

Nov. 8, 1938.

H. K. TODD

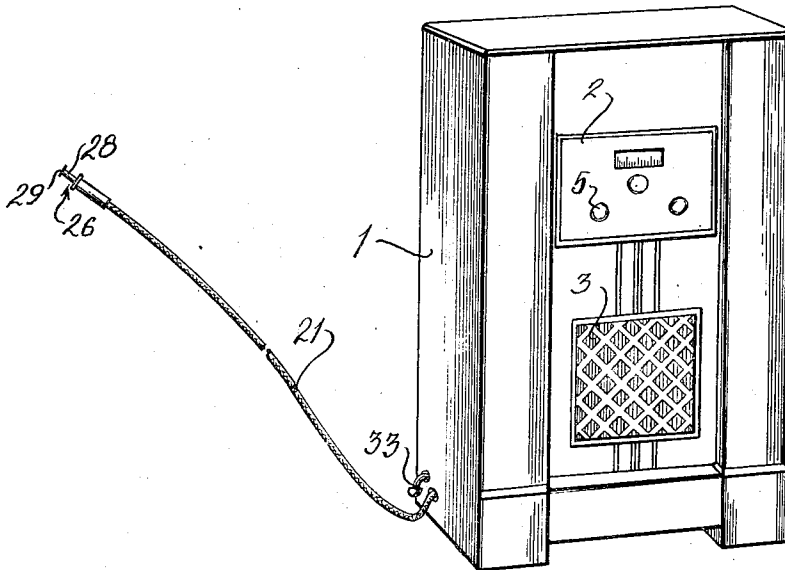
2,135,738

REMOTE VOLUME CONTROL DEVICE FOR RADIO RECEIVING SETS

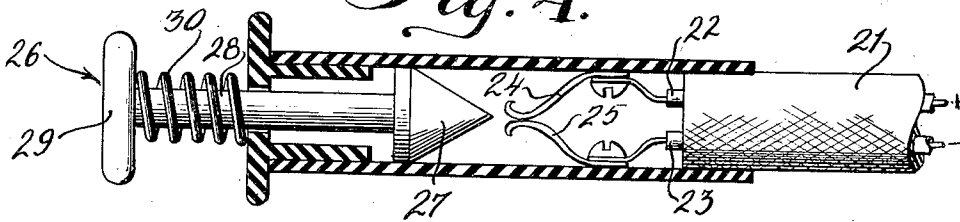
Filed March 5, 1937

5 Sheets-Sheet 1

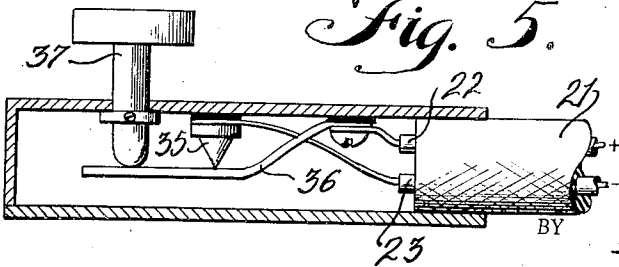
*Fig. 1.*



*Fig. 4.*



*Fig. 5.*



INVENTOR.  
*Harry K. Todd.*  
BY *William R. Smith.*  
ATTORNEY.

Nov. 8, 1938.

