

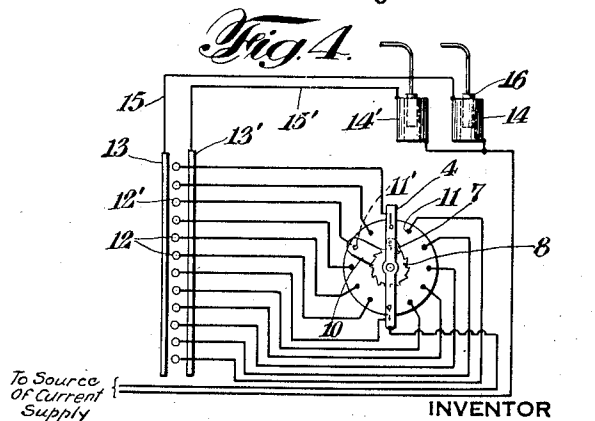
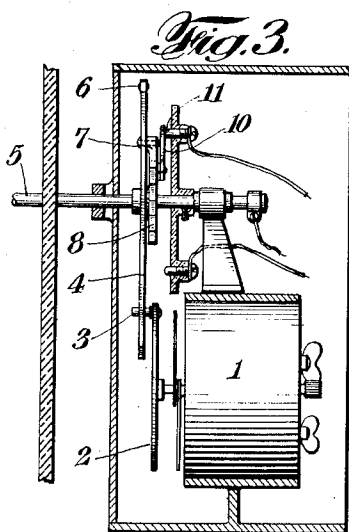
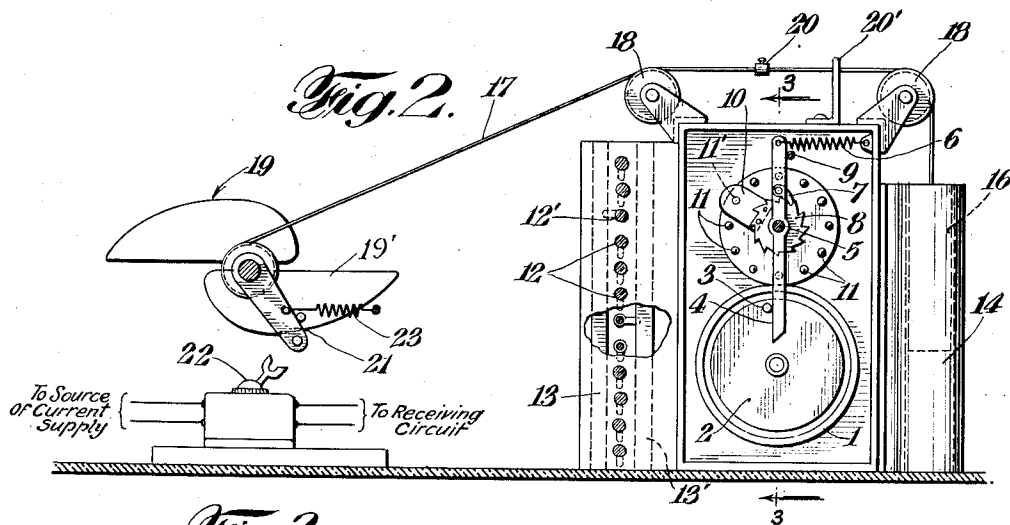
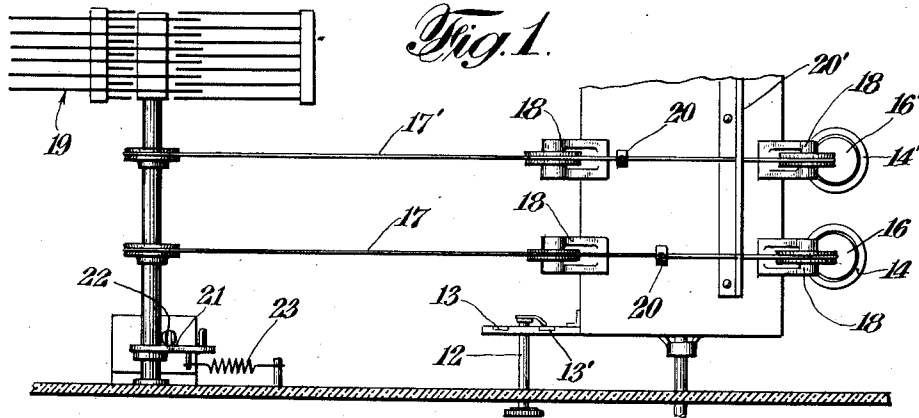
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H. HORELICK

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RECEIVING SET CONTROL SYSTEM

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INVENTOR
 Harry Horelick
 BY
 Edwards, Bower & Pool
 ATTORNEYS

UNITED STATES PATENT OFFICE

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RECEIVING SET CONTROL SYSTEM

Harry Horelick, Paterson, N. J.

