

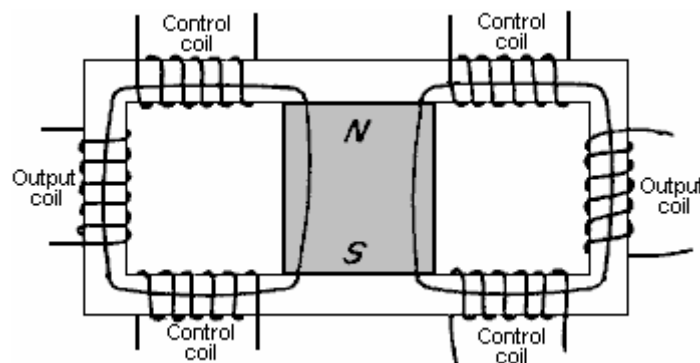
### Chapter 3: Motionless Pulsed Systems

The pulsed devices mentioned so far have had moving parts but rotating or fluctuating magnetic fields can be created without moving parts. An example of this is Graham Gunderson's solid-state electric generator shown in US Patent Application 2006/0163971 A1 of 27th July 2006 which is shown on page A-1038 of the appendix. Another example is:

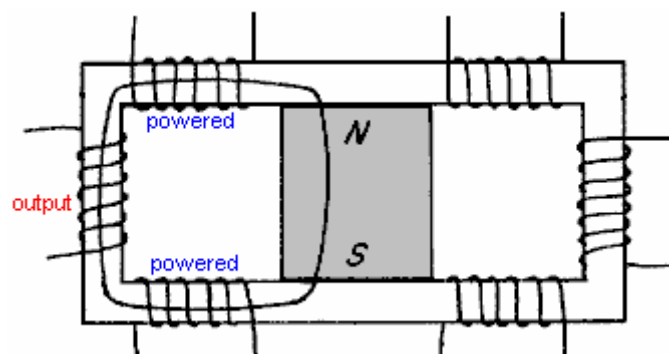
#### Charles Flynn's Magnetic Frame.

Another device of this type comes from Charles Flynn. The technique of applying magnetic variations to the magnetic flux produced by a permanent magnet is covered in detail in the patents of Charles Flynn which are included in the Appendix. In his patent he shows techniques for producing linear motion, reciprocal motion, circular motion and power conversion, and he gives a considerable amount of description and explanation on each, his main patent containing a hundred illustrations. Taking one application at random:

He states that a substantial enhancement of magnetic flux can be obtained from the use of an arrangement like this:



Here, a laminated soft iron frame has a powerful permanent magnet positioned in its centre and six coils are wound in the positions shown. The magnetic flux from the permanent magnet flows around both sides of the frame.

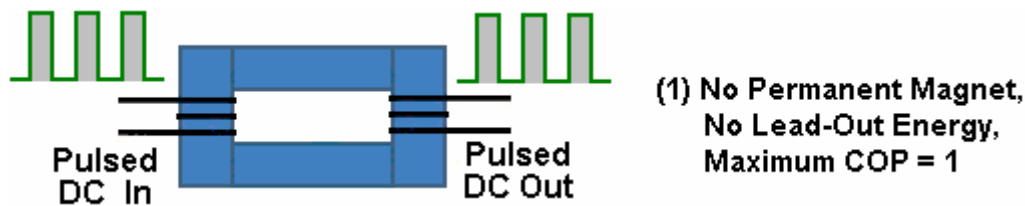


The full patent details of this system from Charles Flynn are in the Appendix, starting at page A - 338.

#### Lawrence Tseung's Magnetic Frame.

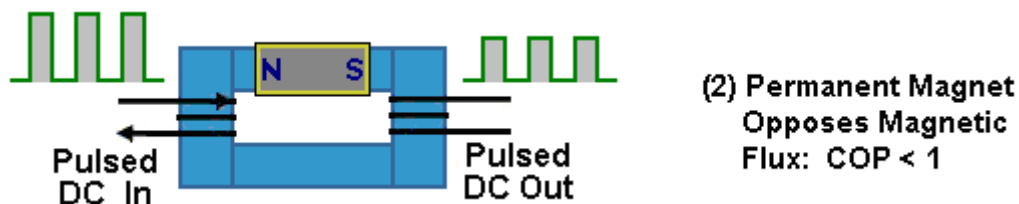
Lawrence Tseung has recently produced a subtle design using very similar principles. He takes a magnetic frame of similar style and inserts a permanent magnet in one of the arms of the frame. He then applies sharp DC pulses to a coils wound on one side of the frame and draws off energy from a coil wound on the other side of the frame.

He shows three separate operating modes for the devices as follows:

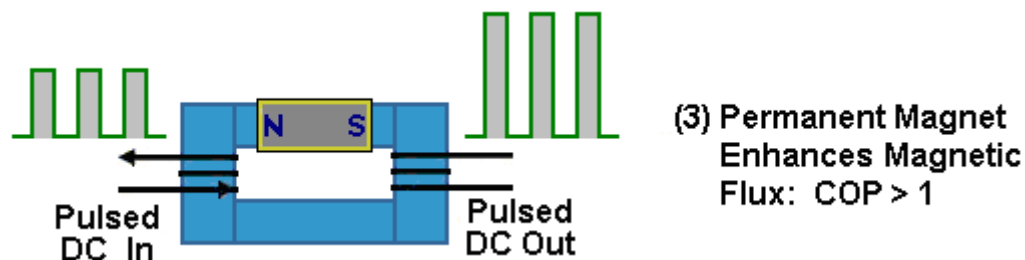


Lawrence comments on three possible arrangements. The first one shown above is the standard commercial transformer arrangement where there is a frame made from insulated iron shims in order to cut down the "eddy" currents which otherwise would circulate around inside the frame at right angles to the useful magnetic pulsing which links the two coils on the opposite sides of the frame. As is very widely known, this type of arrangement never has an output power greater than the input power.

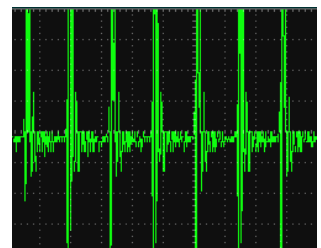
However, that arrangement can be varied in several different ways. Lawrence has chosen to remove a section of the frame and replace it with a permanent magnet as shown in the diagram below. This alters the situation very considerably as the permanent magnet causes a continuous circulation of magnetic flux around the frame before any alternating voltage is applied to the input coil. If the pulsing input power is applied in the wrong direction as shown here, where the input pulses generate magnetic flux which opposes the magnetic flux already flowing in the frame from the permanent magnet, then the output is actually **lower** than it would have been without the permanent magnet.



However, if the input coil is pulsed so that the current flowing in the coil produces a magnetic field which reinforces the magnetic field of the permanent magnet then it is possible for the output power to exceed the input power. The "Coefficient of Performance" or "COP" of the device is the amount of output power divided by the amount of input power which the user has to put in to make the device operate. In this instance the COP value can be greater than one:



As it upsets some purists, perhaps it should be mentioned that while a square wave input signal is applied to the input of each of the above illustrations, the output will not be a square wave although it is shown that way for clarity. Instead, the input and output coils convert the square wave to a low-quality sine wave which only becomes a pure sine wave when the pulse frequency exactly matches the resonant frequency of the output winding. The oscilloscope display shown here is a typical output power waveform which has nearly 390,000 of these pulses per second.



There is a limit to this as the amount of magnetic flux which any particular frame can carry is determined by the material from which it is made. Iron is the most common material for frames of this type and it has a very definite saturation point. If the permanent magnet is so strong that it causes saturation of the frame material before the input pulsing is applied, then there can't be any effect at all from positive DC pulsing as shown. This is just common sense but it makes it clear that the magnet chosen must not be too strong for the size of the frame, and why that should be.

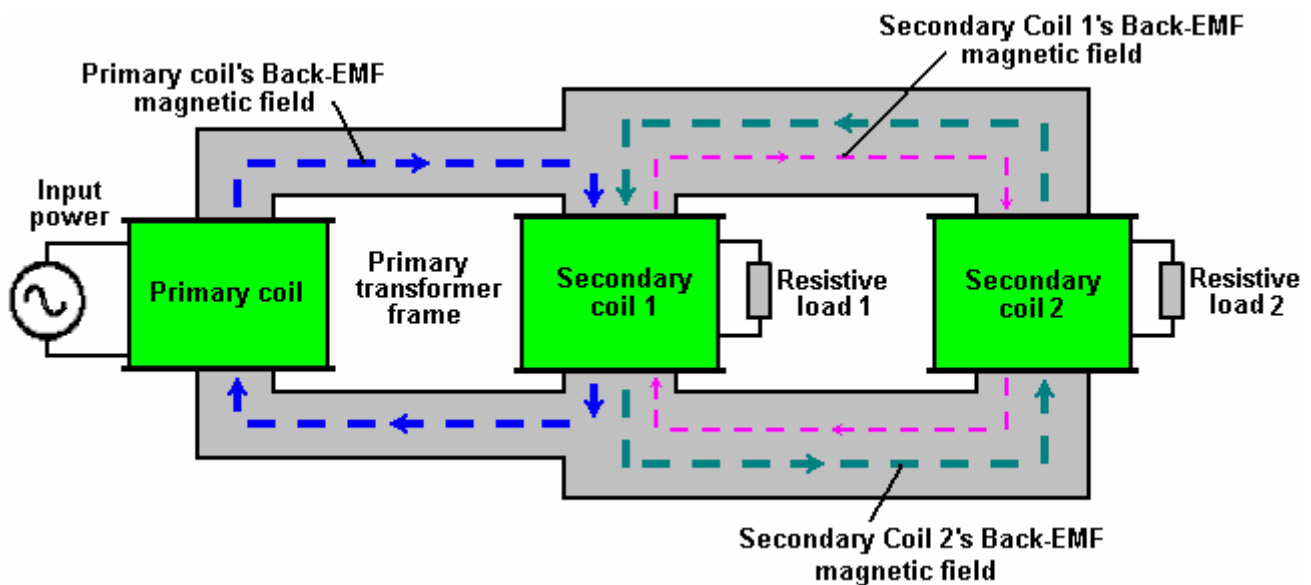
As an example of this, one of the people replicating Lawrence's design found that he did not get any power gain at all and so he asked Lawrence for advice. Lawrence advised him to omit the magnet and see what happened. He did this and immediately got the standard output, showing that both his input arrangement and his output

measuring system both worked perfectly well. It then dawned on him that the stack of three magnets which he was using in the frame were just too strong, so he reduced the stack to just two magnets and immediately got a performance of COP = 1.5 (50% more power output than the input power).

### The Transformers of Thane Heins.

Thane has developed, tested and patented a transformer arrangement where the output power of his prototype is thirty times greater than the input power. He achieves this by using a figure-of-eight double toroid transformer core. His Canadian patent CA2594905 is titled "Bi-Toroid Transformer" and dated 18th January 2009. The abstract says: The invention provides a means of increasing transformer efficiency above 100%. The transformer consists of a single primary coil and two secondary coils. The two secondary coils are set on a secondary toroidal core which is designed to be maintained at a lower magnetic resistance than the primary toroidal core throughout the entire operating range of the transformer. Thus, when the transformer secondary delivers current to a load, the resulting Back-EMF is not allowed to flow back to the primary due to the higher magnetic resistance of that flux path, instead, the secondary coil's Back-EMF follows the path of least magnetic resistance into the adjacent secondary coil.

You will notice that in the following diagram, the secondary transformer frame on the right is much larger than the primary transformer frame on the left. This larger size produces a lower magnetic resistance or "reluctance" as it is known technically. This seems like a minor point but in fact it is not, as you will see from the test results.



In a conventional transformer, the power flowing in the primary winding induces power in the secondary winding. When the power in the secondary winding is drawn off to do useful work, a Back-EMF magnetic flux results and that opposes the original magnetic flux, requiring additional input power to sustain the operation.