H. K. TODD

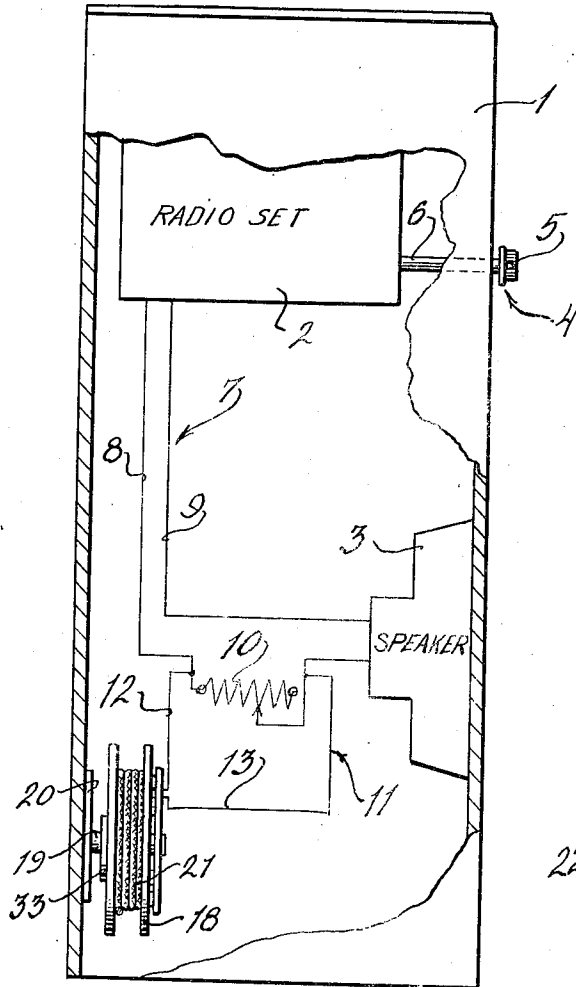
2,135,738

REMOTE VOLUME CONTROL DEVICE FOR RADIO RECEIVING SETS

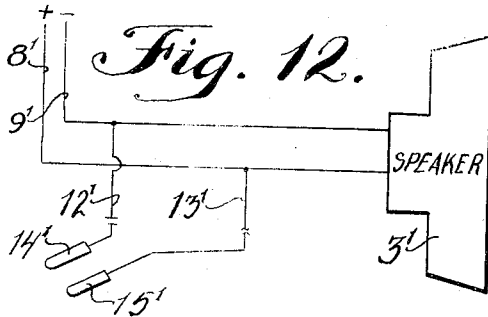
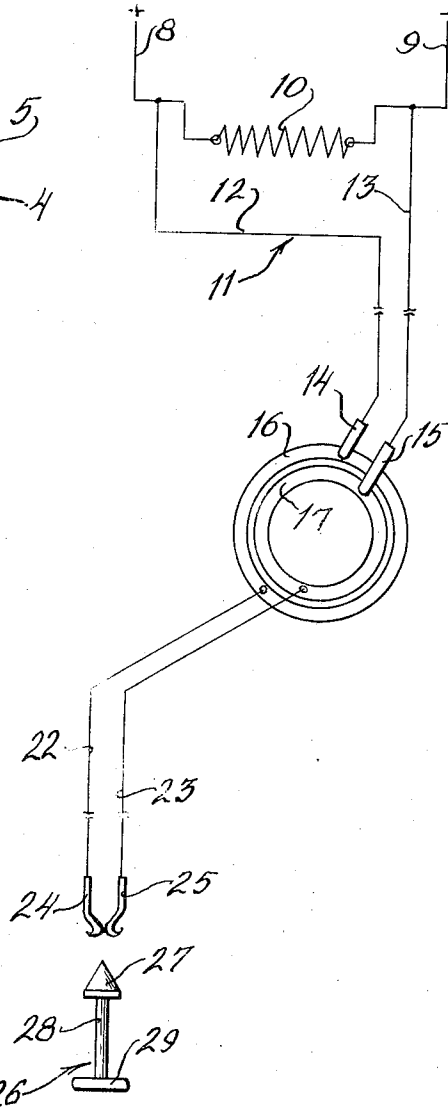
Filed March 5, 1937

5 Sheets-Sheet 2

*Fig. 2*



*Fig. 3.*



INVENTOR.  
*Harry K. Todd*  
 BY *William R. Smith.*  
 ATTORNEY.

Nov. 8, 1938.

