Jan. 27, 1931. N. GYMNAITIS 1,790,234

CURRENT FILTER FOR RADIOS

Filed June 13, 1928

Fig. 1.

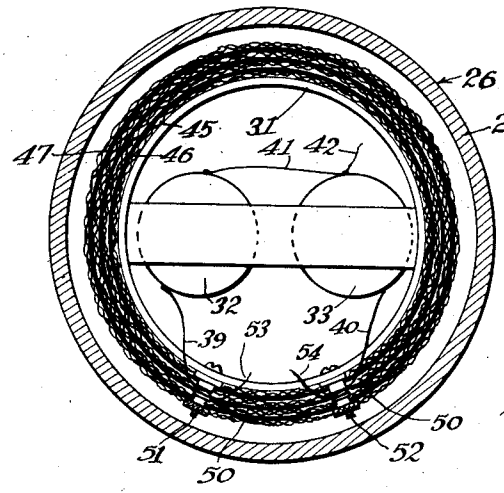


Fig. 3.

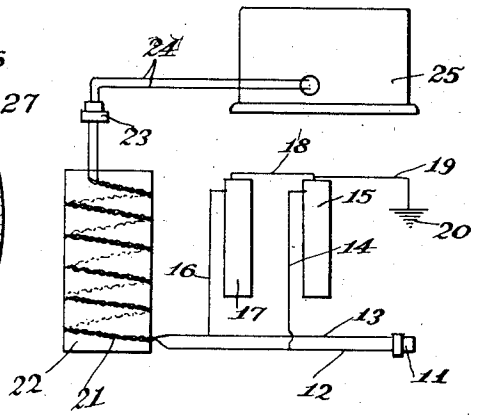


Fig. 2.

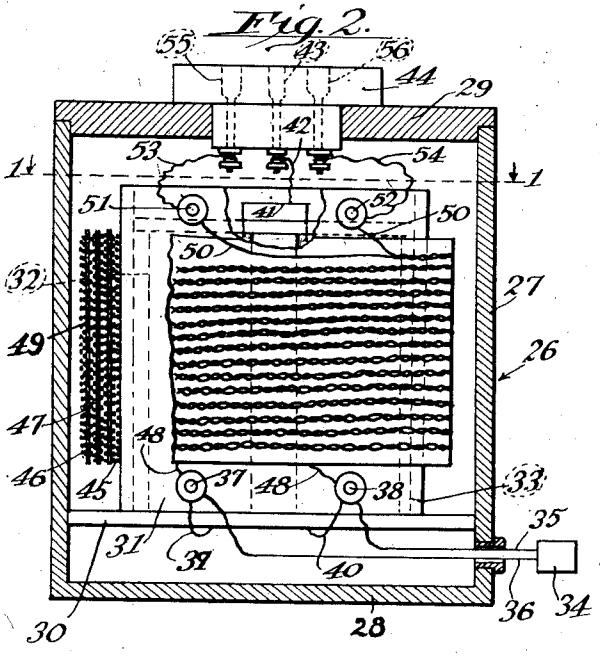
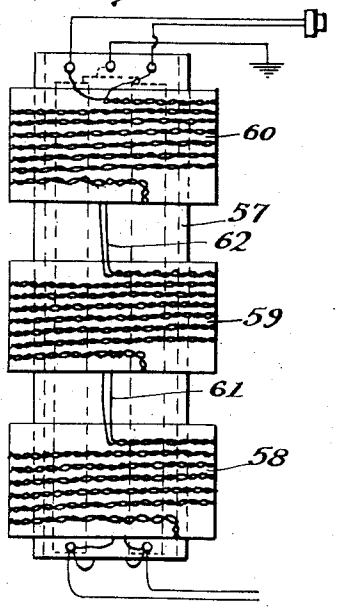


Fig. 4.



