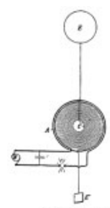
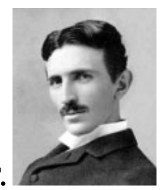
Electro - radiant effect

- **Abstract:**
  Article from the series "Secrets of Nikola Tesla". The effect of placing an inductor in an electric field is described. Illustrations and explanations are provided.





ELECTRO - RADIANT EFFECT.

Secrets of Nikola Tesla.

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INTRODUCTION

Mr. Tesla said that a certain radiant energy created by a scalar electromagnetic field emanates perpendicular to the surface of any conductor, generating longitudinal electromagnetic waves.

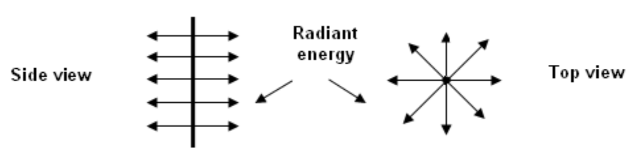

Fig.1 Radiant energy according to Nikola Tesla.

At first glance, this contradicts the centuries-old experience of studying the electromagnetic field (according to modern concepts, electromagnetic fields have components perpendicular to the direction of propagation of the electromagnetic wave), as well as Maxwell's equations, which describe the electromagnetic field as a vector one.
However, the first impression is wrong and no contradictions exist.

Definitions from physics.
Any conductor has both inductance and capacitance, that is, the ability to accumulate charges on its surface.
Charges on the surface of a conductor create an electric field (electrostatic field).
The potential at a point in the electric field is a scalar quantity!!! (here's a scalar field for you...).

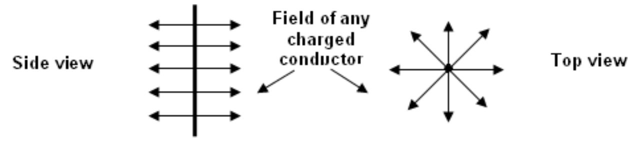

Fig.2 Electric field of a charged conductor.

If the electric charge of a conductor changes with time, then the electrostatic field also changes with time, leading to the appearance of a magnetic component of the field

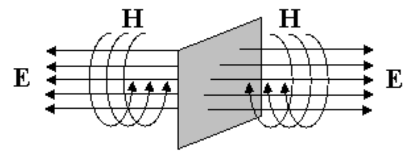

Fig.3 Formation of a longitudinal wave.

Thus, an electromagnetic wave is formed (with a longitudinal component E...). To understand how a longitudinal wave interacts with conducting bodies, you need to remember (read) the section of electrostatics “Electrification by influence”. Particularly interesting are Maxwell's equations (displacement currents).

ELECTRO - RADIANT EFFECT

(inductance in an electric field)

The electroradiant effect is usually understood as the interaction of an electric field varying in time and space with the inductance under its influence.

As a result of this interaction, the electric field turns into a magnetic field, which can be utilized by connecting a load to the inductance.

A time-varying electric field is usually understood as a field whose rate of change is the maximum possible, for example, due to charge transfer by an electric spark.

The electroradiant effect can most easily be observed during the spark discharge of a pre-charged capacitor, when at least one of its plates is inductive.

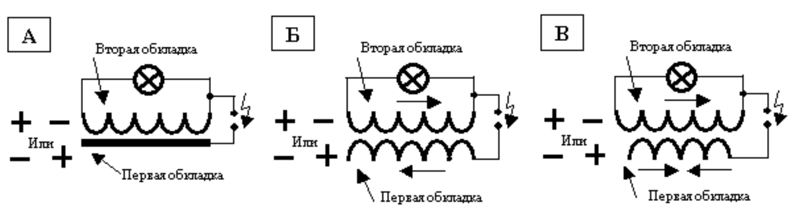

Fig. 4 The simplest manifestation of the electro-radiant effect - the light bulb is on.

The electroradiant effect can be explained as follows.

Charges from the plates try to flow to opposite sides of the capacitor, but the current through the inductance cannot increase instantly - **the spark turns out to be weak** . In this case, the potentials at the ends of the inductance change instantly, after which electrical oscillations occur in the circuit. If you don't support them, they will fade away. If you connect a load to the inductance, current will flow through it (the light bulb will light up). The lower the load resistance, the more powerful the spark will be. At zero load resistance, the spark will be maximum.

The electroradiant effect has a pronounced polarity associated with the voltage distribution across the inductance, determined by how the capacitor was initially charged.

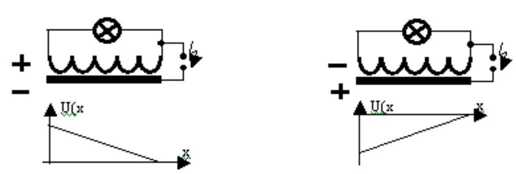

Fig.5 Manifestation of the polarity of the electro-radiant effect.

As can be seen from the definitions made and the presented figures, for the manifestation of the electroradiant effect in the simplest case, grounding is not required at all.

Inductance can be either cored or coreless.

The scheme for observing the effect will be as simple as possible.

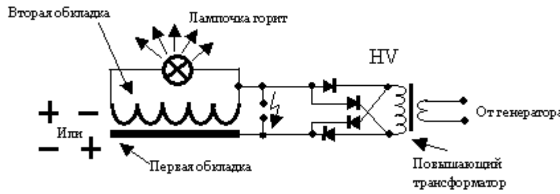

Fig.6 The simplest circuit without grounding for observing the electro-radiant effect.