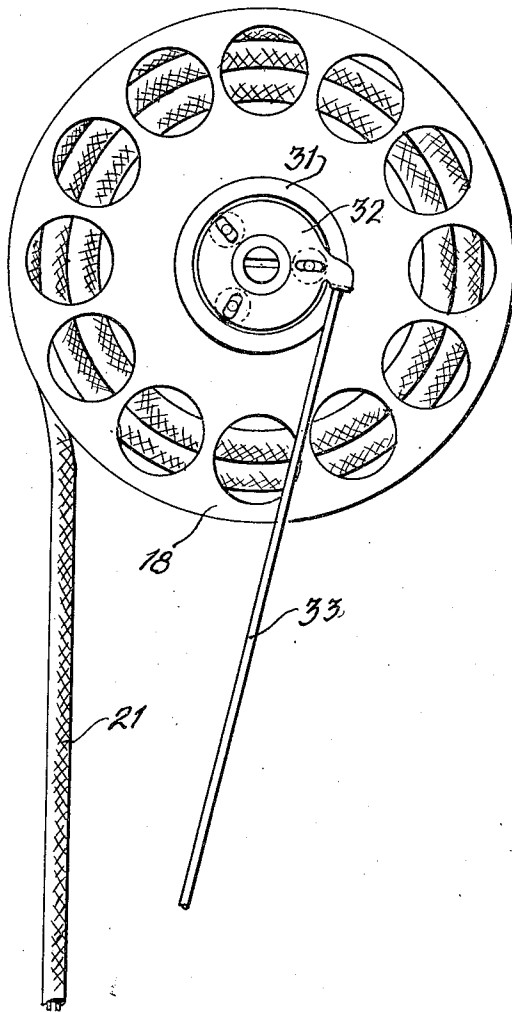
H. K. TODD

2,135,738

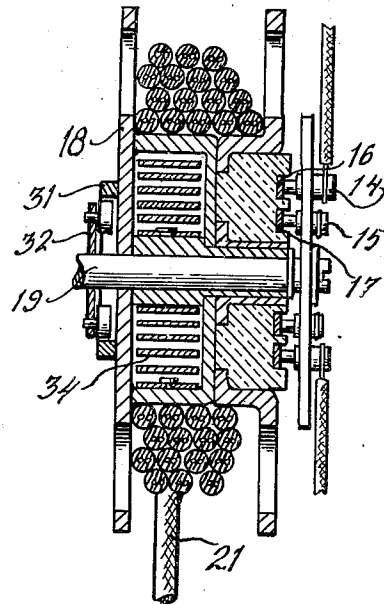
REMOTE VOLUME CONTROL DEVICE FOR RADIO RECEIVING SETS

Filed March 5, 1937

5 Sheets-Sheet 3



