

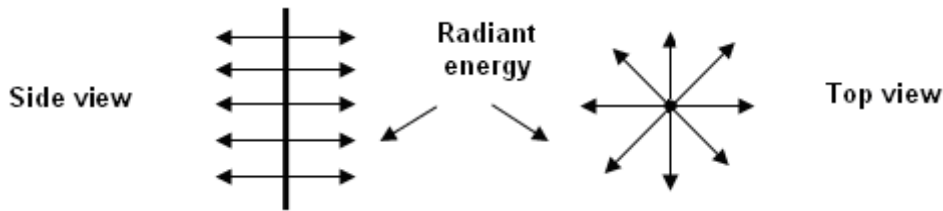
## THE ELECTRO RADIANT EFFECT Nikola Tesla secrets.

By Vladimir Utkin [u.v@bk.ru](mailto:u.v@bk.ru)



### INTRODUCTION

Mr. Tesla said, that there is radiant energy, perpendicular to the surface of any charged conductor, produced by a scalar electromagnetic field, thus giving rise to longitudinal electromagnetic waves.



**Fig.1 Radiant energy according to Nikola Tesla**

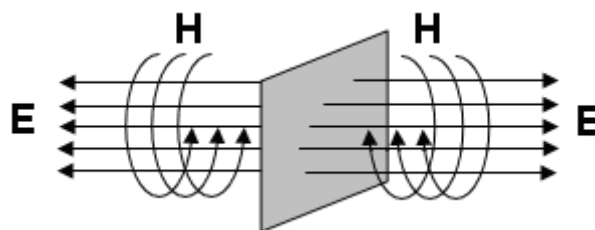
At first glance, this contradicts the age-old experience of studying the electromagnetic field (according to modern concepts, any electromagnetic field has components which are perpendicular to the direction of the propagated electromagnetic wave), also, Maxwell's equations describe an electromagnetic field as a vector. However, the first impression is erroneous, and no contradiction exists.

**Definitions of Physics:** Any conductor has both inductance and capacitance, that is, the ability to accumulate charge on it's surface. A charge on the surface of a conductor creates an electric field (electrostatic field). The potential (voltage) at any point of the electric field is a scalar quantity!!! (That is, it is a scalar electric field ...).



**Fig.2 The electric field of any charged conductor**

If the electric charge of the conductor varies with time, then the electrostatic field will also vary with time, resulting in the appearance of the magnetic field component



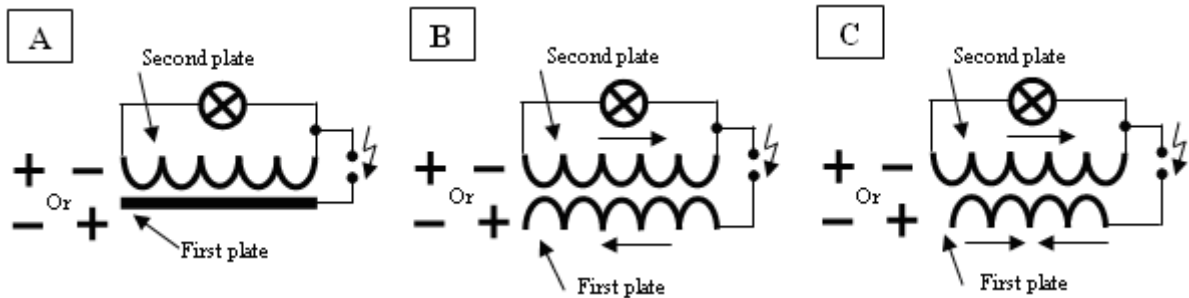
**Fig.3 Creation of a longitudinal wave.**

Thus, the electromagnetic wave is formed (with the longitudinal component of E ...).

In order to understand how a longitudinal wave interacts with conductive bodies, one needs to read the section of electrostatics entitled "Electrification by Influence". Particularly interesting are Maxwell's equations where they mention the displacement current.

## THE ELECTRO RADIANT EFFECT (Inductance in an electric field)

Using the electro-radiant effect we can understand the interaction of an inductance and an electric field which varies in space with time. As a result of this interaction, energy is transferred from the electric field to the magnetic field, and that energy flow can be used to perform useful work by connecting a load across the inductor. With the time-varying electric field, the field has maximum possible rate of change (for example, due to the charge delivered by an electric spark). The most simple way to see an electro-radiant effect taking place is when a previously charged capacitor is discharged by a spark and where **one or both of it's plates is an inductor**.



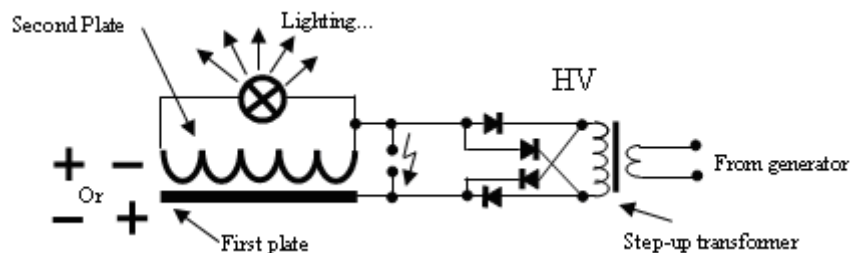
**Fig.4 The simplest manifestation of the electro-radiant effect: the light bulb is lighting**

An explanation of the electro-radiant effect is as follows: The charges are trying to flow from the plates on the opposite sides of the capacitor, however, the current cannot increase rapidly through the inductance, and as a result, the sparks are weak. But, the potentials at the terminals of the inductor change immediately, and after that, there are electric oscillations in the circuit. If they are not supported, then they will decay. If a load is connected to the inductor, then the current will flow through it and the light bulb will light. The lower the load resistance, the more powerful the spark becomes. The spark will be at it's maximum possible strength when the load resistance is zero. The electro-radiant effect has polarity which is associated with the distribution of the voltage across the inductor, which is dictated by the way in which the capacitor was originally charged



**Fig.5 The manifestation of the polarity of the electro-radiant effect.**

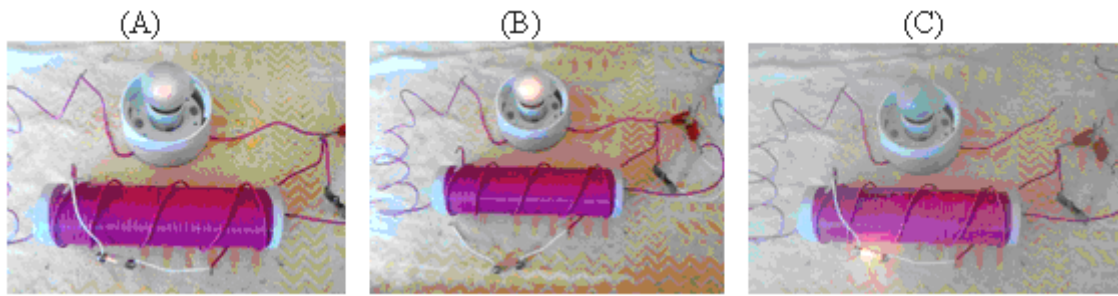
As can be seen from the definitions made above and the accompanying figures, the manifestation of the electro-radiant effect in the simplest case does not require grounding. And as mentioned, the inductor can have a core or be air-cored. A circuit which shows this effect can be very simple:



**Fig.6 The simplest circuit without grounding which shows the electro-radiant effect.**

This circuit was assembled using a tube constructed of ferrite rings, around which an inductor was wound. Inside the ferrite tube there is a copper pipe acting as a capacitor plate, and this copper pipe is slit along its length in order to prevent it forming a closed loop. The results are shown in Fig. 7, where the high-resistance load was a

10W/220V light bulb, and as a low-resistance load a 10W/12V light bulb was used. Loads were combined as shown in (A) and used separately as shown in (B) and (C).



