Components of Resonator Circuit

1. Resonator Coil

The high frequency, high magnitude current from oscillator goes to the resonator coil by electro-magnetic induction.

2. Resonator Condensor / Var. Variable Capacitor

It is used for tuning the machine circuit and patient circuit to obtain maximum heating of the tissues

3. Electrodes

They are of 2 types
a.) Pad electrode
b.) Disc electrode

Pad electrode → They are not kept direct contact with the skin, usually layer of towel

Disc electrode → These are fixed with multipositioned arms. It is very easy to

adjust the electrode to the area to be treated, a small air gap is given b/w the body and the electrode.

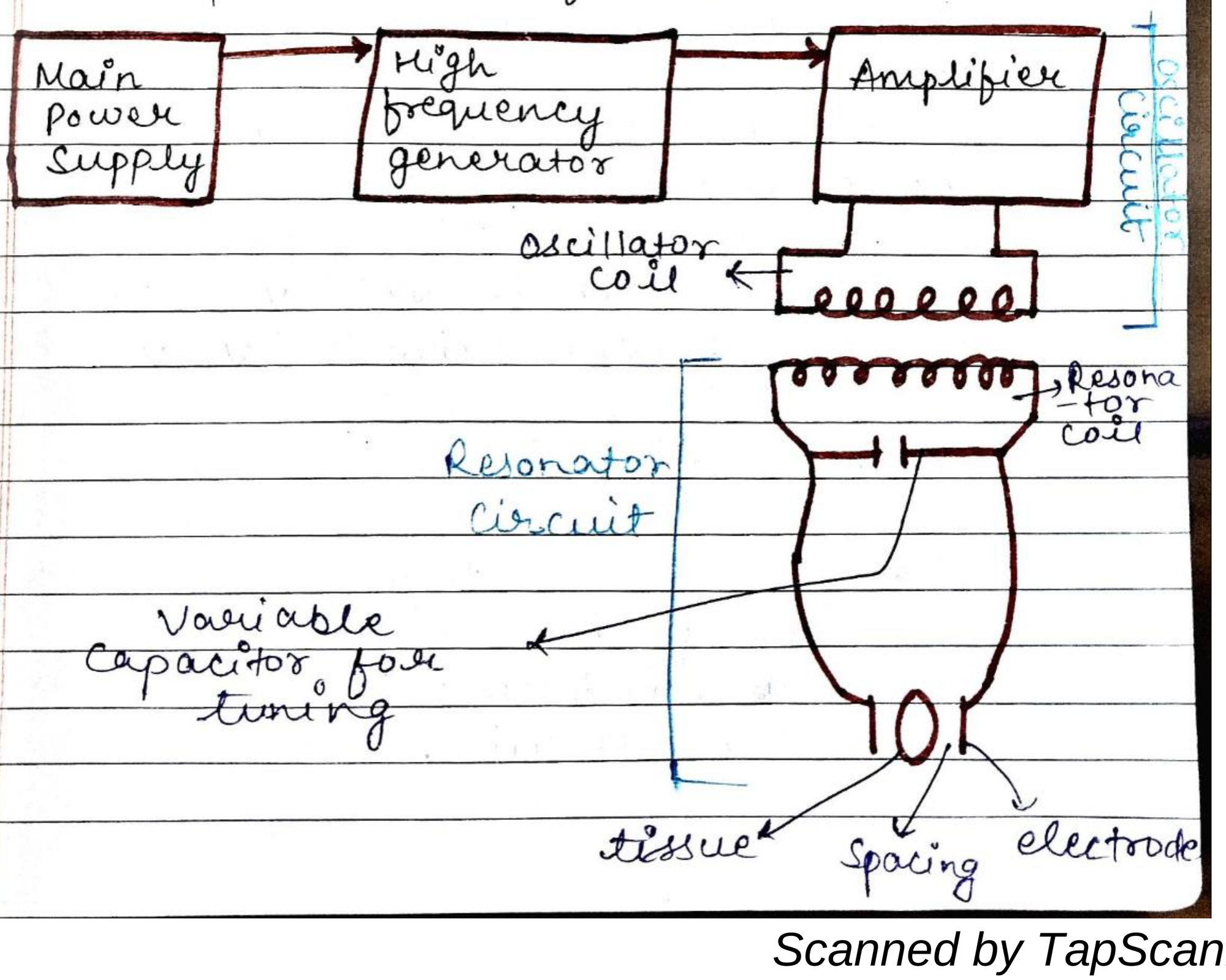
~~4. Emitter~~

4. Ammeter

This shows maximum reading when oscillator and resonator circuit resonate having the same frequency.

5. Tissue

The 2 electrodes are placed on the skin which induces electromagnetic waves which penetrate into the body and production of heat is obtained.



Working

The 27.12 Mega Hertz current is generated in machine circuit which in turn coupled to patient circuit which is used to treat the patient.

1. Machine Circuit

High frequency current is generated by an oscillator circuit consisting of capacitance and/or inductance whose directions are arranged to allowed electron oscillations at a precise frequency (27.12 MH)

In order to maintain the regular oscillation or to produce the high frequency current regularly, the capacitor must be made to charge and discharge rapidly. This is achieved by use of thermionic valve.

2. Patient Circuit

The part to be treated is included in the patient circuit which is coupled inductively to oscillator circuit.

This involves a coil in each circuit being ~~else~~ placed closed together forming a transformer, so that the magnetic field generated by the oscillated circuit induces the current in the resonator coil.

Energy will be effectively transfered if the 2 circuit are in tune to have the same frequency.

This tuning can either be done manually or mechanically.
When the oscillator and resonator circuit are in tune with each other, there is maximum power transfer to the patient circuit.

Indication that this is occuring are:-

a) An indicator light on the equipment goes "ON"

b) An Ammeter into the resonator circuit shows a maximum reading.

c) Tube containing small amount of Neon gas placed ~~between~~ within the electric field between the electrodes and the ends of the cable will glow at maximum intensity.

Tissue may be coupled with the short wave field in 2 ways:-

a) As a part of Capacitor called Capacitor field Method.

b) As a part of an inductance called inductothermy or cable Method.

Effect of High Frequency Current on the Tissues