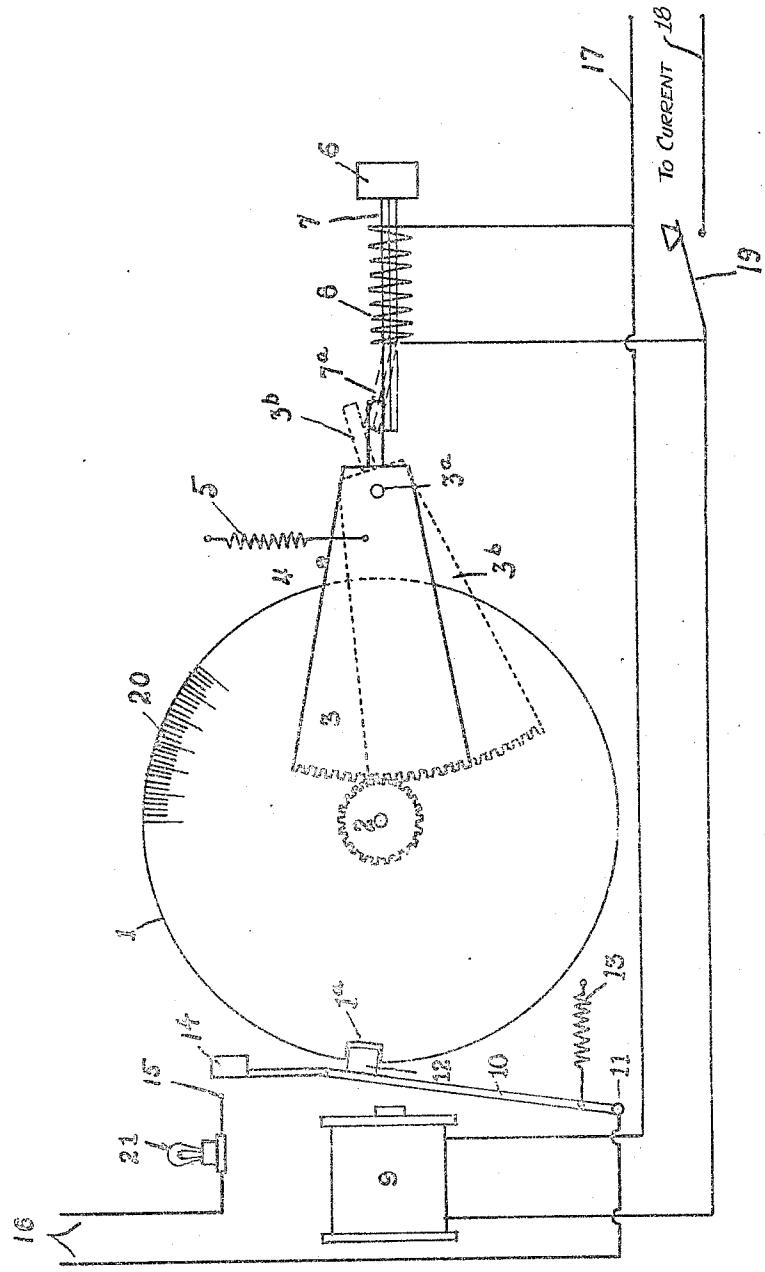
July 24, 1934. H. FUCHS 1,967,816

REMOTE RADIOCONTROL

Filed Jan. 31, 1930




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Patented July 24, 1934 1,967,816

# UNITED STATES PATENT OFFICE

1,967,816

## REMOTE RADIOCONTROL

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Application January 31, 1930, Serial No. 424,951

22 Claims. (Cl. 250—40)

My invention relates to a new method of and apparatus for tuning radio and similar apparatus, simply by actuating a push button or switch, situated either locally or remotely in relation to the radio set, till the desired station is heard, when the button or switch is released, permitting the desired program to continue.

The purposes of this invention are, to control a radio set by just one button or switch, to permit elderly people, children, or folk with poor eyesight to tune in favorite stations, to control a set that is out of the way, from one or more positions, and to have a remote control that can be easily attached to a present radio.

Referring to the accompanying drawing I have illustrated a schematic view of my invention and the electrical connections therefor.

