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DISTORTION INDICATOR FOR RADIO RECEIVERS

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Fig. 1

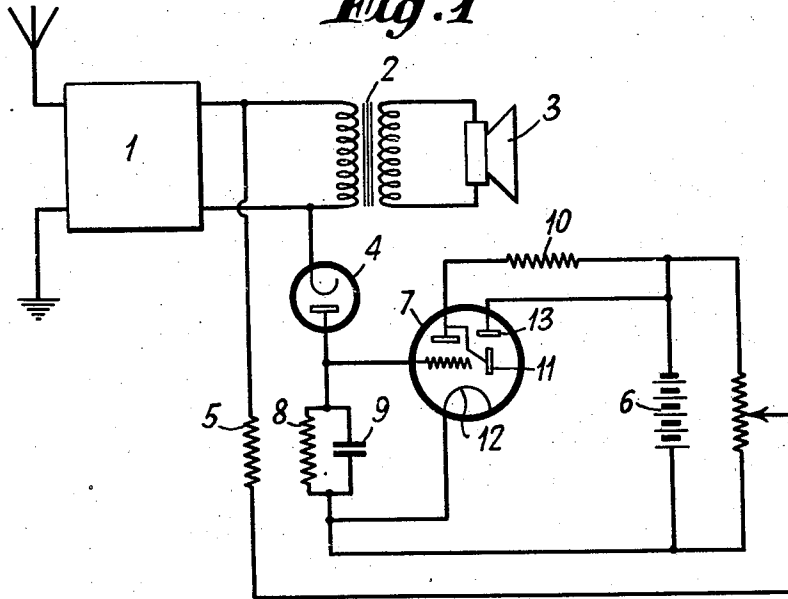
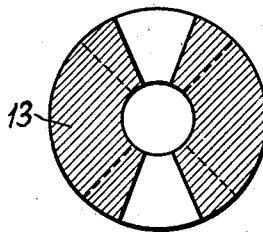


Fig. 2



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DISTORTION INDICATOR FOR RADIO RECEIVERS

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4 Claims. (Cl. 179—1)

This invention relates to a wireless receiving set comprising a distortion indicator and has for its object to render visible even instantaneous excessive loads of the set.

According to the invention, this object is achieved by using as the distortion indicator a discharge tube having an afterglowing fluorescent screen, which only responds when the amplitude of the low-frequency oscillations exceeds a threshold value which is governed by the maximum admissible energy output of the set.

In order that the invention may be clearly understood and readily carried into effect one embodiment thereof will now be described more fully with reference to the accompanying drawing.

Fig. 1 shows a wireless receiver 1 whose output energy is supplied to a loudspeaker 3 by way of a transformer 2. The low-frequency oscillations occurring across the primary of the output transformer 2 are fed to a rectifier 4 with threshold sensitiveness through a resistance 5 and a battery 6. The threshold sensitiveness is governed by a part of the battery 6 by which battery a positive bias is impressed on the cathode of the rectifier. When the amplitude of the low-frequency oscillations fed to the rectifier 4 exceeds the threshold sensitiveness a potential loss occurs across the parallel resistance-capacity combination 8, 9 so that the negative voltage is supplied to the grid of the amplifier system of a cathode ray indicator 7. This results in such a potential variation across the resistance 10 in the anode circuit of the amplifier system that the ray-control electrode 11 has imparted to it an increasing positive voltage relatively to the cathode 12 which results in an extension of that surface of the screen-shaped electrode 13 which is struck by electrons. The electrode 13 is coated with afterglowing fluorescent substance, preferably in the manner shown in Fig. 2, in which only the cross-hatched parts have to be looked upon as coated with fluorescent material. So long as the amplitude of the low-frequency oscillations is lower than the threshold value the voltage at the control electrode 11 is such that only the non-cross-hatched surface of the electrode 13 is struck by electrons. In the case of the set being overloaded, in which case the amplitude of the low-frequency oscillations exceeds the threshold sensitiveness of the rectifier 4, the voltage of the control electrode 11 increases and a part of the cross-hatched surface of the electrode 13, i. e. that surface which is coated with fluorescent substance, for example the parts cir-

cumscribed in Fig. 2 by dotted lines, is struck by electrons simultaneously. Thus, in the event of overloading the cross-hatched parts which are struck become luminescent. Due to the fact that the fluorescent substance continues glowing for a considerable length of time even instantaneous excessive loads are indicated in a distinct manner.

In the embodiment described the low-frequency voltages fed to the distortion indicator were obtained from the output circuit of the final low-frequency amplifier valve of the set. Voltages may also be obtained from the output circuit of one of the preceding amplifier valves; in this case the threshold sensitiveness of the distortion indicator has to be adjusted in accordance with the lower value of the voltages supplied thereto.

What I claim is:

1. The combination with a radio receiver, of means for visually indicating distortion and overload conditions of the receiver, comprising a circuit including a rectifier coupled to the receiver, said circuit capable of developing a rectified voltage therein which is proportional to the received signal in excess of a predetermined value, and an electron ray indicator tube having its grid controlled by said rectified voltage, the fluorescent screen of the indicator tube having the characteristic to glow for an appreciable time after electrons cease to impinge thereon whereby instantaneous overloads may be indicated.

2. The combination with a radio receiver, of means for visually indicating distortion and overload conditions of the receiver, comprising a circuit including a rectifier coupled to the receiver, said circuit developing a rectified voltage therein which is proportional to the received signal in excess of a predetermined value, and an electron ray indicator tube having a cathode, a fluorescent anode surrounding the cathode and a ray-control electrode disposed in the electron stream between cathode and anode, means responsive to fluctuations in said rectified voltage for varying the direct current potential of the ray-control electrode and thereby varying the width of the electrical shadow produced on the anode, the fluorescent anode of the tube having the characteristic that it persists in its fluorescence for an appreciable time after the flow of electrons thereto ceases whereby instantaneous overloads may be indicated.

3. The combination with a radio receiver, of means for visually indicating distortion and overload conditions thereof, comprising a rectifier coupled to the receiver and arranged to draw

current when the signal voltage is in excess of a predetermined value, and an electron ray indicator tube having its grid controlled by the rectified voltage, the indicating screen of said tube 5 having fluorescent and non-fluorescent portions so arranged with respect to the control grid that only with grid voltages derived from the rectifier which are above the predetermined value will there be a visual indication of the overload condition of the receiver. 10

4. The combination with a radio receiver, of means for visually indicating distortion and overload conditions thereof, comprising a circuit including a rectifier coupled to the receiver, said 15 circuit developing a rectified voltage therein

which is proportional to the received signal in excess of a predetermined value, and an electron ray indicator tube having its grid controlled by the rectified voltage, the indicating screen of said tube having fluorescent and non-fluorescent portions 5 so arranged with respect to the control grid that with grid voltages derived from the rectifier which are below the predetermined value the electrons impinge upon the non-fluorescent portion of the tube and with grid voltages above said 10 value the electrons impinge upon the fluorescent portion to produce a visual indication of the overload condition of the receiver.

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