In this transformer, that opposing magnetic flow is diverted through a larger magnetic frame which has a much lower resistance to magnetic flow and which, as a result, bleeds off the problem flux, sending it through secondary coil 2 in the diagram above. This pretty much isolates the input power from any opposition, resulting in a massive improvement in the operation efficiency.

In the patent document, Thane quotes a prototype test which had a primary coil winding with 2.5 ohms resistance, carrying 0.29 watts of power. The secondary coil 1 had a winding with 2.9 ohms resistance, receiving 0.18 watts of power. The Resistive load 1 was 180 ohms, receiving 11.25 watts of power. The secondary coil 2 had a winding with 2.5 ohms resistance, and received 0.06 watts of power. Resistive load 2 was 1 ohm, receiving 0.02 watts of power. Overall, the input power was 0.29 watts and the output power 11.51 watts, which is a COP of 39.6 and while the document does not mention it directly, the primary coil should be driven at its resonant frequency.

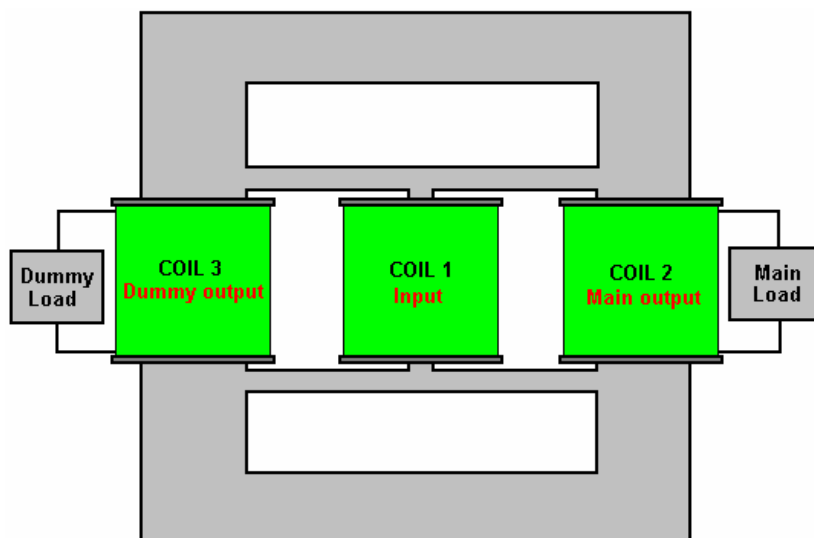
A variation of this arrangement is to attach an outer toroid to the existing bi-toroid arrangement, like this:



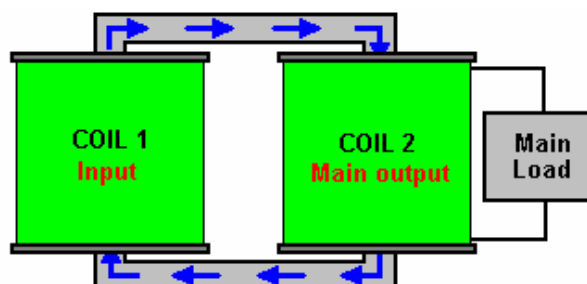
This prototype, as you can see, is fairly simple construction, and yet, given an input power of 106.9 milliwatts, it produces an output power of 403.3 milliwatts, which is 3.77 times greater.

This is something which needs to be considered carefully. Conventional science say that "there is no such thing as a free meal" and with any transformer, you will get less electrical power out of it than you put into it. Well, this simple looking construction demonstrates that this is not the case, which shows that some of the dogmatic statements made by present day scientists are completely wrong.

This version of Thane's transformer is made like this:

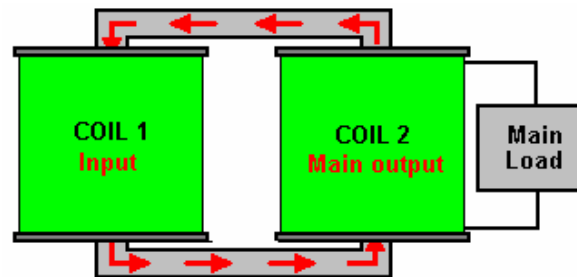


The way that off-the-shelf transformers work at the moment is like this:



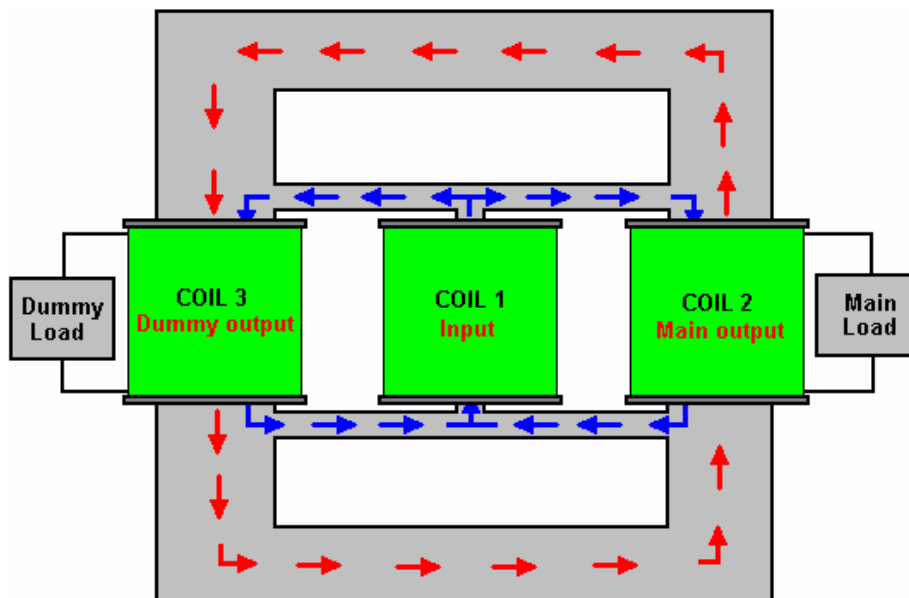
When a pulse of input power is delivered to Coil 1 (called the "Primary winding"), it creates a magnetic wave which passes around the frame or "yoke" of the transformer, passing through Coil 2 (called the "Secondary winding") and back to Coil 1 again as shown by the blue arrows. This magnetic pulse generates an electrical output in Coil 2, which flows through the electrical load (lighting, heating, charging, video, or whatever) providing it with the power which it needs to operate.

This is all well and good but the catch is that the pulse in Coil 2 also generates a magnetic pulse, and unfortunately, it runs in the opposite direction, opposing the operation of Coil 1 and causing it to have to boost it's input power in order to overcome this backward magnetic flow:



This is what makes current scientific "experts" say that the electrical efficiency of a transformer will always be less than 100%.

Thane has overcome that limitation by the simple and elegant technique of diverting that backward pulse of magnetism and channelling it through an additional magnetic path of lower resistance to magnetic flow through it. The path is arranged so that Coil 1 has no option but to send it's power through the frame as before, but the return pulse takes a much easier path which does not lead back to Coil 1 at all. This boosts the performance way past the 100% mark, and 2,300% has been achieved quite readily (COP=23). The additional path is like this:



Not shown in this diagram are the reverse pulses from Coil 3. These follow the easier outside path, opposing the unwanted back pulse from coil 2. The overall effect is that from Coil 1's point of view, the tiresome back pulses from Coil 2 have suddenly disappeared, leaving Coil 1 to get on with the job of providing power without any hindrance.

This simple and elegant modification of the humble transformer, converts it into a free-energy device which boosts the power used to drive it and outputs much greater power. Congratulations are due to Thane for this technique.

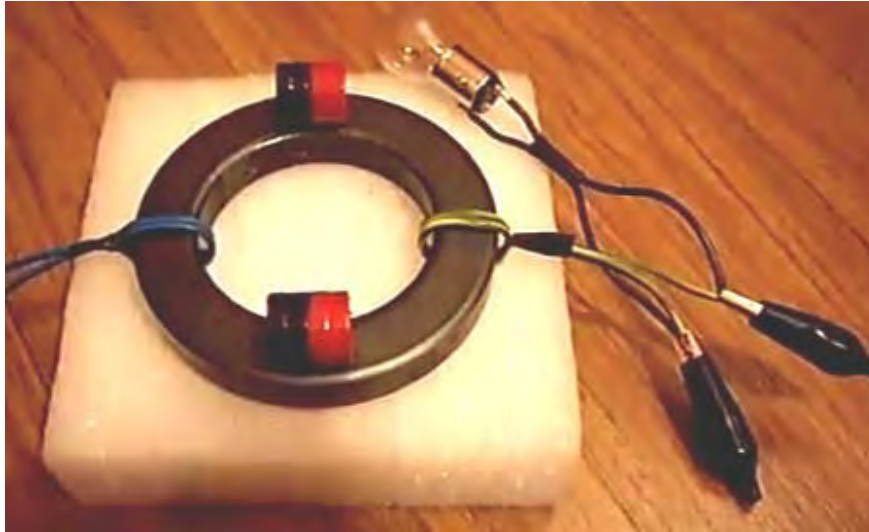
At the present time there are videos showing how this transformer works:

<http://www.youtube.com/watch?v=5KfwiXJ8apk> and

<http://www.youtube.com/watch?v=GcAYhMOLX9A&playnext=1&feature=sub&list=TLJjwILxS9jQ>.

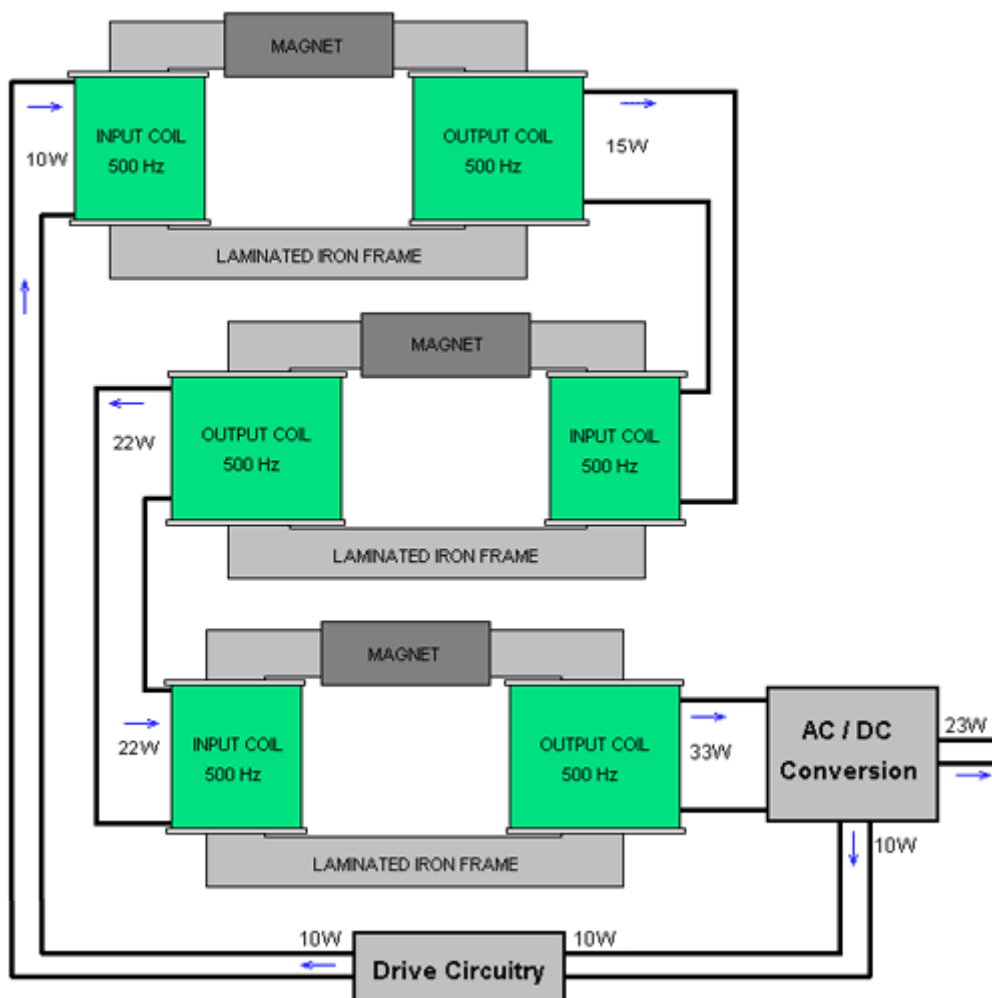
## Combining Magnetic Frames

This is just a suggestion and has not been built and tested. First, watch the very interesting video at: [http://www.youtube.com/watch?v=sTb5q9o8F8c&list=UUaKHAdY13gp-un2hn\\_HJehg&index=1&feature=plcp](http://www.youtube.com/watch?v=sTb5q9o8F8c&list=UUaKHAdY13gp-un2hn_HJehg&index=1&feature=plcp) where it appears that a ferrite toroid with small magnets on it is one way to reproduce Lawrence Tseung's magnetic frame:



While this would be a very easy video to fake, considering the Tseung frame performance, I am inclined to accept this one at face value. The Tseung Magnetic frame has been independently replicated at COP=1.5 which is, 50% more power output than the input power.