**Fig.7 Showing the electro-radiant effect caused by the circuit shown in Fig. 6.**

A step-down winding was used to match the low resistance of the load to the current in the inductor. As a charging generator for this setup, a blocking generator based on a single KT819G transistor was used, and its power consumption was 10W with a 10V power supply. As can be seen from Fig. 7, an electro-radiant effect was seen, as was expected. The sparks were weak, and the homemade spark gap was almost cold.

To check the availability of the electro-radiant effect with the other capacitor's electrodes, a piece of metallic plastic foil was used as the first plate of the capacitor and a coil was used as the second plate, the coil being wound around a toroidal core. The coil was placed on the plastic foil. The other experimental conditions were not changed. The results of that experiment are shown in Fig. 8

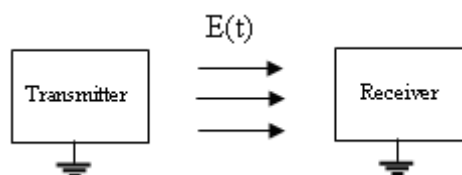


**Fig. 8 Seeing the electro-radiant effect based on the circuit shown in Fig. 6 with the different configurations of the electrodes of the capacitor.**

This experiment confirmed that the electro-radiant effect was not in any way dependent on the configuration of the capacitor electrodes. An inductor test was performed in two parts, one with serial plates and one with parallel plates, showing that the effect is independent of the capacitor plate configuration. The next step is discussion of the electro-radiant effect using grounding on the configurations shown in Fig. 4. These schematics may remind you that some "inventors" used the electro-radiant effect, and reminders of those inventors will be presented beside the schematics. All of these schematics are earthed versions of the above circuits which we have already examined.

### THE SIMPLEST SCHEMATICS USING EARTHING

The most common of the circuits which have grounding is the classical "Receiver – Transmitter" style of circuit as shown here:



**Fig. 9 The common look for the circuits with grounding using the electro-radiant effect**

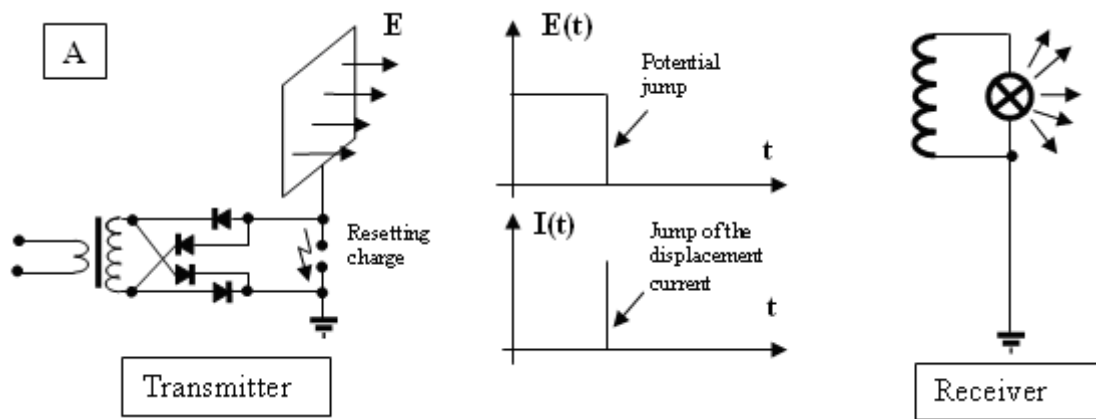


Fig. 10 The Electro-radiant effect with grounding and one inductor.

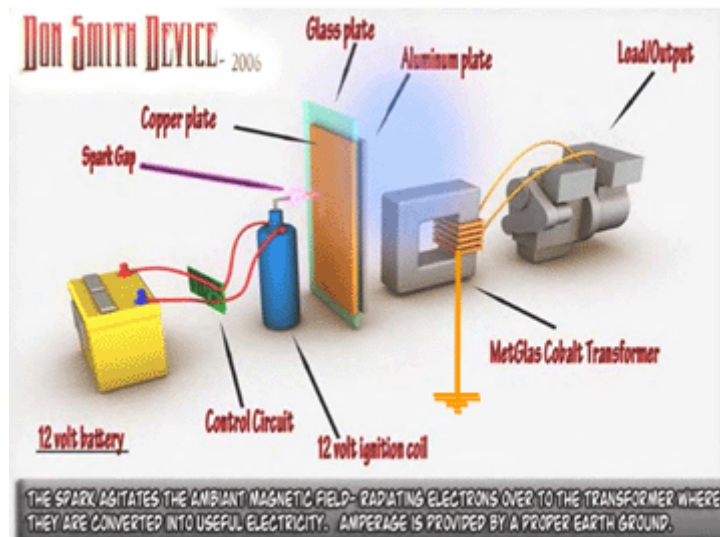


Fig. 11 The Don Smith's schematic of the electro-radiant effect.

Comparing the images shown in Fig.10 and Fig.11 it can be concluded that in this experiment, Don Smith chose option (A).

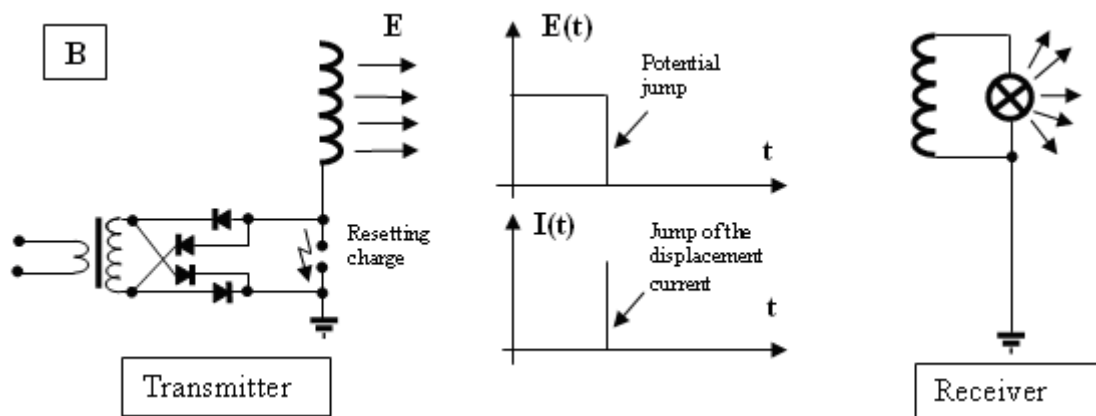


Fig. 12 The electro-radiant effect with grounding and two inductors.

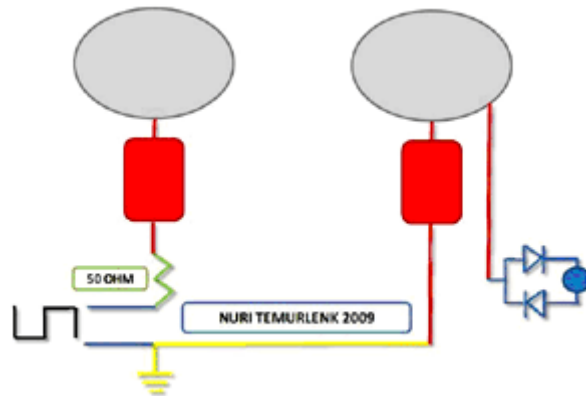


Fig. 13 The image from the website of the TMZ company(Kapanadze, etc.)

