Fig. 1.

Fig. 2.

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TIMING DEVICE FOR COIN OPERATED RADIOS

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4 Sheets-Sheet 2

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4 Sheets-Sheet 3

Fig. 5.

Fig. 6. George Horn, INVENTOR

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This invention relates to a timing device and while the invention is mainly designed for use with a coin operated radio which can of course be used for other purposes, the general object of the invention is to provide means whereby a number of coins will wind up the spring of a spring motor or clock with means operated by the clock for breaking the circuit of the radio device at a certain point in the unwinding action of the clock spring and with means for breaking the coin controlled circuit when a certain number of coins has been placed in the device.

A further object of the invention is to so construct and arrange the parts that the device can be manufactured and sold at a low cost and one which will not interfere in any way with the action of the radio by producing clicking or buzzing noises.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings, and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings, wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is an elevation of the invention with the front casing containing the same removed.

Figure 2 is a section on the line 2-2 of Figure 1.

Figure 3 is a section on the line 3-3 of Figure 2.

Figure 4 is a section on the line 4-4 of Figure 1.

Figure 5 is a section on the line 5-5 of Figure 2.

Figure 6 is a section on the line 6-6 of Figure 1.

Figure 7 is an enlarged view showing the switch means for controlling the circuit of the radio.

In these drawings the numeral 1 indicates a casing in which is located a frame 2 for the encasement, wheels and shafts of the clock mechanism shown generally by the letter A. A disk 3 is fastened to the main shaft 4 of the clock mechanism and a shaft 5 passes through a plate 6 arranged in front of the frame 2 and has its inner end rotatably arranged in the shaft 4. A spring casing 7 is fastened to the inner face of the plate 6 and the shaft 5 passes through the center of its casing. The clock spring 8 has its outer end connected with the casing 7 and its inner end connected with the shaft 5. A disk 9 is connected to a ratchet wheel 10 and these parts are fastened to the shaft 5 so that to rotate on the said shaft, and said parts are arranged between the spring casing and the disk 3, said disk 3 carrying a dog 11 which engages the teeth of the ratchet 10. An arm 12 has one end pivoted to the shaft 4 and its outer end is pivoted to an upright 13, the lower part of which forms a core for the solenoid 14. A spring 15 connected with a part of the casing 1 and with the arm 12 normally holds the arm in upright position but when the solenoid is energized the arm is swung downwardly against the action of the spring. The disk 9 has a V-shaped groove in its circumference for receiving a looped member 16 of spring metal which partly encircles the disk and has its lower end connected to a spring 17 which is connected with a part of the casing, and the other end of the loop member is connected to a projection 18 on the arm 12.

These parts are so arranged that normally the loop member is out of engagement with the disk 9 but when the arm 12 moves downwardly under the action of the solenoid the loop member is contracted on the disk so that it is caused to move with the downward movement of the arm and as the disk is connected with the shaft 5 and with the latch 10 these parts will move with the disk so that the spring 8 is wound and the dog 11 ratchets over the ratchet 10 and holds the parts against retrograde movement. On each standard movement of the arm the dog ratchets on one tooth of the member 10 and said dog and ratchet serve the purpose of communicating the unwinding movement of the spring 8 to the clock mechanism through the shaft 4.

A finger 19 is fastened to the outer end of the shaft 5 and when the finger is in lowered position it will open the switch 8 which controls the circuit of the radio. This switch consists of a pair of switch arms 20 and 21, each carrying the contact 22, both arms being formed of insulating material with the arm 20 connected to a spring 23 which is fastened to the outer face plate 6, and the arm 21 being fastened to a lever 24 having its lower end pivoted to the plate and its upper end having pivoted thereon the latch 25. This latch has its upwardly extending part adapted to be engaged by the finger 19 when the same is in its lowered position and said latch is also formed with a shoulder 26 which will be engaged by the finger 19 as the same starts to move upwardly on the winding action of the clock spring. The tail end of the latch is formed with a rounded
part 27 on its lower edge which engages a pin 28 on the plate 6. A spring 29 connects the latch with the plate 6 and tends to hold the latch in either one of its two positions. In one position the lower end of the rounded part 27 will engage the pin 28 and in the other position the upper end of said rounded part will rest on the pin.

The pin 29 to which the spring 29 is fastened forms a stop for limiting the movement of the lever 24 and with the parts in a position with the lever engagement said pin 28 the switch S is opened as shown in Figure 1 and then when the finger 19 starts to swing upwardly it will strike the shoulder 26 moving the latch to its second position and swinging the lever 24 to the right so that the contacts 22 will engage each other and thus close the circuit. When the finger swings downwardly it strikes the top part of the latch and moves the parts to open the switch. This downward movement of the finger is limited by a stop pin 30.

