

July 14, 1942.

R. H. FISHER

2,289,417

AUTOMATIC RADIO RECEIVER APPARATUS

Filed Feb. 6, 1940

2 Sheets-Sheet 1

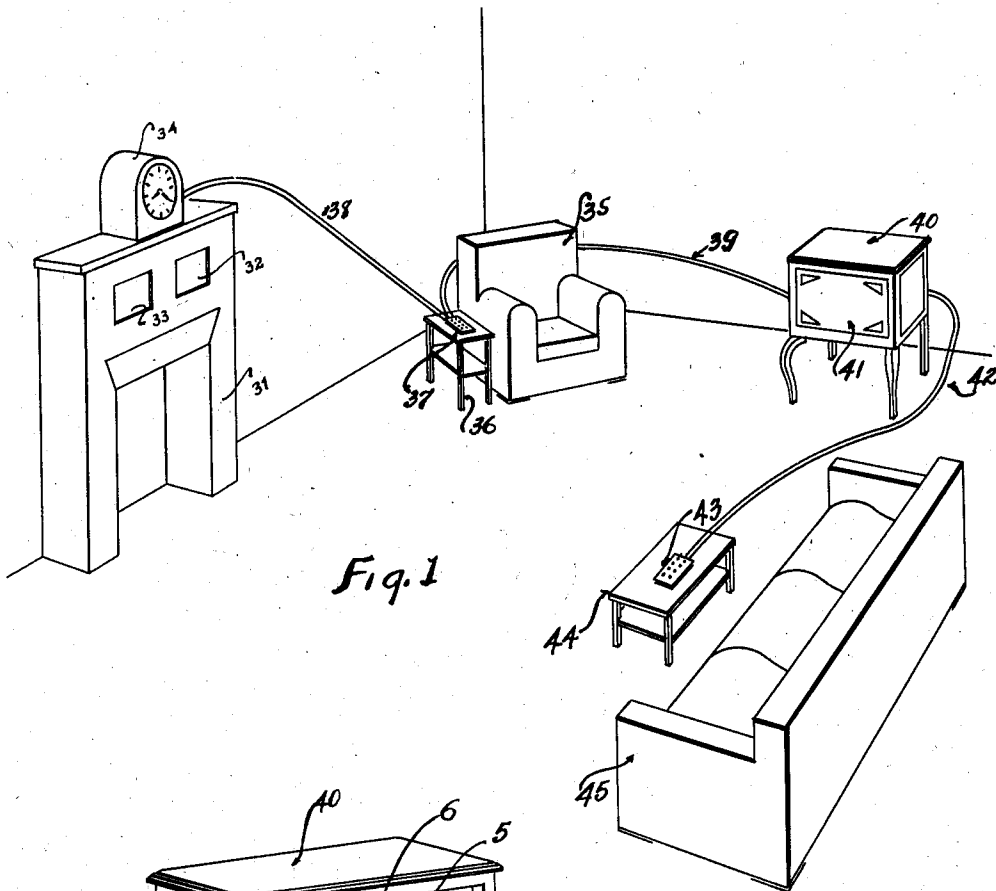


Fig. 1

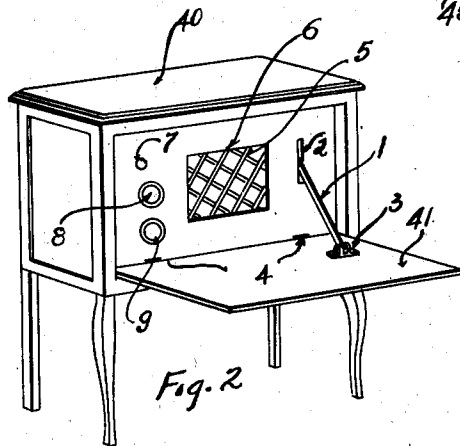


Fig. 2

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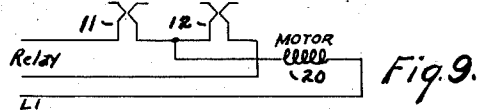
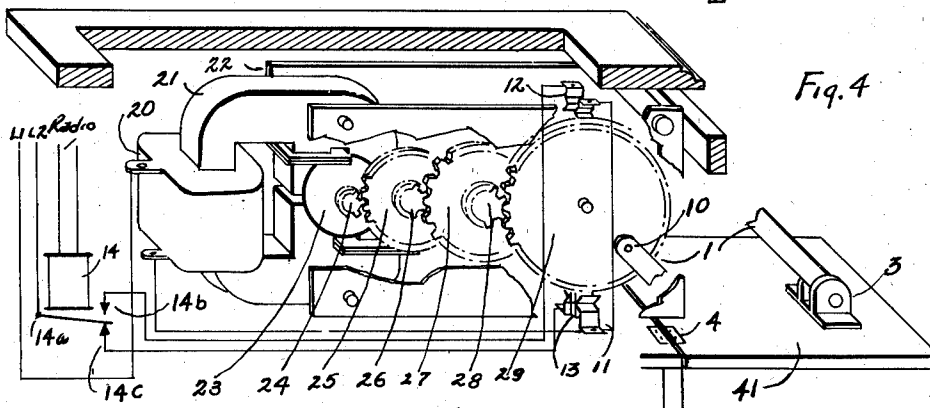
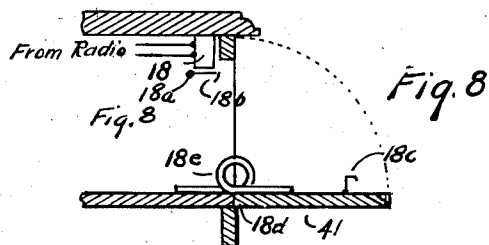
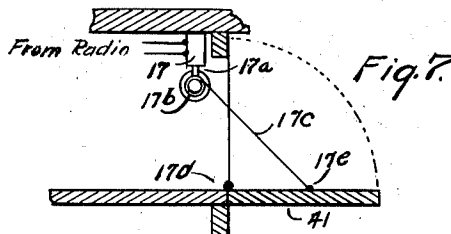
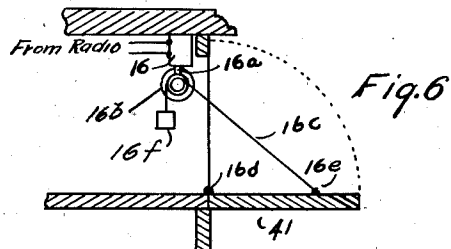
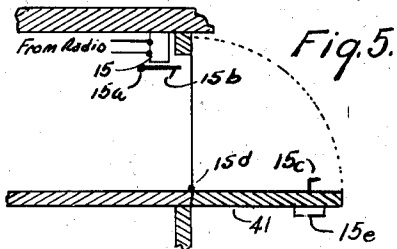
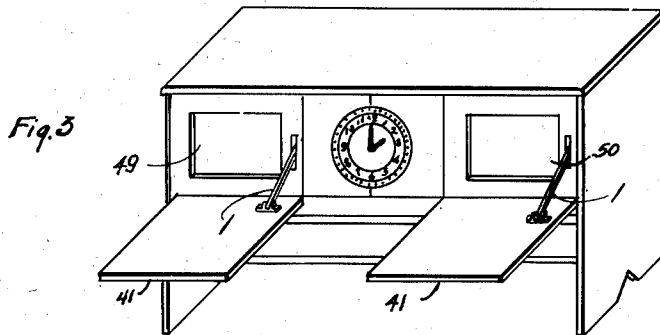
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AUTOMATIC RADIO RECEIVER APPARATUS

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2 Sheets-Sheet 2



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Inventor

UNITED STATES PATENT OFFICE

2,289,417

AUTOMATIC RADIO RECEIVER APPARATUS

Robert H. Fisher, New York, N. Y.

Application February 6, 1940, Serial No. 317,506

3 Claims. (Cl. 250—16)

My invention relates to a new and useful improvement in radio and television receivers.

One of the objects of the invention is to provide a means to automatically cover or uncover the loud speaker of a radio receiver, so that said speaker may be placed in a conventional piece of furniture, fixture, wall or clock, or even in the floor, and yet be covered so that the speaker opening is not exposed to view.

Another object is to provide a means to automatically cover and/or uncover the television screen of a television receiver so that the screen is not ordinarily exposed to view and the enclosures will have, in all respects, their natural appearance as a piece of furniture, etc., but when the radio or television is turned on and the radio-televisor or speaker begins to function, the concealing element or cover to the speaker or televisor is automatically removed or withdrawn, and reversely when the radio is turned off, the concealing or covering element is restored.

The concealing or covering element may be louvers, shutters, or a hinged sliding or roll panel or top, etc. Whichever type is used would make very little difference, as the important feature essential to my invention is the machine that automatically operates these covers.

One of the preferred forms is to place the radio and television receiver in a console that would harmonize with the rest of the living room furniture, without having those parts that would identify it as a radio exposed to view, but at the same time, by the means I provide it would automatically be adjusted to give full service as any other radio in a conventional radio or television console without covers or concealing elements.

