

July 28, 1931.

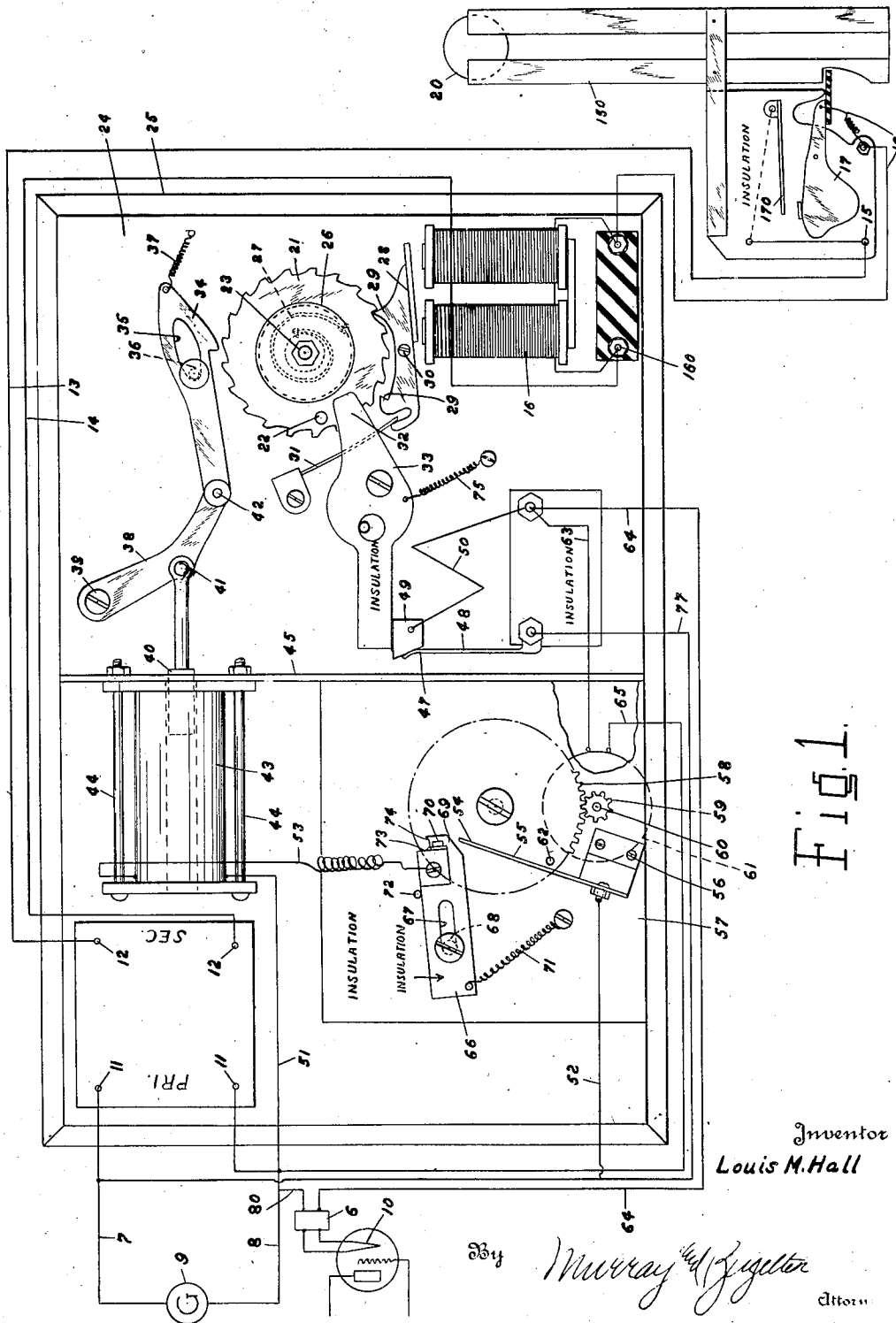
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1,816,526

