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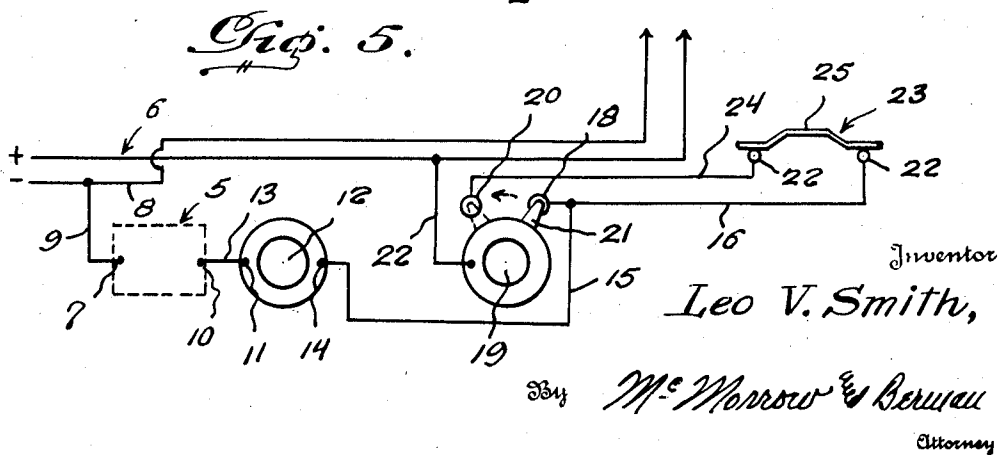
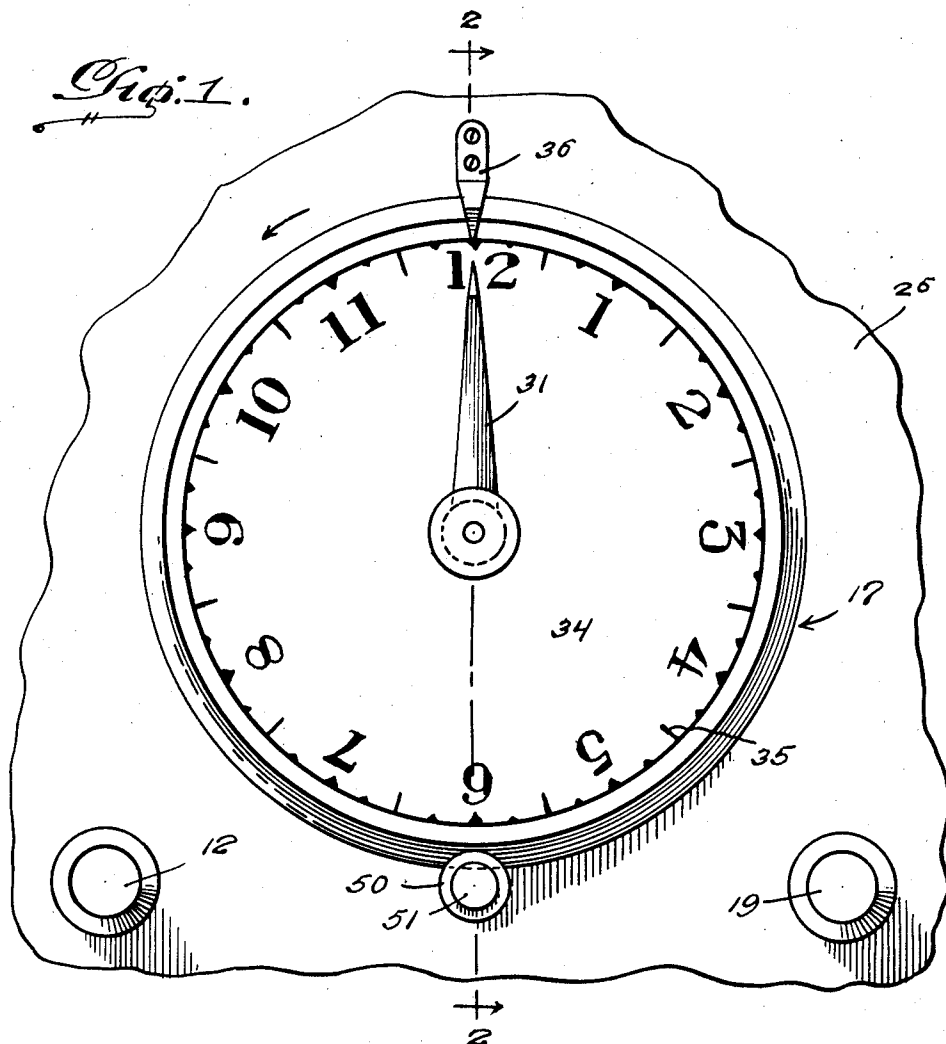
L. V. SMITH