Based on this circuit, a simple installation was assembled, consisting of a “pipe” of ferrite rings on which inductance was wound, and inside the “pipe” rings a capacitor plating in the form of a copper tube cut lengthwise was inserted to avoid a short-circuited turn.

The results are presented in Fig. 7, where a 10 W 220V light bulb was used as a high-resistance load, and a 10 W 12V light bulb was used as a low-resistance load.

The loads were switched on together (A) and separately (B) and (C).

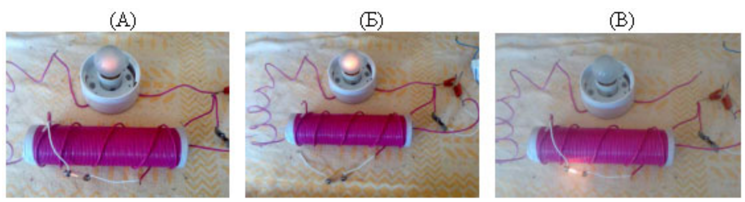

Fig.7 Observation of the electro-radiant effect according to the scheme Fig.6

To match the resistance of the low-impedance load with the current in the inductance, a step-down winding was used.

A blocking oscillator on one KT819G transistor was used as a generator, power consumption 10 W, supply voltage 10V.

As can be seen from Fig. 7, the electro-radiant effect is observed, which was expected. At the same time, the spark is weak, the homemade spark gap almost does not heat up.

To check the presence of the electroradiant effect with other electrode configurations, a piece of foil fiberglass and a coil on a toroidal core were used as capacitor plates. Other experimental conditions did not change. The results of the experiment are presented in Fig. 8.

Fig. 8 Observation of the electro-radiant effect according to the diagram in Fig. 6 with a different configuration of the capacitor electrodes.

This experiment also confirmed the presence of the electroradiant effect, not depending on the configuration of the capacitor plates. In this case, the inductance winding was made in the form of two parts, which were connected both in series and in parallel, which did not affect the presence of the effect .

However, in addition to circuits without the use of grounding, it is possible to represent the electro-radiant effect using grounding based on Fig. 4.

These diagrams may remind you of the various "users" of the electro-radiant effect, reminders of which will be presented nearby. These circuits are a development of variants of circuits without grounding.

THE SIMPLE DIAGRAMS USING GROUNDING

In general, grounded circuits take on the classic form of a receiver - transmitter.

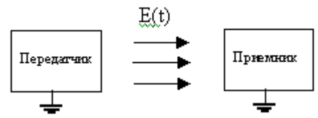

Fig.9 General view of circuits with grounding for the electro-radiant effect.

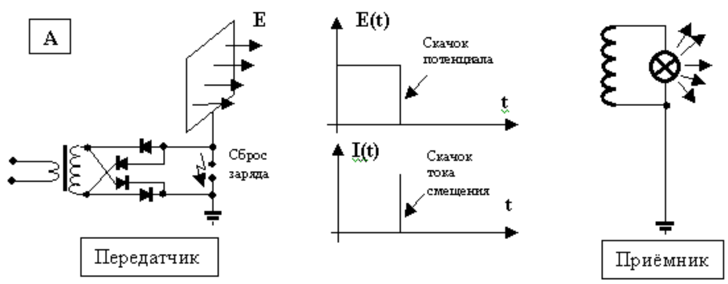

Fig. 10 Electro-radiant effect using grounding and one inductance.

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Fig. 11 Don Smith's diagram for using the electro-radiant effect.

Comparing the images in Fig. 10 and Fig. 11, we can conclude that Don Smith used option (A) in this experiment.

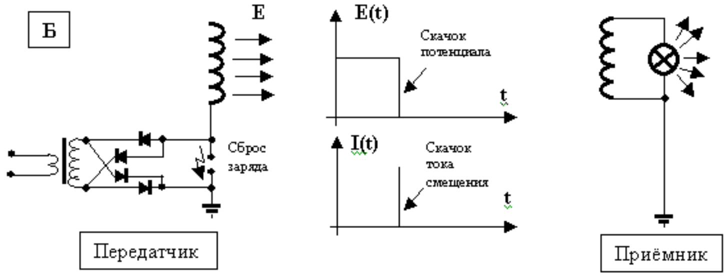


Fig. 12 Electro-radiant effect using grounding and two inductances.

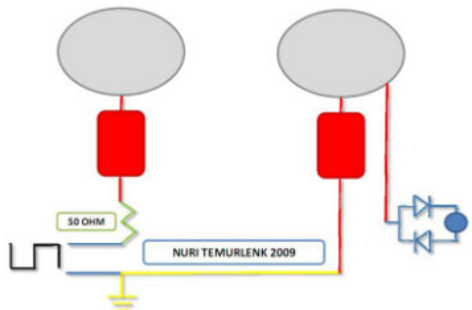


Fig. 13 Image from the TMZ website (Kapanadze et al.)

Comparing Fig. 12 and Fig. 13, it is difficult to get rid of the thought that it is the electro-radiant effect option (B) that is depicted on the TMZ company website . However, the load connection diagram is different.

