Feb. 3, 1931. J. J. PROSKAUER ET AL 1,791,377

ELECTRIC FILTER DEVICE OR SYSTEM

Filed Feb. 20, 1929

Fig. 1.

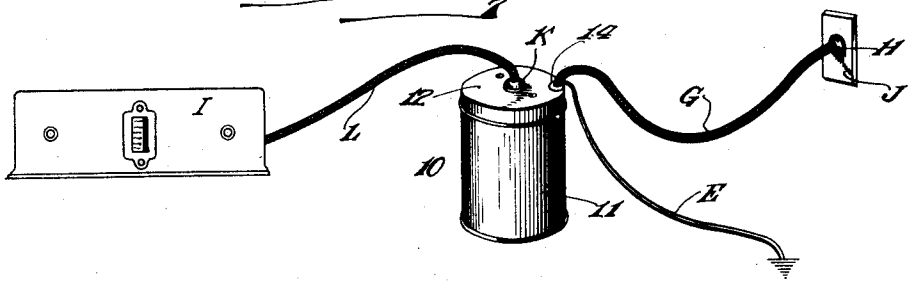



Fig. 2.

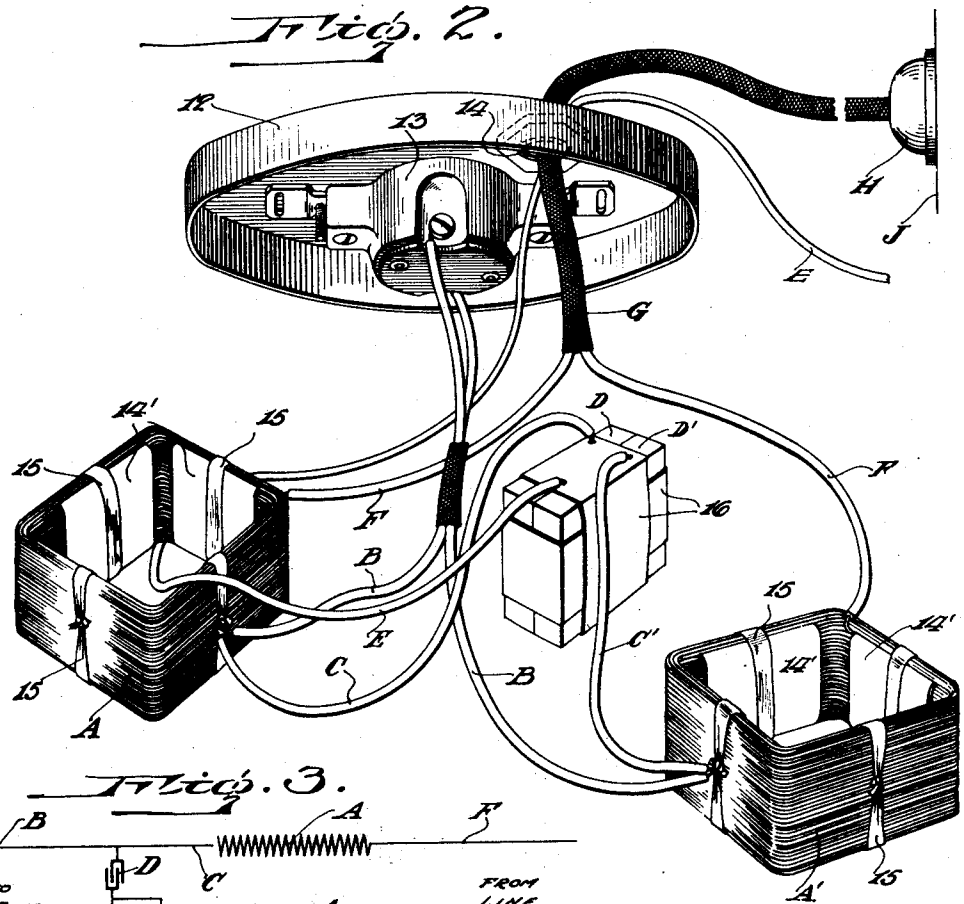
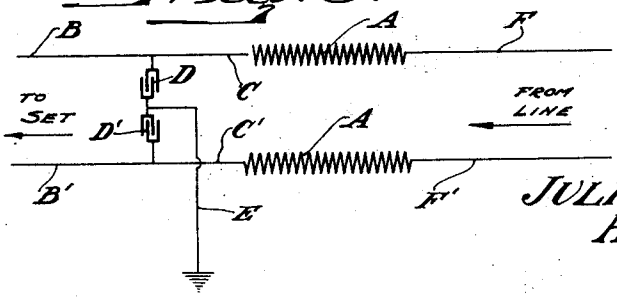



Fig. 3.




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# UNITED STATES PATENT OFFICE

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## ELECTRIC FILTER DEVICE OR SYSTEM

Application filed February 20, 1929. Serial No. 341,437.