2,300,020

TIME SWITCH

Filed May 26, 1941

2 Sheets-Sheet 1



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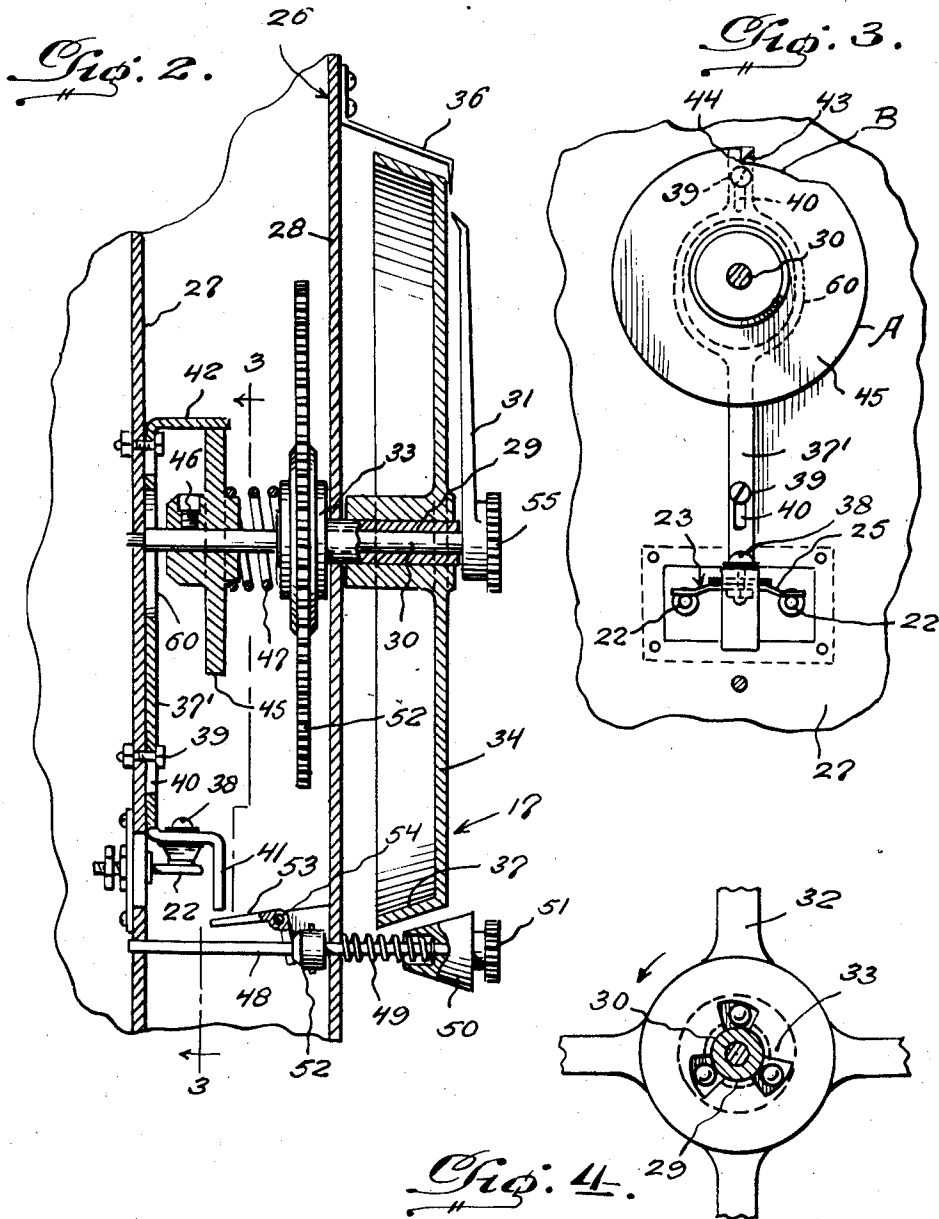
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2 Sheets-Sheet 2



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TIME SWITCH

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Application May 26, 1941, Serial No. 395,293

2 Claims. (Cl. 200—38)

This invention relates to a time switch for the control of an electric circuit, and the primary object of the invention is the provision of a device for closing or completing an electric circuit of a radio receiver or some other electrical device at a selected time and which may be easily and quickly adjusted, so that the time in which the circuit will be closed may be varied and consists of a compact, efficient and durable construction and may be manufactured and sold at a low cost.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a front elevation illustrating an automatic control device constructed in accordance with my invention and showing the application thereof to a fragmentary portion of a radio receiver cabinet.