Comparing Fig. 12 and Fig. 13 it is difficult to get rid of the idea that the TMZ company's website shows exactly the electro-radiant effect in option (B). However, the circuit for connecting the load is different.

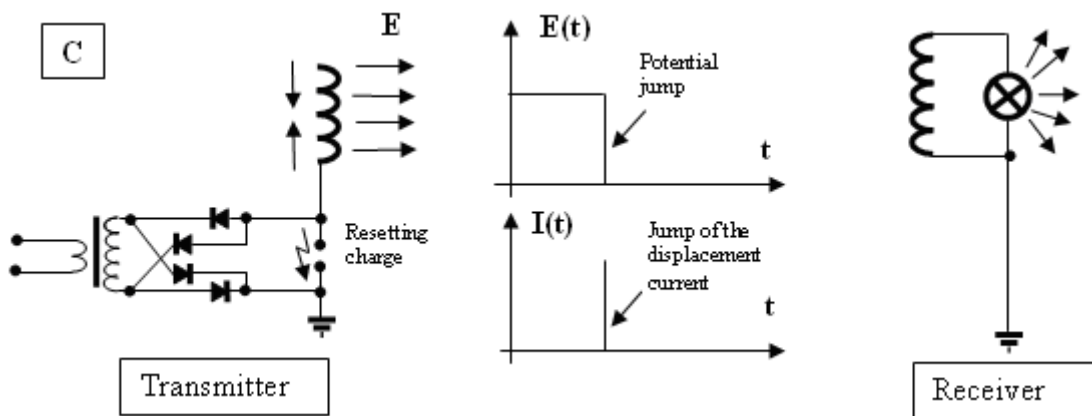


Fig. 14 The electro-radiant effect with grounding and two orthogonal inductors (which are interchangeable).

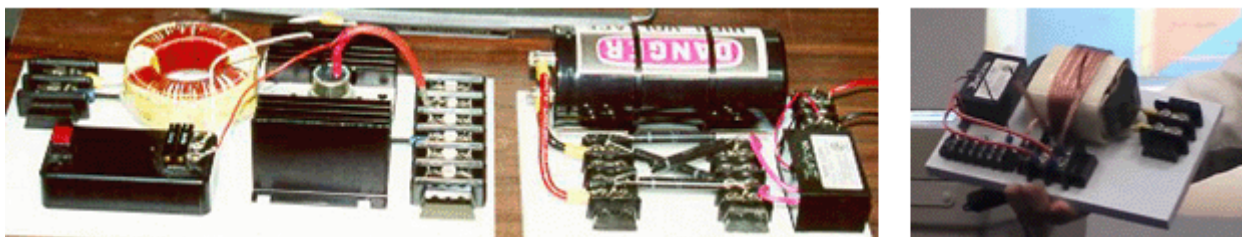


Fig. 15 Don Smith's devices designed for different customers.

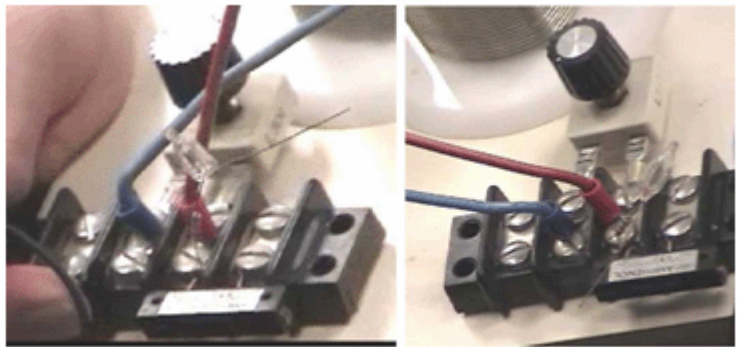
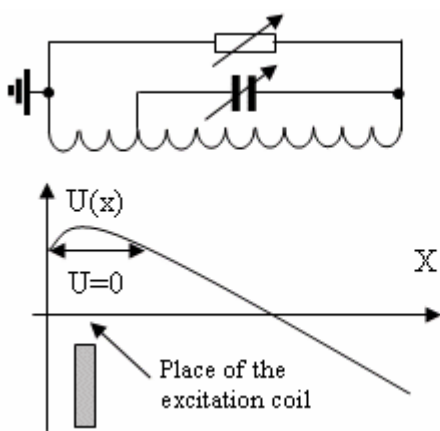
Comparing Fig. 14 and Fig. 15 one comes to the conclusion that Don Smith used option (C), which is essentially little different from option (A).

Fig. 16 shows another of Don Smith's devices based on the option (C) electro-radiant effect:



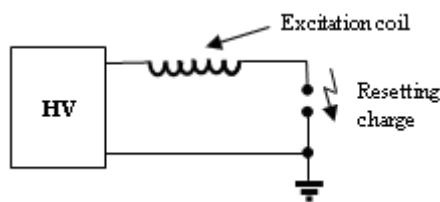
**Fig. 16 Don Smith's device based on the electro-radiant effect of option (C).**

Here Don Smith decided to imitate the external look of the Tesla coil. The orthogonality of the two coils on the same axis was provided with an additional resistor and a capacitor. The value of the capacitor and the resistor were selected to obtain the predetermined voltage distribution on the long coil, which leads to the orthogonality of these two coils.



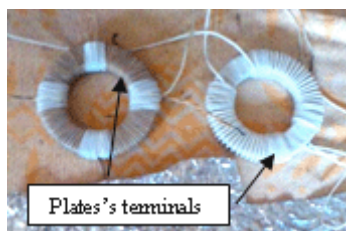
**Fig. 17: The required voltage distribution on a long coil for orthogonality with short coil, and the way to achieve it.**

The capacitor is connected to the centre tap at the  $\frac{3}{4}$ -coil length point. The orthogonality was provided at only one frequency. The inductor (short coil) was connected to the high-voltage source with the schematic to establish the electro - radiant effect.



**Fig. 18 The circuit for connecting the excitation coil in the Don Smith device.**

In addition to the presented possible electrodes configurations in the electro – radiant effect options, some new variants can be presented. For example, one plate of the capacitor in the electro – radiant effect can have a form of a foil that is placed under the outer winding of the toroidal inductance.



**Fig. 19 Placing a piece of the foil under the external windings on the toroidal core as a**

**capacitor's plate in the electro – radiant effect (foil is not visible externally).**

The foil should not take the form of a closed loop, and it should be adequately insulated to prevent electrical breakdown.

