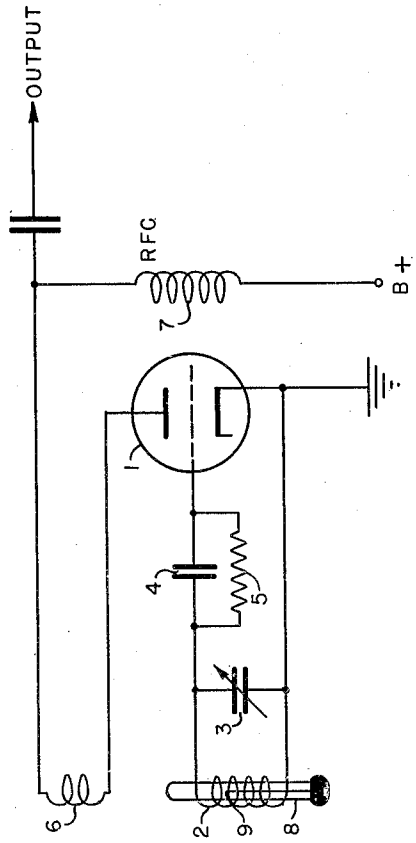
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MERCURIAL COLUMN CONTROLLED INDUCTANCE

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MERCURIAL COLUMN CONTROLLED INDUCTANCE

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3 Claims. (Cl. 250—36)

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This invention relates generally to electronic oscillators and more particularly to a novel means for and method of controlling the frequency thereof.

It is an object of this invention to provide an oscillator whose frequency is controlled by the height of a mercurial column.

It is a further object of this invention to provide an oscillator whose frequency is controlled by the height of a mercurial column axially inserted into the tuning coil comprising part of the tuned circuit of said oscillator.

Other objects and advantages of the invention will be apparent from the following description and accompanying drawing, in which:

The single figure portrays a representative embodiment of the invention.

Briefly, a mercurial column, such as a thermometer or the like, is axially inserted into a coil of a tuned circuit of any standard oscillator. Subsequent changes in the height of the mercury column will change the inductance of said coil and therefore change the frequency of the oscillator.

Referring now to the drawing in detail, a simple regenerative type of oscillator circuit is shown. This oscillator is built around a single triode vacuum tube having a tuning coil 2 shunted by a variable condenser 3 in its grid circuit, the grid of said tube 1 being connected to one end of said coil 2 and condenser 3 through a grid leak consisting of a condenser 4 and a resistor 5 in parallel. The voltage at the plate of said tube is coupled back in phase to the grid coil 2 by means of the plate feed back coil 6, thus causing the circuit to oscillate at the resonant frequency of the grid coil 2 and its shunting condenser 3, as determined by the setting of said condenser 3. The plate voltage may be obtained through a choke 7 of a suitable inductance to keep the oscillation frequency out of the plate supply source.

Now if a mercurial column 8 is inserted in the grid coil 2, the mercury constitutes the core of the coil. Since mercury is a conductor of electricity, its introduction to the core of the coil will produce a change in the inductance of said coil. By inserting said mercury column 8 so that its range of variation lies wholly within the extremities of the coil, variations in the height of said column will produce corresponding variations in the inductance of the coil. It therefore follows that since the coil 2, whose inductance is determined by the height of the mercury column 8, is a component of an oscillator circuit, the frequency of the oscillator will also be determined by the height of said mercury column.

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Any type of mercury column is operable with this device. The oscillator circuit may be designed to operate with for example, a thermometer, such that changes in frequency normally produced by temperature variation will be opposed by the action of the thermometer, thus providing a temperature compensated oscillator. Or the circuit may be designed such that the frequency of the oscillator is an indication of the status of the mercurial column.

The oscillator circuit herein described was chosen solely for the purpose of illustration. It should be noted that the mercurial column will work equally well as a frequency control in any standard oscillator. It is only required that the mercurial column be properly inserted in any coil having a frequency determining influence on an oscillator.

Although certain specific embodiments of this invention have been herein disclosed and described, it is to be understood that they are merely illustrative of this invention and modifications may, of course, be made without departing from the spirit and scope of the invention as defined in the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. An oscillator comprising, an electron discharge device, an inductance means including a coil with a non-magnetic core, a capacitance means in cooperative association therewith to establish the oscillator frequency, and a mercurial column axially inserted within said coil operative to vary the value of said inductance of said coil with the height of said column whereby the height of said mercurial column controls the oscillator frequency.

2. A system for controlling the inductance of a coil in response to a condition comprising, a coil of wire having a non-magnetic core, a mercurial column axially inserted in one end of said coil for a variable distance therein to form a variable portion of the core thereof, said mercurial column being characterized by an ability to change its height in response to variations in said condition, said mercurial column being disposed so that its height determines the extent of its entry into said coil.

3. An oscillator comprising, an electron dis-

charge device, an inductance coil having a non-magnetic core, a capacitance means in circuit with said coil to provide a resonant circuit operative to establish the oscillator frequency, a mercurial column axially inserted for a variable distance into said core to form a variable portion of the core thereof, the height of said mercurial column determining the extent to which it comprises the core of the coil.

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