Nov. 1, 1932. R. H. STEVENS 1,885,959

APPARATUS FOR THE FILTRATION OF RADIO WAVE SIGNALS

Filed Oct. 12, 1928 2 Sheets-Sheet 1

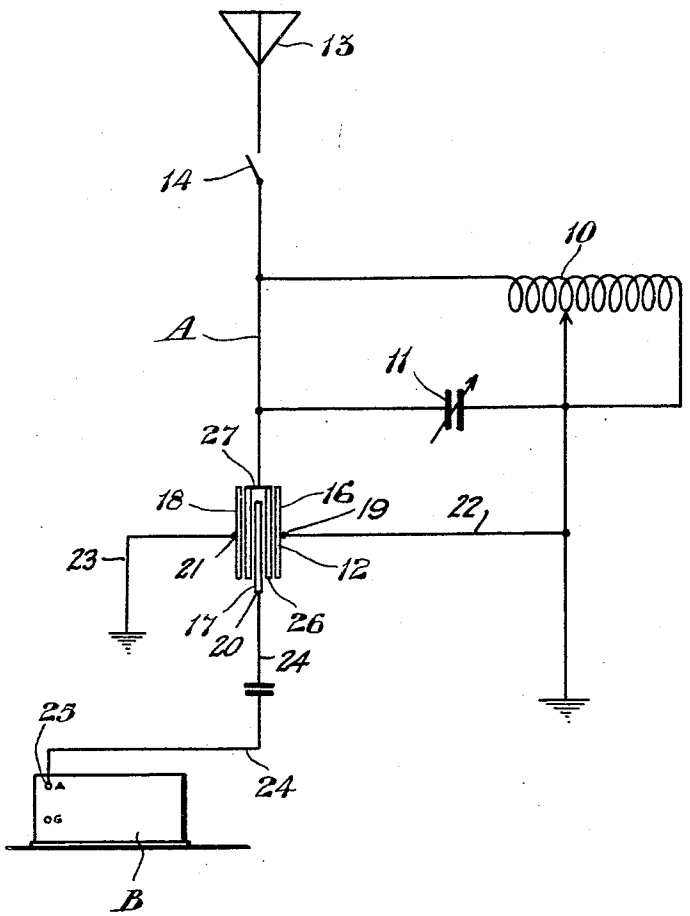


FIG. 1.

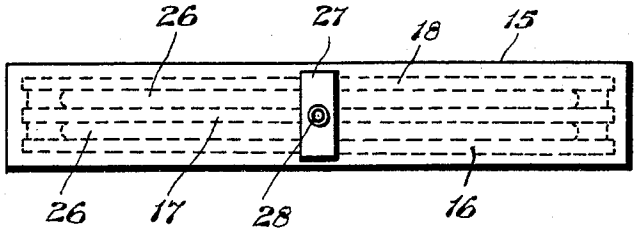


FIG. 2.

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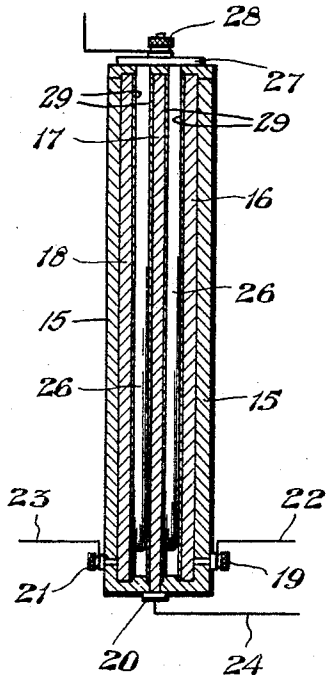


Fig. 3.

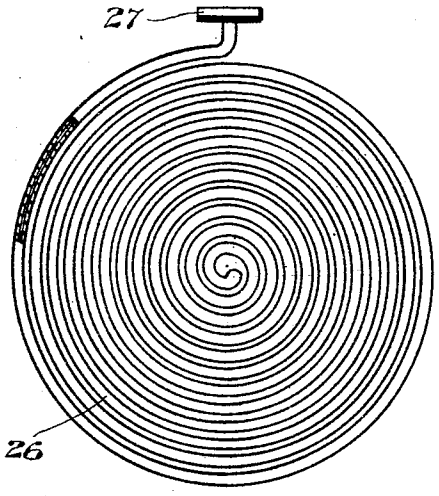


Fig. 4.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR THE FILTRATION OF RADIO WAVE SIGNALS

Application filed October 12, 1928. Serial No. 312,178.

This invention relates to improvements in apparatus for the filtration of radio wave signals, and more particularly that type of apparatus, adapted to clarify and improve the quality of signals before they are transmitted to a receiving apparatus.

One of the principal objects of the invention is to eliminate objectional interferences, such as static, etc., and thereby improve the quality, volume, tone and selectivity of radio reception.

A further object of the invention is to provide a filtering attachment in the form of a self-contained unit, which may according to desirability, be effectively used with or without an aerial.

