deposit of a coin, or the like, in said coin-receiver to thereby close said circuit, and an abutment for said resilient gate, said arm being tiltable in the opposite direction with said resilient gate into engagement with said abutment to flex said gate to permit the gravity discharge of said coin from said coin-receiver to thereby permit the return of said arm into normal position with said circuit in open condition.

In witness whereof I affix my signature.

WILLIAM PODROUZEK.