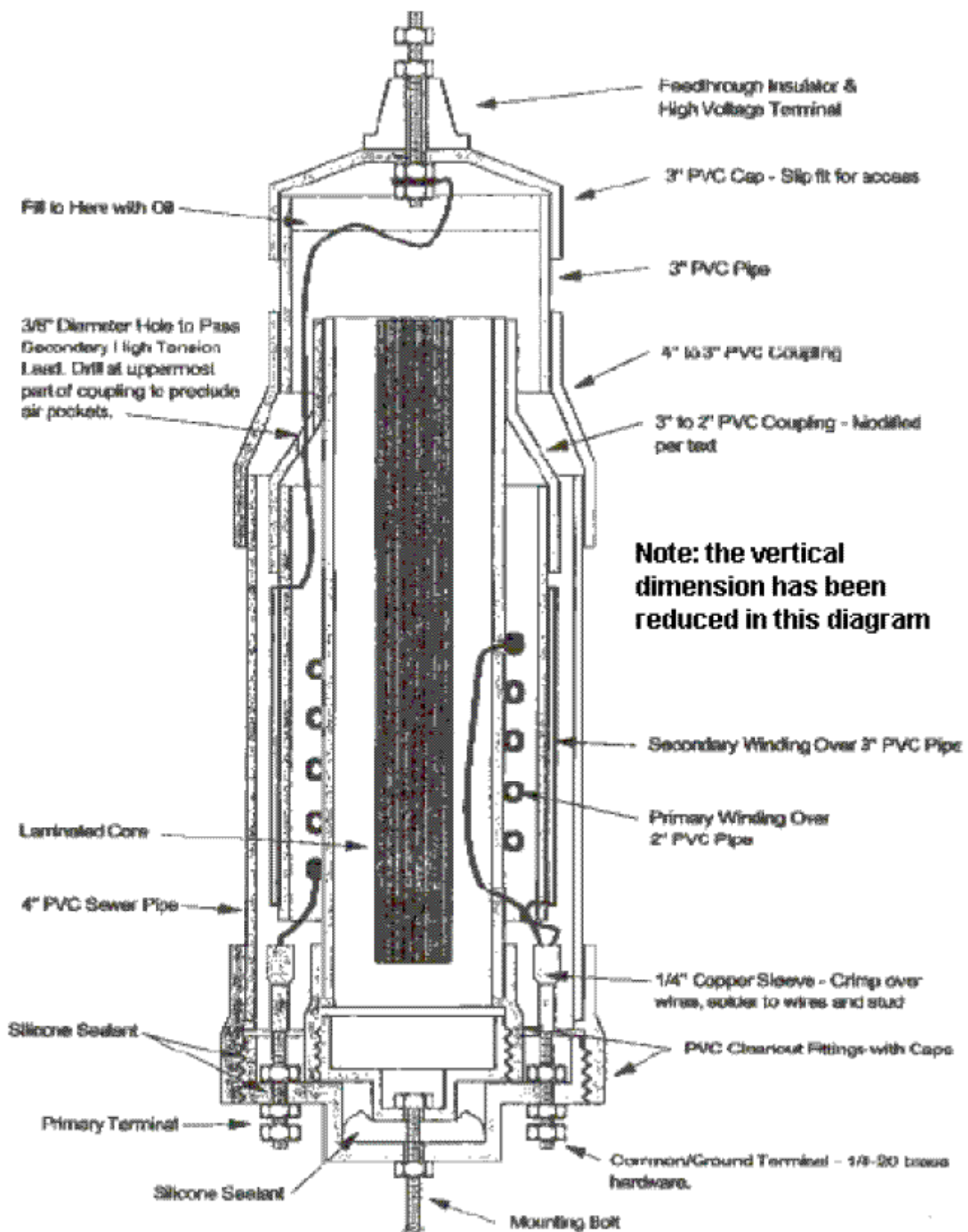
In experiments with circuits using grounding, the electromagnetic field occurs in the ambient space, and it is interesting to investigate its configuration by means of sensors.



**Fig. 20 The sensors for the electromagnetic radiation (A) and for the electro - radiant effect (B).**

When using sensors you may have nuances. If the LED glows faintly in the sensor for radiant effect, hold a hand on the other terminal of the coil, mindful of the polarity of the effect. If the LED lights up slightly in the sensor for field, turn it over (as the field has an asymmetrical half-wave, like a blocking generator does).

While connecting a load you can get nuances also. For example, to connect the load, you might use an additional winding (usually step down), which should be covered by the external grounded winding, responding to the jumps of the electric field. An additional winding can be without grounding, however, Don Smith grounded his transformer additional winding



**Impulse Transformer Assembly**

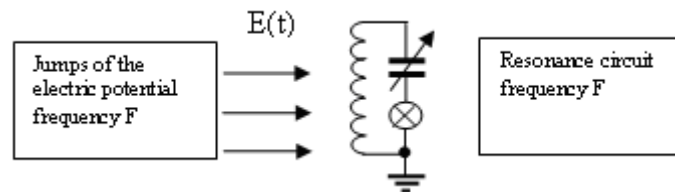


**Fig. 21: Don Smith's coil, suitable for transmitter or receiver in the electro-radiant effect (the low-voltage coil is covered by a high-voltage coil and earthed).**

However, the grounded schematics were developed by the authors not for options, but in order to get power gain, which may seem to be rather "strange" from the point of view of classical physics. In order to get an energy gain, resonant frequency tuning was proposed.

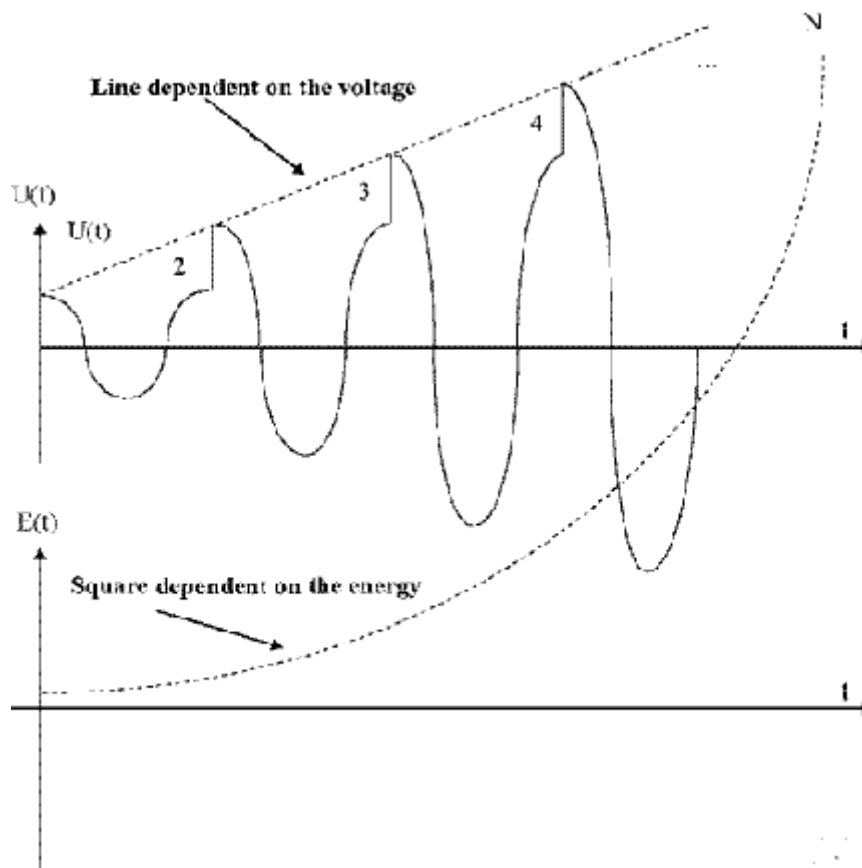
### RESONANT MODE

Resonant mode is the most interesting of the electro-radiant effects. By this, we mean supplying sparks (capacitor discharge) with the resonant frequency of at least one of the coils which produce the electro-radiant effect.