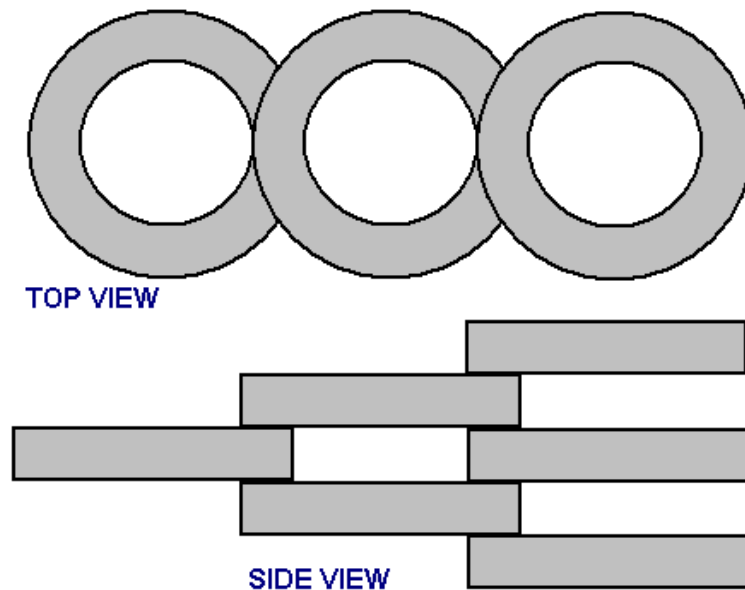
One obvious arrangement to test is cascade frames as shown here:



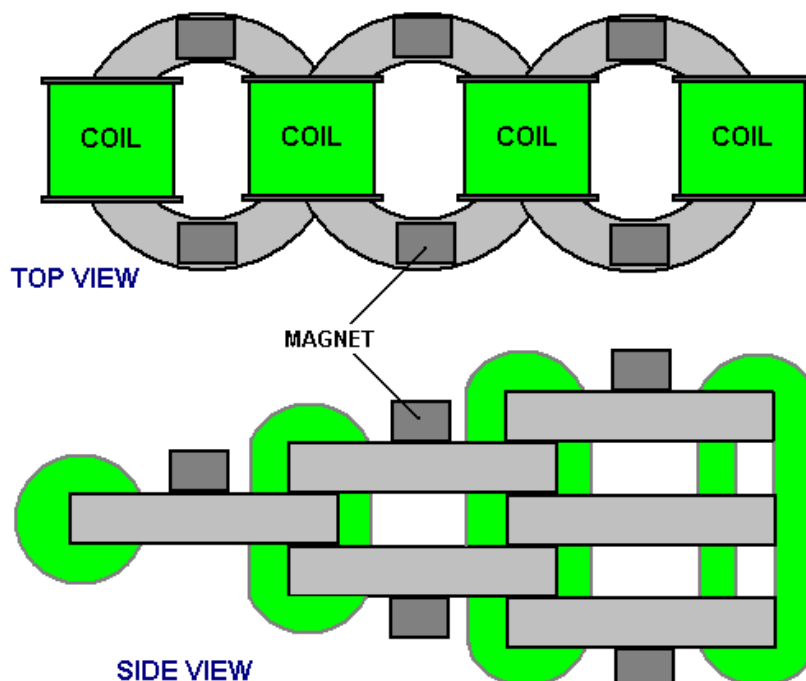
The limit here is the magnetic saturation of the laminated frames or “yokes”. While you can do all sorts of calculations to predict what power levels can be carried by any laminated iron frame, all that is really necessary is to look at an existing transformer and see what power rating is quoted for that particular frame cross-section size, and although the power levels shown in the diagram are very modest, it is likely that very much higher power levels could be used, giving a much higher excess output.

Laminated iron has very restricted operating frequency, typically, well below 1000 Hz, which is why the diagram above shows just 500 Hz as the suggested frequency. As efficiency improves at higher frequencies, using ferrite for the frame and a higher frequency should improve the performance.

One additional step would be to use Thane Heins' adaption for the frames as his performance gain is very much better with 300% being about the lowest noted in experiments. Combining these two ideas might produce an arrangement like this:

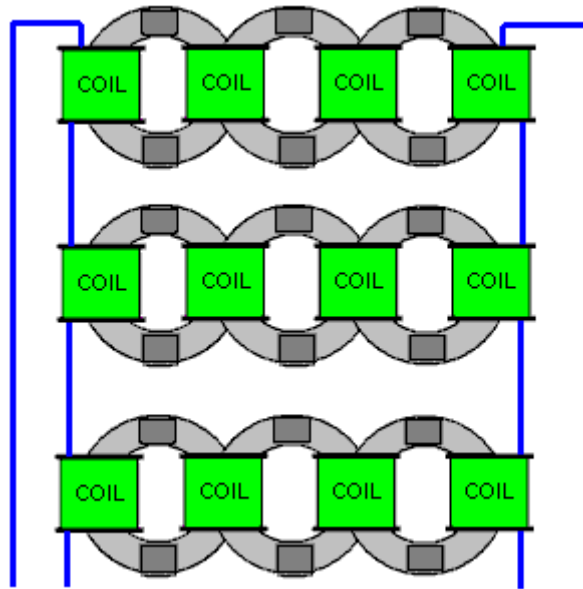


With this arrangement, the increased magnetic path on the right hand side of the first two toroids gives a dramatic improvement to their performance, even without the use of magnets on the toroids. A COP of nine or more should be perfectly possible, but only actual implementation and testing will show the real performance and testing far outweighs theory and ideas. Wound with coils, the arrangement would look like this:



The input would be pulsed with a 555 timer circuit or a signal generator. Power limit is the magnetic saturation

point of the toroids as you have to keep below magnetic saturation or else your pulsing will not have any effect. Avoid the resonant frequency of the ferrite toroids, but pulsing in the kilohertz range might give a very good results. There is, of course, no reason why you could not use more than one of those arrangements, combining the outputs after rectification and feeding into a capacitor:



This could be an interesting project. You will notice in the video that the brightest light is where the second magnet has not been turned around all the way to where the demonstrator finally positions it, so experimenting with different magnet angles might produce better effects. The magnets can be held in place with super glue when the best positions have been found.

While the brilliant dual-toroid technique of Thane Heins is very effective, it is not the only way of achieving spectacular performance from a transformer as can be seen here:

### **The High-power Motionless Generator of Clemente Figuera**

Clemente Figuera of the Canary Islands died in 1908. He was a highly respected individual, an Engineer and University Professor. He was awarded several patents and was known to Nikola Tesla. Figuera's design is very simple in outline. He has avoided the performance-killing Lenz Law magnetic feedback by splitting a transformer into three parts. Two parts form the primary winding and are shown on the left and on the right. The third part is the secondary winding which is located in the centre. Because of the splitting of the primary into two parts, Lenz's Law has been abolished for this design, allowing a spectacular performance where the current drawn from the secondary winding has no effect on the current flowing in the two halves of the primary winding. There is also, no back-EMF as current flows continuously in both halves of the primary winding. The very clever method used by Clemente makes the strength of the current in the two halves of the primary to oscillate with one side repeatedly having first much more current and then far less current than the other half. This generates alternating current in the secondary, current which can be drawn off and used for useful work, powering lights, heaters, motors, etc. The following information comes from a man who wishes to remain anonymous. On 30th October 2012, he made the following comments about his repair to a Figuera patent which was missing some of the content. He says:

