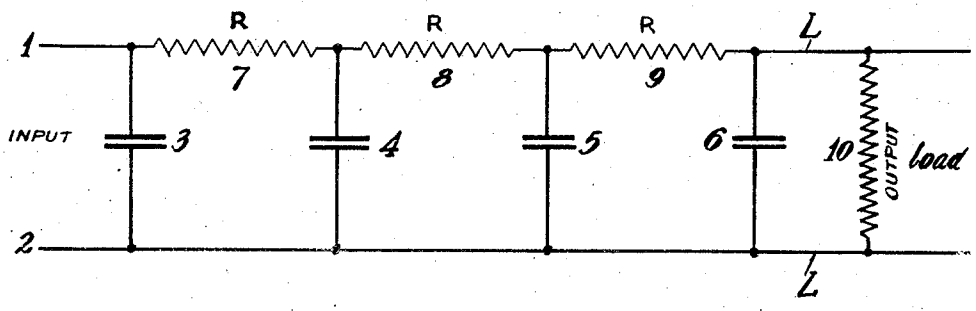
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FILTER SYSTEM

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UNITED STATES PATENT OFFICE

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FILTER SYSTEM

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This invention related to an improved electrical filter system; especially an electrical filter system for smoothing out fluctuations of current.

An object of the invention is to provide a device for filtering either rectified alternating current, or fluctuations of any current, such as undesirable frequencies due to any cause in the supply line.

A further object of the invention is to provide a filter system adapted for operation with high voltages in an economical and efficient manner.

Another object of the invention is to provide an electrical filter system which has no free or natural period of oscillation of its own.

The above and other objects and advantages of the invention are set forth in the following description, and the novel features pointed out in the appended claim; but the disclosure is illustrative only, and I may vary the apparatus disclosed herein to a considerable extent without departing from the principle controlling the invention.

On the drawing, the figure shows in diagram a filter system in accordance with my invention.

The system may be connected at 1 and 2 to a source of alternating or other fluctuating or unsteady current and across the main leads L of the filter system are connected in multiple a number of condensers shown in 3, 4, 5 and 6. Between condensers 3, 4, 5 and 6, I insert resistances 7, 8 and 9, preferably in one of the leads L on one side of the circuit of the system. Between the leads L at the delivery end of the system, I connect a resistance 10 which is bridged across the two leads L and serves as a steady output load on the system.

Obviously, in practice any rectified alternating, or uni-directional current with greater or smaller fluctuations therein, flowing into the circuit at the points 1 and 2, will have any fluctuations or peaks or ripples therein smoothed out by the condensers 3, 4, 5 and 6 and the resistances 7, 8 and 9, and when the current reaches the terminals of the resistance 10, it will have the form of a smooth current which always flows in one direction. The resistance 10, in shunt with the output, acts as a constant load which greatly improves the voltage regulation.

My invention is very advantageous to use in systems where the resistance of the filter or rectifier, or both is high and is especially adapted for high voltages, and it should have no free period of oscillation of its own.

With such a filter system, if the output resistance 10 were omitted, the regulation curve would present a considerable incline, varying as the voltage decreases and the current increases; but with the output load resistance 10 included, the regulation curve drops but only a slight extent, if at all, and remains more nearly constant for voltage over any range of current for which it is designed. The resistances 7, 8 and 9 may be inductive or non-inductive as required.

Having described my invention, what I believe to be new and desire to secure and protect by Letters Patent of the United States is:—

A filter having input terminals for connection to a source of fluctuating current power supply, and output terminals for connection to a work circuit, resistances connected in series in said filter and condensers in parallel across the filter circuit at the terminals of said resistances, the resistances and condensers being adapted to render the circuit aperiodic, and a condenser and a constant load resistance for improving the voltage regulation bridged across the output terminals of the filter, whereby power free from disturbances will be furnished at the output terminals of the filter.

In testimony whereof I affix my signature.

HARRY W. HOUCK.