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ELECTRIC SHORT WAVE THERMIONIC VALVE GENERATOR

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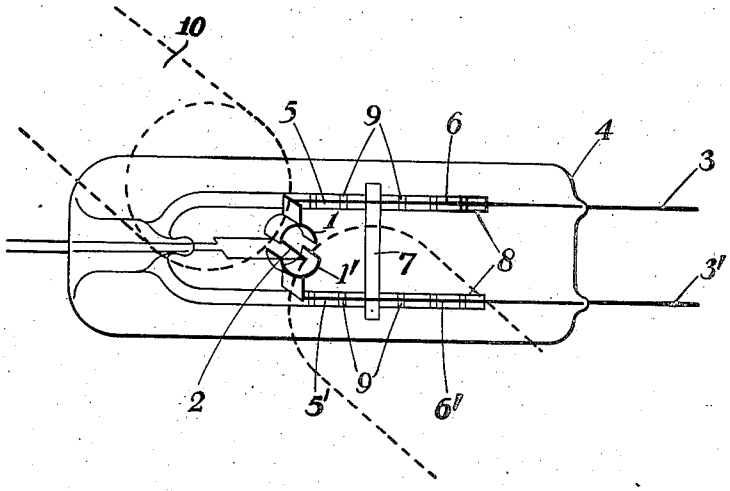

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ELECTRIC SHORT WAVE THERMIONIC VALVE GENERATOR

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6 Claims. (Cl. 250—27.5)

This invention relates to valve generators of short electrical waves enclosed in sealed envelopes. By short waves are meant those of wave length less than 3 metres.

A generator of short waves is usually connected to a circuit tuned to the frequency of the waves. If this circuit is placed outside the envelope of the generator, it is often difficult to make the circuit small enough to have the necessary high frequency, because the leads from the interior to the exterior form part of the circuit; further trouble arises from the capacity between the leads where they pass through the envelope.

According to the invention a valve generator of short electric waves comprises a tuned circuit enclosed within its envelope, the frequency of which can be varied without opening the envelope.

One method of carrying the invention into effect will now be described with reference to the accompanying drawing which shows a generator constructed in accordance with the invention.

The valve generator is of the kind in which the anode consists of two parts and a magnetic field is maintained between the anode and the cathode by an electromagnet, the cylindrical pole pieces 10 of which are indicated on the drawing, the axes of the pole pieces being substantially in line with the filament. 1, 1' are the two parts of the anode; 2 the incandescent cathode enclosed by them. 3, 3' are leads to the two parts of the anode, sealed through the envelope 4. Within the envelope the leads have the form of a substantially parallel pair of straight wires which are divided into two sections 5, 5' and 6, 6' by the movable bridge piece of metal 7. This bridge piece does not rest on the wires, but is supported out of contact with them on the glass fork 8, sealed to the wall of the vessel, which must lie during operation approximately in a horizontal plane. The two prongs of the fork 8 are parallel to the wires and are provided with pairs of corresponding notches 9, in one of which the bridge piece 7 rests; it can be moved from one pair of corresponding notches to another by tilting the vessel, and the length of the section 5, 5' can thus be varied.

The tuned circuit consists of the anode segments 1, 1', the parts 5, 5' of the anode leads attached to them and the bridge piece 7; the capacity between the bridge piece and the wires provides part of the capacity of the circuit and at the same time couples the tuned circuit to the output circuit consisting of the parts 6, 6' of the anode leads and any apparatus connected to them outside the envelope. The capacity between the bridge piece and the wires is adjusted so as to give any desired coupling to the external circuit; in particular, when the external leads are connected to a load circuit (for example an aerial) the capacity is adjusted so that the impedance between its terminals at the working frequency is of the same order as the characteristic impedance of the load circuit. The natural frequency of the tuned circuit is varied by changing the length of the sections 5, 5' whereby the inductances and (to a less extent) the capacity of the circuit is changed.

I claim:—

1. A valve generator of short electric waves including in combination in a sealed envelope an electrode adapted to act as anode, an electrode adapted to act as cathode, a tuned circuit, and means within the envelope for varying the frequency of said tuned circuit without opening the envelope.

2. A valve generator of short electric waves including in combination in a sealed envelope an electrode adapted to act as anode and divided into a plurality of parts, an electrode adapted to act as cathode surrounded by the said parts of the said divided anode, a tuned circuit, and means within the envelope for varying the frequency of said tuned circuit without opening the envelope.

3. A valve generator of short electric waves including in combination in a sealed envelope an electrode adapted to act as anode and divided into a plurality of parts, an electrode adapted to act as cathode surrounded by the said parts of the said divided anode and a tuned circuit, the frequency of which can be varied without opening the envelope, said circuit comprising two substantially parallel conducting members each attached to an electrode in the valve and a movable bridge piece mounted near but not in contact with the said wires.

4. A valve generator of short electric waves including in combination in a sealed envelope an electrode adapted to act as anode and divided into a plurality of parts, an electrode adapted to act as cathode surrounded by the said parts of the said divided anode and a tuned circuit, the frequency of which can be varied without opening the envelope, said circuit comprising two substantially parallel conducting members each attached to an electrode in the valve and a movable bridge piece mounted near but not in contact with the said wires supported freely on notched insulating members.

5. A valve generator of short electric waves in-

cluding in combination in a sealed envelope an electrode adapted to act as anode and divided into a plurality of parts, an electrode adapted to act as cathode surrounded by the said parts of the said divided anode and a tuned circuit, the frequency of which can be varied without opening the envelope, said circuit comprising two substantially parallel conducting members each attached to an electrode in the valve and a movable bridge piece mounted near but not in contact with the said wires supported freely on notched insulating members and means for maintaining a magnetic field between the said parts of the said divided anode and the said cathode.

6. A valve generator of short electric waves including in combination in a sealed envelope an electrode adapted to act as anode and divided into a plurality of parts, an electrode adapted to act as cathode surrounded by the said parts of the said divided anode and a tuned circuit, the frequency of which can be varied without opening the envelope, said circuit comprising two substantially parallel conducting members each attached to an electrode in the valve and a movable bridge piece mounted near but not in contact with the said wires and supported freely on notched insulating members and movable along the length of the said two parallel conducting members, from one pair of notches to another in the said notched insulating members by a suitable movement of the whole generator and means for maintaining a magnetic field between the said parts of the said divided anode and the said cathode.

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