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7 Claims. (Cl. 250—20)

This invention relates to radio apparatus and primarily to a receiving set control system for controlling the reception of signals or programs from different transmitting sources at predetermined time intervals.

One object of my invention is to provide for a preselection of desired programs with means for automatically tuning the receiving apparatus for the reception of such programs as they are broadcast, and my system is particularly adapted for the reception by a radio receiving set of various preselected broadcast programs as they occur at previously announced time intervals.

Another object of my invention is to reduce to a minimum the attention necessary in connection with the tuning in of the desired broadcast station at any desired time. Thus, it is often desirable to tune in on different stations at different hours to obtain desired programs, and my invention provides a means whereby this is accomplished automatically.

My invention also provides for the control by the tuning element of a receiving set of the power supplied to the set. This appreciably reduces the current consumed, since when the set is not tuned to receive, the supply circuit is opened. This also insures longer life of the tubes employed in receiving sets.

My invention also provides for a quick make-and-break action in the means for switching stations on and off at different hours, thus preventing burning of the switch contacts, and also minimizing any noise incident to the switching operation.

For a better understanding of my invention, reference will be had to the following description in connection with the accompanying drawing, in which

Fig. 1 is a plan view of one form of apparatus in accordance with my invention;

Fig. 2 shows a front view of the apparatus shown in Fig. 1;

Fig. 3 is a section taken along the line 3—3 of Fig. 2 and looking in the direction of the arrows;

Fig. 4 is a diagrammatic view of the connections of my device.

Referring to Fig. 2, a clock or other time controlled mechanism 1 is adapted to rotate a disk shaped member 2 in clock-wise direction. This mechanism may be driven by a spring or any other suitable means, and the member 2 may be adapted to make a complete revolution in one hour, thereby corresponding to the minute hand of a clock, or may be driven at any desired speed

according to the rate of change of programs desired. The member 2 has a pin 3 fixed in it near its periphery as indicated, and during each revolution of the disk the pin engages a lever 4 which is pivotally mounted at 5. The lever is displaced by pin 3 against the tension of restoring spring 6. A stop 9 serves to determine the initial position of the lever.

Upon rotation of disk 2 the lever 4 is displaced by pin 3 until the pawl 7 engages the next tooth of ratchet wheel 8. The continued revolution of the disk causes pin 3 to revolve until lever 4 is released and is restored to its original position by spring 6.

A wiper or contact arm 10 is mechanically and electrically connected to ratchet wheel 8 by rivets or other suitable means, and as the lever is released the ratchet wheel revolves the wiper arm which successively engages contacts 11. These contacts are spaced around about a circle similar to the spaces on a clock, and each contact represents a certain time interval. It is found desirable to employ twelve contacts, each of the same representing one hour of the clock, although if it is desired to change programs more often than hourly, as many contacts with a corresponding number of notches on the ratchet wheel may be added as required. Thus, twenty-four contacts may represent half-hourly program changes during a twelve hour period. Also, this number of contacts may represent a twenty-four clock dial if desired.

Each of the contacts 11 is electrically connected to a corresponding switch 12 as indicated in Fig. 4, and each of the switch members 12 therefore represents one hour on the clock in the arrangement shown.

Each of the switches 12 is adapted to make contact with either of the two plates 13 or 13', each plate representing a broadcast station. For each broadcast station from which it is desired to receive a program a similar plate must be added, but for the sake of clearness only two stations are shown. As many stations may be added as desired, and in the event of a considerable number of stations it will be desirable to have the switches 12 in the form of three-point, four-point, or similar switches, and have multiple banks of contacts representing the broadcast stations.

Each of the contact plates 13 and 13' is electrically connected to a separate solenoid 14 and 14' by conductors 15 and 15', and if a switch 12, corresponding to a certain hour, is thrown to engage either of the plates 13 or 13', the solenoid corre-

sponding to the selected plate will be energized when the wiper arm 10 engages the contact 11 which is connected to the switch thrown.

Each of the solenoid plungers or armatures 16 and 16' is connected to a steel wire 17 or 17' which passes over pulleys 18, 18, and is connected to the shaft of a tuning device or element 19 such as a variable condenser or inductance of a receiving set as shown in Figs. 1 and 2.

The operation of my device is as follows:

Each of the switches 12 which corresponds to the desired hour of reception is thrown to the right or left depending upon which broadcast station or program it is desired to receive at that hour. For the purposes of illustration, one of these switches 12' in Figs. 2 and 3, corresponding to 10 o'clock on a clock dial, is shown as thrown to the left to receive from the station represented by the contact plate 13. In the position shown wiper arm 10 is engaging with contact 11' corresponding to 10 o'clock, and a circuit may be traced from the source of current supply, ratchet wheel 8, wiper arm 10, contact 11' corresponding to 10 o'clock, corresponding switch 12' as shown by the dotted line, plate 13, corresponding solenoid 14, and return to the source of supply. The source of current supply may be obtained from the house lighting system, or it may comprise a battery, or other suitable source.