A still further object of the invention is to provide a device, which is guarded against electrostatic charges, and in which objectional interferences are filtered from incoming signals, and by-passed to ground, thus eliminating their passage through the reception apparatus.

With the foregoing and other objects in view, which will become apparent as the description proceeds, the invention consists of the novel combination and arrangement of parts, hereinafter explained in detail.

In the drawings;

Figure 1 is a diagrammatic view of my improved device, and illustrates its operative association with an ordinary radio receiving set.

Figure 2 is a plan view of the filter unit.

Figure 3 is a transverse section of the unit.

Figure 4 is an elevation of one of the spiral coils employed in the unit.

In the embodiment of the device as illustrated, and in particular reference to Figure 1, A designates the filter device as a whole, which is illustrated schematically, and B a radio receiving or like apparatus, with which I have associated it.

The circuit with which the filter is connected, comprises a tuner coil 10, a variable condenser 11 and a filter 12.

The coil 10 may be of such suitable construction and material as to effectively change the range for wave length, while the condenser 11 may be of any standard construction with capacity to suit conditions, and effectively tune the circuit.

With reference to the antenna 13, I have shown this as being selectively coupled with the circuit, by means of the cutout 14. It is not necessary however, as will be hereinafter explained, to employ an antenna with the circuit.

An essential feature of the present invention is the filter member 12. This comprises in the main, a casing or housing 15, of suitable non-conducting material, and within which is mounted a series of metallic plates 16, 17 and 18 respectively, of high conductivity. The plates, it will be noted, are spaced one from the other, and are provided with terminals 19, 20 and 21.

The members 16 and 18, it will be noted, may be grounded respectively through the terminals 19 and 21, and leads 22 and 23, while the plate 17 is connected by means of the terminal 20, and lead 24, the latter lead being connected to the antenna terminal 25 of the radio receiving set B. While I have shown a fixed condenser in the lead to the receiving set, it might be conveniently dispensed with if so desired.

Positioned intermediate of the plates 16, 17 and 18, are a plurality of single terminal spiral coils 26. Each coil as indicated in Figure 4, is heavily insulated, and as indicated in Figure 3, has one terminal conductively connected to the plate 27 and the other terminal open. The plate 27 is provided with a terminal 28.

In referring to Figure 3, particularly, it will be noted that the coils 26 are capacitatively coupled to the plate members 16, 17 and 18, the separating medium being a dia-electric 29 of any suitable insulating material.

Reverting now to the elimination of the antenna as previously referred to, it will be noted that the coils 26, are of spiral formation, and due to this formation, while compact, are extensive in length, and by this particular formation, may effectively supersede the antenna for wave signal reception. These spiral members 26, it will be noted, are capacitatively coupled with the plate members

16, 17 and 18, one of which, namely 17, is conductively coupled with the receiving set B.

From the foregoing, the novelty and simplicity of the construction of my improved device will be apparent. The members 26 will, when the antenna 13 is eliminated, intercept the wave signals, and during the inductive transmission thereof, the plate members 16 and 18, will filter the signals, carrying the objectional interferences such as static etc., to ground, thereby permitting a selective signal substantially free of spurious qualities, to be conducted to the receiving apparatus.

As many changes could be made in the above construction, and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. Apparatus for the filtration of radio wave signals comprising in combination, a tuned circuit, a pair of open-ended spiral coils arranged in spaced apart, parallel relation, one end of each of said coils conductively connected to the tuned circuit, a plate of conducting material capacitatively associated with the spiral coils and positioned therebetween, radio receiving apparatus conductively connected to said plate, and a ground plate overlying and insulated from the outer face of each spiral coil and capacitatively associated therewith.

2. Apparatus for the filtration of radio wave signals comprising in combination, a tuned circuit containing a variable inductance and a variable capacity, a pair of open-ended spiral coils arranged in spaced apart, parallel relation, one end of each of said coils conductively connected to one side of the variable capacity and the other side of the variable capacity grounded, a plate of conducting material capacitatively associated with the spiral coils and positioned therebetween, radio receiving apparatus conductively connected to said plate, and a ground plate overlying and insulated from the outer face of each spiral coil and capacitatively associated therewith.

3. In apparatus of the class described, a filter comprising a casing of non-conducting material, a plurality of spaced apart plates of conducting material mounted in spaced apart, parallel relation therein, an open-ended spiral coil mounted in the space between each pair of adjacent plates and insulated therefrom, said coils capacitatively associated with the plates, one end of each coil conductively connected to a common terminal, and a terminal communicating with each plate.

4. In apparatus of the class described, a filter comprising a casing of non-conducting material, three spaced apart plates of conducting material mounted in spaced apart, parallel relation therein, an open-ended spiral coil mounted in the space between adjacent plates and insulated therefrom, said coils capacitatively associated with the plates, one end of each coil conductively connected to a common terminal, and a terminal communicating with each plate.

In witness whereof I have hereunto set my hand.

ROBERT HERBERT STEVENS.