Consoles have long been the most popular cabinets for fine radio sets since they are better suited to accommodate all the equipment required to render a reception of high fidelity. However, when large consoles are employed, care must be taken in their design to avoid lack of harmony among otherwise harmonious furniture and settings. In some cabinets, provision has been made to hide the dials and gadgets by providing a door or screens that could be opened or closed. Some of these designs result in very ingenious schemes and very beautiful pieces of furniture that can be placed in a room to somewhat eliminate the objection noted above, but even then we still find the inconvenience of manipulation. Recourse has been made to consoles in the form of end tables so the controls can be manipulated by the person sitting in a chair next to the radio, but this also has its bad feature, because the

rendition of the speaker cannot go directly to the listener, but is reflected from other parts of the room, and with the advent of television where a part of the program is visual, it is all important that consideration be given the placement of the set.

The appropriate place to put a radio to satisfy the above requirements and to lend artistic arrangement to the furniture is not usually the convenient place to have it for manipulation, and therein lies the need for a remotely controlled radio. But if it is necessary to cover and uncover the speaker opening, manually, the advantage of a remote control is partly, at least, discounted.

My invention provides the means to eliminate the above difficulty by providing a means to automatically uncover the radio's speaker and/or television opening, whenever a broadcast is being rendered, and to cover the same opening when the broadcast has finished.

One use of my invention would apply where the tuner was located in a convenient place for manipulating the controls, and the speaker and/or televisor located in a better part of the room to more satisfactorily render the broadcast. Where remote control is employed, there would of course, be no objection to having the tuner in the same cabinet as the rest of the equipment. Where the radio receiver is provided with a timing device to automatically preselect the radio program, a very convenient and artistic arrangement of the room's furniture may be had by the arrangement herein shown and explained.

However, numerous other applications suggest themselves, and therefore I do not contemplate being limited to the specific use herein shown, nor only to consoles, but to all applications where my invention is adaptable, or even as an adjunct to remote control.

Figure 1 is a perspective view illustrating the possible arrangements of the elements in a system of remote control and preselection of radio and television with respect to other furniture in a room.

Figure 2 is another perspective view of the radio cabinet shown in Fig. 1, with its hinged front panel lowered, exposing the speaker opening and radio controls.

Figure 3 is a similar view of another console large enough to accommodate all of the units shown in Fig. 1, that is, a televisor, radio speaker and timing mechanism, with the panels in front of the speaker and televisor lowered.

Figure 4 is an isometric perspective view of the

automatic operating mechanism, illustrating how the panel of the cabinet Fig. 2, is opened and closed.

Figures 5 to 8, inclusive, are diagrammatic sectional views of various modified forms of the device.

Figure 9 is the circuit diagram for the control of the mechanism shown in Figure 4.

The similar numbers refer to similar parts throughout the drawings.

Referring to Figure 1 which illustrates the possible arrangement of an operating element of a remote and preselected automatic control system of radio, the fireplace 31, is shown with two openings, 32 and 33, in which the radio and television receiving units could be placed suggesting the need and use of an automatic opening and closing device to open and close said opening.

The clock, 34, on the mantel is a timing device for the preselection of radio stations, through a remote control in cabinet 40. Push button bank 37, on end table 35, and push buttons 43, on table 44, are employed to operate the remote control.

The entire radio receiver with its remote control mechanism is housed in the cabinet 40. Front panel or cover 41 is arranged to swing upwardly or downwardly on hinges 4 to cover or uncover speaker grill 5 in the opening 6, the switch 7, and radio dials 8 and 9, as shown in Figure 2. In Figure 3, the radio and television units may be mounted in the openings 49 and 50.

Figure 4 shows a mechanism operated by a non-reversible alternating current motor 21, all mounted on frame 22. The mechanism comprises a train of reduction gears terminating with a crank pin 10 on gear 29 connected by a link 1 to cover 41. There is also provided on gear 29, and rotated by it, an insulated segment 13 for engaging and opening the normally closed contacts 11, 12, so as to limit the movement of the cover by opening the motor circuit. The controlling switch 14 is merely a relay having bottom contact 14c and top contact 14b on a common armature 14a and so arranged that the top contact 14b is closed by the armature when the relay is energized by the power from the remote control, radio, or television receivers, when same are turned on. When relay is deenergized the armature 14a drops by gravity closing contact 14c.

Figure 5 illustrates the cover 41 held in place by the latching device 15b on armature 15a of relay 15 engaging a catch 15c on cover 41. Said cover is closed manually or by other means not shown, but it is opened by the weight of the cover or additional weight 15e provided when latch 15b is disengaged from catch 15c, by the energization of relay 15.

In Figure 6, manual or other means are used to open the cover, and the weight 16f connected to the flexible cable 16c which passes over the pulley 16b is utilized to close said cover. The weight 16f is automatically released by a latching device 16a on armature of relay 16.