*Fig. 6.*



*Fig. 7.*

INVENTOR.

*Harry K. Todd*

BY

*William R. Smith*  
ATTORNEY.

Nov. 8, 1938.

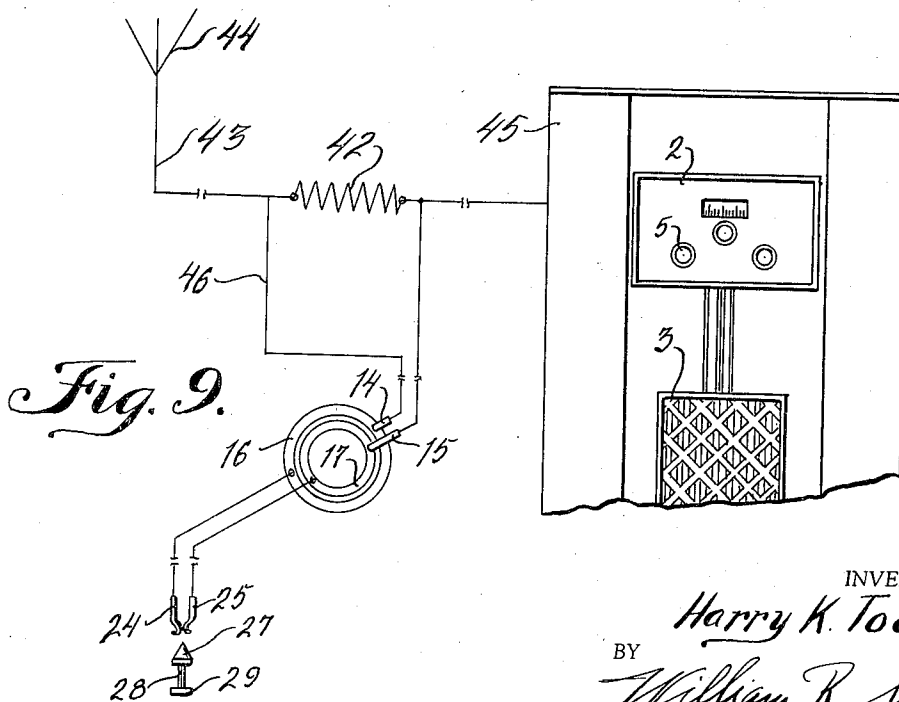
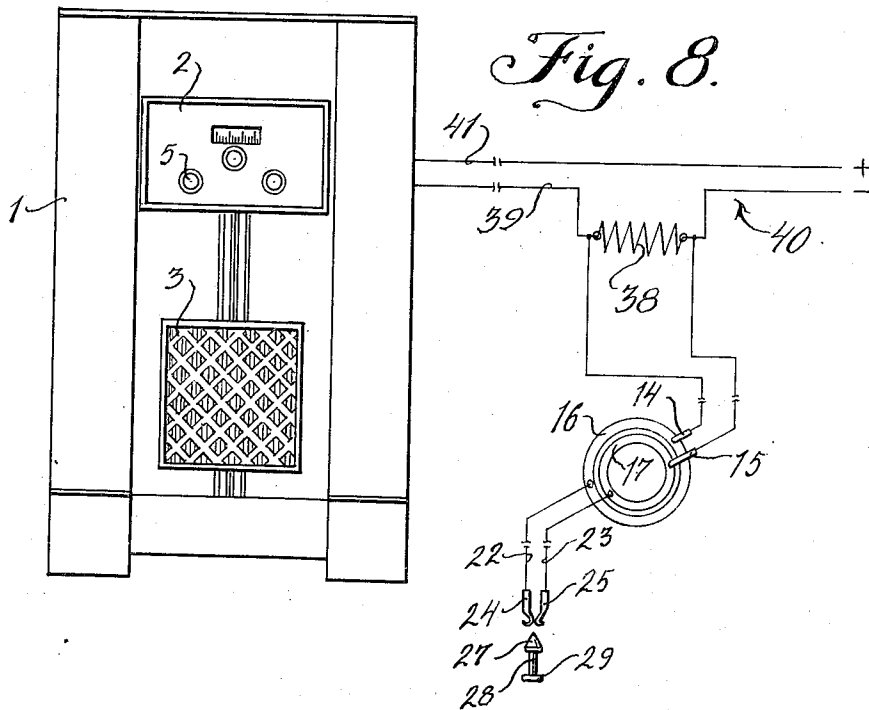
H. K. TODD