**Fig. 22 The electro-radiant effect in the resonant mode of the receiver.**

The resonant mode provides increasing energy (not to be confused with the accumulation). An additional energy appearance in resonant mode can be explained as the addition of a charge 'Q' in a resonant LC circuit, regardless of the voltage on its terminals.

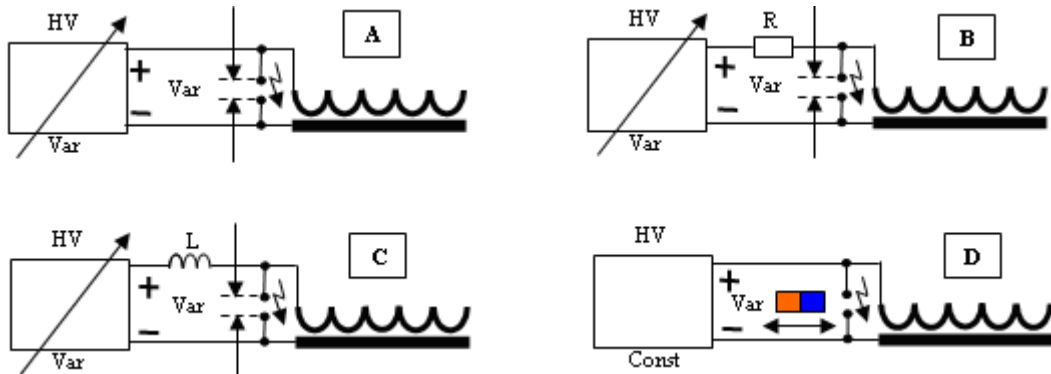


**Fig. 23 Explanation of the energy gain principle in resonant mode of the electro-radiant effect.**

If Q represents a charge delivered to the capacitor of the resonant circuit by a spark, the voltage U across it will be  $U = Q / C$ . After N sparks, the voltage  $U_n$  of capacitor C will be N times greater and so  $U_n = NQ / C$ . The energy  $E_c$

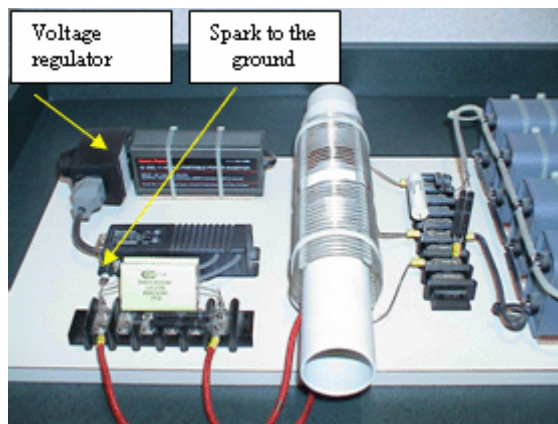
of the capacitor is proportional to the square of the voltage  $E_c = CU^2 / 2$ . Therefore, after N sparks, the energy  $E_n$  will be increased to  $N \times N$  times compared to the energy provided by a single spark. In other words, if an LC circuit is excited by a series of charges the energy will be increased.

While creating the resonant mode, it is important to create conditions for discharging the capacitor at the desired frequency. The schematics for providing such conditions are fairly simple:



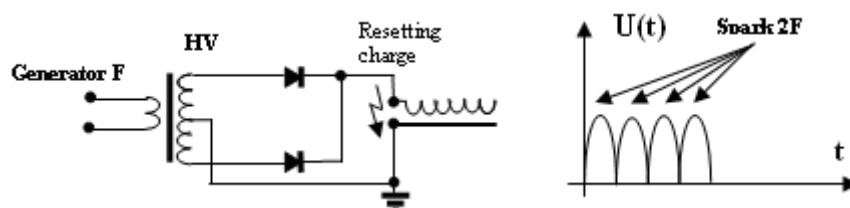
**Fig. 24 The simplest schematics with adjustable spark frequency (capacitor's frequency discharge).**

The higher the voltage of the source and the narrower the spark gap, the higher the frequency of the spark will be (capacitor discharge). A voltage invertors for cold cathode neon lamps, provided with a voltage controller (dimmer), can be used as a simple high voltage power supply. The output of the inverter is connected to the rectifier to charge the capacitor and generate the electro-radiant effect. The dimmer regulates the voltage and as a result, the frequency of the sparks. In the absence of a dimmer, the voltage can be adjusted by changing the voltage across the transformer, or by using a power supply which has adjustable voltage.



**Fig. 25 Adjusting frequency of the sparks based on the principle "voltage – frequency" by using a dimmer, from Don Smith.**

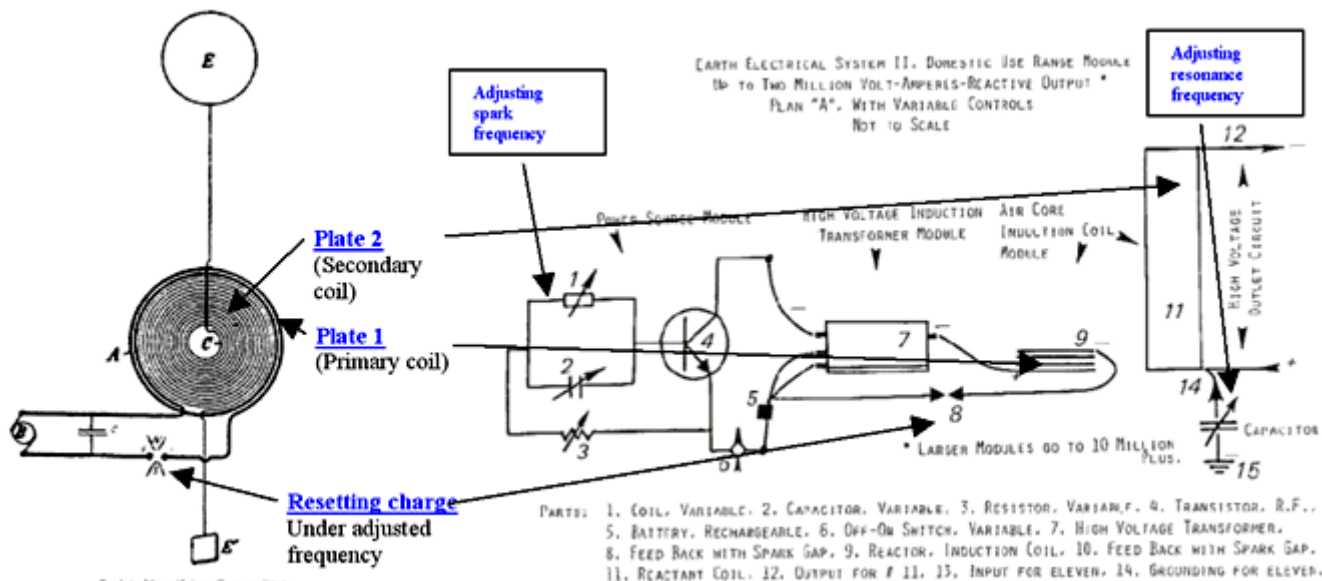
Connecting a capacitor to the output of the half-bridge or full-bridge rectifier, provides charging of the capacitor. If the value of the capacitor is small (big distance between the primary and secondary windings), it will form the spark at twice the frequency of the voltage converter.



**Fig. 26 The simplest schematic for forming discharge frequency of the capacitor, which creates the electro-radiant effect (similar to Don Smith).**

However, Nikola Tesla used a different approach based on disrupting the spark with a magnetic field, as shown in Fig. 24 (D). The closer the magnet is brought to the spark gap - the higher the frequency of the sparks.