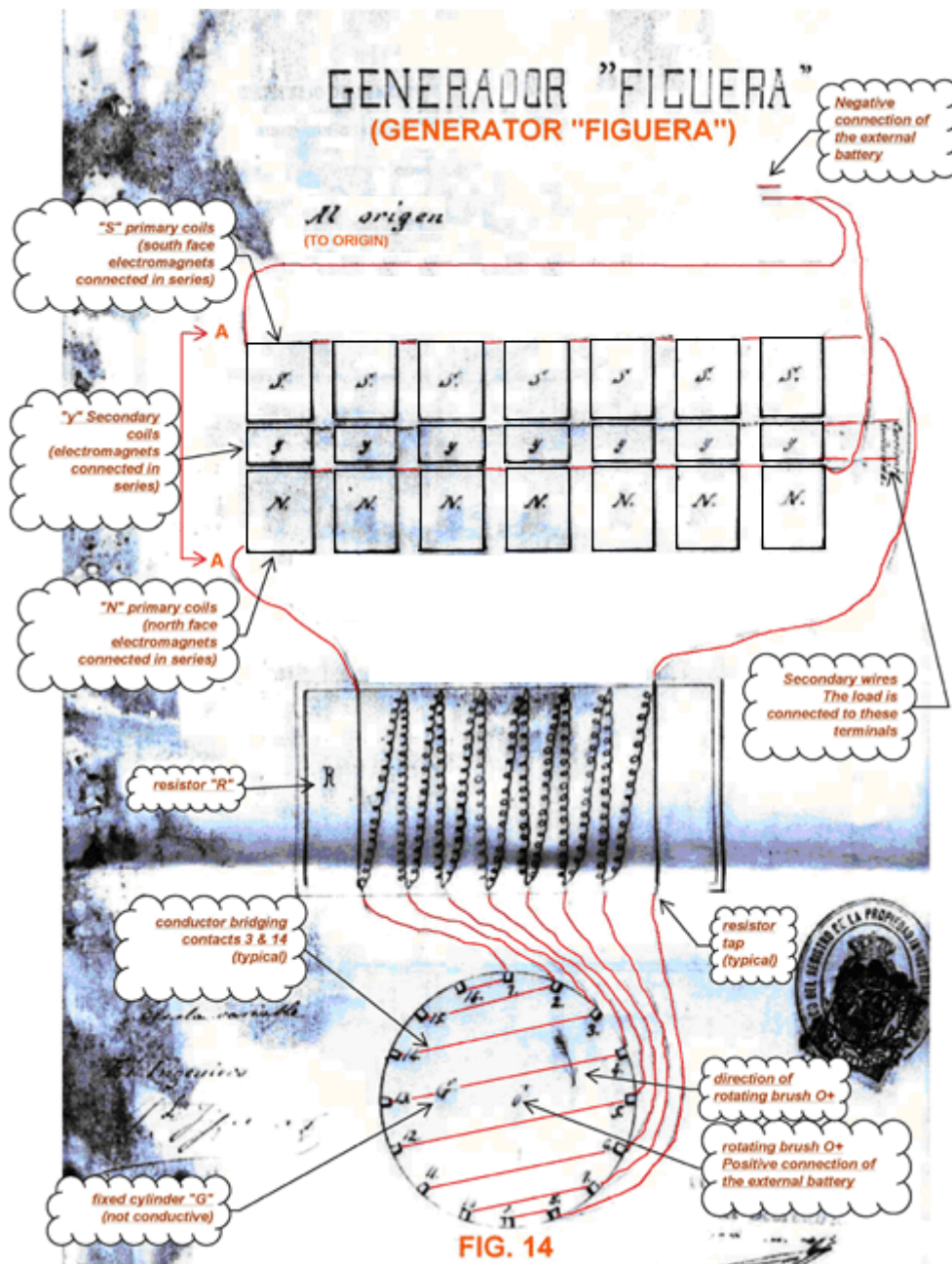
### **CLEMENTE FIGUERA AND HIS INFINITE ENERGY MACHINE**

I heard of Clemente Figuera for the first time from one of the Tesla articles. In 1902 the Daily Mail announced that Mr. Figueras (with an "s"), a Forestry Engineer in the Canary Islands, and for many years Professor of Physics at St. Augustine's College, Las Palmas, had invented a generator which required no fuel. The newspaper article says that "He claims to have invented a generator which can collect the electric fluid, to be able to store it and apply it to infinite purposes, for instance, in connection with shops, railways and manufacturers. He will not give the key to his invention, but declares that the only extraordinary point about it is that it has taken so long to discover a simple scientific fact. Señor Figueras has constructed a rough apparatus by which, in spite of it's small size and it's defects, he obtains 550 volts, which he utilises in his own house for lighting purposes and for driving a 20 horse-power motor. Señor Figueras is shortly coming to London, not with models or sketches, but with a working apparatus. His inventions comprise a generator, a motor, and a sort of

governor or regulator, and the whole apparatus is so simple that a child could work it." [Taken from "Perpetual Motion – A History of an Obsession"].

I was in one of the forums when someone mentioned Clemente Figuera and provided some links to documents referring to his work [1]. In one of the documents, I found what looks to be the only page showing sketches from one of his patents. After restoring the faint lines which show the wire connections, I was very surprised to see the similarities between the embodiment of Mr. Figuera's drawing and one of my own for over-unity transformers.

I was very eager to read any information about Mr Figuera's work and the operation of his 'Infinite Energy Machine'. It looks very suspicious that the pages describing the most important part of the machine have been 'lost'. I then decided to just figure this machine out for myself.



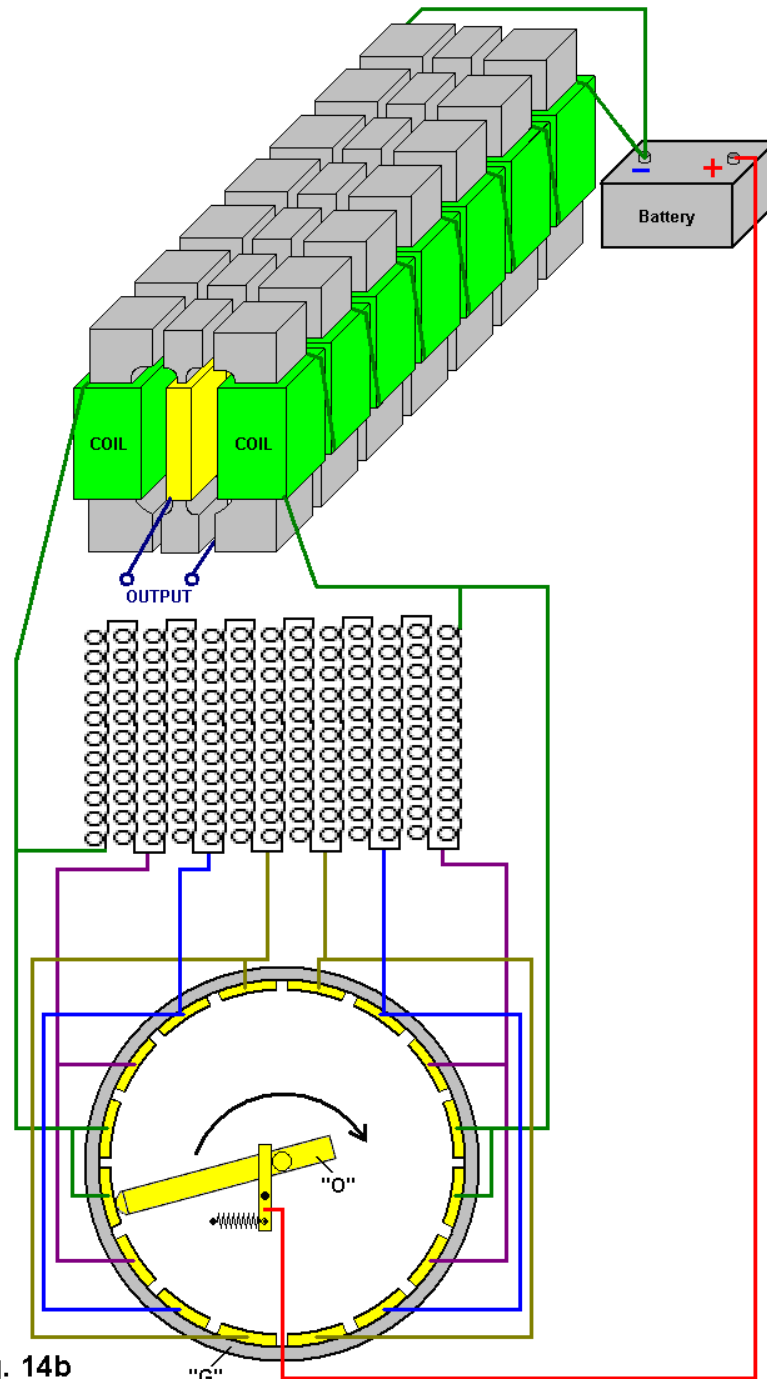


Fig. 14b

Please note that the rotating contact brush needs to be a "Make Before Break" type. That is, it needs to bridge across the gap between adjacent stator contact strips so that there is no sparking due to the current flow being interrupted.

According to Mr. Figuera, an over-unity transformer can be built without using permanent magnets, and based on a very simple concept. Figuera's generator consists of three rows of electromagnets, where each row is connected in series. The rows of "S" and "N" electromagnets function as the primary of the transformer, while the row of "y" electromagnets, located in the centre, functions as the secondary. The "S" and "N" stand for South and North poles, respectively. The apparatus includes a resistor "R" having multiple taps connected to a type of distributor formed by a cylinder "G" and brush "O". The brush "O" rotates inside the cylinder "G" changing the connection to the resistor taps. When the brush "O" rotates around the eight taps, it generates two stepped half-cycle sine waves which are 90° out of phase with each other. I suggest that Fig.15 is the wiring diagram as originally disclosed by Mr. Figuera in his patents. The most significant component of the system is the arrangement of the electromagnets shown in section A-A of figure 14. Keep in mind that each electromagnet shown in figure 15 corresponds to a row of seven electromagnets connected in series as shown in figure 14. In addition, I recommend that when building this apparatus, at least for the first implementation, that you try to replicate all of the details of the device shown in the patent. For example, figure 14 shows the top area of the "S" and "N" electromagnets being approximately equal to twice the top area of the "y" electromagnets.

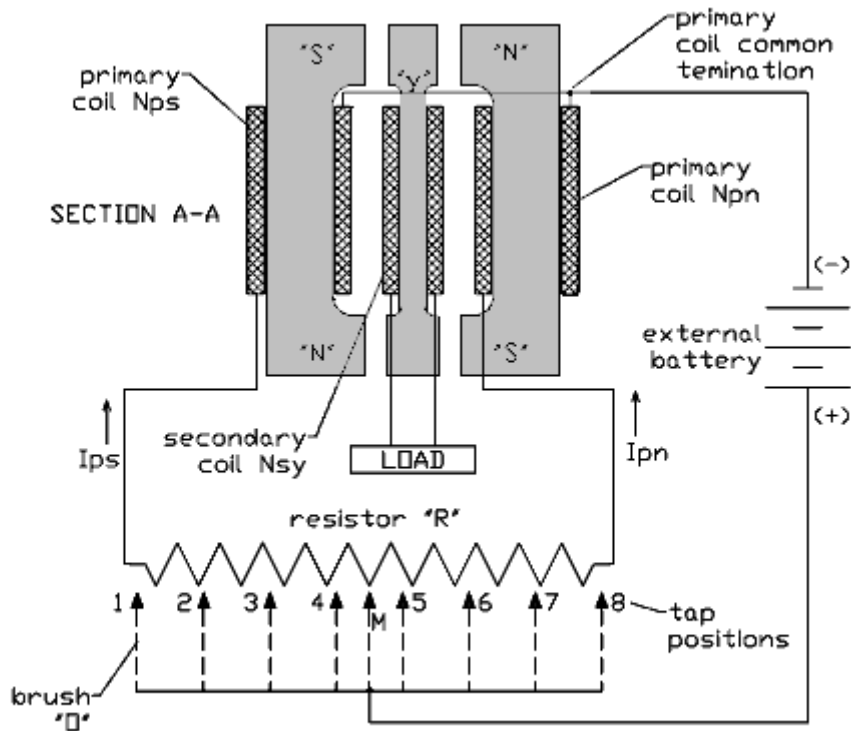


FIG. 15

SIDE VIEW

Even though Mr. Figuera used stepped sinusoidal currents  $I_{ps}$  and  $I_{pn}$ , I consider the resistor shown in Fig.15, to be a linear variable resistor having infinite 'taps' and the voltage and current generated to be pure half-cycle sine waves which are  $90^\circ$  out of phase. The coils of the "S" and "N" electromagnets are connected together and attached to the negative terminal of the battery. The other ends of both electromagnets are connected to both ends of the resistor "R". The sliding contact "O" is connected to the positive terminal of the battery and is rotated continuously making electrical connections repeatedly from left to right and then back from right to left across the multi-tap resistor "R". The position of the sliding contact "O", determines the magnitude of the DC currents  $I_{ps}$  and  $I_{pn}$  passing through the primary coils "S" and "N". For instance, when the brush is in position 1, the "S" coils receive the full voltage of the battery, producing the maximum current  $I_{ps}$  and maximum magnetic field  $B_{ps}$ , while at the same time, the current  $I_{pn}$  and magnetic field  $B_{pn}$  of the "N" coils are at their minimum values because they are now connected to the battery through the maximum value of the resistor "R". Figure 21 shows the voltage, current, and magnetic field waveforms flowing through these coils. The voltage induced in the secondary coils "y" is a sinusoidal alternating voltage. The secondary voltage should be zero when the magnitudes of the currents  $I_{ps}$  and  $I_{pn}$  are equal. At this point, the magnetic fields  $B_{ps}$  and  $B_{pn}$  induce two voltages of the same magnitude and opposite polarity.

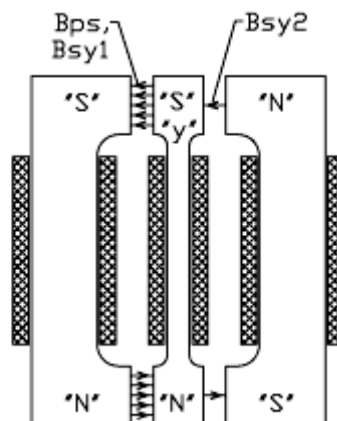


FIG. 16

POSITION 1

The magnetic interaction of the "S", "N", and "y" electromagnets is shown in Fig.16 to Fig.20. Figure 16 illustrates the situation when the brush "O" is at position 1. Here, the current  $I_{ps}$  and magnetic field  $B_{ps}$  are at their maximum, while the current  $I_{pn}$  and magnetic field  $B_{pn}$  are at their minimum values. When the secondary current  $I_{sy}$  starts flowing, the "y" coils generate a magnetic field  $B_{sy}$  which opposes the magnetic field  $B_{ps}$  in accordance with Lenz's law. As a consequence, a South pole is created at the top of the "y" electromagnet and a

North pole at the bottom. Because magnets of the same polarity repel and opposite polarities attract, it is likely that some of the induced magnetic field **Bsy2** is diverted through the iron core of the “N” electromagnet, which represents a lower reluctance path. And, if the induced magnetic field **Bsy** can be rerouted so as to avoid opposing the magnetic field **Bps** which generates it, then, it might be possible to have an over-unity transformer.

