

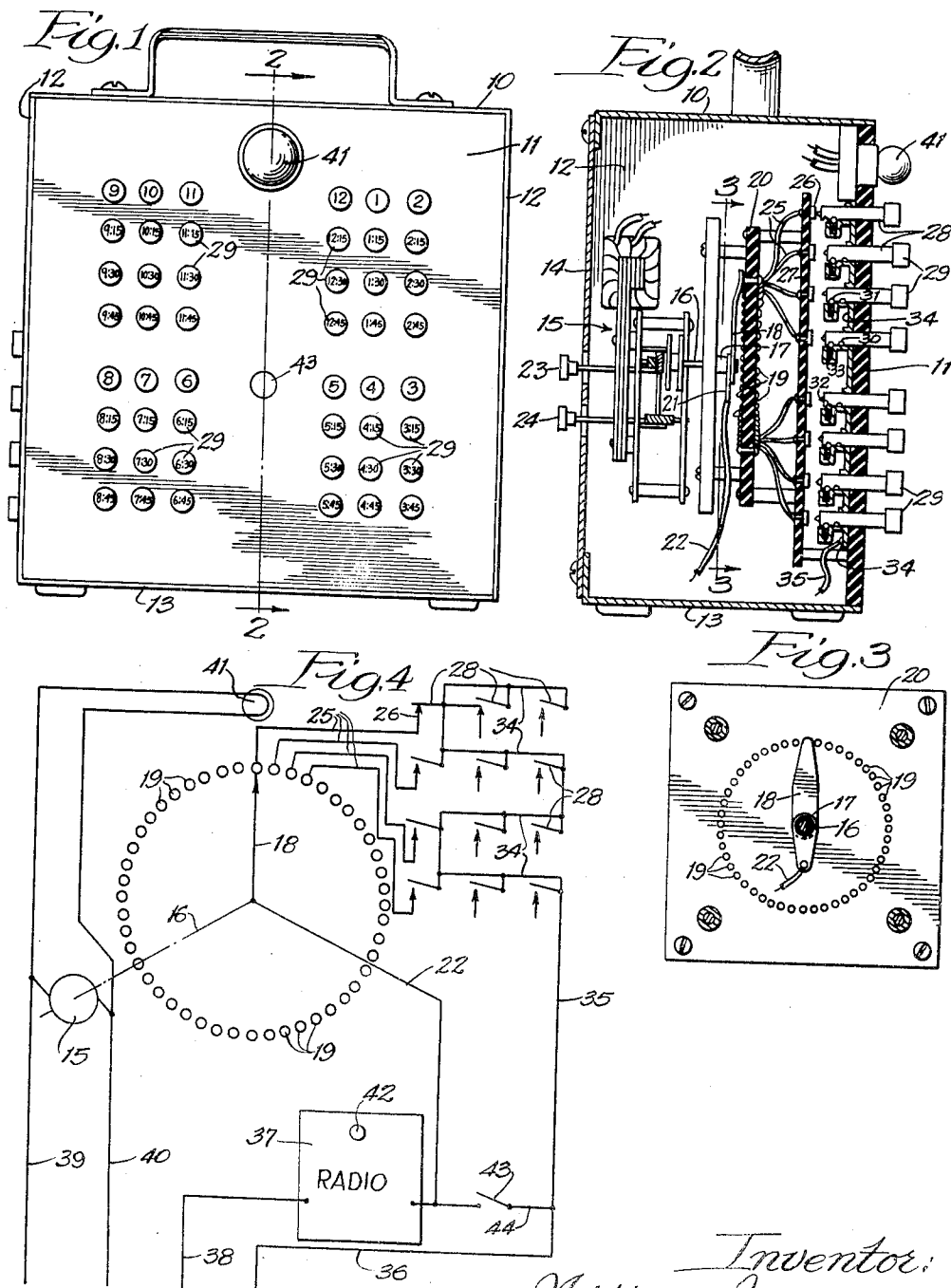
Nov. 12, 1940.

W. JOHNSON

2,221,544

AUTOMATIC TIME SWITCH

Filed May 4, 1939



Inventor:
William Johnson,
By *Barringer & Barringer*
Attorneys.