This invention relates to improvements in electric filter devices or systems.

The primary object of the invention resides in a filter device for eliminating all line disturbances in an electric or an electrified radio receiver, such as alternating current hum, electric noises, spark interference, inductive interference, and every other type of noise from electric line noises.

Another object of the invention is to provide an electric filter device which constitutes a single unit which may be connected with radio receivers now in use without requiring any change in the receiver and which may be installed by one unskilled in the art of radio.

A further object of the invention is the provision of a filter device which may be plugged into the wall socket of an electric lighting system and to which the lead cable from the radio receiver may be connected by inserting the plug thereon into the socket with which the device is provided, thus requiring no instruments and no possibility of error when installing.

A still further object of the invention is to provide an electric filter which includes a pair of radio frequency choke coils arranged in the power line and a pair of condensers respectively connected to the coils with a common ground leading from the condensers.

With these and other objects in view, the invention resides in certain novel construction and combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claim, and are illustrated in the accompanying drawing, in which:—

Figure 1 is a perspective view of our improved filter in use.

Figure 2 is a perspective view of the several connected parts removed from their housing.

Figure 3 is a diagrammatic view of the filter.

Referring to the drawing by reference characters, the numeral 10 designates our improved electric filter in its entirety which includes a can shaped receptacle 11 having a removable cover 12 closing the open top of the same. Fixed to the underside of the cover is an electric plug receiving socket 13 which opens through the top of the cover for a purpose to be presently explained. The cover is also provided with an opening 14 for the passage of certain wires hereinafter explained.

Contained within the receptacle 11 are a pair of radio frequency coils A and A′ which are wound upon cardboard cores or frames 14′, the convolutions of the coils being held to the cores by tapes 15 suitably tied together as shown in Figure 2 of the drawing. The outer ends of the coils A and A′ are connected by wires B and B′ respectively which connect with the respective terminals of the socket 13. Also connected to the outer ends of the coils are wires C and C′ which have connections with condensers D and D′ respectively. The two condensers are taped together as at 16 into a single unit while a common ground wire E connects with the condensers and passes out through the opening 14 in the cover 12. It will be noted that the two condensers are interposed between the two choke coils, while wires F and F′ connect with the inner ends of the respective coils A and A′ and are housed in a single cord G which passes out through the opening 14, the free end of the wire being connected to an attachment plug H.

To operatively connect the filter device 10 with a radio receiver I as shown in Figure 1 of the drawings, the plug H is inserted in an electric socket J while the plug K provided on the lead L from the radio receiver I is inserted into the socket 13. The ground wire E is attached to any convenient ground

such as a water pipe or the like and the device is now set for operation. In practice, the electric current from the source of supply first passes through the coils A and A' which act to filter the sound or electrical noise frequencies which may be present therein, and which electrical noise frequencies are taken out when passing through the condensers by reason of the fact that the natural condenser capacity absorbs the same and which passes to the ground through the wire E.

If desired, the container 11 may be filled with pitch or the like to maintain the several parts in a set position and the cover 12 sealed thereon. This will also prevent tampering with the parts by those unskilled in the art as the device is capable of long life if undisturbed.

Although, we have described the filter device for use in connection with a radio receiver, the same may also be used with other electrical household appliances, such as electric refrigerators, vacuum cleaners, oil burners and any other noise interfering apparatus as it may be that the noises present in a radio receiving set are not from the line feeding the receiver, but from some household appliance. It might also be found practical for eliminating generator noises where direct current is being converted into alternating current for use with alternating current operated radio receiving sets.

While we have described what we deem to be the most desirable embodiment of our invention, it is obvious that many of the details may be varied without in any way departing from the spirit of our invention, and we therefore do not limit ourselves to the exact details of construction herein set forth nor to anything less than the whole of our invention limited only by the appended claim.

What is claimed as new is:—

In an electric filter device for eliminating extraneous oscillations from a radio apparatus and adapted to be inserted in the circuit connecting said radio apparatus to a main power supply circuit, the combination with the said power supply circuit of a plurality of rectangularly shaped choke coils, each of said coils comprising a plurality of rectangular turns and rectangular stiffening members, means for connecting one end of each of said choke coils to said power supply circuit, a pair of rectangular condensers connected in series relationship to the other ends of said choke coils, means for binding said condensers together to form a compact unitary structure, means comprising a cylindrical container provided with an opening and adapted to receive and protect said choke coils and said condensers, means carried by a part of said container for establishing a connection from said radio apparatus to the common connection between said choke coils and said condensers, and means for establishing a ground from the common connection between said condensers, said ground establishing means and said connections to the power supply circuit comprising flexible leads passing through said opening in said container.

In testimony whereof we hereby affix our signatures.

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HAROLD SHEVERS.