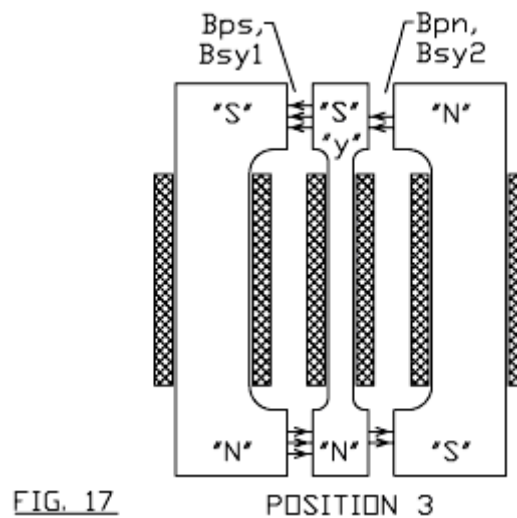


Fig.17 illustrates the situation when the sliding contact “O” is at position 3. The primary current **Ips** and the primary magnetic field **Bps** are decreasing in magnitude while the magnitude of the primary current **Ipn** and magnetic field **Bpn** are both increasing. The primary current **Ips** (and **Bps**) is still larger than primary current **Ipn** (and **Bpn**). As shown in the figure, part of the induced magnetic field **Bsy2** is still coupled to the “N” electromagnets.

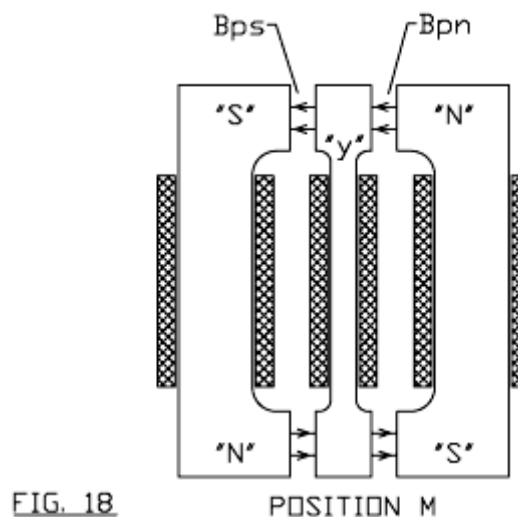


Fig.18 illustrates the scenario when the brush is at position M. This position is exactly at the centre of the resistor “R” and both currents **Ips** and **Ipn** are of equal magnitudes, and as a result, the magnetic fields **Bps** and **Bpn** are also equal. The net voltage **Vsy**, current **I<sub>sy</sub>**, and magnetic field **Bsy** induced in the secondary coils “y” are all zero.

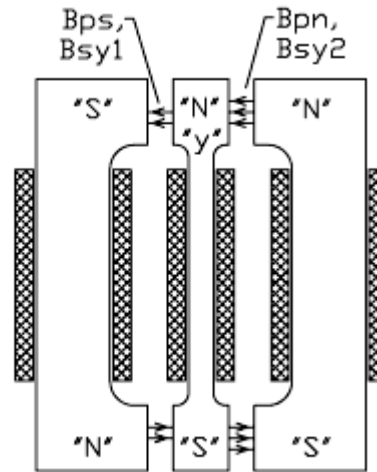


FIG. 19

POSITION 6

Figure 19 shows the situation when sliding contact "O" is at position 6. The primary current  $I_{ps}$  and the primary magnetic field  $B_{ps}$  are still decreasing in magnitude while the magnitude of the primary current  $I_{pn}$  and the magnetic field  $B_{pn}$  are increasing. The primary current  $I_{ps}$  (and  $B_{ps}$ ) is now of lower magnitude than primary current  $I_{pn}$  (and  $B_{pn}$ ). Because the magnetic field  $B_{pn}$  of the "N" electromagnets is stronger than the magnetic field  $B_{ps}$  of the "S" electromagnets, the polarity of the induced voltage  $V_{sy}$ , current  $I_{sy}$ , and magnetic field  $B_{sy}$  are reversed in accordance with Lenz's law. In this situation, the secondary electromagnets "y" present the north poles at the top and the south poles at the bottom making the "y" and "N" electromagnets to repel and the "y" and "S" to attract. Because of the now higher reluctance of the "N" electromagnets and lower reluctance of the "S" electromagnets, it is expected that part of the induced magnetic field  $B_{sy}$  will couple with the "S" electromagnets, and therefore, the effect of Lenz's law is minimised.

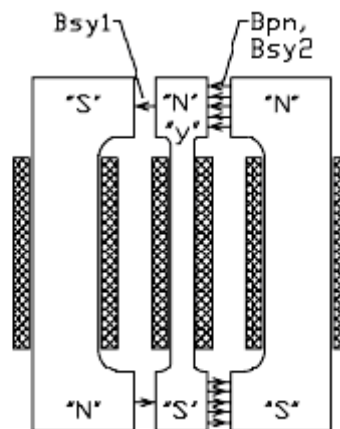


FIG. 20

POSITION 8

Fig.20 illustrates the situation when the brush "O" is at position 8. The primary current  $I_{pn}$  and the magnetic field  $B_{pn}$  are at their maximum values. The induced secondary voltage  $V_{sy}$ , current  $I_{sy}$ , and magnetic field  $B_{sy}$  are also maximum and of opposite polarities to those which they had at position 1. Again, part of the induced secondary magnetic field  $B_{sy}$  is attracted by the "S" electromagnet mitigating the effect of Lenz's law.

#### References:

- [1] <http://orbo.es/>  
[http://www.bibliotecapleyades.net/tesla/esp\\_tesla\\_27.htm](http://www.bibliotecapleyades.net/tesla/esp_tesla_27.htm)  
[http://www.alpoma.net/tecob/?page\\_id=8258](http://www.alpoma.net/tecob/?page_id=8258)

Our thanks are due to the anonymous contributor who produced the above information on the work of Clemente Figuera whom I had never heard of before. Recently, the forum member 'hanlon1492' of the overunity.com forum [http://www.overunity.com/12794/re-inventing-the-wheel-part1-clemente\\_figuera-the-infinite-energy-machine/#.UXu9gzcQHqU](http://www.overunity.com/12794/re-inventing-the-wheel-part1-clemente_figuera-the-infinite-energy-machine/#.UXu9gzcQHqU) has shared a translation of Figuer's complete 1908 patent, lodged just days before he died, and it is reproduced here with thanks to 'hanlon1492' for his work and for freely sharing the results:

## **PATENT by CLEMENTE FIGUERA (year 1908) No. 44267 (Spain)**

Ministry of Development General Board of Agriculture, Industry and Commerce. Patents of Invention. Expired. Dossier number 44267. Instruction at the request of D. Clemente Figuera. Representative Mr. Buforn. Presented in the register of the Ministry in the 31st October 1908, at 11:55 received in the negotiated in the 2nd November 1908.

### **ELECTRICAL GENERATOR “FIGUERA”**

#### **BACKGROUND**

If we rotate a closed circuit inside a spinning magnetic field, with the closed circuit positioned at right angles to the lines of magnetic force, a current will be induced in the closed circuit for as long as there is movement, and the sign of that induced current will depend on the direction in which the closed circuit moves.

This is the basis of all magnetic machines and electric dynamos from the original, invented by Pixii, in France and later modified and improved by Clarke to reach the design of the current dynamos of today.

The principle on which this theory is based, has the unavoidable need for the movement of either the induction circuit or the magnetic circuit, and so, these machines are considered to be a transformer of mechanical work into electricity.

#### **PRINCIPLE OF THE INVENTION**

Considering carefully what happens in a dynamo in motion, we see that the coil turns of the induction circuit approach and move away from the magnetic centres of the magnets or electromagnets, and those turns, while spinning, pass through sections of the magnetic field of different magnetic strengths, because, while the maximum magnetic strength is in the centre of the core of each electromagnet, this action weakens as the induction coil moves away from the centre of the electromagnet, only to increase again when it is approaching the centre of another electromagnet with opposite sign to the first one.

Because we all know that the effects seen when a closed circuit approaches and moves away from a magnetic centre are the same as when the circuit is motionless and the magnetic field increased and decreased in intensity, since any variation of the magnetic flow traversing a circuit produces an induced electrical current. Then, consideration was given to the possibility of building a machine which would work, based, not on the principle of movement as current dynamos do, but based on the principle of increasing and decreasing the strength of the magnetic field, or the strength of the electrical current which produces it.

The voltage from the total current of the current dynamos is the sum of all of the induced currents generated in every turn of the induction coils. Therefore it does not matter if these induced currents were generated by rotating the induction coils, or by varying the magnetic flux which passes through them. In the first case, a greater amount of mechanical work is required than the amount of electricity generated, while in the second case, the force needed to produce the variation of magnetic flux is so insignificant that it can easily be taken from the output generated by the machine.

Up to the present day, no machine based on this principle has been constructed for the production of large electrical currents, and which among other advantages, has overcome the necessity for motion and so, the energy needed to produce it.

In order to attain the production of large industrial electrical currents, using the principle that electrical current can be provided by just changing the flow of magnetic flux through an induction circuit, the above disclosure should be sufficient, however, as this operating principle needs to be embodied in a practical machine, there is a need to describe it in order to fully disclose how to carry out a practical application of this principle.

This principle is not new since it is just a consequence of the laws of induction stated by Faraday in the year 1831: what it is new and claimed in this patent, is the application of this principle to a machine which produces large industrial electrical currents and which, up to now, has only been obtained by transforming mechanical work into electricity.

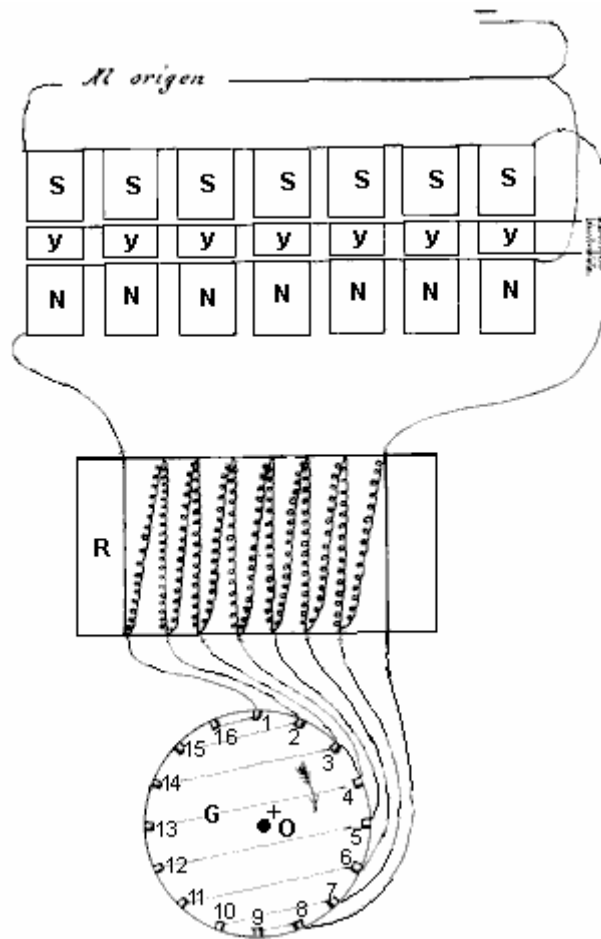
We will therefore, provide a description of a machine based on the above principle disclosed in this patent; but it must be understood, and what is sought is the patent for the application of this principle, that all machines built based on this principle, will be included in the scope of this patent, whatever the form and way that has been used to make the application.