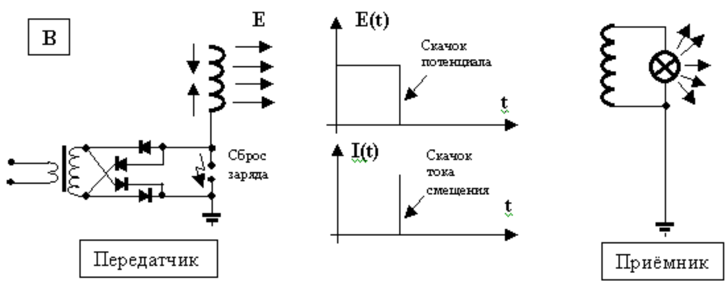


Fig. 14 Electro-radiant effect using grounding and two orthogonal inductances (which can be swapped).

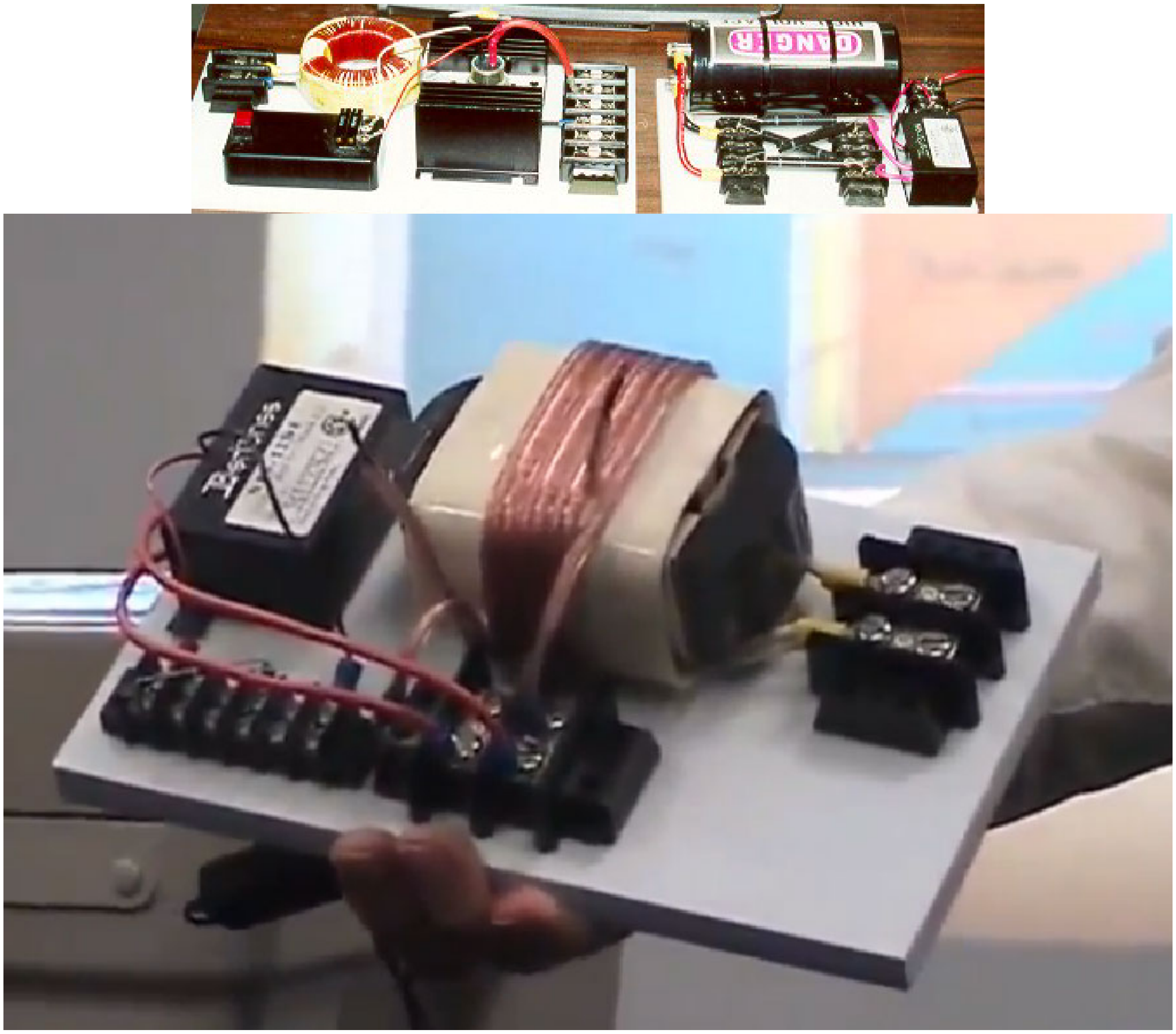


Fig. 15 Don Smith devices developed for various customers.

Comparing Fig. 14 and Fig. 15 you come to the conclusion that here Don used option (B), which in essence is not much different from option (A).

Figure 16 shows another Don Smith device, also based on the electroradiant effect according to option (B).

Fig. 16 Don Smith's device based on the electro-radiant effect.

Here Don Smith decided **to imitate** the appearance of a Tesla coil. To do this, the orthogonality of two coils located on the same axis is ensured using additional resistor and capacitor.

The size of the capacitor and resistor is chosen such as to obtain a given voltage distribution, leading to orthogonality of the two coils.