2,135,738

REMOTE VOLUME CONTROL DEVICE FOR RADIO RECEIVING SETS

Filed March 5, 1937

5 Sheets-Sheet 4



INVENTOR.

*Harry K. Todd.*

BY

*William R. Smith.*  
ATTORNEY.

Nov. 8, 1938.

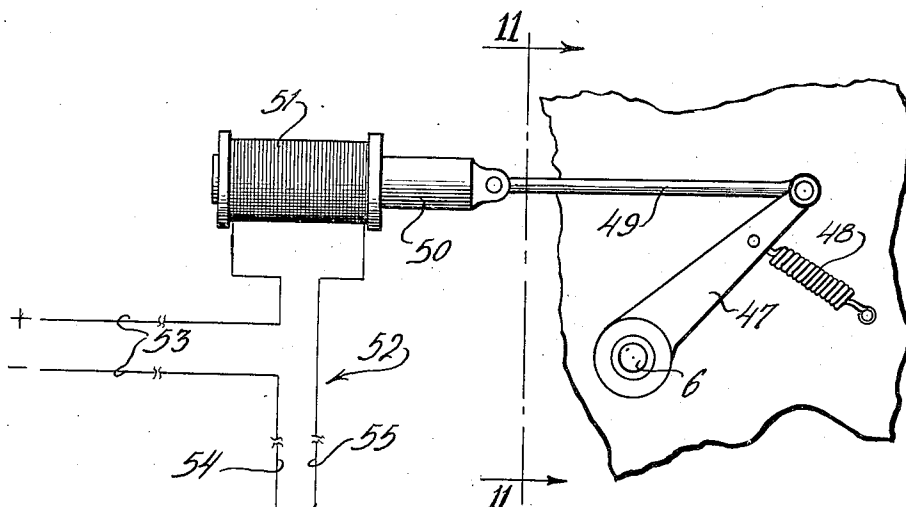
H. K. TODD

2,135,738

REMOTE VOLUME CONTROL DEVICE FOR RADIO RECEIVING SETS

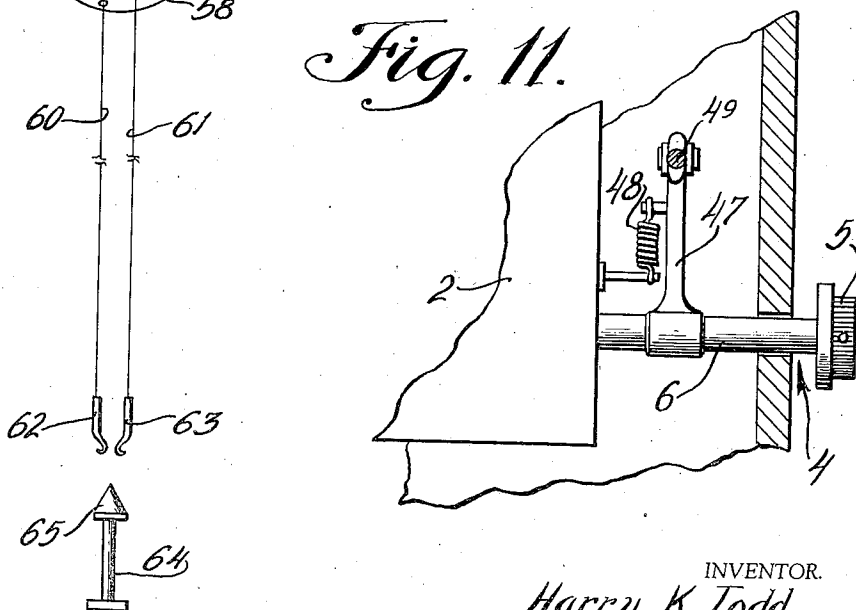
Filed March 5, 1937

5 Sheets-Sheet 5



*Fig. 10.*

*Fig. 11.*



INVENTOR.  
*Harry K. Todd.*  
BY  
*William R. Smith*  
ATTORNEY.

## UNITED STATES PATENT OFFICE

2,135,738

REMOTE VOLUME CONTROL DEVICE FOR  
RADIO RECEIVING SETS

Harry K. Todd, Tacoma, Wash.

Application March 5, 1937, Serial No. 129,196

2 Claims. (Cl. 250—20)

This invention relates to a volume control device for radio sets, and more particularly to a remote type of control device whereby, from a remote point, the sound volume of a radio receiving set may be controlled.

The invention has for its primary object the incorporation of a remote control in a radio set or a radio-phonograph set, whereby a radio broadcast that is not interesting to the listener may be reduced in volume to an extent that it is not objectionable, but instantly upon the termination of the objectionable portion of the broadcast, the radio receiving set will be immediately restored to its original sound volume.

An object of the invention is the provision of a device that will not completely cut out the broadcasted program, but will reduce the volume of that portion of the program that is of little interest to the listener.

Another object of the invention resides in the reduction in volume of the objectionable portions of a program to the extent that the same is slightly audible, so that the listener may accurately determine when the objectionable portion of the program terminates so that he may instantly restore the full sound volume of the instrument when the desired portions of the program are to be heard.

A feature of the invention resides in a design of a remote control device that may be contained within the radio set, but may be instantly withdrawn to a remote point where the same may be manipulated by the listener.

Another feature of the invention resides in a design of remote control device that will, from a remote point, vary the current flow to the speaker of the radio set, thereby regulating the tone volume of the speaker.

With these and other objects in view, my invention will be better understood from the following detailed description, taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a diagrammatic perspective view illustrating my invention.

Figure 2 is a side elevation, partly in section, of a radio cabinet with my invention applied thereto.

Figure 3 is a diagrammatic view of electric circuits.

Figure 4 is an enlarged sectional view of a hand operated control switch.

Figure 5 is an enlarged sectional view of a foot operated control switch.

Figure 6 is a side elevation of the reel.

Figure 7 is a vertical sectional view of the reel.

Figure 8 is a diagrammatic view of a modified form of my invention.

Figure 9 is a diagrammatic view of another form of my invention.

Figure 10 is a diagrammatic view of a fourth form of my invention.

Figure 11 is a sectional view on line 11—11 of Figure 10.

Figure 12 is a diagrammatic view of a fifth form of my invention.

Referring specifically to that form of my invention shown in Figures 1 to 7 inclusive, the numeral 1 designates a radio cabinet of any suitable design or construction now on the market. Within the cabinet 1 is arranged a radio set 2 and a loud speaker 3. As is usual in the types of radio sets now on the market, a volume control device 4 is provided, including a manually operated control knob 5 and a control shaft 6 running into the radio set for controlling the sound volume of the radio.