Figures 7 and 8 illustrate respectively the same operations as Figures 5 and 6, in that a potential energy device is used to either open or close the cover, but such device in Figures 7 and 8 depends upon the energy stored in a spring, instead of in a weight.

Having thus described the parts, I will now describe the several forms of operation of the devices.

Referring to Figure 4, relay 14 is assumed to be controlled from the same circuit that controls the source of power of the radio. Therefore, by turning on the radio and energizing its circuit, either by remote control or manually, switch 14 is also energized to attract armature 14a. The armature is connected to the line conductor L2 of any suitable source of current. The current from this source passes through the armature 14a to contact 14b, and from thence to contacts 12, to motor coil 20 and back to the other side L1 of the line. This causes motor to rotate, in turn rotating the train of reduction gears 25, 27 and 29 and pinions 26 and 28 connected to the pinion 24 of armature 23, and thereby transmits a rotating power to crank pin 10, which is connected to link 1 that extends through the slot 2 and is joined to hinge 3 on cover 41. Cover 41 is thereby pulled upwardly and inwardly closing speaker opening 5. When insulated member 13 on gear 29 passes between and opens the normally closed contacts 12, the motor circuit is thereby opened and further movement of the cover stopped.

When the source of current to relay 14 is interrupted by the turning off of the remote control or radio, and relay 14 becomes deenergized, armature 14a drops by gravity, thus closing the circuit from the line L2 to the armature, through contacts 14c and 11 to motor coil 20 and back to the other line L1. This causes motor to rotate and, by the train of gears above described, said motor rotates crank pin 10 on gear 29 in a clockwise direction with the result that the cover 41 is moved toward its closing position. When insulated section 13 engages between contacts 11 to break the circuit just described, the motor is thereby stopped and further closing movement of cover 41 is arrested.

Figure 5 is a diagrammatic view of a means by which cover 41 is opened by gravity. It is assumed that relay 15 is connected to the same source of power as the radio and is energized when the radio is turned on. This raises armature 15a which unlatches latch 15b, releasing catch 15c and the weight of the cover causes the cover to be opened by gravity. The device in Figure 6 is similar except that it is energized when the radio is turned off, disengaging the latch 15b of armature 15a which permits the weight to close the cover by gravity.

In Figure 7, it is assumed that relay 17 is connected to the same source of current as the radio and is energized by the turning on of the radio. This disengages latch 17a from spring device 17b. The cover 41 is, as shown, connected at 17e to a flexible cable 17c which is joined to the rotatable spring device 17b similar to a coil spring used as the main spring of a watch, so that when latch 17a is disengaged by the energization of relay 17 through the power from the radio, the cover 41 is raised upwardly and inwardly to cover the speaker opening.

In Figure 8 the cover is held open by the spring 18e and closed either manually or by other means. When so closed, catch 18c engages the latch 18b of armature 18a of relay 18. Thus, when the relay 18 is energized from the same source of power as the radio, when the radio is turned on. The latch 18b of armature 18 is raised and disengages from catch 18c, permitting the cover to be moved outwardly and downwardly by the spring 18e.

In each of the forms shown in Figures 5 and

8, 15d, 16d, 17d and 18d are merely hinges of cover 41.

I claim:

1. In apparatus of the class described, an enclosure for a radio receiving set or the like, a cover member for said enclosure movable to open and closed positions, a switching means for controlling the operation of said set, an operating element for said cover member, driving means for said operating element, means including a prime mover and an electrical circuit for operating said driving means, and an electromagnetic device in said circuit responsive to the operation of said switching means for closing said circuit to energize said driving means.

2. In apparatus of the class described, an enclosure for a radio receiving set or the like, a cover member for said enclosure movable to open and closed position, a switching means for controlling the operation of said set, an operating element for said cover member, driving means for said operating element, means including a prime mover and an electrical circuit for operating said driving means, an electromagnetic de-

vice in said circuit responsive to the operation of said switching means for closing said circuit to energize said driving means, and an interrupter for said circuit forming a part of said driving means and operable to limit the movement of said cover member.

3. In apparatus of the class described, an enclosure for a radio receiving set or the like, a cover member for said enclosure movable to open and closed positions, a switching means for controlling the operation of said set, an operating element for said cover member, driving means for said operating element, means including a prime mover and an electrical circuit for operating said driving means, an electromagnetic device in said circuit responsive to the operation of said switching means for closing said circuit to energize said driving means so that the latter will move said cover member to open and closed positions, and an interrupter for said circuit controlled by said driving means to limit the movements of said cover member to either of said positions.

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