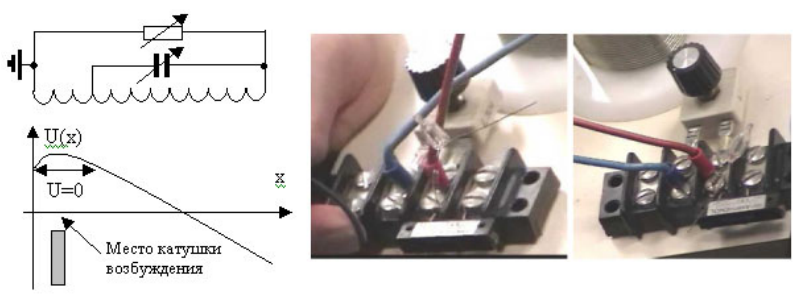


Fig. 17 The required voltage distribution on a long coil ensuring orthogonality with a short coil, and the means to achieve it.

The capacitor is connected to the tap at ½ length of the coil. Orthogonality is ensured at only one frequency.

An inductor (short coil) is connected to a high voltage source according to a circuit creating an electro-radiant effect

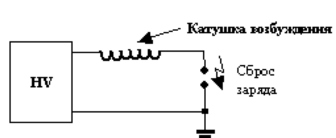


Fig. 18 Circuit diagram for connecting the excitation coil in Don Smith's device.

In addition to the options presented here, other options for creating and observing the electroradiant effect are possible. For example, one foil capacitor plate can be placed under the outer winding of a toroidal inductor.

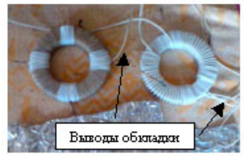


Fig. 19 Placement of one capacitor plate in the form of foil under the external windings on a toroidal core (not visible from the outside).

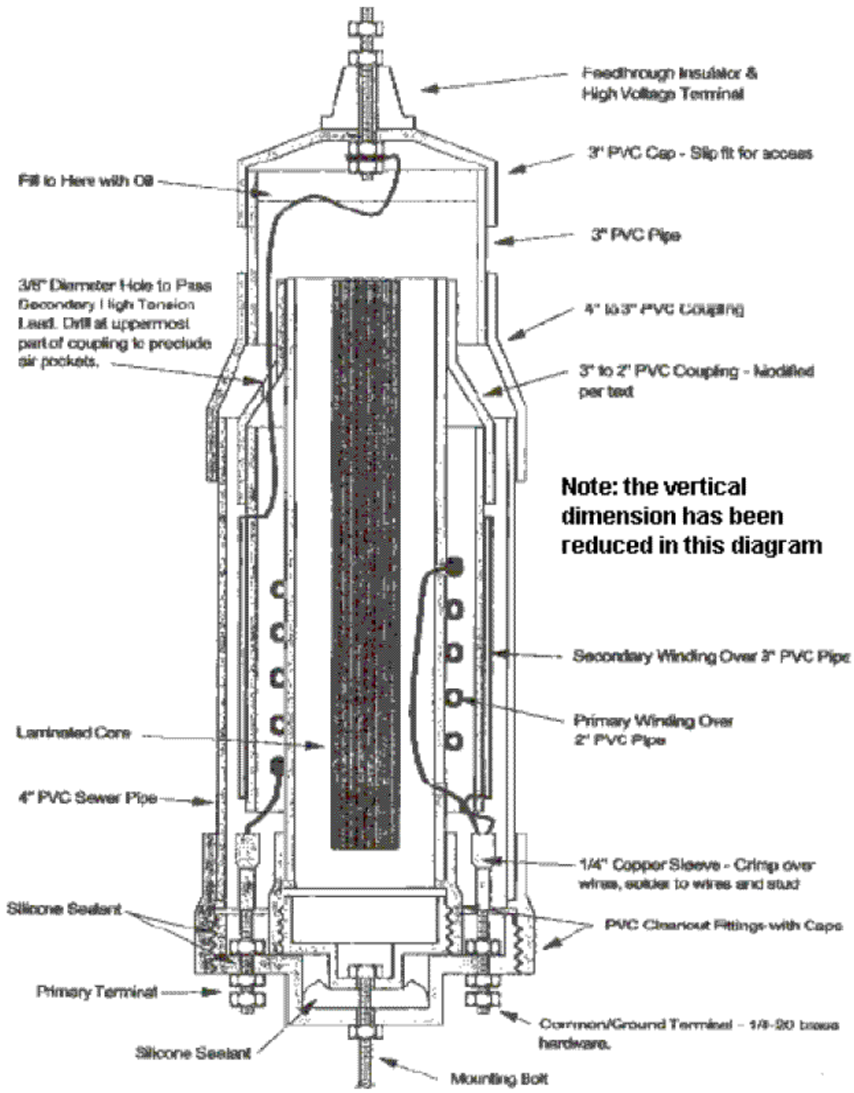
The foil should not form a short circuit and should be well insulated to avoid electrical breakdown.

When conducting experiments with circuits using grounding, an electromagnetic field is formed in the surrounding space, the configuration of which can be interesting to study using sensors.

0x08 graphic
Fig.20 Electromagnetic radiation sensor (A) and electro-radiant effect sensor (B).

When using sensors, nuances may arise.
If the LED glows dimly in the effect pickup, grab the other end of the coil with your hand, being mindful of the polarity of the effect.
If the LED glows weakly in the radiation sensor, turn it the other way (for a field that has asymmetrical half-waves, like a blocking generator).

When connecting the load, nuances also arise.
For example, when connecting a load, you can use an additional winding (for matching), which must be covered from the external electric field by a grounded winding that responds to potential surges in this field. The additional winding does not need to be grounded, however, Don Smith did.