We can now proceed to the consideration of devices of different authors, from Nikola Tesla up to his modern followers, who "benefited" from the radiant effect in the resonant mode. Some of these authors openly admitted that they used this effect, on the other hand, some considered it a "great mystery" or alternatively, omitted to mention it. We can start our analysis with the Don Smith's device schematic, shown in Fig. 27, since it is the closest to the Tesla's original coil, which acts as a reinforcing coil in the resonant mode of the electro-radiant effect. A patent for this invention of Nikola Tesla's was accepted over a century ago.



**Fig. 27 The resonant circuit schematic by Nikola Tesla and Don Smith's device based on it.**

Don Smith was one of those authors, who disclosed parts of their inventions but who held back some of the relevant information. To get a working generator from Don Smith's schematic, a self-excited transistor must have sufficient capacity to be able to charge a capacitive load which then creates the electro-radiant effect. So a suitable generator would be a blocking generator which produces asymmetric vibrations, as Don Smith did. A small primary coil is installed at the "hot" terminal of the secondary coil, ensuring the creation of the electro-radiant effect, in contrast to the classical Tesla transformer.

Another Don Smith's schematic is shown in Fig. 28. It contains resistor (8) which sets the level of the electro-radiant effect produced. The lower the value of this resistor, the better the connection of the secondary coil to the ground, boosting the output power. With infinite resistance of resistor (8) the device does not work, that is, there is zero output voltage. Another schematic of Don Smith's for controlling the electro-radiant effect is shown in Fig. 29. The difference to the circuit in Fig. 28 is in the process of creating a pair of coils at right-angles to each other.

# ELECTRICAL ENERGY GENERATING SYSTEM

Patent Pending 08 / 100,074

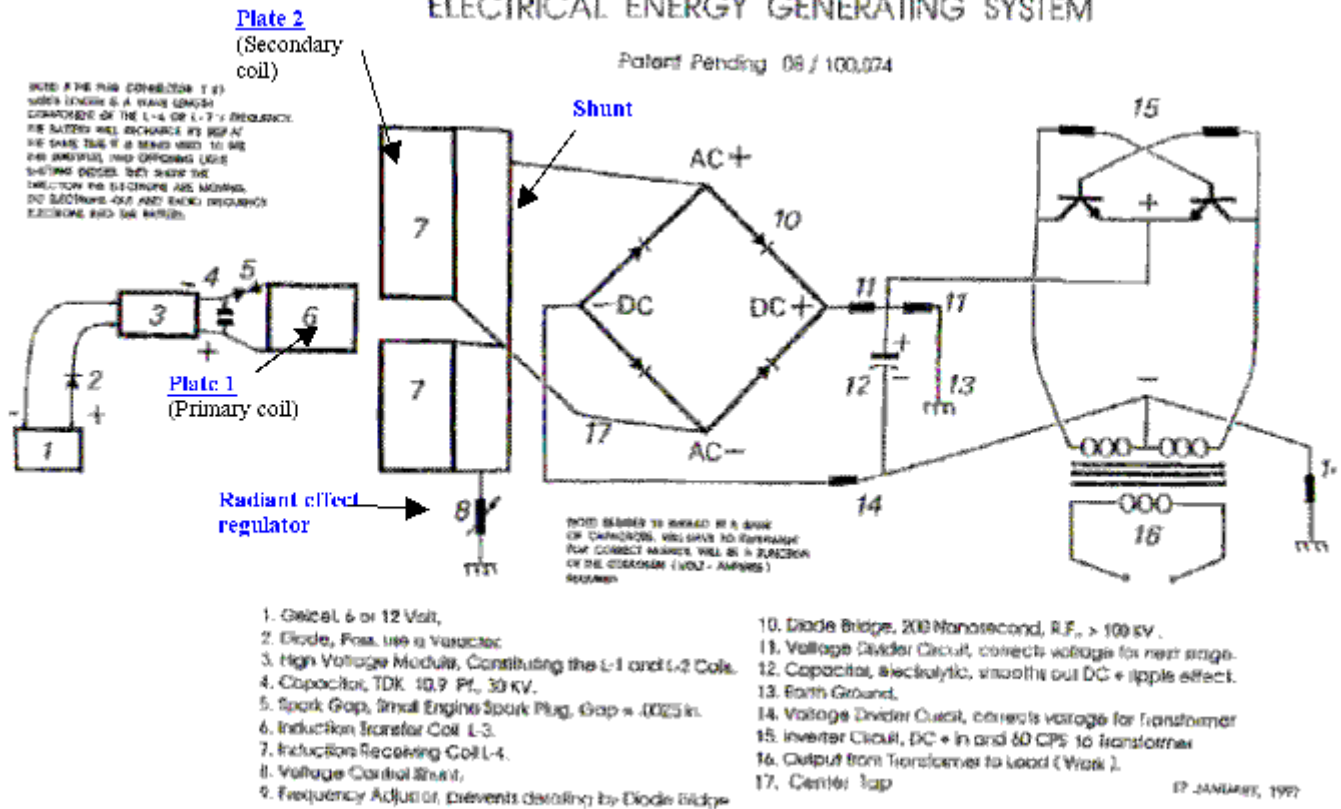
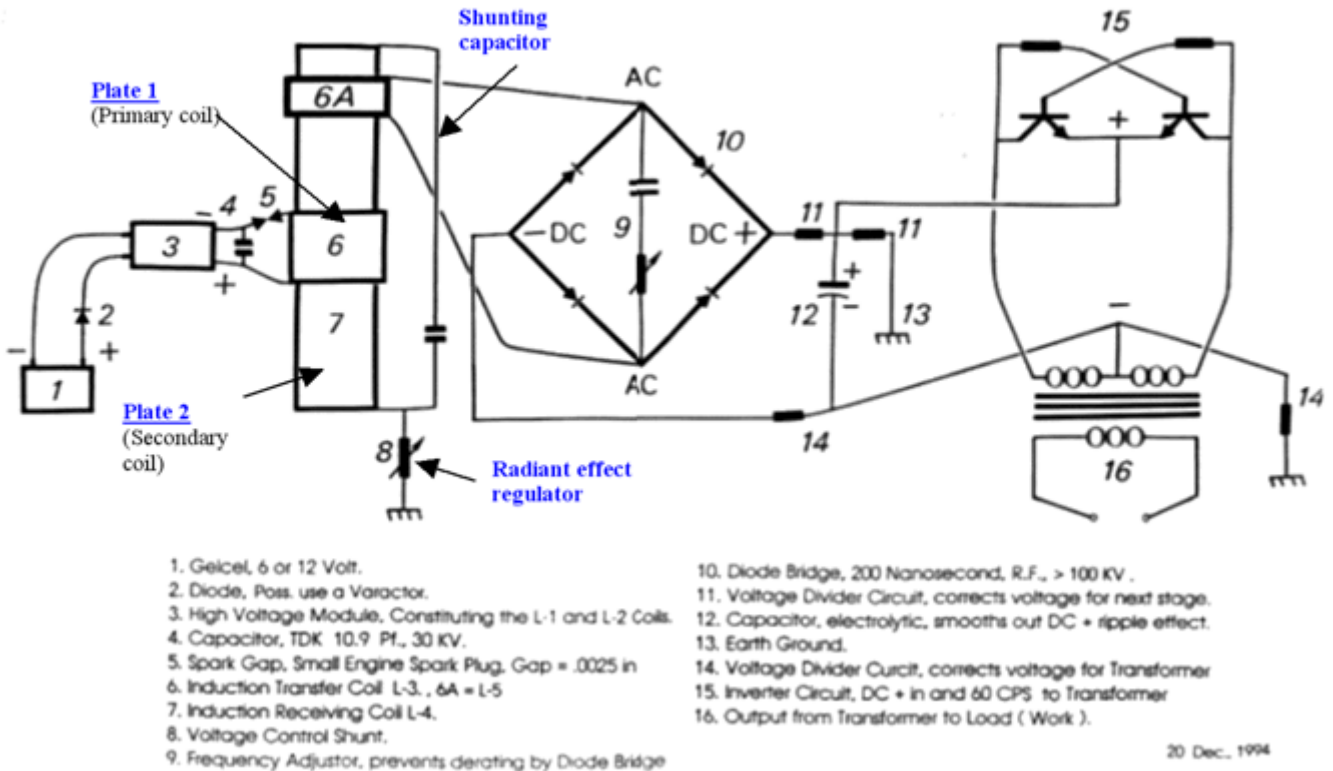