TIME CONTROLLED COIN DEVICE FOR RADIO CIRCUITS

Filed Sept. 26, 1929

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

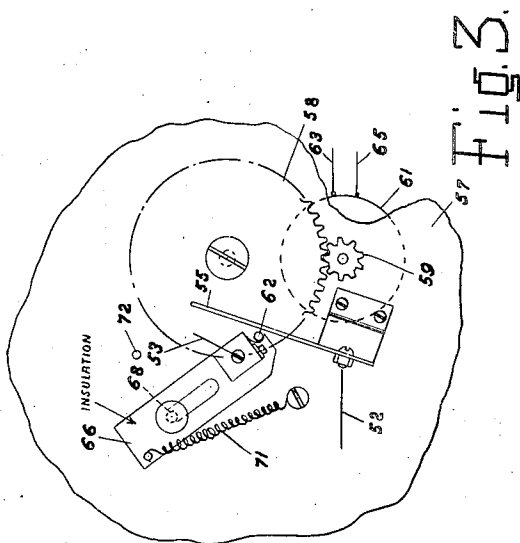


Fig. 3.

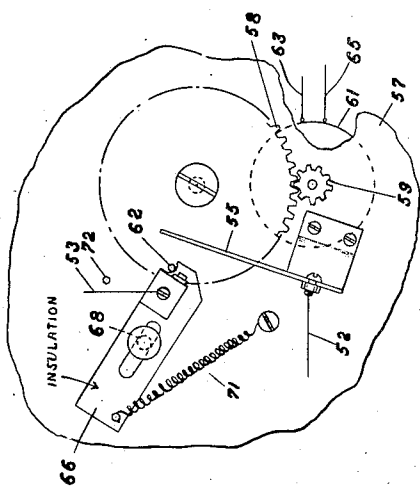


Fig. 2.

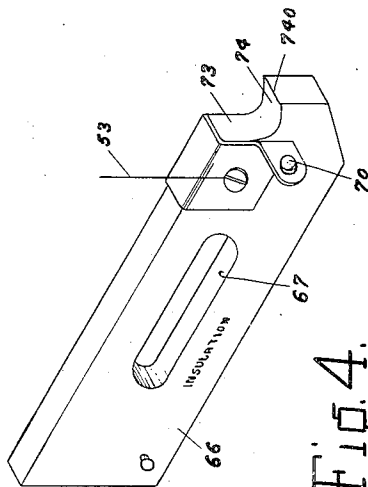


Fig. 4.

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UNITED STATES PATENT OFFICE

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TIME CONTROLLED COIN DEVICE FOR RADIOCIRCUITS

Application filed September 26, 1929. Serial No. 395,359.

This invention relates to a time controlled coin device for controlling an electrical circuit, for example, an electrical circuit of a radio receiver.

5 An object of the invention is to provide improved means whereby an electrical switch, closed by the action of a coin, will be kept closed for a predetermined time.

Another object is to provide an improved means of the above character which requires no winding or other attention.

Another object is to provide a device for the purpose stated above, which will retain the said electrical switch closed, without interruption to the electrical circuit controlled thereby, until termination of a number of time intervals corresponding to the number of coins dropped into the device.

15 A further object is to provide a timing device having a novel wiping contact electrical switch mechanism which will function perfectly for long periods of time without requiring adjustment or repairs.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is an elevational view of the device of the invention, showing conventionally a coin slot mechanism and the manner of electrically connecting the device to a radio receiver and to a source of electricity.

Fig. 2 is a detailed elevational view of a time operated mechanism forming part of the invention, showing one of the positions assumed thereby when set in motion.

Fig. 3 is a view similar to Fig. 2 showing the time operated mechanism in advanced position.

Fig. 4 is an isometric view of a contact member forming a detail of the invention.

40 The device of the present invention is particularly adapted for use in conjunction with a radio receiver, and the purpose thereof is to close the principal or controlling circuit of said radio receiver upon the insertion of a coin or coins, and to maintain said circuit in a closed condition until the elapse of a number of uniform time intervals equal to the number of inserted coins. The particular means utilized in accomplishing the above

are trouble-proof and positive in action, and all electrical contacts thereof are self-cleaning and self-adjusting.