Impulse Transformer Assembly

Fig. 21 Don Smith coil, suitable for a radiant effect transmitter or receiver (low voltage coil covered by high voltage coil).

However, grounded circuits were not developed by the authors on their own, but with the aim of amplifying energy, which may seem a somewhat “strange” formulation of the question from the point of view of classical physics.

To amplify the energy, a resonant mode is proposed.

RESONANCE MODE

The resonant mode is the most interesting in the electroradiant effect. Resonance here means the supply of a spark (discharge of a capacitor creating an electro-radiant effect) with the resonance frequency of at least one coil.

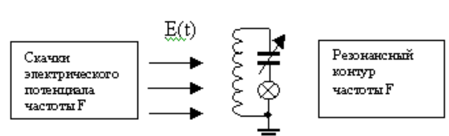


Fig.22 Electro-radiant receiver in resonant mode.

The resonant mode provides energy amplification **(not to be confused with accumulation)** .

The appearance of additional energy in the resonant mode can be explained as the addition of charge Q to the resonant LC circuit, regardless of the voltage at its ends.

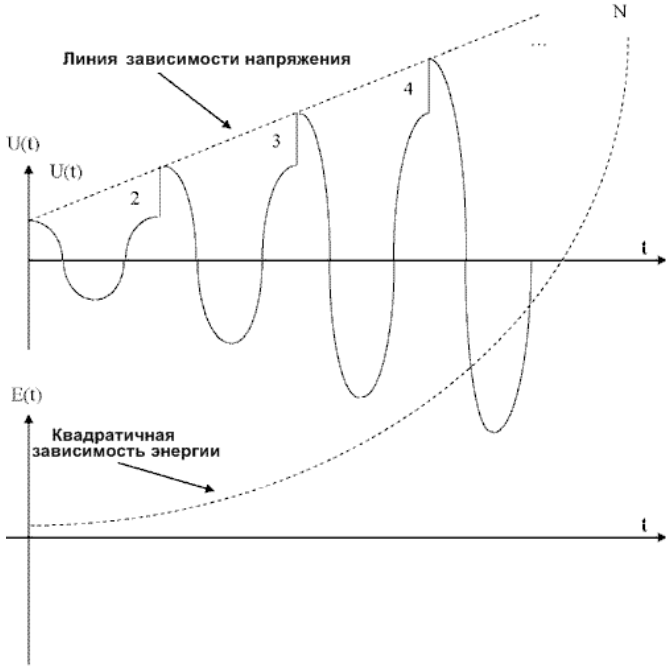


Fig. 23 Explanation of the principle of energy amplification in the resonant mode of the electro-radiant effect.

If Q represents the charge delivered to the resonant circuit capacitor by a single spark, then the voltage across it will be U = Q / C .
After N sparks, the voltage Un on capacitor C will be N times greater than Un = NQ/C.
The energy on the capacitor is proportional to the square of the voltage.
Consequently, after N sparks, the energy En will be increased by N^2 times in comparison with the energy provided by one charge.
In other words, if the LC circuit is excited by charges, energy amplification can be obtained.

To create a resonant mode, it is important to create conditions for discharging the capacitor at the required frequency.
However, the schemes for creating such conditions are quite simple.

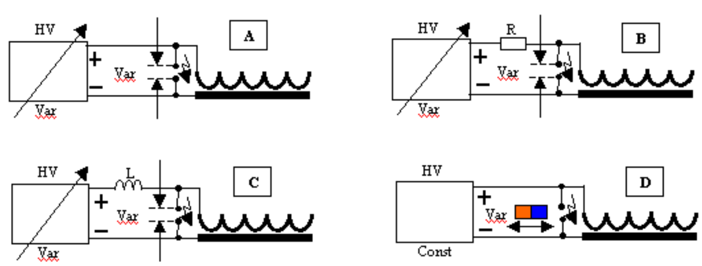


Fig. 24 The simplest circuits with adjustable spark frequency (capacitor discharge frequency).

The higher the voltage of the high-voltage source and the smaller the spark gap, the higher the frequency of the spark discharge (the capacitor is discharged more often).
As the simplest high-voltage source, you can use high-frequency voltage converters for neon cold cathode lamps, equipped with a voltage regulator (dimmer). A rectifier is connected to the output of the converter to charge the capacitor, which creates an electroradiant effect. The dimmer controls the voltage and, as a result, the spark frequency.
In the absence of a dimmer, the voltage can be adjusted by changing the supply voltage through the LATR, or use power supplies with adjustable voltage.

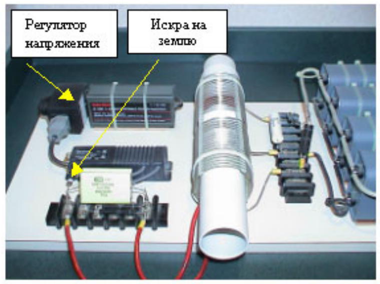


Fig. 25 Adjusting the spark frequency according to the voltage-frequency principle using a dimmer according to Don Smith,

A half-wave or full-wave rectifier is connected to the output to charge the capacitor. If the capacitor size is small (there is a relatively small capacitance between the windings), then the spark will jump at twice the frequency of the voltage converter.