The completion of this circuit energizes solenoid 14 which causes armature 16 to be pulled down. This in turn through the medium of wire 17 causes the movable element 19' of the tuning device 19 to be rotated until the stop 20 on wire 17 engages the common abutment member 20'. At this stop the tuning device is adjusted to tune the receiving set with the desired station and the program will therefore be received. The stop 20 is adjustable to vary the adjustment of the tuning device, and this permits each solenoid and its associated equipment to represent any desired station. The adjustment also permits an accurate tuning of the device.

During the initial movement of the movable tuning element 19', an arm 21 engages and operates switch 22 which turns on the current supply to energize the set. Spring 23 causes the tuning element to be positively restored to zero position when the solenoid is deenergized. This movement opens the switch and disconnects the current supply from the set. In addition to effecting a considerable saving of current, this action also results in increased life of the tubes since the filaments of the latter are not heated except when the set is tuned for reception.

At the end of the hour, or at 11 o'clock, the member 2 will have made another revolution and pawl 7 will engage ratchet wheel 8, switching in the desired program at 11 o'clock which is predetermined by the position of the adjacent switch 12. It is obvious that successive programs may be received from the same stations instead of from different stations if desired.

It will be seen from the foregoing that my arrangement permits the preselection of signals or programs to be received either continuously or at desired intervals, and that the receiving set will be automatically energized, tuned and deenergized in accordance with the pre-selected programs. While I have shown and described but one embodiment of my invention, various modifications will suggest themselves to those skilled in the art without departing from the spirit of the invention, and I do not desire to be

limited except as indicated by the scope of the appended claims.

I claim:

1. In a wave receiving system, the combination of unitary means comprising a plurality of plates movable to tune the system to different wave lengths to be received, a plurality of means each having a different extent of travel from the same initial position and representing a different wave length for moving the tuning means to positions corresponding to the respective wave lengths, means for preselecting any one of said plurality of means, and automatic means for causing successive energization of said preselected means.

2. In a wave receiving system, the combination of means comprising a plurality of plates movable as a unit for tuning the system to different wave lengths to be received, a plurality of means each having a different extent of travel from the same initial position and representing a different wave length for moving the tuning means to positions corresponding to the respective wave lengths, and automatic means for causing successive actuation of said plurality of means in accordance with a predetermined order.

3. In a wave receiving system, the combination of adjustable means comprising a plurality of plates adjustable as a unit for tuning the system to receive different wave lengths, a plurality of means each having a different extent of travel from the same initial position and representing a different wave length for moving the tuning means to positions corresponding to the respective wave lengths, means for preselecting the order in which said last-recited means shall be effective, and automatic means for causing successive actuations of said preselected means.

4. In a radio receiving system, the combination of adjustable means comprising a plurality of plates rotatable as a unit for tuning the system to different wave lengths to be received, a plurality of means each having a different extent of travel from the same initial position and representing a different wave length for moving the tuning means to positions corresponding to the respective wave lengths, means for preselecting the order in which said last-recited means shall be effective, and means for automatically actuating said preselected means at predetermined time intervals.

5. In a radio receiving system, the combination of adjustable means comprising a plurality of plates rotatable as a unit to tune the set to different frequencies to be received, a plurality of electrically operated means each having a different extent of travel from the same initial position and representing a different frequency for moving the tuning means from one end position to positions corresponding to such frequencies, means including a switch for preselecting the order in which said plurality of means shall be connected, a source of supply current for energizing said plurality of electrically operated means, and means for automatically closing the circuits of said preselected means each at a predetermined time.

6. In a radio receiving set, a time controlled variable tuning device having a movable element, a plurality of independent operating means each having a different travel and representing a different frequency, said operating means being mechanically connected with said movable element, electromagnets, one for actuating each of

said operating means, a time-controlled circuit system for controlling the electromagnets, and switches for closing the same at points representative of predetermined time periods.

- 5 7. In a radio receiving set, the combination of a variable tuning device having fixed and movable elements, a plurality of operating means each having a different travel and representing a different frequency, said operating means being
10 mechanically connected with said movable ele-

ment to vary the adjustment of the same, means for selectively energizing said operating means, a switch for controlling the current supplied to the set, the switch being closed by displacement of the movable tuning element from zero position by any of said operating means, and means 5 for automatically restoring the tuning element and opening the switch upon deenergization of said operating means.

HARRY HORELICK. 10