Fig. 28 The resonant circuit from Don Smith with controlling the electro-radiant effect

In Fig.28 coil (7) is a short-circuited coil, the coils (6) and (7) form a pair of orthogonal coils, which allows us to consider the scheme to be a close embodiment (of type C) of the electro-radiant effect.

# ELECTRICAL ENERGY GENERATING SYSTEM

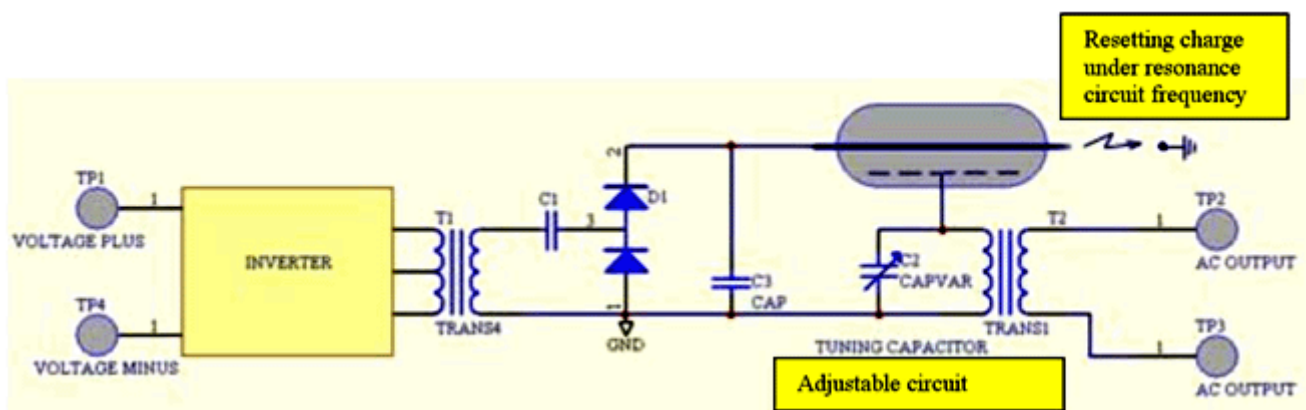
Patent Pending 08 / 100,074



**Fig. 29 A resonant circuit from Don Smith with controlling the electro-radiant effect.**

As shown in Fig. 29, the value of the shunt capacitor is chosen so that coils (6) and (7) form a pair of orthogonal coils, which allows us to consider this schematic to be close to the variant (C) radiant effect. Fig. 28 and Fig. 29 also draw attention to capacitor (4) - this is similar to the capacitor in the ordinary Tesla coil, but its value is very small (only 10 pF). This indicates that the system operates in a resonant mode forming a discharge capacitor of the electro-radiant effect mechanism.

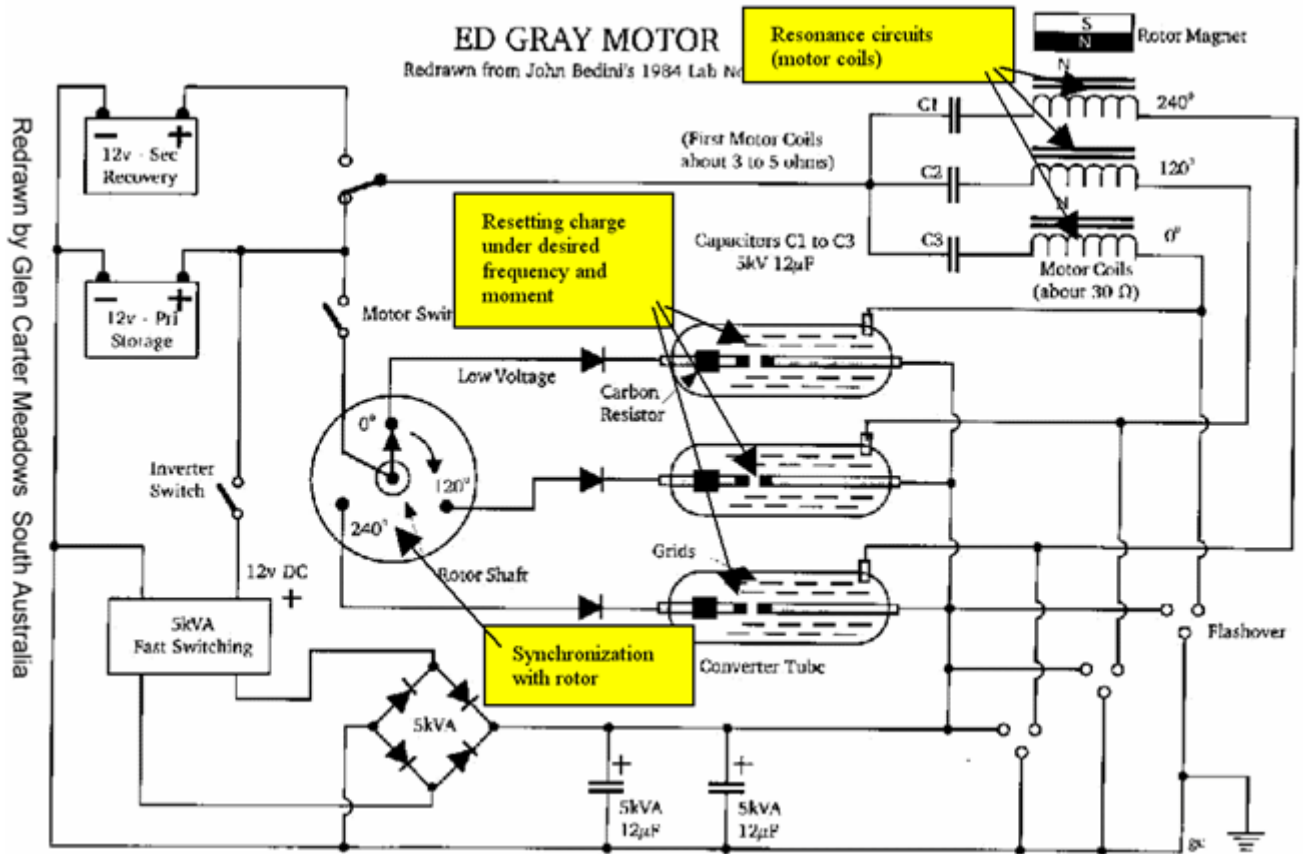
Now, if we examine the history of Edwin Gray's devices, remembering that he said quite openly that the electro-radiant effect in resonant mode was used. Here is his famous (simplified) schematic:



**Fig. 30. Simplified circuit of the Edwin Gray's device, using the electro-radiant effect in resonant mode.**

Looking at Fig. 30 is not difficult to see that it is variant (A) of the electro-radiant effect. Edwin Gray said that the

devices are intended for use with inductive loads. Without the inductance and the resonant mode you do not get the desired result. His schematics are a bit more complicated than the scheme described here, but in all of them you can easily notice the use of the electro-radiant effect. Worth mentioning is Edwin Gray's mechanical motor, shown in Fig. 31.