The loud speaker 3 is electrically connected to the radio set 2 by a circuit 7, usually consisting of a pair of conductors 8 and 9. My invention is designed to control the volume of sound of the speaker 3 by varying the amount of current passing through the circuit 7 from the radio set to the speaker. There are various ways in which the amount of current passing through the circuit may be varied, but for the purpose of illustration, I have shown one type of current controlling device, shown as a variable resistance element or coil 10 inserted directly in the conductor 8, and shunted around this element 10 is a circuit 11 consisting of leads 12 and 13. The lead 12 has one end tapped to one side of the element 10 and the other end connected to the contact brush 14 whereas the lead 13 is tapped on to the conductor 8 on the opposite side of the resisting element 10 and has its other end connected to the contact brush 15.

The contact brushes 14 and 15 engage contact rings 16 and 17 forming two of the elements of an improved type of take-up device or reel structure, more specifically described in detail in the patents to Tamarin Numbers 1,921,438 and 1,921,439. As shown in these patents, the take-up device or reel construction consists basically of a reel 18 mounted on a shaft 19, which is in turn connected to a bracket 20 secured to the wood work of the cabinet. The reel has wrapped thereon an electric cord 21 consisting of two wires 22 and 23, one of the wires being connected to one of the contact rings and the other wire being connected to the other contact ring. The remaining ends of the

wires 22 and 23 are connected to the spring terminals 24 and 25 that yieldably engage each other so as to electrically connect the wires 22 and 23 together. Thus it will be appreciated, by referring to Figure 3, that a continuous path for the current passing along the conductor 8 is provided by the lead 12, brush 14, wire 22, spring terminal 24, spring terminal 25, wire 23, ring 17, contact brush 15, and lead 13, thereby shunting out of circuit the resisting element 10.

As shown and described, the current will directly pass from the radio set to the speaker around the resisting element 10 so that the speaker may have its maximum sound volume. Upon interruption of the circuit by separation of the spring terminals 24 and 25, current will be forced to pass through resisting element 10 and, due to the resistance thereof, the volume of current will be reduced to the extent that the tone volume of the speaker will be reduced so as to be only slightly audible. The terminals 24 and 25 may be separated in any desired manner but, for the purpose of illustration, I have shown a plunger 26 having a spear-shaped head 27 that is adapted to wedge in between the spring terminals for the separation thereof. For this purpose, the head 27 is constructed from an insulating material. The head 27 is secured to a stem 28 that terminates in a button 29 by means of which the plunger 27 may be forced towards the spring terminals 24 and 25 in opposition to the coil spring 30. When the button 29 is depressed against the action of the spring 30, the head 27 will be forced in between the spring terminals 24 and 25 and thus the circuit, consisting of the conductors 22 and 23, and leads 12 and 13, will be broken for reducing the amount of current flowing to the loud speaker through the resisting element 10. Upon release of the button 29 by the finger of the operator, the spring 30 will force the head 27 out of engagement with the terminals 24 and 25 and, as a result, the continuity of the circuit is again established for shunting current around the resisting element 10, thereby enabling the speaker to function at full sound volume.

A very important feature of my invention resides in the fact that the heating of the tubes of the radio set is not interfered with in any manner whatsoever, thereby enabling the speaker to function at full tone volume immediately. The resisting element 10 is rendered inactive through the release of the button 29 by the operator.

The reel or take-up device includes a brake device consisting of a brake drum 31 with which functions a brake element 32 under the control of the remotely arranged control element 33, which may be supported on the radio cabinet at any convenient point.

A coil spring 34 is provided for automatically wrapping the cord upon the reel, and for preventing the functioning of the spring when the cord is extended for use, I provide the novel form of braking device just described which assures smooth, easy operation of the take-up device.

The invention just described is hand-operated, but it may be advisable to provide a device of a character that will enable my invention to be operated by the foot and, for this purpose, I have shown in Figure 5 a stationary contact 35 connected to the terminal of the conductor 22 with which co-functions a spring terminal 36 connected to the terminal of the other conductor 23. A foot operated plunger 37 is arranged to force the terminal 36 out of engagement with the stationary contact 35.

In Figure 8, I have shown a resistance element 38 arranged in one of the conductors 39 and 40 of the electric cord 41 for supplying current to the radio receiving set, and this resisting element 38 may be cut into or out of circuit by the manipulation of the button 29 or the plunger 37 in the manner heretofore described. As the resisting element 38 will cut down the current flowing to the radio instrument, it will be understood that the volume of sound emanating from the loud speaker may be modified accordingly.

