April 4, 1944. R. B. FOSTER 2,345,927

VOLUME CONTROL APPARATUS FOR RADIO RECEIVERS

Original Filed May 28, 1938

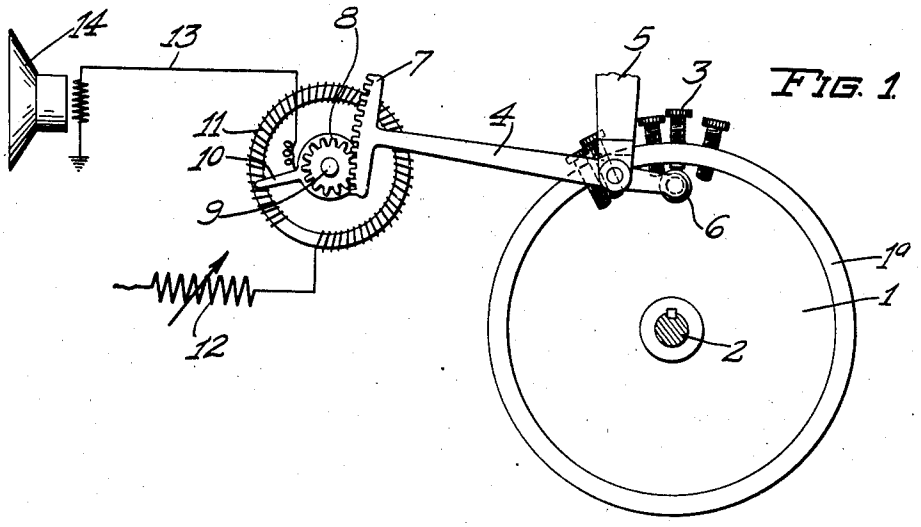
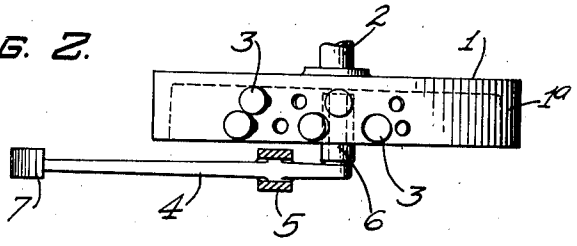


FIG. 1.

FIG. 2.



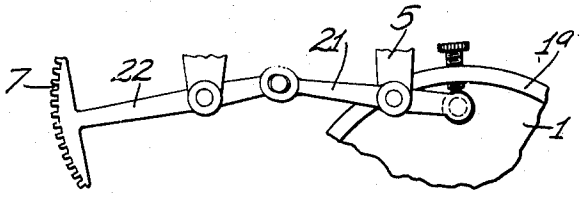


FIG. 3.

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VOLUME CONTROL APPARATUS FOR RADIO RECEIVERS

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Original application May 28, 1938, Serial No. 210,664. Divided and this application October 26, 1940, Serial No. 362,949

4 Claims. (Cl. 250—20)

This invention relates to a volume control apparatus for radio receivers and is a division of United States application, Serial No. 210,664, filed May 28, 1938, for Volume control apparatus for radio receivers, issued October 29, 1940, under United States Patent No. 2,219,302.

The principal object of this invention is to provide an extremely simple means for automatically adjusting the volume of a radio receiver, whether the latter is to be manually or automatically tuned.

Another object of this invention is to provide a simple and readily accessible means for manually changing or variously adjusting the volume of different broadcast stations, whether the radio receiver is in operation or not.

An important object also of this invention is to provide a volume control means of this class which may be readily installed in radio receivers now in use without extensive alteration of the radio receiver.

With these and other objects in view, as will appear hereinafter, I have devised an apparatus of this class having certain novel features of construction, combination, and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawing and to the characters of reference thereon, which form a part of this application, in which:

Fig. 1 is a fragmentary elevation of my volume control mechanism, in one form of construction, in connection with portions of a radio receiver;

Fig. 2 is a fragmentary plan view thereof; and,

Fig. 3 is a fragmentary elevation of a slightly modified form of my volume control mechanism shown in Fig. 1.

The conventional radio receiver is provided with a tuning condenser or other tuning means, a loud speaker, and a variable resistance for manually controlling the electrical energy to the loud speaker and thereby controlling the volume. My volume control apparatus is directly associated with these elements and synchronized with the condenser shaft, either directly or by suitable gearing.

In the drawing I have shown a flanged wheel 1, which is essentially provided at its periphery with a cylindrical flange 1a. The wheel 1 may be directly mounted upon the condenser shaft 2, as shown. It is obvious, however, that the flanged wheel may be connected to the condenser shaft by suitable gearing so that the flanged wheel may be rotated two or slightly more than two revolutions to a single revolution of the condenser shaft, so that substantially the whole circumferential area of the flange 1a may be utilized even though the condenser shaft 2 revolves generally less than one-half of a revolution.