In the drawings, 6 represents the usual electrical current rectifying or transforming means to which are electrically connected the line wires 7 and 8 of a suitable source of electricity 9. The device 6 is adapted to supply a suitable electrical current for the filament 10 of a radio tube or tubes. The line wires are electrically connected also to the terminals 11 of a transformer, a secondary terminals 12 of which are connected, by means of conductors 13 and 14, to a coin chute terminal 150, and to one terminal 160 of an electromagnet coil 16, respectively. A pivoted electrical contact trip member 17 cooperates with a second contact member 170, which is connected with conductor 13, for closing the circuit through the electromagnetic coil. Member 17 has electrical connection, through conductor 19, with the electromagnetic coil, so that the circuit consists of the secondary coil of the transformer, conductor 13, terminal 15, contacts 170, and 17, conductor 19, electromagnet 16, and conductor 14, all connected in series. A coin 20, upon striking one end of the pivoted contact 17, serves to complete the said circuit, thereby energizing the electromagnet 16. The purpose of the transformer 11—12 is to provide suitable current for energization of the electromagnet 16, but said transformer is not essential to the operation.

A toothed wheel or escapement member 21, 85 having an extending pin or abutment 22, is rotatably mounted upon a shaft 23 which is fixed upon the side 24 of casing 25. The shaft carries a fixed hollow drum 26 having one end of a coil spring 27 secured therein. The opposite end is secured to the shaft, and the spring serves constantly to urge the wheel 21 in a clockwise direction of rotation. Actuation of the armature 28 by the magnetism of the electromagnet, serves to permit partial escapement of the wheel 21 each time that a coin closes the circuit to the electromagnet. The teeth 29 of the pawl 30, which is fixed to the armature, permit tooth by tooth escapement of the toothed wheel, as the armature 100

is rocked upon its pivot 30. The armature is yieldingly held in the raised position by a spring 31, as shown in Fig. 1.

Means are provided for effecting a tooth by tooth return of the toothed wheel to an initial position wherein the extension or stud 22 is in abutment upon the extension 32 of an insulated switch member 33. Said means comprises a return pawl 34 having a slot or opening 35 which cooperates with a fixed pin 36 to guide the pawl relative to the teeth of the wheel 21. A spring 37 holds the pawl in a normally disengaged position.

An armature support 38 is pivotally mounted upon the wall 24 as at 39, and to this support is pivotally mounted an armature 40 and the pawl 34, as at 41 and 42, respectively.

The character 43 indicates a solenoid or hollow coil, which is retained in alignment with the armature by means of bolts 44 extending through a wall 45 of the casing. Upon energization of the solenoid or coil, the armature 40 is forcibly drawn thereinto in a manner well known. Each time that the solenoid is energized, the action of the armature causes the pawl to move the toothed wheel the distance of one tooth, in a counter-clockwise direction of rotation. It should be apparent, therefore, that such movement of the wheel will cause the stud 22 to strike the extension 32, and thereby move the member 33 about its pivot 46 for breaking the electrical contact at 47. Conductors of electricity are indicated by 48, 49 and 50. Contact 49 is fixed upon the member 33.

It will be noted that conductors 51, 52, 53 and a switch indicated generally by 54, serve to carry electrical current from the source of electricity to the solenoid 43. The switch 54 is arranged to close the circuit through the solenoid, for an instant, upon the termination of predetermined time intervals. The spring metal switch member 55, to which is electrically connected the conductor 52, is fixedly mounted as at 56, upon a base 57 of non-conductive material. Upon the base is rotatably mounted a gear 58, which is constantly in mesh with a pinion 59 on a shaft 60 driven by an electrical motor 61. The motor preferably is one of the type which operates in synchronism with the pulsations or undulations of the electrical circuit, and the motor is geared or otherwise arranged, with respect to the pinion, so as to rotate the pinion one revolution within a predetermined interval of time. The gear 58 accordingly will rotate once during a greater interval of time, which is determined by the ratio of the gears 58 and 59. The large gear therefore may rotate once every five or ten minutes, if desired. It will be noted that the gear 58 carries an extending stud or abutment 62. Current is supplied to the motor by conductors 63, 64 and 65 which

have electrical connection with the source of electricity 9.

A contact supporting arm 66, of insulating material, is provided with an elongated slot 67 in which is loosely received a stud shaft 68 which is mounted upon the base 57. By reason of the slot, the arm 66 may be reciprocated and oscillated upon the stud. One end 69 of the arm overhangs the gear 58, and is provided with a metallic contact 70 which is electrically connected with conductor 53. A spring 71 yieldingly holds the arm in an initial position against a stop 72. The spring serves another purpose also, which will presently be disclosed.