In the drawing, 1 indicates a drum or dial suitably connected to operate the radio tuning mechanism, and having at its axis a gear 2 intermeshing with the segmental gear 3 which is pivoted at $3^a$ and tensioned against the stop 4, by the spring 5. 6 indicates a fixed post having secured to it a thermostatic bar or element 7 which is wound with or is within the effective range of the heating coil 8, electrically connected to the source of current. The electromagnet 9 is likewise connected to the source of current and functions to attract the armature 10 pivoted at 11. 12 indicates a friction pad secured to armature 10 and tensioned against the drum 1 by the spring 13. At the extremity of armature 10 is contact 14 adapted to contact with contact 15 to automatically close circuit 16 connected to the radio set and current supply thereof, when electromagnet 9 attracts armature 10 releasing friction pad 12 from notch $1^a$ in drum 1. The coil 8 and the electromagnet 9 are connected in parallel, and the electric current from lines 17 and 18 is controlled by the key or switch 19. The circuit 16, connected to the radio set and current supply thereof, is automatically closed when key 19 is actuated, energizing electromagnet 9 to attract armature 10 carrying friction pad 12, thereby releasing drum 1, which may be calibrated as at 20, to rotate, and consecutively tune in the radio stations. 21 indicates a visual lamp indicator to indicate when current to radio set is on.

The mode of operation is more particularly as follows:—

A remote control radio as embodied in my invention is affixed to the tuning mechanism of a radio set and the button or switch 19 or a plurality of them, are connected in parallel, and placed in convenient positions away from the set, as for instance, in adjacent rooms.

When the button or switch 19 is actuated, electromagnet 9 attracts armature 10, pulling away frictional pad 12 from notch $1^a$, releasing dial 1, closing circuit 16, which remains closed while friction pad 12 is out of notch $1^a$, thus connecting the current to the radio set which is indicated by illumination of the pilot lamp 21. At the same time the current flows thru the heating coil 8, which is connected in parallel to electromagnet 9, thereby heating and causing the thermostatic bar 7 to very slowly curve to position as indicated by $7^a$. The segmental gear 3, pivoted at $3^a$, and movable to position indicated by $3^b$, is thus very slowly actuated by the very slowly curving thermostatic bar 7, intermeshing with gear 2 secured to dial 1, thereby very slowly rotating dial 1, and consecutively tuning in the radio stations. When the desired station is heard, button or switch 19 is opened and the desired program continues. In opening button or switch 19, the current is discontinued both from the heating coil 8 and the electromagnet 9. Immediately armature 10 tensioned by spring 13, is released by electromagnet 9, and the friction pad 12 grips the periphery of dial 1, thus securely keeping dial 1 in the position to which it has been set, while thermostatic bar 7 returns to its normal shape and position.

All this time contacts 14 and 15 are contacting and lamp 21 is lighted, indicating that the current to the radio set is on (circuit 16). It is only when friction pad 12 is in notch $1^a$ that the current to the radio set is off, and the unlighted lamp 21 so indicates.

After hearing the first station for awhile suppose another station is desired. Button or switch 19 is again closed. Immediately electromagnet 9 again attracts armature 10, releasing the periphery of dial 1 from the friction pad 12. On the instant, gear 3, which thru gear 2 has been held in fixed position by the grip of friction pad 12 on the periphery of dial 1, returns to its original position under tension of spring 5, causing dial 1 to do likewise.

The thermostatic bar 7 now begins to very slowly curve again, the dial 1 again very slowly rotates, consecutively tuning in the radio stations till the desired one is heard, button or switch 19 is opened, and the desired program continues.

After several programs have been heard and one desires to close the radio, button or switch

19 is closed for an instant, permitting dial 1 to return to original position. When button or switch 19 is opened, the extinguished pilot lamp 21 will indicate that friction pad 12 has fallen into notch $1^a$, and circuit 16, connected to current supply of radio set, is open.

From the foregoing it will be readily observed that by simply manipulating a button or switch, positioned locally or remotely in relation to a radio set, a radio set is started and stopped, and any desired station may be tuned in.

This remote radio control device is also much cheaper and simpler to manufacture and install than any remote control devices commercially sold at present, which employ expensive and bulky geared motors and auxiliary mechanisms and apparatus.

It will be understood that various modifications may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

I claim:—

1. In a remote control device, a tuning element, an expanding and contracting element operatively connected to and adapted to move said tuning element, means for energizing the expanding and contracting element whereby it will change in size and move the tuning element to a desired position, a device adapted to hold the tuning element at the desired position, and manually operable means adapted to deenergize the expanding and contracting element whereby it will recede.