UNITED STATES PATENT OFFICE

2,221,544

AUTOMATIC TIME SWITCH

William Johnson, Chicago, Ill.

Application May 4, 1939, Serial No. 271,657

1 Claim. (Cl. 161-1)

The device of the present invention is designed primarily as a starter for a radio, which permits the operator in advance to make appropriate selections from the program of a given broadcasting station and to set up a series of contacts which at predetermined intervals will energize the radio and bring in the numbers selected from the program. In this way it is possible for the user of the radio to arrange in advance for the selection only of the desired numbers and to shut off the operation of the radio during the intervening intervals. It is not, of course, necessary that all of the predetermined selections shall be confined to a single broadcasting station, but if the intended program for reception includes more than one station it will be necessary for the operator to reset the radio at the appropriate time to meet the intended requirements.

Although the device is intended primarily for use in connection with radios, it might be otherwise employed in cases where it is desired at variable predetermined intervals to energize electrical circuits for other purposes.

Further objects and details will appear from the description of the invention in conjunction with the accompanying drawing, wherein—

Figure 1 is an elevation of the panel provided with the adjustable switches adapted to be set to close the electrical circuit during the desired time intervals;

Fig. 2 is a sectional elevation taken on line 2-2 of Fig. 1;

Fig. 3 is a face view of the contacts for the movable hour hand switch member of a clock; and

Fig. 4 is a diagram of the electrical circuits.

The device in the form shown comprises a box-like casing 10 having a front panel 11, side walls 12, a base 13, and a rear wall 14. Within the casing is located a clock mechanism 15, which as shown is an electric clock, although a spring clock may be employed for a like purpose.

The clock mechanism includes an arbor 16 which carries at its end an insulating disk 17, which rotates with the arbor and carries at its outer end a spring finger 18 in the nature of an hour hand, which during its rotation makes engagement with a circularly arranged series of contact heads 19 carried by a plate 20 of insulating material. The inner end of the spring finger makes contact with a thin apertured plate 21 carried by a circuit wire 22 and loosely mounted on the insulating disk 17.

The arrangement is one which insulates the spring finger 18 and apertured plate 20 from the

remainder of the clock to prevent short circuiting. The clock is provided with the usual starting button 23 and setting button 24, but the details of the clock mechanism need not be further described, since the clock itself is of any conventional type.

The circular series of contact heads 19 are individually connected by wires 25 with switch contacts 26 carried by a plate 27 of insulating material, and each of the contacts cooperates with the shank 28 of a switch button 29, which switch buttons are slidably mounted with the front panel 11 and arranged as in Fig. 1.

For convenience, each of the switch buttons 29 on its face is inscribed to indicate a particular instant of time, the upper buttons of each series indicating the even hours, such as 9:00, 10:00, 11:00, and the underlying buttons indicating the quarter hours, as for instance 9:15, 9:30, 9:45. As shown, forty-eight switch buttons are employed, which make provision for setting the switch apparatus so as to receive radio programs at the quarter hour intervals throughout a twelve hour period.

A convenient method of adjusting the buttons is afforded by providing each of the shanks with outer and inner recesses 30 and 31 respectively, either of which is adapted to socket a small ball 32 backed by a spring 33, so that the button will be held in either a retracted or depressed position. Any other convenient or conventional form of switch button, however, may be used in lieu of the arrangement here shown. When any particular switch button is depressed it will engage the associated contact 26, thereby closing the associated circuit at this point. All of the shanks 28 of the contact buttons extend through a metal plate 34 of conductive material which is connected by a circuit wire 35, or if desired some other convenient arrangement may be provided for including all of the switch button shanks in parallel within the same circuit.

Referring to the wiring diagram, the switch button circuits are connected with a line wire 36 through the medium of the wire 35 and plate 34, or equivalent connections, and the circuit wire 22 leads through the radio 37 which in turn is connected with the line wire 38. The circuit for energizing the clock mechanism is provided by line wires 39 and 40 and preferably includes a light 41 for visually indicating when the clock is in motion. In like manner it is desirable to provide a light signal 42 in the radio circuit to indicate when the radio is energized. A switch 43 is provided in a wire 44 leading from the line wire

for establishing direct circuit connection through the radio where it is desired to cut out or disable the automatic operation of the present invention.