**Fig. 31 Edwin Gray's mechanical motor which uses the electro-radiant effect in resonant mode.**

Here, motor windings are used as the inductors, which are connected to capacitors, creating a serial resonant circuit. Resetting charge occurs through a frequency-resonant circuit. The timing of the discharge is caused by an interrupter which is attached to the motor drive shaft. This device is an example of the option (A) electro-radiant effect.

Continuing the historical digression, let us mention the development of some other authors who used spark excitation, which might allow us a chance to categorise their devices on the basis of the electro-radiant effect. However, this is really not possible, due to the lack of available data.

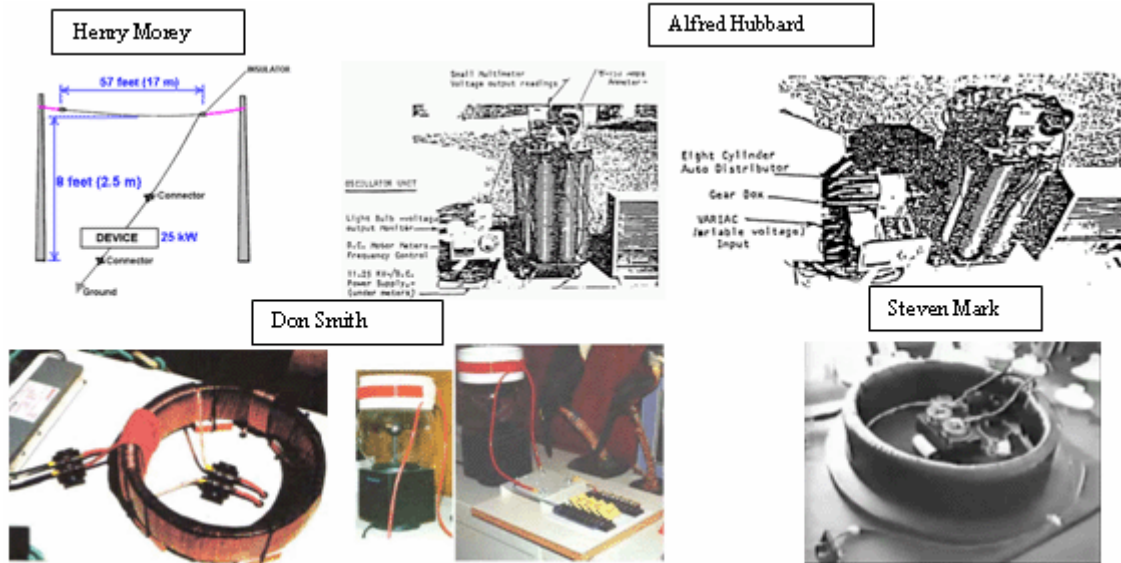


Fig. 32 Devices of the various inventors, which may use the electro-radiant effect.

Now, let us go back and look at Tariel Kapanadze's patent shown in Fig. 33.

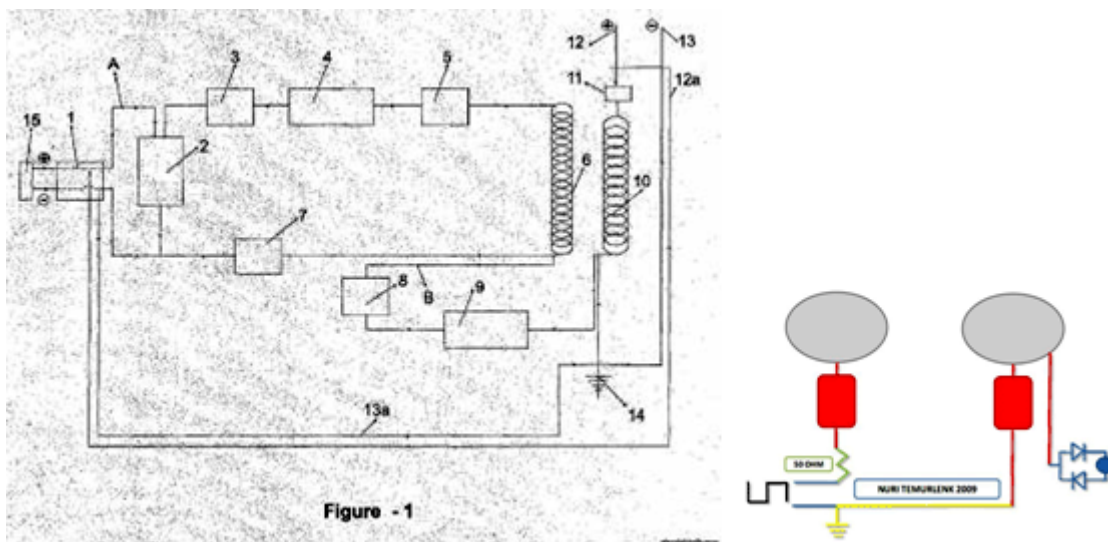


Fig. 33 Tariel Kapanadze's patent and the image from the TMZ company website.

It would be almost impossible to see the electro - radiant effect here, if it weren't for the "leak" with the publication of the schematic on the website of the TMZ company. Tariel Kapanadze is one of the inventors who carefully hide the details of the use of the electro-radiant effect in resonant mode. However, his statements, and the appearance of the devices that he developed (elements, resonance settings, types of wires used, and the metal electrode) leads to the conclusion that this is so.

### SUMMARY

Over a century ago, Nikola Tesla discovered the electro-radiant effect, which since, has been used by many inventors to create devices which conflict with the point of view held by the physicists of the 20th century. Over the past hundred years the effect has been "borrowed" several times and it has become "an open secret" pointed to in various patents.

By the way, the effect can be detected very easily, bringing a grounded inductance to any metal surface with "jumping" potential (e.g., by sparks). Resonant mode itself is not a source of energy in the effect, but only allows a

break in the symmetry of interaction from the output to the input, by adding the same charge into the resonant circuit. The well-known physics principle "For every action there is an equal and opposite reaction" is based solely on the results of physical experiments. The fact that this principle can be violated and an asymmetrical interaction can be created is not written anywhere in physics. In other words, this "sedition" occurred only in the head of Nikola Tesla who produced a practical implementation of it.

## **CONCLUSIONS**

1. The Law of Conservation of Energy is the result (not the cause) of symmetrical operation.
2. The easiest way to destroy symmetrical operation is to use electromagnetic feedback in the field.
3. All asymmetric systems are outside the scope of the Law of Conservation of Energy.
4. The Law of Conservation of Energy cannot be broken, but it only applies to symmetrical interactions.

No private or state secrets are contained in this document. All illustrations and diagrams are provided only as an aid to understanding the principles involved.