2. In a remote control device, a tuning element, an expanding and contracting element operatively connected to and adapted to move said tuning element, means for energizing the expanding and contracting element whereby it will change in size and move the tuning element to a desired position, a device adapted to hold the tuning element at the desired position, and switching means adapted to deenergize the expanding and contracting element whereby it will recede.

3. In a remote control device, a tuning element, a thermo responsive element operatively connected thereto and adapted to actuate said tuning element, means for braking the said tuning element when the desired position is reached, and means for automatically returning the tuning element to a position when the said braking means is disengaged therefrom.

4. In a remote control device, a tuning element, means operatively connected thereto and adapted to actuate said tuning element, braking means adapted to disengage from said tuning element when actuated, said tuning element actuating means and said braking means being connected in a common electrical circuit and simultaneously actuated by operating single contact means until the desired position of the tuning element is reached, means whereby the opening of the circuit will lock said tuning element in said desired position, and means for returning the tuning element to its original position when the circuit is again closed.

5. In a remote control device, a tuning element, means operatively connected thereto adapted to actuate said tuning element in one direction, spring means adapted to move said tuning element in another direction, and braking means adapted to stop said tuning element, the said tuning element actuating means and the said braking means being adapted to operate successively after being energized concurrently.

6. In a remote control device, a tuning element, a thermo responsive element operatively connected to and adapted to actuate said tuning element in a direction, spring means adapted to move said tuning element in an opposite direction, and a brake adapted to arrest the movement of said tuning element at any point.

7. In a remote control device, a tuning element, an electroresponsive device adapted to move said tuning element in one direction, means for energizing the electroresponsive device to move the tuning element to a desired position, a brake adapted to hold the tuning element at the desired position when the electroresponsive device which moves the tuning element is de-energized and returns to a position, an electroresponsive device adapted to actuate the brake, and means for moving the tuning element in an opposite direction when released by the brake, the electroresponsive device adapted to move the tuning element and the electroresponsive device adapted to actuate the brake being adapted to operate successively after being energized concurrently.

8. In a remote control device, a spring that tends to move a tuning device in one direction, an electro-responsive device adapted to move said tuning device in an opposite direction, means for braking said tuning device in any position against the influence of said spring while said actuating means returns to a predetermined position, electroresponsive means for disengaging said brake from said tuning device, and an electrical circuit controlling device adapted to be biased to one condition by the tuning device when the said tuning device is out of a predetermined position.

9. In a remote control device, an electrically actuated oscillating device adapted to move a tuning device, a spring tensioned brake normally engaging said tuning device and electromagnetic means adapted to disengage said brake therefrom, connections from said electrically actuated oscillating device and said electromagnetic means connected to lines from a source of current and means for energizing same simultaneously, and a switch operated by said brake adapted to switch on the radio operating current when said tuning device is moved from its starting position.

10. In a remote control device, a spring that tends to move a tuning device in one direction, an electroresponsive device adapted to move said tuning device in an opposite direction, means for braking said tuning device in any position against the influence of said spring while said actuating device returns to a predetermined position, electroresponsive means for disengaging said brake from said tuning device, and an electrical circuit controlling device for controlling the radio operating current movable between two positions and biased to one position by the tuning device when the said tuning device is out of its initial position.

11. In a remote control device, a thermo responsive device adapted to move a tuning device, a brake normally engaging said tuning device and electroresponsive means adapted to disengage said brake therefrom, connections from said thermoresponsive moving device and said electroresponsive means connected to lines from a source of current and means for energizing same, and a switch operated by said brake adapted to control the radio operating current.

12. In a remote control device, a tuning element, an electroresponsive device adapted to move said tuning element, a brake adapted to

stop the tuning element, an electroresponsive device adapted to actuate the brake, the electroresponsive device adapted to move the tuning element and the electroresponsive device adapted to actuate the brake being adapted to operate successively after being energized concurrently, and switching means operated by the brake adapted to influence an electric circuit when the tuning element is moved.

13. In a remote control device, a tuning element, means operatively connected thereto and adapted to actuate said tuning element, braking means adapted to disengage from said tuning element when actuated, the said tuning element actuating means and the said braking means being electrically connected and adapted to operate successively after being energized concurrently until the desired position of the tuning element is reached, means whereby the opening of the circuit will lock the said tuning element in the desired position and cause the tuning element actuating means to return to a predetermined position, and means for returning the tuning element to a predetermined position when the circuit is again influenced.