5 In use we may assume that the radio is set for the reception of selected features of the program coming in over the station WMAQ. The selection is effected by depressing the appropriate buttons, which for example may be the buttons inscribed
10 to represent 9:00 a. m., 10:30 a. m., 1:30 p. m., 4:15 p. m., and 8:45 p. m. The clock being energized and the switch finger 18 being set to a position corresponding to the proper setting of the hour hand of a clock and the radio circuit being
15 properly connected, the switch finger will move in the manner of an hour hand and successively engage the contact heads 19.

In cases where a button has been depressed, the engagement of the movable switch finger will
20 close the radio circuit, thereby energizing the radio and bringing in the program during the fifteen minute interval that the switch finger maintains engagement with the contact head. At the conclusion of the fifteen minute interval the
25 radio will be deenergized unless the switch button allotted to the next succeeding fifteen minute interval has also been depressed, which is necessary for the reception of programs running for a half hour, and in like manner where a program
30 extends through an entire hour, the four buttons covering the fractional periods must all be depressed to provide for continuity in the reception of the program. Such continuity is insured by reason of the fact that the switch finger
35 18 in its travel will slightly overlap the adjacent contact heads, so that where two or more contiguous circuits are closed by the switch buttons the closure of the radio circuit will be continuously maintained until the program number is concluded.
40

Thereafter, the passage of the spring switch finger 18 across the contact heads 19 will be ineffective to close the radio circuit until another contact head in closing circuit relation is encountered.
45 In this manner it is possible to energize the radio at the desired intervals and for operation during the desired periods by setting the buttons in advance so that further manipulation is unnecessary so long as reception is desired from a single broadcasting station. Of
50 course, if programs from different stations are desired, it will be necessary to manually adjust the radio at the proper time, which bears no relation to the functioning of the present invention. The
55 arrangement is one which permits the operator to quickly and easily set the device in the desired manner, and by indicating the time intervals on

the faces of the buttons themselves a quick and certain adjustment can be made.

If means are not otherwise provided for setting to accurately register the correct time, the clock can be set by the depression of a button
5 registering the current time at any interval and thereafter adjusting the movable switch finger in the manner of an hour hand until it registers with the contact head in circuit with said button, which indicates that the clock mechanism is in
10 correct adjustment with the timing of the radio station. Where it is desired to eliminate or disable the automatic features of the present invention, the cut out switch 43 can be closed which
15 will establish direct circuit connection through the radio, which can then be operated manually in the usual manner.

The present invention has been described as an attachment for or accessory to an ordinary radio and as being housed in a separate box or
20 cabinet, but it will be understood that if desired the time switch of the present invention can be mounted within the radio cabinet and incorporated as a standard feature of the radio itself.

Although the invention has been described with
25 particularity as to detail, it is not the intention to limit the device to the form shown, since various modifications can be made therein without departing from the spirit of the invention.

I claim:

In mechanism of the class described, the combination of a radio, circuit wires leading thereto and provided with a switch adapted when closed to permit manual operation of the radio, time
35 switch mechanism in circuit with the radio and by-passing said switch for permitting automatic operation of the radio when the aforesaid switch is open, said mechanism including a clockwork having an arbor, an insulating disk fixedly mounted on the arbor and rotatable therewith, a spring
40 finger switch member fixedly carried by the insulating disk, a series of circularly disposed contacts adapted to be successively and uninterruptedly engaged by the face of said spring finger switch member, a plurality of switches adapted
45 to be selectively actuated to establish circuit closing relation with any desired number of said circularly disposed contacts, circuit members in series relation with each of said plurality of switches and leading to the radio circuit wires on one side of
50 the first mentioned switch, and a non-rotatable circuit member in constant contact with the spring finger switch member and in electrical connection with the radio circuit wires on the
55 opposite side of the first mentioned switch.

WILLIAM JOHNSON.