

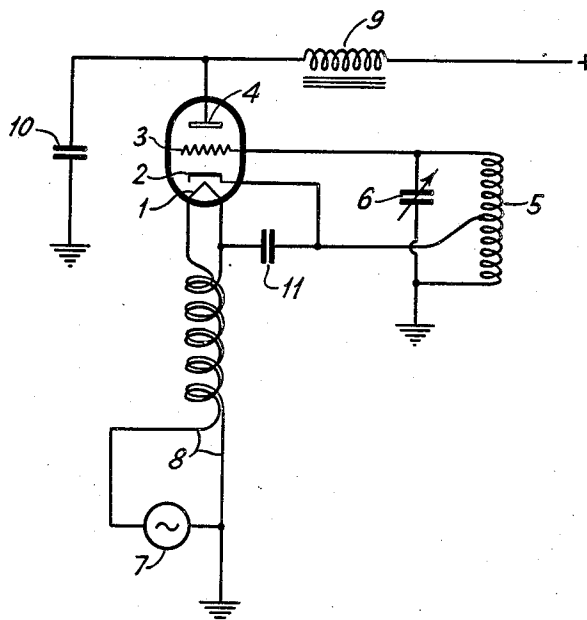
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VACUUM TUBE OSCILLATOR

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VACUUM TUBE OSCILLATOR

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4 Claims. (Cl. 250—36)

This invention relates to an oscillator in which the frequency-determining circuit is connected between the control grid and the anode of a discharge tube having an indirectly heated cathode and the cathode is connected to a point of the oscillatory circuit intermediate the ends.

In the use of such a generator circuit as a local oscillator in a superheterodyne receiver microphonic effect has been found to occur. This phenomenon is due to the fact that the sound oscillations reproduced in the loudspeaker, directly or indirectly, cause the filament to vibrate relatively to the cathode of the generator valve so that the filament-cathode capacity, which is connected in parallel with part of the frequency-determining circuit of the generator, varies. In order to obviate the harmful effects of this variation in capacity it has previously been proposed to supply the filament via two choke coils so that the filament-cathode capacity is connected in series with a high impedance parallel to part of the oscillatory circuit. It has, however, been found in practice that this precaution does not suffice to completely neutralise the disadvantage indicated before.

According to the invention, it is therefore proposed that in the circuit arrangement in which the cathode is supplied via two choke coils the cathode should be connected to the filament through a condenser whose capacity is high as compared with the internal capacity between the cathode and the filament. Preferably, use is made of a condenser having a capacity of $5000\mu\mu\text{F}$.

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.

In the circuit arrangement shown in the single figure of the drawing use is made of a discharge tube containing a filament 1, a cathode 2, a control grid 3 and an anode 4. The frequency-determining circuit which is formed by the parallel combination of an inductance coil 5 and a condenser 6 is connected between the control grid and the anode, the cathode being connected to a point of the inductance coil 5. The tuning circuit is earthed on one side.

The filament supply voltage is supplied by a source of voltage 7 the voltage of which is supplied to the filament via two bifilar wound conductors 8. The positive terminal of the source of anode voltage (not shown) is connected to the anode via a choke coil 9, the series combination of the choke coil 9 and the source of anode volt-

age being bridged by a condenser 10 which constitutes a short-circuit for the oscillations to be generated.

The circuit described so far has the disadvantage that when used as a local generator in a superheterodyne receiver the phenomenon described above occurs. This phenomenon is due to the fact that the series combination of the cathode-filament capacity with the coils constituted by the bifilar wound conductors 8 is connected in parallel with part of the oscillatory circuit. Any variation of the said capacity will consequently affect the frequency of the oscillations generated and since the filament is set into vibration relatively to the cathode under the influence of the sound oscillations reproduced in the loudspeaker, a periodical variation in the value of the filament-cathode capacity will occur. By arranging between the cathode and the filament a condenser 11 whose capacity is high as compared with the cathode-filament capacity, the influence of these variations on the frequency of the oscillations generated is practically neutralised completely, since the cathode-filament capacity is negligible with respect to the capacity of the condenser.

What I claim is:

1. An oscillation generator comprising an electron discharge tube provided with a grid, an anode, an indirectly heated cathode and a heatable filament for said cathode, a frequency determining circuit connected between the anode and the control grid, a connection from the cathode to an intermediate point of said circuit, means for maintaining the heatable filament at a radio frequency potential and above ground, and a condenser connected between the cathode and filament, the capacity of said condenser being high as compared with the internal capacity between cathode and filament.

2. An oscillation generator comprising an electron discharge tube provided with a grid, an anode, an indirectly heated cathode and a heatable filament for said cathode, a frequency determining circuit connected between the anode and the control grid, a connection from the cathode to an intermediate point of said circuit, means connected to the filament for maintaining the same above zero radio frequency potential, said means comprising a pair of bifilar windings through which the heating current is fed, and a condenser connected between the cathode and filament for maintaining the cathode above zero radio frequency potential, the capacity of said

condenser being high as compared with the internal capacity between cathode and filament.

3. An oscillation generator comprising an electron discharge tube provided with a grid, an anode, an indirectly heated cathode and a heatable filament for said cathode, a frequency determining circuit connected between the anode and the control grid, a connection from the cathode to an intermediate point of said circuit, means connected to the filament for maintaining the same above zero radio frequency potential, said means comprising a pair of bifilar windings through which the heating current is fed, and a condenser having a capacity of at least $5000\mu\mu$
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- 15 F. connected between the cathode and filament for maintaining the cathode above zero radio

frequency potential, said capacity being high as compared with the internal capacity between cathode and filament.

4. An oscillation generator comprising an electron discharge tube provided with a grid, an anode, an indirectly heated cathode and a heatable filament for said cathode, a frequency determining circuit connected between the anode and the control grid, a connection from the cathode to an intermediate point of said circuit, means connected to the filament for maintaining the same above zero radio frequency potential, and means connected between filament and cathode for maintaining the cathode above zero radio frequency potential.
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