## DESCRIPTION OF GENERATOR OF VARIABLE EXCITATION "FIGUERA"

The machine is comprised of a fixed inductor circuit, consisting of several electromagnets with soft iron cores enhancing induction in the induction circuit, which is also fixed in position and motionless, and which is composed of several coils, accurately positioned. As neither of the two circuits spin, there is no need to make them round, nor leave any space between one and the other.

Here what it is constantly changing is the intensity of the excitatory current which drives the electromagnets and this is accomplished using a resistance, through which circulates a operating current, which is taken from one power source and passed through one or more electromagnets, thus magnetising one or more electromagnets. When the current is higher, the magnetisation of the electromagnets is increased, and when it is lower, the magnetisation is decreased. Thus, varying the intensity of the current, varies the magnetic field which crosses through the induction circuit.

To assist in understanding this idea, it is convenient to refer to the attached drawing which is no more than a sketch intended to assist in understanding the operation of the machine built to implement the principle outlined above.



Suppose that electromagnets are represented by rectangles marked 'N' and 'S'. Located between their poles is an induction circuit represented by the line of small rectangles marked 'y'. A resistor 'R', drawn here in a simple form to help understanding of the entire system. Shown as '+' and '-', is the excitation power, drawn from an external source. As can be seen in the drawing, the different sections of this resistor connect with the commutator bars embedded in a stationary cylinder of insulating material. A sliding-contact brush 'O', which always connects with more than one contact, rotates, carrying the excitation current. One of the ends of the resistor is connected to the electromagnets N, and the other end of the resistor is connected to the electromagnets S. Half of the terminals of the resistor go to half of the commutator bars of the cylinder. The other half of these commutator bars are connected directly to the first set of commutator bars.

The operation of the machine is as follows: the brush O rotates inside cylinder G and is always in contact with two of the commutator bars. When the brush is touching contact 1 the current, flowing from the external source passes through the brush and powers electromagnets N to their maximum level of magnetisation, but the current passing through electromagnets S is insufficient to magnetise them because the whole of resistance R is too great to allow sufficient current to magnetise them. Therefore, the N electromagnets are fully powered while the S

electromagnets are not sufficiently powered to be magnetised.

When the brush connects with contact **2**, the whole of the current will not flow through electromagnets **N** because it has to pass through part of the resistor. Consequently, some current will pass through the electromagnets **S** because it has to overcome less resistance than in the previous case. This same reasoning applies to the case when brush **O** connects with each of the different contacts around the first semicircle. Then the brush **O** starts to connect with the commutator contacts in the other half, each of which are directly connected to their corresponding commutator contacts in the first half. In short, the resistor has the function of a current-splitter, powering either one set of electromagnets or the other set of electromagnets repeatedly. It can be seen that electromagnet sets **N** and **S** operate in a complementary manner, because while the first set is being progressively powered up, the other set is being progressively powered down. This sequence is repeated continuously causing an orderly a constant variation of the magnetic fields passing through the induction circuit. This action can be maintained by just the simple rotation of a brush or group of brushes which rotate in a circle inside cylinder **G** driven by a small electric motor.

As indicated by the drawing the current, once it has flowed through the electromagnets, returns to the power source where it originated. A small part of the output current from this device can be used to provide the 'external' excitation power mentioned above, thus making the machine self-exciting and to provide the current to operate the small motor which moves the brush causing the switching. Once started with an external power source, that external power source can be removed and the machine will continue to work indefinitely without any external power source.

This invention is really new, very daring, and above all, has huge technical and industrial consequences in all areas. This patent was not applied for until a working machine based on these principles had been built, thus proving the concept to be sound and practical.

### **ADVANTAGES OF THE ELECTRICAL GENERATOR "FIGUERA"**

1. The completely free production of DC or AC electric current of any voltage which can be used for:
  - a. Providing a driving force.
  - b. Production of light.
  - c. Production of heat.
  - d. All other existing uses of electricity.
2. There is no need whatsoever for a driving force of any kind or chemical reactions or fuel consumption.
3. Needs little or no lubrication.
4. Is so simple that it can be easily operated by anyone.
5. Does not produce smoke, noise, or vibration when operating.
6. Indefinite operational life.
7. Has a wide range of uses: home management and industrial.
8. Easy construction.
9. Cheap to produce and market

### **NOTE**

A 20-year patent is requested for a "NEW GENERATOR OF ELECTRICITY, so-called "FIGUERA" of variable excitation, designed to produce electrical currents for industrial applications without using either driving force, nor chemical reactions. The machine is essentially characterised by two series of electromagnets which form the inductor circuit, between whose poles induction coils are placed. Both the induction and inductor circuits remain motionless and yet are able to produce a current induced by the constant variation of the intensity of the magnetic field forcing the excitatory current (coming at first from any external source) to pass through a rotating brush which, in its rotation movement, connects with the commutator bars or contacts of a ring distributor or cylinder whose contacts are connected to a resistor whose value varies from a maximum to a minimum and vice versa, according with the commutator bars of the cylinder which operates, and for that reason the resistance is connected to the electromagnets **N** by one of its side, and the electromagnets **S** at the other side, in such a way that the excitatory current will be magnetising successively with more or less strength, the first electromagnets, while, simultaneously decreasing or increasing the magnetisation in the second set, determining these variations

in intensity of the magnetic field, the production of the current in the induced, current that we can use for any work for the most part, and of which only one small fraction is derived for the actuation of a small electrical motor which rotates the brush, and another fraction goes to the continuous excitation of the electromagnets, and, therefore, converting the machine to become self-exciting, being able to remove the external power which was used initially to excite the electromagnets. Once the machinery is in motion, no new force is required and the machine will continue in operation indefinitely.

All in accordance with the described and detailed in this report and as represented in the drawings which are attached.

Barcelona, the 30th of October, 1908. Signed: Constantino de Bufo.

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There are some practical points which have not been included so far and which need to be mentioned. The Figuera patent shows the electromagnets as just rectangles, and while C-shaped electromagnet cores have been indicated and discussed, there is a distinct possibility that the electromagnet cores are just I-shaped or even a short cylinder which is several times wide than it is tall. These more simple shapes could make it very much easier to construct, although the C-shaped core need only be three straight sections placed together.

While it is definitely possible to construct each of the cores of the electromagnets from a solid block of iron, doing that will certainly allow eddy currents to generate heat in the cores, wasting useful energy in the process. It would be advisable therefore, to use the standard manufacturing method of assembling each core from a number of thin iron pieces, each separated from it's neighbour by a thin layer of insulating material. These components are available from companies which manufacture transformers.

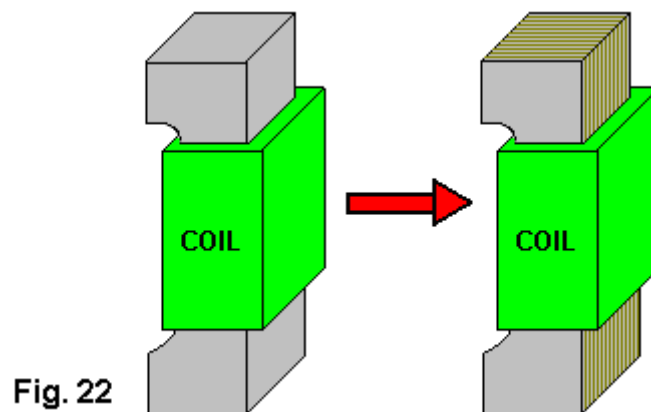


Fig. 22

I have to agree wholeheartedly with the anonymous contributor when he recommends that any attempted replications stay as close to the arrangement shown in the patent drawing, and have seven separate sets of three electromagnets. However, for subsequent experiments, a somewhat easier construction with just one set of electromagnets might be tried, making the electromagnets equal in length to the seven separate units:

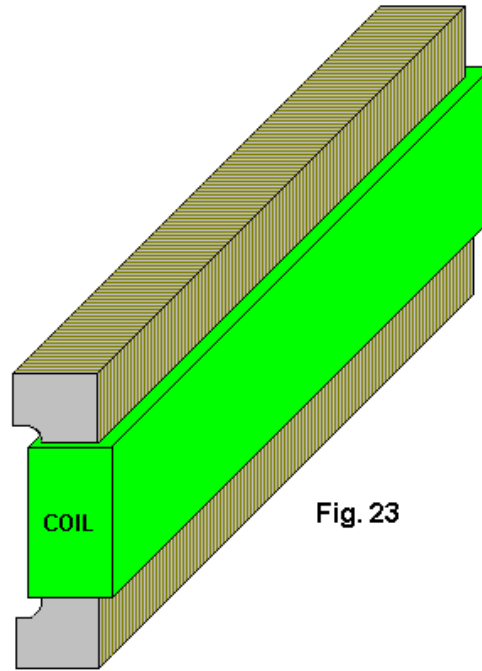


Fig. 23

This arrangement has advantages if the design is taken on into manufacturing as less construction is needed.

Figure 15 shows two electromagnets connected at the top to the battery Minus and at the bottom to the battery Plus. But, one is marked with a North pole at the top and the other with a South pole at the top, so perhaps some explanation would be helpful. If the coils are connected that way, then one will have to be wound in a clockwise ("CW") direction and the other in a counter-clockwise ("CCW") direction:

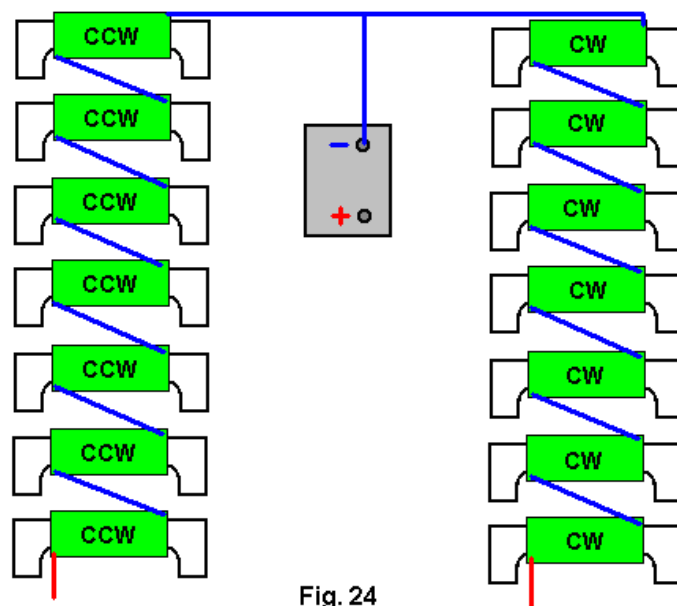


Fig. 24

Or the alternative is to have all of the electromagnets wound in the same way, and adjust the connections:

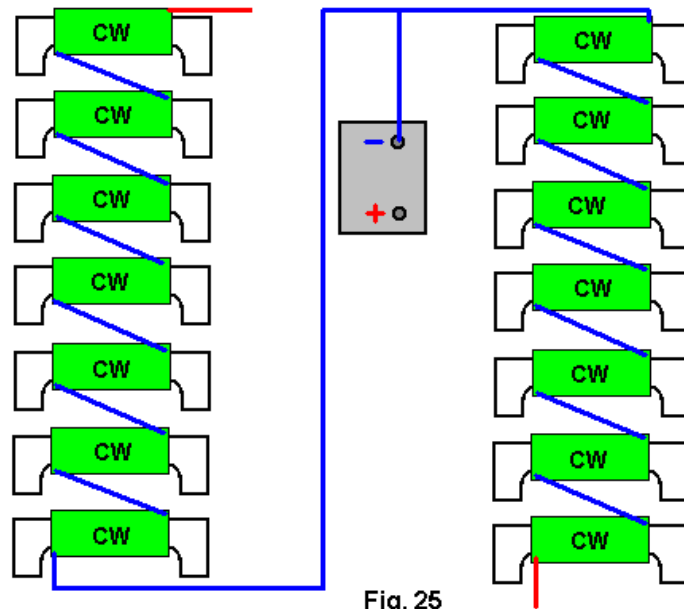


Fig. 25

The Figuera design was implemented more than a hundred years ago, and so Clemente did not have any semiconductors available to him, and so he used a motor-driven commutator arrangement to produce the electrical switching which he needed.