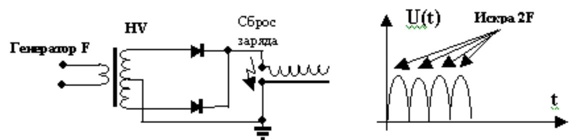


Fig. 26 The simplest scheme for generating the frequency of a capacitor discharge that creates an electro-radiant effect (similar to Don Smith).

However, Nikola Tesla used a different approach based on interrupting the spark by a magnetic field, shown in Fig. 24(D). The closer the magnet is brought to the spark gap, the higher the spark frequency.

Now we can move on to consider the designs of various authors, ranging from Nikola Tesla to his modern followers, “using” the electro-radiant effect in a resonant mode.

Some of these authors openly admitted that they use this effect, some, on the contrary, considered it “the greatest secret” and in every possible way created fog.

You can start your consideration with Don Smith's circuit, presented in Fig. 27, since it is most similar to the original, which is a Tesla amplifying transformer in the resonant mode of the electro-radiant effect. Nikola Tesla received a patent for the invention more than a hundred years ago.

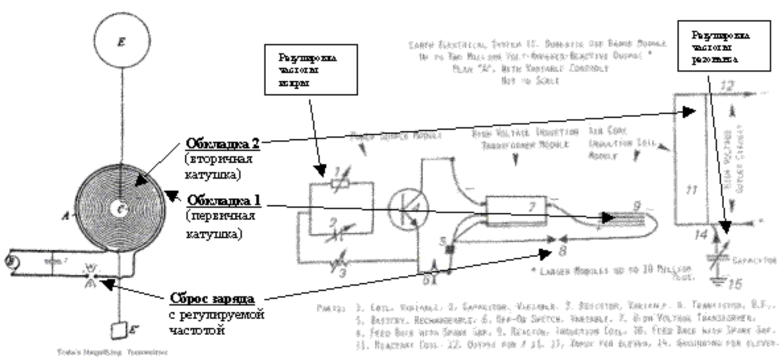


Fig. 27 Nikola Tesla's resonant circuit and Don Smith's circuit based on it.

Don Smith can be classified as one of the authors who took an intermediate position, saying something about their inventions and keeping something silent.

For Don Smith's circuit to work, the self-excited transistor oscillator must have sufficient power to drive the capacitive load that creates the electroradiant effect. Such a suitable oscillator is a blocking oscillator that produces asymmetrical oscillations, which is what Don Smith took advantage of.

A small primary coil is installed at the "hot" end of the secondary coil, as opposed to a classic Tesla transformer, creating an electro-radiant effect.

Another diagram by Don Smith is shown in Fig. 28. It contains a resistor (8). It sets the magnitude of the electro-radiant effect. The lower the resistor value, the better the secondary coil is connected to ground and the better the device operates. If the resistor has infinite resistance, the device does not work. That is, it produces zero output voltage.

Another Don Smith circuit with adjustment of the electro-radiant effect is shown in Fig. 29. The difference in the circuit in Fig. 28 is the method of creating a pair of orthogonal coils.

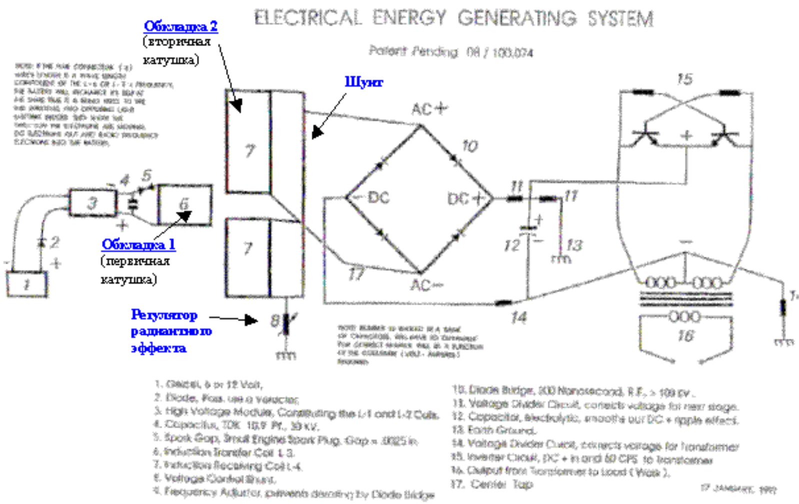


Fig. 28 Don Smith's resonant circuit with adjustment of the electro-radiant effect.

In Fig. 28, coil (7) is short-circuited, coils (6) and (7) form a pair of orthogonal coils, which allows us to consider this circuit close to option (B) of the radiant effect.

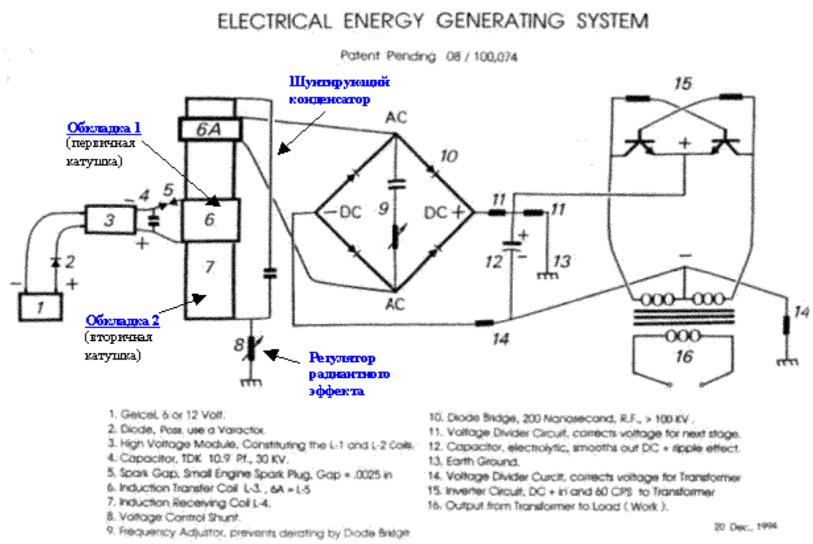


Fig. 29 Don Smith's resonant circuit with adjustment of the electro-radiant effect.