In Figure 9, I have shown a resistance element 42 arranged in the lead 43 extending from the aerial 44 to the radio instrument 45. This resistance element 42 is cut into or out of circuit by opening and closing the circuit 46 in the manner hereinbefore described in relation to Figure 3. Due to the location of the resistance element 42, the intensity of the current passing from the aerial into the radio set is varied, thereby varying the tone volume of the radio set.

In Figures 10 and 11, I have illustrated my invention designed to directly operate the volume control shaft 6 of the radio set. For this purpose, the shaft 6 has secured thereto an arm 47 under the control of a spring 48. The end of this arm 47 is connected by a link 49 to the core 50 of a solenoid 51. This solenoid 51 is arranged in a circuit 52 receiving current in any suitable manner through the leads 53. The circuit 52 includes two conductors 54 and 55 connected respectively to contact brushes 56 and 57 co-functioning with the contact rings 58 and 59 of the take-up device or reel construction. These rings, in turn, are connected to wires 60 and 61 connected to the spring terminals 62 and 63, which are normally separated so that the circuit is broken. A manually operated plunger device 64 is provided, which is of the construction shown in Figure 4, with the exception that the head 65 is formed from a metallic element so as to electrically bridge the gap between the contacts 62 and 63. When this is accomplished, the circuit is closed, thereby energizing coil 51 for the drawing therein of the core 50 for the operation of the lever 47 and the turning of the shaft 60 to reduce the sound volume of the loud speaker. Immediately the plunger 65 is retracted from the spring terminals 62 and 63, the circuit is broken and the coil 51 is de-energized so that the spring 48 may return the lever 47 to normal position and, with it, the shaft 6 so that the loud speaker may function in its full sound volume.

In Figure 12, I have shown the conductors 12' and 13' bridged directly across the wires 8' and 9' of the voice coil of the speaker so that when the brushes 14' and 15' are electrically connected together in the manner shown in Figure 10 of the drawings, the circuit 7 will be short circuited, but only to the extent that a small amount of current will pass through the loud speaker due to the normal resistance of the electric cord wrapped upon the reel. This small amount of current, passing through the coil of the loud speaker, will be of a degree to allow the speaker to be just slightly audible.

In the operation of the various forms of my invention heretofore described, the operator draws the electric cord from the spring powered reel, as shown in Figure 1, and as this cord may be of any length, it will be understood that the quieting of the radio receiving set may be accomplished from quite a remote point—in fact, from an adjoining room. The operator at the remote point, listening to a radio program, may

periodically operate the switch device to vary the current flow in the circuit of the radio receiving set; or to break the circuit, in which case the resistance coil is not arranged in place as illustrated, thereby forming a permanent gap wherever such resistance coil is normally arranged, as illustrated; or to modify the current by short circuiting certain of the circuits, thereby permitting the control of objectionable portions of the radio program.

Of course, it is to be understood that the remote device for opening and closing the circuits may be designed in various other manners than those illustrated, and a modification of the tone volume of the speaker may be accomplished in various other ways than illustrated, without departing from the broad scope of my invention, which resides basically in the combination of a remote control device, a take-up device, and means associated therewith whereby the sound volume of the speaker may be modified to a high or low capacity from a remote point. Therefore, I do not wish to be limited in protection in any manner whatsoever, except as set forth in the following claims:—

What I claim is:

1. In combination, a radio cabinet, a radio set arranged therein, a speaker arranged within said cabinet, a circuit connecting said radio set to said speaker, a resistance element arranged in

one of the conductors of said circuit, a take-up reel rotatably supported by the cabinet, a pair of contact rings carried by said reel, brushes electrically bearing upon said rings, leads connecting said brushes to one of the conductors of said circuit to opposite sides of said resistance element, an electric cord wound around said reel and including a pair of wires, each electrically connected respectively to said contact rings, clips connected to the ends of said wires and normally engaging each other, and a manually operated element for separating said clips for the purpose set forth.

2. In combination, a radio cabinet; a radio set arranged therein; a speaker arranged within the cabinet; a speaker circuit connecting said radio set to said speaker; a resistance circuit interposed in said speaker circuit; a take-up reel rotatably supported by the cabinet; a pair of contact rings carried by said reel; brushes electrically bearing upon said rings and electrically associated with said resistance circuit; an electric cord wound around said reel and including a pair of wires, each electrically connected respectively to said contact rings; contact clips connected to the ends of said wires and acting to establish an electrical connection between the latter; and a manually operated element for controlling the action of said clips for the purpose set forth.

HARRY K. TODD. 30