One edge and an adjacent end of the arm 66 are cut to provide a notch having abutting faces 73 and 74, face 74 being provided with an upwardly turned lip 740 which stud 62 may engage, if necessary, for assisting the arm to the position of Fig. 3. The rotation of gear 58 is counter-clockwise, and it will be observed that continued rotation of said gear (Fig. 1) will cause the stud 62 to lodge within the notch formed by the faces 73 and 74. Further rotation of the gear causes the arm to recede, thereby tensioning the spring 71 as shown in Fig. 2. As the stud continues to move downwardly, the arm assumes the position shown in Fig. 3, and further movement thereof causes the stud to leave the face 74, whereupon the tensioned spring 71 acts to rotate the arm to the initial position shown in Fig. 1. This latter movement effects a wiping contact of the member 70 upon spring contact 55, which energizes the solenoid and thereby actuates the return pawl for rotating the escapement member the distance of one tooth. It should be clear that repeated actuation of the return pawl will cause the extension 22 (Fig. 2) to strike the arm 32 and move the member 33 about its pivotal mounting, thereby opening the switch 47.

The operation of the device is as follows:

As disclosed in Fig. 1, a coin has been dropped into chute 150, which momentarily closed the circuit through the electromagnet 16. The armature 28 thereupon was actuated to permit escapement of one tooth of the wheel 21, in a clockwise direction, as was previously explained. This movement of the wheel caused the abutment 22 to leave the arm 32, thereby permitting spring 75 to move said arm to the position shown, wherein the switch 47 was closed. Closing of switch 47 permitted flow of electricity through the motor 61, by way of conductors 65, 63, 50, 49, 48, and 77, and at the same time the tube filament circuit, consisting of conductors 80, 6, 64, 50, 49, 48 and 77, was completed. The motor therefore is driving the large gear 58 in a counter-clockwise direction. Pin 62, moving with the gear, will strike the abutment face 74 of arm 66, and further move-

ment of the pin will cause the arm to assume the positions indicated in Figs. 2 and 3. As the pin continues to move, it leaves the face 74 of the arm, whereupon the arm is thrown quickly upward to the initial position, by the action of spring 71. During said quick upward movement of the arm, the contact 70 slides upon contact 55, thereby closing the circuit embracing the solenoid 43. As the solenoid is energized, the return pawl 34 is actuated for returning the toothed wheel 21 to initial position, with the switch 47 open. It is to be understood that pin 62, on the motor driven gear 58, clears the member 55.

In the event that a plurality of coins be dropped into the chute 150, in succession, the toothed wheel will move the distance of one tooth for each coin, and the circuit embracing the filament 10 will remain closed (at 47) until the toothed wheel is returned, step by step, to the initial position.

It is to be understood that various modifications and changes in structural details may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. In combination an electrical circuit including an energizable element and a pair of electrical contacts, one of the contacts being substantially stationary, a contact supporting arm arranged for linear and rotatory movement and having the other contact fixed thereon, an electrically driven motor, a gear driven by the motor, means on the gear for cooperating with the arm and imparting thereto linear and rotatory movement for placing the contact of the arm in an operative position with respect to the stationary contact, and means for sliding one contact across the other upon predetermined movement of the gear, for closing the electrical circuit through the energizable element.

2. In combination a fixed electrical contact member, a contact support arm disposed adjacent the fixed contact member and yieldingly urged to a normally inoperative position, said arm being arranged for linear and rotatory movement, a second electrical contact member on the arm, a driven member disposed adjacent the arm, means associated with the driven member for engaging the arm and moving said arm longitudinally and through an arc to an operative position adjacent to the fixed contact member, continued movement of the driven member serving to release the arm for movement to the inoperative position, during which movement the contact member on the arm slides along the stationary contact member.

3. In combination, a base, a substantially stationary electrical contact member, supported upon the base, a contact support arm mounted upon the base for linear and rotatory movement, a contact member on the

arm for cooperation with the stationary contact member, a spring cooperating with the arm for yieldingly holding said arm in a raised and extended position, a driven member, an extension on the driven member for contacting the arm and moving it longitudinally and through an arc against the resistance of the spring, whereby to preclude contact of the contact members, continued movement of the driven member serving to release the arm and permitting the spring to bring the contacts together while moving the arm to the initial position.

In testimony whereof, I have hereunto subscribed my name this 20th day of September, 1929.

LOUIS M. HALL.

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