In Fig. 29, the size of the shunt capacitor is chosen such that coils (6) and (7) also form a pair of orthogonal coils, which allows us to consider this circuit close to option (B) of the radiant effect.

In Fig. 28 and Fig. 29, position (4) also attracts attention - this is a capacitor similar to the charging capacitor of a Tesla coil, but its value is very small (only 10 picofarads). This suggests that the system operates in a resonant mode with frequent discharge of the capacitor that forms the electro-radiant effect.

Now let's go a little deeper into history and remember the developments of Edwin Gray, who openly said that he uses the electro-radiant effect in a resonant mode. Here is his famous (simplified) diagram.

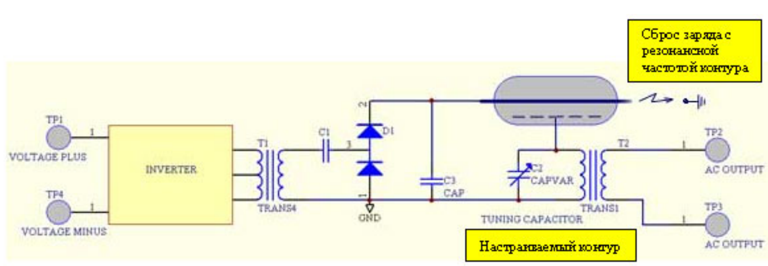


Fig. 30 Simplified diagram of Edwin Gray's device, using the electro-radiant effect in resonant mode.

Analyzing Fig. 30 it is not difficult to come to the conclusion that this is option (A) of the electro-radiant effect. Gray's patents state that the devices are designed to operate on an inductive load. Without inductance and resonant mode, the required result cannot be obtained. The circuits themselves are somewhat more complicated than the one shown here, but in all of them you can easily notice the use of the electroradiant effect.
The mechanical electric motor of Edwin Gray, shown in Fig. 31, should also be mentioned.

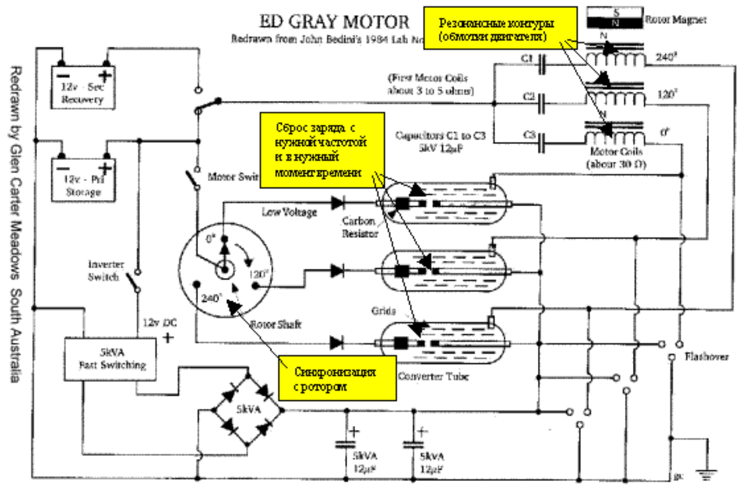


Fig.31 Mechanical engine of Edwin Gray, using the electro-radiant effect in resonant mode.

Here, the motor windings are used as inductance, to which capacitors are connected, creating a series resonant circuit. The charge is released at the frequency of the resonant circuit. The timing of the reset is set by a chopper mounted on the motor axis. The device can also be attributed to the electro-radiant effect according to option (A).
Continuing the historical excursion, let us mention the developments of some other authors, where spark excitation was used, which gives a chance to classify them as devices based on the electroradiant effect. However, it is not possible to do this unambiguously, since there is a lack of substantiated data.

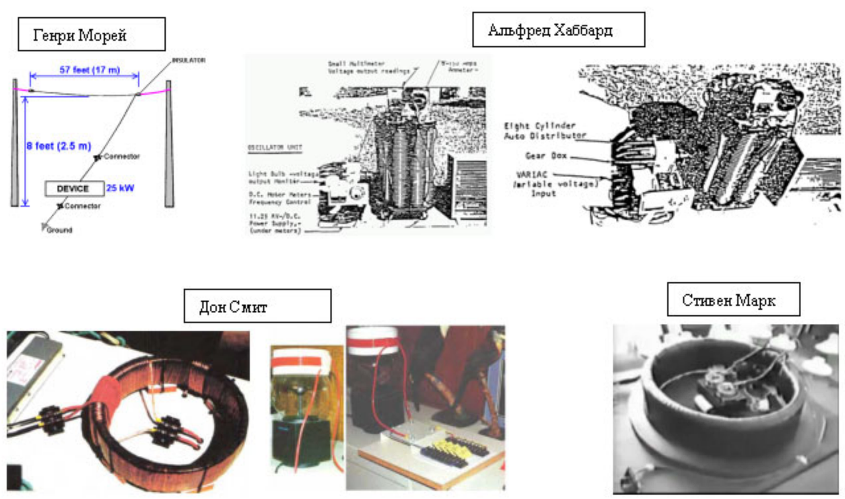


Fig. 32 Devices of various inventors, where the electro-radiant effect could presumably be used.