14. In a remote control device, a tuning element, means operatively connected thereto adapted to actuate said tuning element, braking means engaging said tuning element and adapted to disengage therefrom, the said tuning element actuating means and the said braking means being electrically connected and adapted to be actuated by circuit controlling means until the desired position of the tuning element is reached, means whereby the opening of the circuit will lock the said tuning element in the said desired position and cause the tuning element actuating means to return to a predetermined position, and means for returning the tuning element to a predetermined position when the circuit is again closed.

15. In a remote control device, a tuning element, means operatively connected to and adapted to actuate said tuning element, braking means adapted to disengage from said tuning element when actuated, said tuning element actuating means and said braking means being electrically connected and actuated by operating circuit closing means until the desired position of the tuning element is reached, means whereby the opening of the circuit will lock said tuning element in said desired position and cause the tuning element actuating means to return to its original position, means for returning the tuning element to a predetermined position when the circuit is again closed, and automatic signal means for indicating when the tuning element is not in its original position.

16. In a remote control device, an electrically actuated device adapted to move a tuning device, a brake normally engaging said tuning device and electroresponsive means adapted to disengage said brake therefrom, connections from said electrically actuated device and said electroresponsive means connected to lines from a source of current and means for energizing same, a switch operated by said brake adapted to switch on the radio operating current when the tuning device is moved from its starting position, and means for locking the tuning element in a desired position and causing the tuning element actuating means to return to a predetermined position.

17. In a remote control device, an electrically actuated device adapted to move a tuning device, a brake normally engaging said tuning device and electroresponsive means adapted to disengage said brake therefrom, connections from said electrically actuated device and said electroresponsive means connected to lines from a source of current and means for energizing same, a switch operated by said brake adapted to switch on the radio operating current when the tuning device is moved from its starting position, means for locking the tuning element in a desired position and causing the tuning element actuating means to return to a predetermined position, means for returning the tuning element to the starting position, and automatic signal means for indicating when the tuning element is not in a predetermined position.

18. In a remote control device, an electrically actuated device adapted to move a tuning device, a brake normally engaging said tuning device and electrical means adapted to disengage said brake therefrom, connections from said electrically actuated device and said electrical means for disengaging the brake connected to lines from a source of current and means for energizing same simultaneously, a switch operated by said brake adapted to control the radio operating current when the tuning device is moved, means for stopping the tuning element at a desired position and causing the tuning element actuating means to return to a predetermined position, and means for returning the tuning element to a predetermined position.

19. In a remote control device, a tuning element, means operatively connected thereto adapted to actuate said tuning element, a brake adapted to arrest the tuning element, an electroresponsive device adapted to actuate the brake, connections from the tuning element actuating means and the electroresponive device connected to lines from a source of current and means for energizing same simultaneously until the desired position of the tuning element is reached, means whereby the deenergization of the tuning element actuating means and the electroresponsive device will stop the tuning element at the desired position, and means for returning the tuning element in a direction toward its initial position when the tuning element actuating means and the electroresponsive device are again energized.

20. In a remote control device, a tuning element, means operatively connected thereto adapted to actuate said tuning element, braking means normally engaging said tuning element and adapted to disengage therefrom when actuated, said tuning element actuating means and said braking means being connected in an electrical circuit and simultaneously actuated by operating contact means in circuit therewith until the desired position of the tuning element is reached, means whereby the opening of the said circuit will lock said tuning element in said desired position, means for returning the tuning element in a direction toward its initial position when the circuit is again closed, and signal means for indicating when the tuning element is not in its initial position.

21. In a remote control device, a tuning element, an electroresponsive device adapted to move said tuning element in one direction, a brake adapted to stop the tuning element, an electroresponsive device adapted to actuate the brake, the electroresponsive device adapted to move the tuning element and the electroresponsive device adapted to actuate the brake being adapted to operate successively after being energized concurrently and means for moving the

tuning element in an opposite direction when released by the brake.

22. In a remote control system, a tuning element, an electroresponsive device operatively connected to and adapted to actuate said tuning element, a brake engaging said tuning element and electroresponsive means of different inertia than the first mentioned electroresponsive means adapted to disengage said brake therefrom, connections from both electroresponsive devices connected to lines from a source of current and means for energizing them, a switch actuated by one of the electroresponsive devices adapted to influence a circuit when the tuning element is moved from a predetermined position, and means for returning the tuning element before the electroresponsive means again actuates it.

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