On the flange 1a is provided a multiplicity of cams, one for each important broadcast station. If the wheel 1 is mounted directly on the condenser shaft, the cams are circumferentially spaced apart substantially equal to the spacing of the radial markings on the radio tuning dial, that is, they are of the same angular spacing. If the wheel 1 is geared to and revolved through a greater arc than the condenser shaft, the spacing of the cams is correspondingly increased.

The cams above mentioned consist of thumb screws 3 which extend radially through the flange 1a. These thumb screws are spaced from each other axially with respect to the axis of the wheel 1, as shown best in Fig. 2, that is, the screws are staggered with respect to each other so as to space the same from each other to provide space sufficient for easily adjusting the screws.

Adjacent one side of the wheel 1 is provided a lever 4 which is pivoted intermediate its ends on a bracket 5. At one end of the lever is provided a transverse rounded cam portion or roller 6, and at the opposite end of the lever is provided a circular gear rack or quadrant 7. The lever arm from the pivotal mounting of the lever 4 to the cam or roller 6 is relatively short, while that between the pivot of the lever and the quadrant is relatively long, as shown, so as to multiply the leverage of the variously adjusted cams or screws 3 and proportionately move the quadrant 7.

The teeth of the quadrant mesh with a gear 8 mounted upon a shaft 9 which carries a rheostat arm 10 which moves over a variable resistance or rheostat 11. Angular movement of the lever 4 rotates the gear 8 and moves the arm 10 over the variable resistance or rheostat.

The rheostat 11 is connected in series with the usual manually operated variable resistance, designated 12. The rheostat arm 10 is shown as connected by a wire 13 to the loud speaker 14.

From the above, it is apparent that movement of the condenser shaft 2 will correspondingly rotate the flanged wheel 1 moving the appropriate cam or screw 3 in engagement with the roller 6 of the lever 4 and tilt the same to the desired extent for rotating the gear 8 and thereby automatically adjusting the rheostat arm 10 over the rheostat 11. Such adjustment is separate from any manual adjustment by the variable resistance 12.

The modification shown in Fig. 3 is similar to that described above, except that instead of a single lever 4 to connect the cams of the wheel 1 to the rheostat, I have shown a series of interconnected levers 21 and 22 for creating substantially the same or greater movement. The structure in the modification, however, permits the reduction in size of certain of the parts and also increases accuracy.

Though I have shown and described a particular construction, combination, and arrangement of parts and portions, and certain modifications thereof, I do not wish to be limited to the same, but desire to include in the scope of my invention the construction, combination, and arrangement substantially as set forth in the appended claims.

I claim:

1. A device for controlling the volume of sound from a radio receiver which is adapted to receive signals of varying strength, comprising tuning means, a signal receiver, a volume control for controlling the signal receiver, an adjustable rotatable cam synchronized with the tuning means and comprising staggered radial screws carrying cam elements at their ends, the alternate screws being arranged in staggered relation to each other with respect to the axis of rotation of the cam, and means adapted to ride upon the ends of the screws and connected to the volume control for shifting the latter in proportion to the positions of the cam elements.

2. A device for controlling the volume of sound from a radio receiver which is adapted to receive signals of varying strength, comprising tuning means, a signal receiver, a volume control for controlling the signal receiver, an adjustable cam synchronized with the tuning means and comprising a rotatable member having a cylindrical flange at its periphery, and radial screws mounted in circumferentially spaced relation on the flange, each screw having a separate self-contained cam portion at its end and means adapted to ride upon the cam elements and connected to the volume control for shifting the latter in proportion to the positions of the cam elements.

3. A device for controlling the volume of sound from a radio receiver which is adapted to receive signals of varying strength, comprising tuning means, a signal receiver, a volume control for controlling the signal receiver, an adjustable cam synchronized with the tuning means and comprising a rotatable member having a cylindrical flange at its periphery, and radial screws mounted in circumferentially spaced relation on the flange, each screw having a separate self-contained cam portion at its radially inner end, and means adapted to ride upon the cam elements and connected to the volume control for shifting the latter in proportion to the positions of the cam elements.

4. A device for controlling the volume of sound from a radio receiver which is adapted to receive signals of varying strength, comprising tuning means, a signal receiver, a volume control for controlling the signal receiver, an adjustable rotatable cam synchronized with the tuning means and comprising a rotatable member having a cylindrical flange at its periphery and adjusting screws mounted in circumferentially spaced relation on the flange, the alternate screws being arranged in staggered relation to each other with respect to the axis of rotation of the rotatable member, said screws having cam elements at their ends, and means adapted to ride upon the cam elements and connected to the volume control for shifting the latter in proportion to the radially adjusted positions of the cam elements.

ROBERT B. FOSTER.