Figure 2 is a fragmentary transverse sectional view illustrating the automatic control device, and taken on the line 2—2 of Figure 1.

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary front elevation, partly in section, illustrating an overrunning clutch.

Figure 5 is a diagrammatical view illustrating the wiring diagram of the present invention, and showing a portion of an electric circuit of a radio receiver.

Referring in detail to the drawings, the numeral 5 indicates diagrammatically a radio receiver unit and 6 the power supply circuit therefor, and 12 a hand volume and power control switch. The terminal 7 of the receiver unit 5 is connected to the conductor 8 of the power supply circuit by a conductor 9. The terminal 10 of the receiver unit has the terminal 11 of the hand volume and power control switch connected thereto by a conductor 13. The terminal 14 of the switch 12 is connected to a conductor 16 of a time control device 17 by a conductor 15. The conductor 16 is connected to a contact 18 of a double throw switch 19. The switch 19 and the time control device 17 form the subject matter of the present invention, the receiver unit 5, power supply circuit 6 and hand volume and power control switch 12 are shown to indicate how the present invention is electrically connected in a radio of a conventional construction.

When the movable contact 21 of the double throw switch 19 is in engagement with the contact 18 and the switch 23 is open the electric circuit to the radio receiver unit 5 is rendered

inactive or inoperative, consequently the radio receiver is inoperative but still set to the wave length of a selected broadcast station with a selected amount of volume.

A fragmentary portion of the radio receiver cabinet is indicated by the character 26 and includes a portion of the chassis of the radio receiver, as indicated by the character 27, and the front wall of the cabinet or case designated by the character 28. The wall 28 and the portion of the chassis 27 are relatively spaced and are employed for the mounting of the time control device 17. A hollow shaft 29 is journaled in the wall 28 of the cabinet and rotatably supports an indicator shaft 30 to which is secured a movable indicator 31. The shaft 30 is further journaled in the chassis 27.

An hour hand drive gear 52 on a clock mechanism (not shown) is carried by the hollow shaft 29. The gear 32 is connected to the hollow shaft 29 by an overrunning clutch 33. The clock mechanism heretofore referred to may be of the spring driven type or of the electrical operated type.

It is to be understood that the gear 32 makes one complete revolution in twelve hours by the clock mechanism and is located within the cabinet of the radio receiver.

A dial plate 34 is secured to the hollow shaft 29 and is arranged exteriorly of the radio receiver cabinet and has applied to its front face a scale 35 designating the hours of the day with each hour divided in quarters of 15 minutes each. The indicator 31 is movable over the scale 35 by the clock mechanism (not shown). The overrunning clutch mechanism permits adjustment of the dial plate 34 relative to the gear 32 of the clock mechanism.

A fixed pointer 36 for the scale of the dial plate 34 is carried by the cabinet of the radio receiver. The dial plate 34 has a substantially conical shaped peripheral flange 37.

The switch 23 of the time control device 17 further includes a contact carrying member 37' to which the contact 25 is secured to and insulated from, as shown at 38. The member 37' is mounted on the chassis 27 of the radio receiver for a limited vertical sliding movement by fasteners 39 operating in slots 40 provided in said member 37'. The lower end portion of the member 37' is provided with an offset extension 41 while the upper end is provided with a right angularly disposed extension 42 provided with a beveled cutaway portion 43 presenting a sharp edge 44 to ride the periphery of a cam 45.

The cam is secured on the shaft 30 by a set screw 46. The extension 42 of the member 37 coincides with the fixed pointer 36.

A coil spring 47 surrounds the shaft 30 and bears against the hub of the overrunning clutch 33 and against the hub of the cam 45 to provide a drive connection between the gear 32 and the cam and one that will permit manual relative rotation of the cam 45 with respect to the gear 32 of the clock mechanism.

The cam 45 has a high face A and a low face B. The low face B governs the length of time that the switch 23 of the time control device will be in circuit closing position and the high face A of said cam governs the length of time that the switch 23 will be in circuit breaking position.