After that, let's go back to our days and take a look at Tariel Kapanadze's patent, shown in Fig. 33.

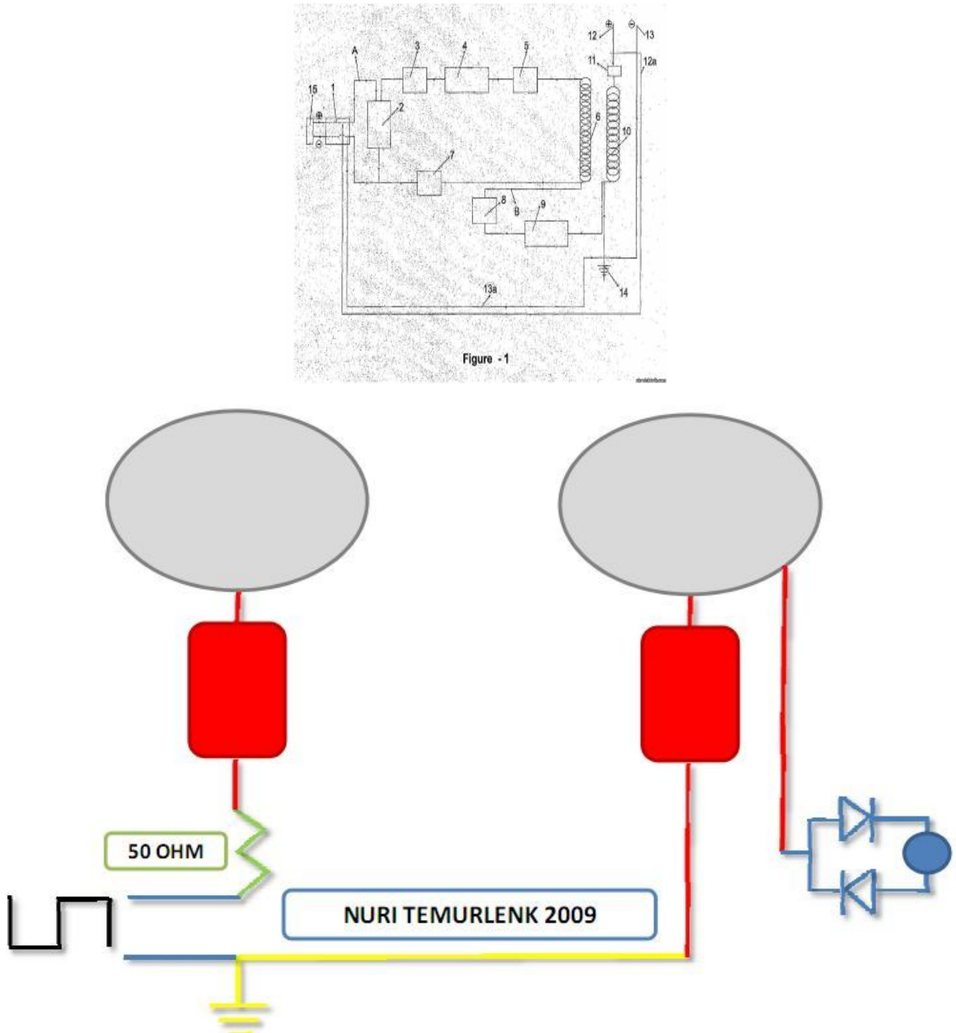


Fig.33 Tariel Kapanadze's patent and image from the TMZ company website .

It is almost impossible to see the electro-radiant effect here, if not for the “puncture” with the publication of the diagram on the TMZ company website .

Tariel Kapanadze is one of the inventors who carefully hide the details of the use of the electroradiant effect in the resonant mode. However, his statements, as well as the appearance of the devices he developed (resonance tuning elements, types of wires used, metal plates) allow us to conclude that this is exactly the case.

CONCLUSION

Discovered by Nikola Tesla more than a hundred years ago, the electroradiant effect has been used by many inventors to create devices that contradict the views of 20th century physics. Over the past hundred years, the effect has been “used” several times and it has become an “open secret”, having been noted in various patents.

At the same time, the effect itself can be detected very simply by bringing a grounded inductance to any metal surface on which the potential “jumps” (for example, using a spark).

The resonant mode itself is not a source of energy in the effect, but only allows you to break the symmetry of the interaction between the output and the input, by adding identical charges to the resonant circuit, regardless of the voltage on it.

The well-known principle in physics “The force of action is equal to the reaction” is purely experimental, derived on the basis of physical experiments. The fact that it can be violated and create an asymmetric interaction is not written anywhere in physics. In other words, it never occurred to anyone to put such “blasphemy” into practice except Nikola Tesla.

CONCLUSIONS

1. The law of conservation of energy is a consequence (not the cause) of symmetric interaction. 2. The simplest way to destroy symmetrical interactions is to use electromagnetic field feedback. 3. All asymmetric systems are outside the region specified in the law of conservation of energy. 4. The law of conservation of energy cannot be violated. The scope of applicability of the law is only for symmetric interactions.

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