

Sept. 2, 1941.

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2,254,739

THERMIONIC VALVE OSCILLATION GENERATOR

, Filed June 27, 1939

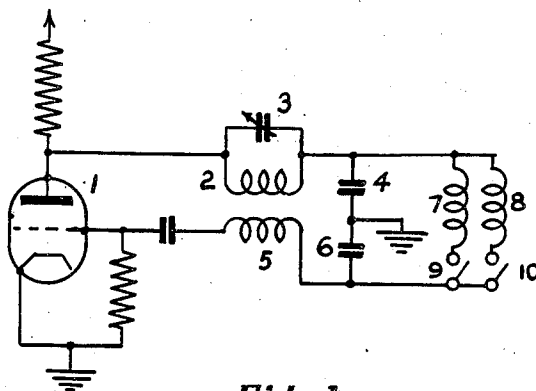


Fig. 1

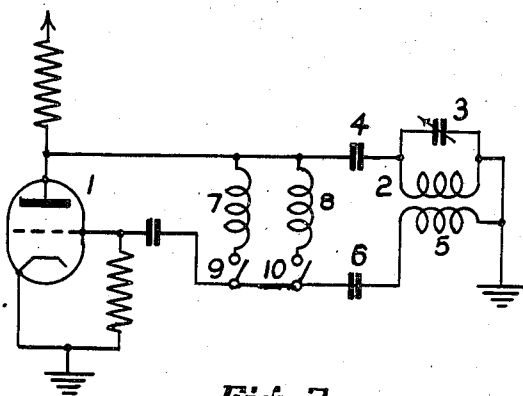


Fig. 2

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2,254,739

THERMIONIC VALVE OSCILLATION
GENERATOR

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mesne assignments, to Cinema-Television Lim-
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Application June 27, 1939, Serial No. 281,379
In Great Britain November 28, 1938

5 Claims. (Cl. 250—36)

This invention relates to improvements in thermionic valve oscillation generators and is especially concerned with oscillators which are arranged to operate at frequencies of 30 megacycles or more as well as at broadcast frequencies.

More particularly is the present invention concerned with oscillators adapted to be tuned to one or other of a plurality of previously selected broadcast frequencies by switching and also to a frequency in the television band.

According to the present invention there is provided a thermionic valve oscillation generator circuit comprising a valve having an inductance connected in series with a condenser between its anode and an earth line, a further inductance connected in series with a condenser between its grid circuit and said earth line, said inductances being coupled by mutual inductance and one of said inductances being connected in parallel with a tuning condenser and at least one additional inductance arranged to be connected between the high potential terminals of first said condensers which are such as to have a low impedance at the frequency to which said tuning condenser tunes the inductance across which it is connected while first said inductances have a low impedance at the frequency to which said additional inductance is tuned by first said condensers.

To provide a number of alternatively selectable lower frequencies of oscillation said additional inductance may be one of a series of inductances which are arranged to be connected selectively by appropriate switching.

In order that the present invention may be more particularly described reference is now made to the accompanying diagrammatic drawing comprising Figures 1 and 2 which show by way of example two embodiments of an oscillator according to the present invention. The same reference numerals are used throughout.

In the drawing a valve 1 is arranged to operate as a Colpitts oscillator at lower frequencies and as a normal reaction oscillator at higher frequencies. A coil 2, tuned by a condenser 3, is connected between the anode circuit and earth in series with a condenser 4. A further coil 5 is connected between the grid circuit and earth in series with a condenser 6. Additional coils 7 and 8 may be connected between the high potential ends of the condensers 4 and 6 by switches 9 and 10 respectively. When both switches 9 and 10 are open the valve 1 operates as a reaction oscillator at a frequency determined by the tuned

circuit 2, 3, the condensers 4 and 6 having a low impedance at this frequency. When one of the switches 9, 10 is closed the valve operates as a Colpitts oscillator at a frequency determined by the inductance of the coil 7 or 8 connected in circuit and the capacity of the condensers 4 and 6. It is, of course, possible to vary the circuit arrangement shown, for example the inductance 5 in the grid circuit may be tuned instead of the capacitance 3 in the anode circuit. It is also possible to connect the high tension supply in other manners than that illustrated in the drawing. It is, of course, also possible to employ more than two selectively connected inductances as 7 and 8. The switching may be ganged with other switches bringing into operation appropriately tuned signal frequency circuits when the oscillator is used as the local oscillator in a superheterodyne receiver.

I claim:

1. A thermionic valve oscillation generator circuit comprising a thermionic valve, a first inductance connected between the anode and cathode of said valve in series with a condenser, a second inductance connected between the grid and cathode of said valve in series with a condenser said first and second inductances being coupled by mutual inductance, connections to opposite poles of a source of potential, said condensers having their terminals connected to the poles of said source, the values of said inductances and capacitances being such that the valve will operate as a reaction oscillator, a third inductance, and a switch for connecting said third inductance between the terminals of said condensers connected with the same pole, said third inductance being of such value that when so connected the valve will operate as a Colpitts oscillator.

2. A thermionic valve oscillation generator circuit comprising a thermionic valve, a first inductance connected between the anode and cathode of said valve in series with a condenser, a second inductance connected between the grid and cathode of said valve in series with a condenser said first and second inductances being coupled by mutual inductance, connections to opposite poles of a source of potential, said condensers having their terminals connected to the poles of said source, the values of said inductances and capacitances being such that the valve will operate as a reaction oscillator, a plurality of inductances, switching means for selectively connecting said plurality of inductances between the terminals of said condensers connected to the

same pole, said plurality of inductances being of such value that when so connected the valve will operate as a Colpitts oscillator.

3. A thermionic valve oscillation generator circuit comprising a thermionic valve, a tuned circuit connected between the anode and cathode of said valve in series with a condenser, a first inductance connected between the grid and cathode of said valve in series with a condenser, said first inductance being coupled to said tuned circuit by mutual inductance, connections to opposite poles of a source of potential, said condensers having their terminals connected to the poles of said source, the values of said inductances and capacitances being such that the valve will operate as a reaction oscillator, a plurality of inductances, switching means for selectively connecting said plurality of inductances between the terminals and said condensers connected to the same pole, said plurality of inductances being of such value that when so connected the valve will operate as a Colpitts oscillator.

4. A thermionic valve oscillation generator circuit comprising a thermionic valve, a first inductance connected between the anode and cathode of said valve in series with a condenser, a second inductance connected between the grid and cathode of said valve in series with a condenser, connections to opposite terminals of a source of potential, said condensers having their terminals connected to the poles of said source, said first and second inductances being coupled by mutual inductance and being of such values

as to cause the circuit to produce reaction oscillations at a first frequency, a third inductance, switching means for connecting said third inductance between the terminals of said condensers connected to the same pole, said third inductance being of such value as to cause the circuit to operate as a Colpitts circuit and to produce oscillations at a second frequency.

5. A thermionic valve oscillation generator circuit comprising a thermionic valve, a first inductance connected between the anode and cathode of said valve in series with a condenser, a second inductance connected between the grid circuit and cathode of said valve in series with a condenser, said first and second inductances being coupled by mutual inductance and one of said inductances being connected in parallel with a tuning condenser and being of such values as to cause the circuit to produce reaction oscillations at a frequency at which said condensers have a low impedance, connections to opposite terminals of a source of potential, said condensers having their terminals connected to the poles of said source, a third inductance, switching means for connecting said third inductance across the terminals of said condensers connected to the same pole, said third inductance being of such value as to cause the circuit to operate as a Colpitts circuit and to produce oscillations at a frequency at which said first and second inductances have low impedances.

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