A manually operated dial plate setting shaft 48 is slidably and rotatably mounted in the wall 28 and the chassis 27 of the radio receiver and is spring influenced in one direction by a coil spring 49. A cone shaped element 50 is secured on the shaft 48 and forms a seat for one end of the spring 49 while the opposite end of the spring seats against the wall 28 of the cabinet of the radio receiver. The shaft 48 is provided with a finger piece 51 adjacent the cone shaped element 50. A collar 52 is secured to the shaft 48 and a bell crank lever 53, pivoted as shown at 54, has constant contact therewith. The bell crank lever 53 underlies the extension 41 of the member 37' of the switch 23 of the time control device 17. By shoving inwardly on the shaft 48 against the action of the spring 49 the extension 42 will be disengaged from the cam 45 and the cone shaped element 50 brought into frictional engagement with the flange 37 of the dial plate so that by rotating the shaft 48 in the proper direction the scale 35 may be adjusted relative to the fixed pointer 36 so that said scale when considered in conjunction with the pointer 36 can be made to read properly relative to the time of the day.

The hub of the movable pointer 31 is equipped with a finger piece 55 so that a person may readily move said pointer 31 over the scale 35 to a selected time in which a broadcast is to be heard. The adjustment of the pointer 31 over the scale 35 as specified also adjusts the cam 45 relative to the gear 32 of the clock mechanism, the spring drive 47 permitting said relative manual rotation of the cam 45 relative to the gear 32.

It is to be understood that when the extension 42 of the member 37' of the switch 23 is upon the high face A of the cam the switch 23 will be in circuit breaking position and in order for the circuit controlled by said switch 23 to be closed the extension 42 must engage with the low face B of the cam. Also, it is to be understood that the switch 23 is in circuit breaking position whenever the dial 34 is rotated by the finger piece 51 owing to the fact that the shaft must be moved endwise in order to bring the cone-shaped element 50 into engagement with the flange 37 of the dial plate 34. This endwise movement of the shaft 48 engages the extension 41 and moves the extension 42 off of the cam as well as keeping the bridge 25 spaced from the contact 22 of the switch 23.

The member 37' is provided with a substantially ring-like portion 60 to freely receive the shaft 30

so that the member 37' may be free to slide vertically in either direction.

In operation, the time control device 17 is adjusted to give the proper time of the day and the person desiring a particular radio broadcast program, tunes the radio receiver as usual to the broadcasting station with the switch element 21 of the switch 19 in engagement with the contact 13 so that the radio receiver through the adjustment of the volume control switch may be regulated as to volume and the radio receiver in operation of reception to the broadcast station then sending out a program and after the accomplishment of the tuning of the radio receiver the person places the contact 21 into engagement with the contact 20 rendering the circuit of the radio receiver unit 5 inactive or inoperative and consequently the radio receiver inoperative as to sound. The pointer 31 is then moved over the scale 35 to the hour or time of the selected broadcast program. When the time of the said broadcast program arrives, the high face A of the cam 45 is such that the extension 42 may drop on the low face B and permit the member 37' to gravitate and thereby close the switch 23 to render the radio receiver active and consequently the radio receiver operative to the reception of the selected broadcast program.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what I claim is:

1. In a switch operating device, a rotatably supported shaft, a sleeve journaled on the shaft, a dial bearing indicia secured to said sleeve, a fixed indicator for said dial, a switch operating cam secured to said shaft, an overrunning clutch secured to said sleeve, a gear driven by a clock mechanism secured to the clutch for rotating the dial in one direction relative to said indicator, a coil spring engaging the clutch and the cam for rotating the latter with the dial, and a hand operated indicator associated with the dial and secured to the shaft whereby the cam may be manually rotated relative to the dial and the clutch.

2. In a switch operating device, a rotatably supported shaft, a sleeve journaled on the shaft, a dial bearing indicia secured to said sleeve, a fixed indicator for said dial, a switch operating cam secured to said shaft, an overrunning clutch secured to said sleeve, a gear driven by a clock mechanism secured to the clutch for rotating the dial in one direction relative to said indicator, a coil spring engaging the clutch and the cam for rotating the latter with the dial, a hand operated indicator associated with the dial and secured to the shaft whereby the cam may be manually rotated relative to the dial and the clutch, a switch operating shaft located adjacent the dial, and a spring influenced finger piece secured to the latter-named shaft and manually movable to engage the dial for the rotation thereof relative to either of said indicators.

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