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Patented Jan. 27, 1931 1,790,234

UNITED STATES PATENT OFFICE

NICHOLAS GYMNAITIS, OF SANTA BARBARA, CALIFORNIA

CURRENT FILTER FOR RADIOS

Application filed June 13, 1928. Serial No. 285,018.

My invention is an electric current filter for radios and the like.

An object of my invention is a current filter suitable for radios, which is arranged with a series of coils connected in a series and preferably with each of the coils formed of a plurality of layers of wire; and in addition preferably the wires being twisted relative to each other.

A further object of my invention is the employment in connection with the filter coils of condensers which may be connected to the ground; and in this connection I preferably use a pair of condensers, one being connected to each of the wires forming opposite sides of the circuit and the condensers being connected by a common lead to the ground.

My present invention may be considered as an improvement on my patent application for a Current filter and static muffler for radios, Serial No. 271,059, filed April 18, 1928. My present invention is particularly adapted for use with alternating current radio sets utilizing the alternating current directly from a light socket.

My invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a horizontal section on the line 1—1 of Fig. 2 in the direction of the arrows,

Fig. 2 is an interior elevation of the structure of Fig. 1 with the casing broken and internal parts broken away,

Fig. 3 is an electrical diagram showing my arrangement of coils, condensers and circuit for a simple connection,

Fig. 4 is a wiring diagram showing a plurality of coils with the condensers connected therein.

Referring first to Fig. 3 this illustrates a plug 11 which may be connected to an alternating current circuit. This has lead wires 12 and 13. The lead wire 12 is illustrated as having a connection 14 to one side of the condenser 15 and the lead wire 13 has a connection 16 to one side of the condenser 17. The opposite sides of each of these condensers are connected by a common connection 18 and this connection has a lead 19 to the ground 20.

The lead wires 12 and 13 are connected to a coil 21 which is preferably made of twisted wires, this coil being wound on a cylindrical spool 22. The wires end at a terminal 23 and have a connection 24 to a radio receiving set indicated at 25.

In Figs. 1 and 2 I show my invention in a commercialized form, in which I use a box structure 26 preferably with cylindrical side walls 27, a base 28 and a removable cap 29. I also have a partition 30 between the side walls, and the cylindrical core or spool 31 is mounted on this partition as are the two condensers 32 and 33.

A plug 34 is connected to the lead wires 35 and 36. I employ two binding posts 37 and 38 mounted on the spool. The wire 35 is illustrated as connected to the post 38 and the wire 36 to the post 37. From the binding post 37 there is a connection 39 to one side of the condenser 32 and from the post 38 there is a wire 40 to one side of the condenser 33. These condensers have a common connection 41 at the top and a lead wire 42 from this connection to a socket 43 in a socket plate 44 mounted on the cover. This is adapted to receive a plug connected to the ground.

I illustrate the spool as having an inner coil 45, a middle coil 46 and an outer coil 47 of wire mounted thereon. The inner coil is connected to the binding posts 37 and 38 by the lead wires 48. The wires of each of the coils are preferably twisted on themselves, and each coil is separated by an insulating fabric 49. The wires from the inner coil connect to the middle coil and from the middle coil to the outer coil so that these coils are connected in series. The outgoing wires 50 from the outer coil are connected to binding posts 51 and 52 and these binding posts have lead wires 53 and 54 to the sockets 55 and 56

in the socket plate 44. The wires 24 are designed to be connected to these sockets and from thence to the radio set.

In Fig. 4 I show an arrangement using a plurality of distinct coils. These are mounted on an elongated spool 57 with a lower coil 58, a middle coil 59 and an upper coil 60, each of these coils being formed of twisted wires and having connecting leads 61 and 62 between the lower and the middle coil and the middle and the upper coil. Each of these coils is made up of a plurality of layers in a similar manner to the construction of Fig. 2.

The condensers are positioned inside of the spool 57, the lead wires being connected to binding posts at the bottom of the core and having a connection to the condensers and to the lowermost coil. The condensers at the top are connected to a common binding post and from this to ground, and the uppermost coil has an output connection to a radio set.