A switch S’ consisting of the spring arms 31 is carried by the rear face of the plate 6 and one of the arms is extended so that it will be engaged by a pin 32 on the disk 9 when the clock spring has been wound to a certain extent so that said pin will move the extended arm away from the other arm and thus break the circuit. This switch is arranged in a circuit a which includes a secondary winding of a transformer T and a coin gap 33. A pair of magnets 34 are also arranged in said circuit so that when the gap is closed by a coin and the switch S’ is closed the magnets will be energized so that they will attract the armature 35 and as the armature moves downwardly it will pass under the notched end of a latch lever 36 which will hold it in lowered position. The magnets, the armature and the latch lever are carried by a bracket 37 in the casing 1.

A switch S” is also carried by the bracket and consists of the spring arms 38, one of which is extended so that it will be engaged by the insulated projection 39 on the tail of the lever 36, and when the armature 35 is in raised position it will engage the lever 36 in such position so as to cause its part 39 to hold the lower arm of the switch S” separated from the upper arm. As the armature moves downwardly the lower switch arm 38 will swing the lever 36 on its pivot and cause its notched part to engage the armature so that the armature will be held in lowered position and the switch S’” will be closed. A projection 40 is formed on the arm 12 and this projection will engage the part 39 of the lever 36 when the arm 12 nears the lower limit of its movement, so that the lever 36 will be swung to position where it will release the armature 35 and move the lower arm 38 of the switch S” away from the upper arm and thus open the switch.

This switch S” is arranged in the circuit b of the solenoid 14 and is connected with the supply lines B which lead to the transformer and to which the circuit c of the radio is connected. The switch S is of course arranged in said circuit c.

From the foregoing it will be seen that each time a coin is dropped into the coin chute of the apparatus of which this invention forms a part, the gap 33 will be momentarily closed by the coin and thus the magnets 34 will be energized so that the armature 35 will be lowered, and the lever 36 will move to a position to hold the armature in its downward position and permit the switch S” to close. The closing of the switch S” will cause current to flow from the main line B through the circuit b or to the solenoid 14 so that this solenoid will draw down the member 13 and the arm 14. The downward movement of the arm 12 will contract the member 16 about the disk 9 so that the said disk and ratchet 10 as well as the shaft 5 will be given a partial rotary movement and cause the dog 11 to engage another tooth in the ratchet 10, and this movement will also partly wind the spring.

As the arm nears its standard limit of movement the projection 40 will strike the arm 39 of the lever 36 and cause said lever to open the switch S”’ and release the armature 35. The spring 15 then raises the arm 12 and as it starts upwardly the member 16 expands and passes freely over the disk 9 without rotating the same. The dog 11 holds the parts against retrograde movement. Another coin then closes the gap 33 again and the operation is repeated until a certain number of coins have been dropped into the device when the last coin will move the parts to a position where the pin 32 on the disk 9 will open the switch S’” and thus break the coin circuit and prevent further operation of the device by other coins.

As before stated as the finger 19 starts its upward movement it will operate the latch 25 so as to cause the same to close the switch S in the radio circuit and thus the radio will begin to operate. The radio will continue to operate until the clock mechanism moves the finger 19 downwardly into engagement with the latch 25 when said latch is moved to a position to open the switch S” and then the radio of course ceases to function.

If a less number of coins is dropped into the apparatus than the number necessary to fully wind the spring of the clock mechanism the switch S” will remain closed so that when other coins are dropped in they will act to rewind the spring until the required number of coins have been dropped in to move the parts to position where the switch S” is open.

The object of using the relay side of the magnets 34 and switch S”” is that all coin box wiring must be of low voltage and a coin dropped makes a very short contact. This contact would be of too short duration to pull the arm 12 all the way down but by using the relay the circuit to the solenoid 14 is closed and kept closed until the arm 12 is all the way down.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:
1. A timing attachment for radio devices, com-
prising clock mechanism including a spring, a shaft connected with the spring, a ratchet means for communicating movement of the shaft under the action of the spring to the clock mechanism, an arm, a second spring for normally holding the arm in one position, a solenoid for moving the arm to its other position, means for causing the arm to rotate the shaft when it is moved by the solenoid and freeing the shaft of the arm when the latter is moved by the second spring, a circuit for the solenoid, a switch therein, a magnet closing the last named switch, a circuit for the magnet, means for closing the circuit to the magnet, and means for opening the circuit to the solenoid on movement of the arm.
2. A timing attachment for radio devices, comprising a circuit, a switch controlling said circuit, clock mechanism including a spring, a shaft connected with the spring, an arm, a solenoid in said circuit for moving the arm in one direction, means for moving the arm in the opposite direction, means for moving the shaft when the arm is moved by the solenoid and freeing the arm of its connection with the shaft when said arm is moved in the opposite direction, means on the arm for opening said switch, a magnet for closing said switch, a circuit for the magnet, and means for closing the last named circuit.

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