With my type of current filter the twisted wires have a condenser action and offer a resistance, that is they provide a capacitance and resistance. Therefore when the wires are formed into a coil, have the two combined functions, that of giving a resistance and a capacitance in the circuits.

Various changes may be made in the principles of my invention without departing from the spirit thereof, as set forth in the description, drawings and claims.

I claim:

1. A current filter comprising in combination a pair of input wires adapted to be connected to an alternating current source of power, a pair of output wires adapted to connect to a radio set, a coil formed of two wires twisted on themselves connecting the input and output wires, and a condenser connected to each of the wires, each condenser having a common ground connection, the said twisted wires forming a capacitance and resistance.

2. A current filter comprising in combination a pair of input wires adapted for connection to an alternating current source of power, an output pair of wires adapted for connection to a radio set, a plurality of coils each having two wires twisted on themselves, the coils being connected in series, the first set of coils being connected to the input pair of wires and the last coil to the output pair of wires, and a condenser connected to each of the wires prior to the first coil, each of the condensers being connected to a ground, the said twisted wires forming a capacitance and resistance.

3. A current filter comprising in combination a hollow spool having an inner coil formed of a pair of wires twisted on themselves and a plurality of separate coils of wire twisted on themselves positioned outside of the first coil, said coils being connected in series, a lead connection from the first coil to an alternating source of power and from the last coil to a radio set, a condenser connected to each side of the circuits so formed, and a ground connection from each of the condensers, the said twisted wires forming a capacitance and resistance.

4. A current filter comprising in combination a tubular spool having an inner coil formed of a pair of wires twisted on themselves, a plurality of outer coils of wire twisted on themselves positioned on the inner coil and insulated therefrom, said coils being connected in series, a pair of lead wires connecting the first coil to an alternating current source of power, a pair of wires leading from the outermost coil to a radio set, a pair of condensers mounted inside the spool, a wiring connection from each condenser to the pair of wires leading to the first coil, and a common ground connection from each of the condensers, the said twisted wires forming a capacitance and resistance.

5. A current filter comprising in combination a tubular spool having a first coil composed of two wires twisted on themselves and a plurality of outer coils formed of two wires twisted on themselves, each coil being insulated from the other, the coils being connected in series, binding posts on the spool, a pair of input wires connected to said posts, a pair of wires leading from the posts to the first coil, a pair of condensers, a connection from the binding posts to each condenser, a common connection from each condenser to a ground, and a pair of output wires connected to the outermost coil and adapted to connect to a radio set.

6. A current filter as claimed in claim 5, the spool having a pair of upper binding posts, the wires from the last coil being connected to said posts and the wires to the set being connected to the same posts.

7. A current filter comprising a housing having a tubular spool mounted therein, an inner coil formed of two wires twisted on themselves on the spool, a plurality of outer coils formed of two wires twisted on themselves positioned outside of the first coil, each coil being insulated from the other coils, a pair of lower binding posts on the spool, a pair of input wires connected from said posts extending outside of the housing, a connection from the binding posts to the first coil, a pair of upper binding posts on the spool, a connection from the outermost coil to the upper posts, a socket plate connected to the housing, the output wires connected from the upper posts to a pair of sockets therein, a pair of condensers positioned inside of the spool, a wire from each of the lower posts to a condenser, and a common connection from the condensers to a socket in the socket plate.

8. A current filter comprising in combination a tubular spool having a plurality of distinct and separate coils thereon, each formed

of two wires twisted on themselves, positioned longitudinally of the spool, each coil being formed of a plurality of separate insulated layers in series and each of the coils being arranged in series, a pair of condensers mounted in the spool, a pair of input wires each having a connection to one of the condensers and to opposite wires of the coils, the condensers having a common connection to the ground and the wires of the coils each having an output connection to a radio set, the said twisted wires forming a capacitance and resistance.

In testimony whereof I have signed my name to this specification.

NICHOLAS GYMNAITIS.