While I am in no way opposed to mechanical switching, especially where prototypes are concerned, there has to be an advantage in using solid-state switching, and while I am by no means an expert in that field, the following suggestions might be useful for experienced circuit builders.

In spite of the wire-wound resistor bank having only eight connection points, the switching has to have sixteen outputs due to the backwards and forwards switching sequence which is used. A solid-state 16-way switching module can be constructed from two CD4017 Divide-by-Ten integrated circuits like this:

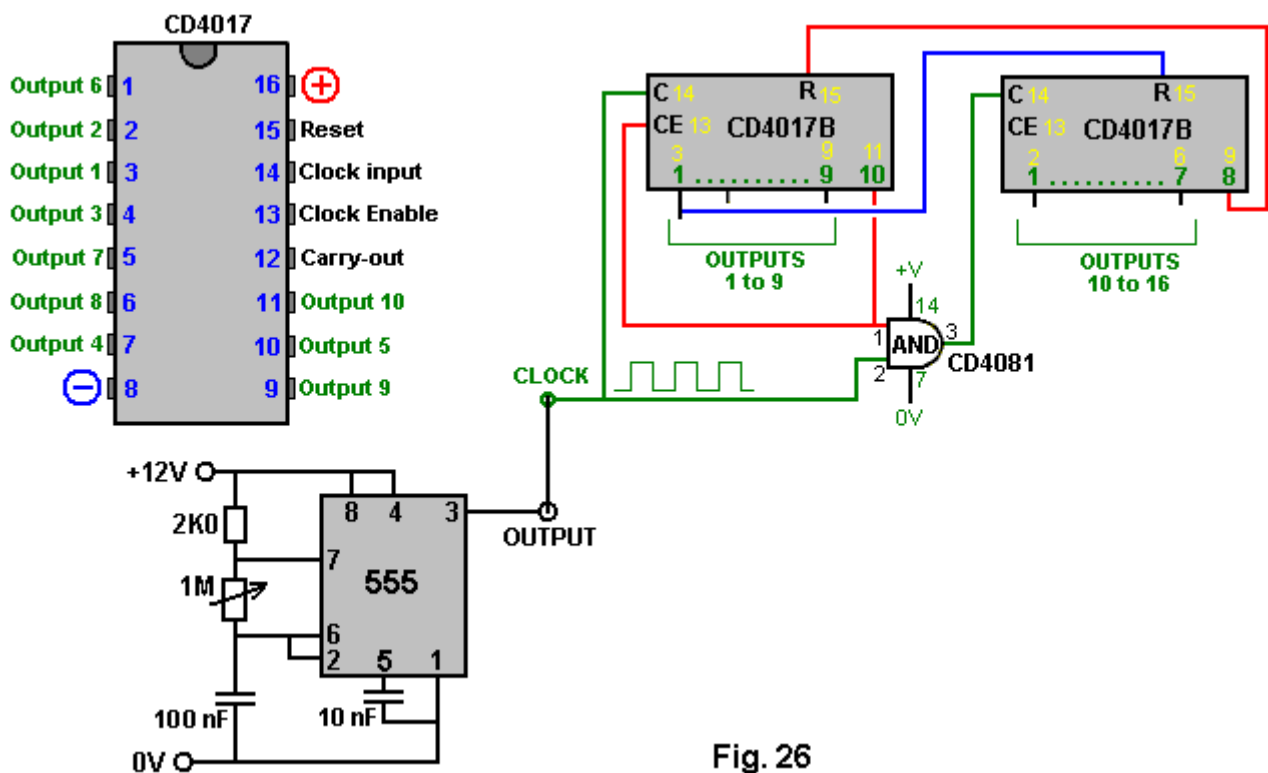


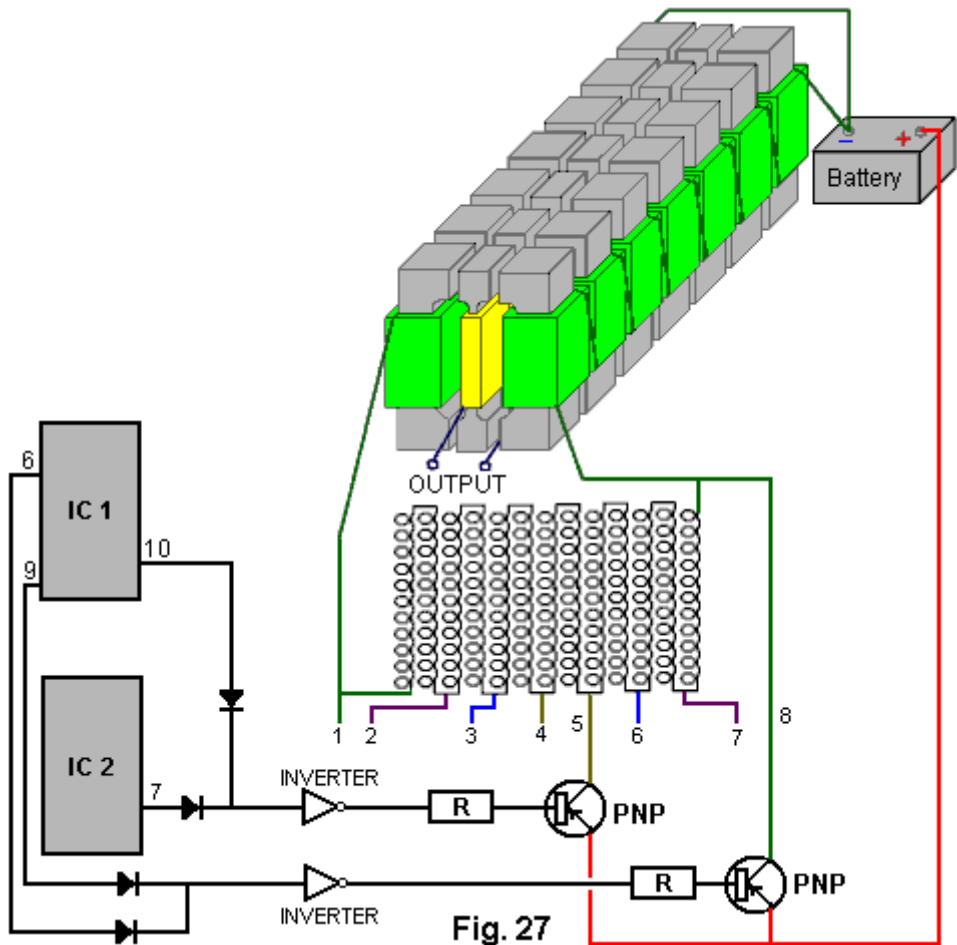
Fig. 26

This arrangement gives sixteen outputs in sequence, so two outputs need to be connected together in order to match the mechanical switching which Clemente used. Presumably, it would not be advisable to connect two outputs directly together, and so an isolation diode (say, a 1N4148 type) would be required on each output.

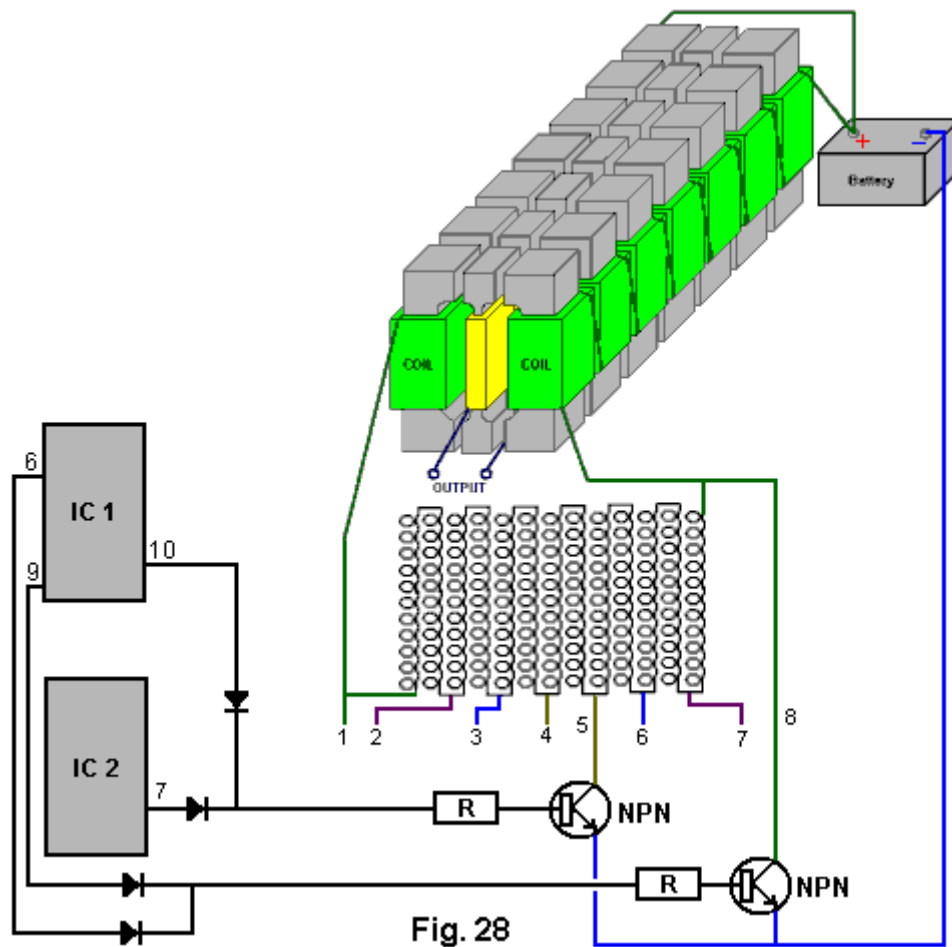
Please note that the pin connections shown here have been revised as it appears that in this circuit, the output pin 3 of the second 4017 chip does not function as expected:

Output Number	Chip and Pin Nos	Paired with Output	Resistor Connection Point
1	Chip 1 Pin 3	16 (Chip 2 pin 6)	1
2	Chip 1 Pin 2	15 (Chip 2 pin5)	2
3	Chip 1 Pin 4	14 (Chip 2 pin1)	3
4	Chip 1 Pin 7	13 (Chip 2 pin 10)	4
5	Chip 1 Pin 10	12 (Chip 2 pin7)	5
6	Chip 1 Pin 1	11 (Chip 2 pin 4)	6
7	Chip 1 Pin 5	10 (Chip 2 pin 2)	7
8	Chip 1 Pin 6	9 (Chip 1 pin 9)	8
9	Chip 1 Pin 9		
10	Chip 2 Pin 2		
11	Chip 2 Pin 4		
12	Chip 2 Pin 7		
13	Chip 2 Pin 10		
14	Chip 2 Pin 1		
15	Chip 2 Pin 5		
16	Chip 2 Pin 6		

Eight power transistors can be used to energise each resistor connection point in the sequence required. As mechanical switching was used by Clemente, it really did not matter which way round the battery connections were made. We can match his switching exactly by using PNP power transistors (or possibly, P-channel FETs) which would make the arrangement like this (with just two of the eight connections being shown):



Or you can reverse the battery for the easier NPN option:

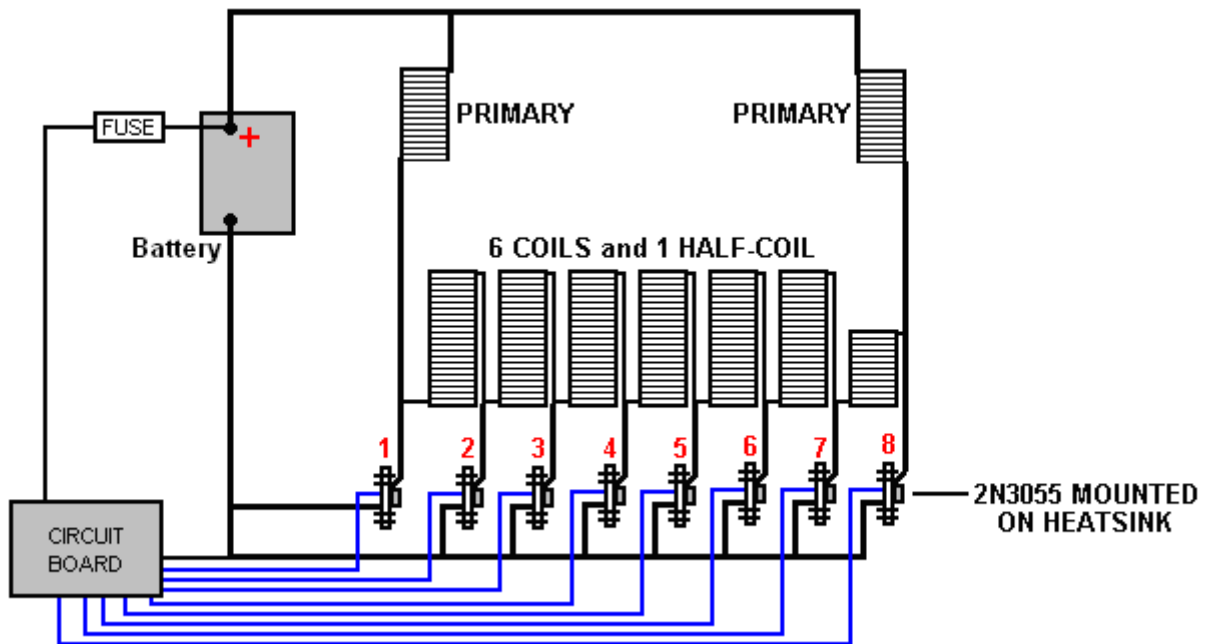
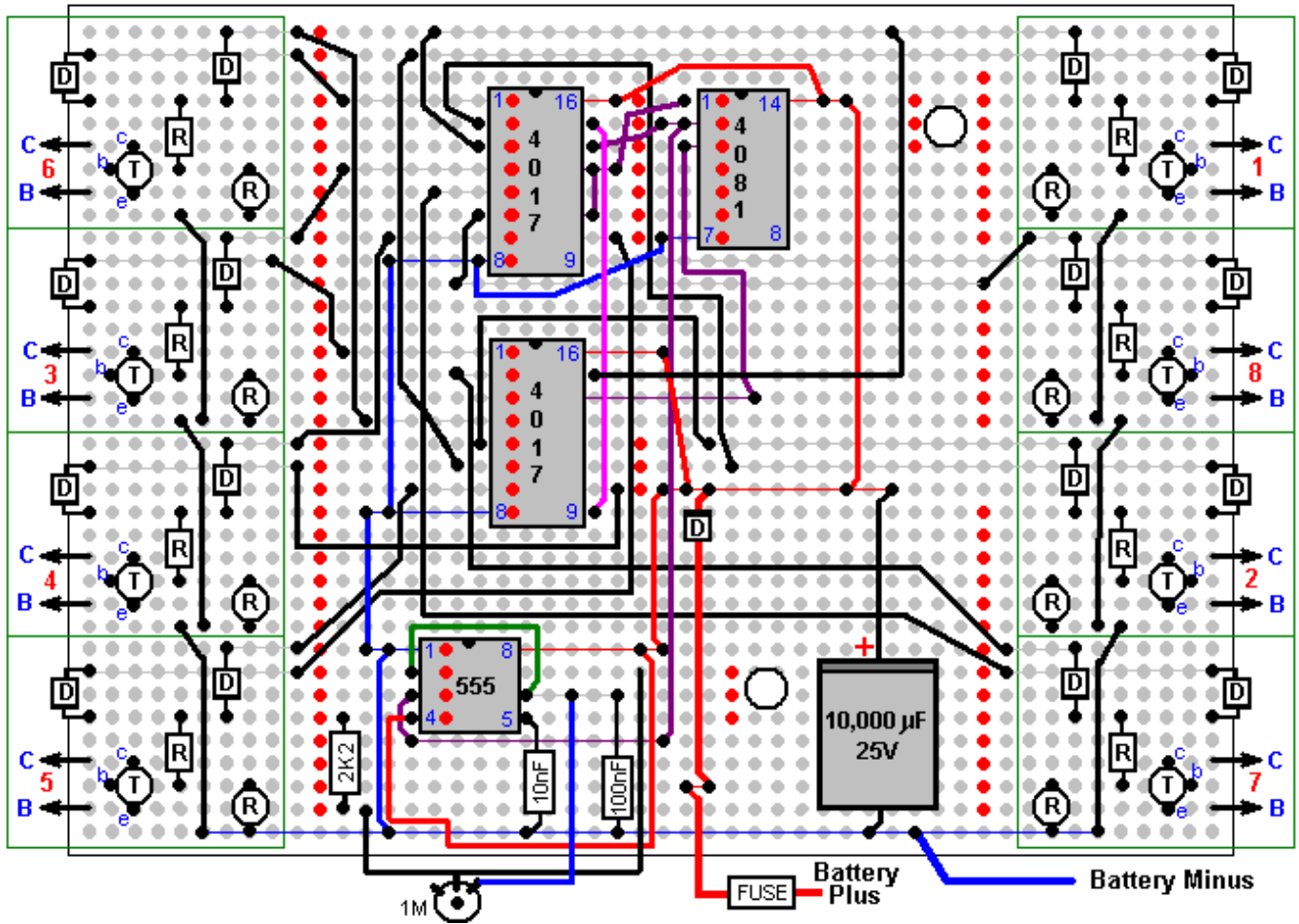


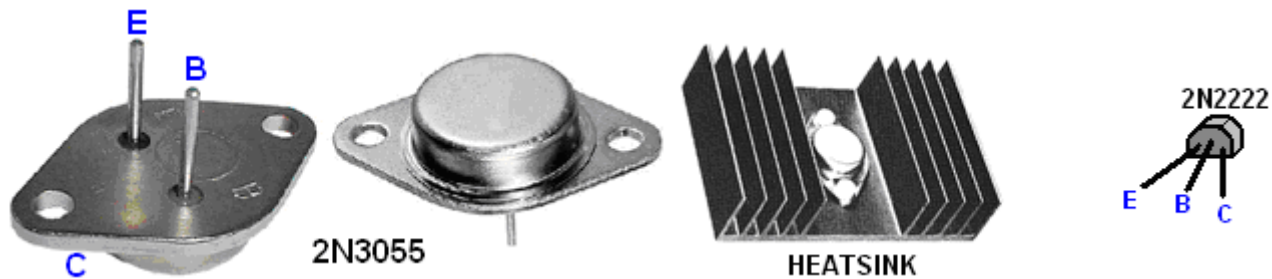
I have been asked by an electronics novice to show a possible construction form for this sort of circuit. I am not particularly good at that sort of thing, but here are a couple of diagrams of a non-optimised layout for a standard size of common stripboard:

T = 2N2222 Transistor D = 1N4001 Diode R = 4.7K Resistor

→ C = Connection to 2N3055 Collector → B = Connection to 2N3055 Base

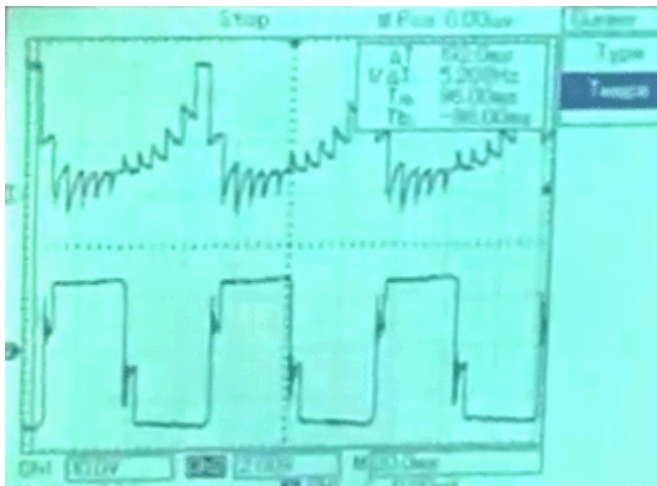
• = Break in the copper strip on the underside of the board



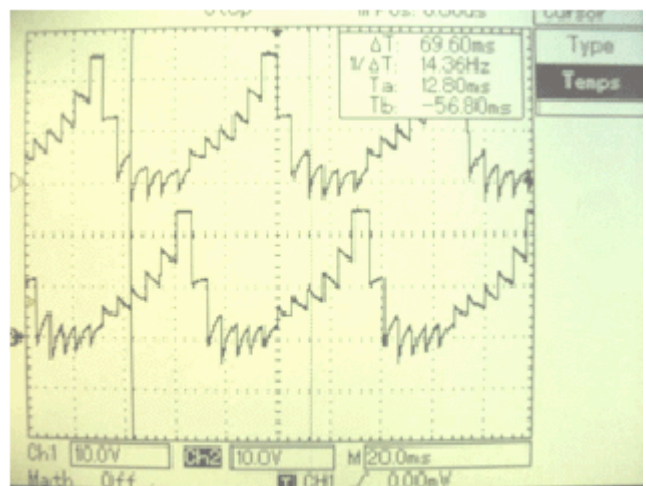


Experienced experimenter 'Woopy' has posted a video of a quick experiment to test the working principle of this Figuera design. It is at <http://www.youtube.com/watch?v=HIOGEnKpO-w&feature=g-u-u> and in it, he short-circuits the secondary winding, showing that the input power is totally unaffected by the current draw from the secondary.

He shows some very interesting oscilloscope shots:



**One primary and the secondary output**



**Both primaries, showing their phases**

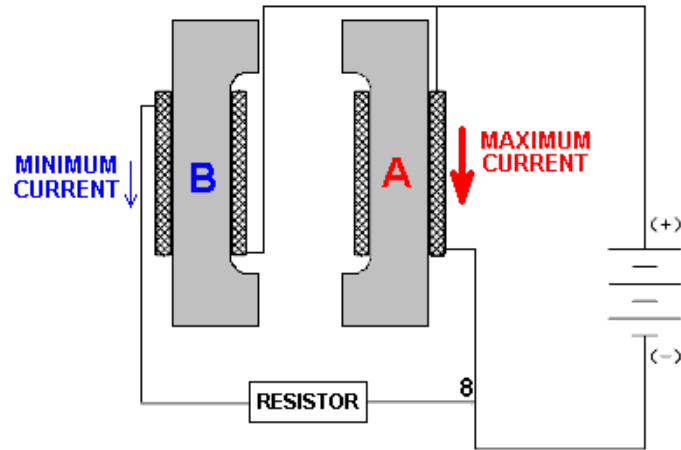
The first screen shot surprises me as it shows clearly that the output is actually an excellent square wave while I would have expected it to be a sine wave as it is coming from a coil which has inductance. The second shot shows very clearly, how the two banks of primary electromagnets operate out of phase with each other thanks to Woopy's mechanical 6-way switching arrangement. It is reported that Mr Figuera ran a 20-horsepower motor with his prototype and if that motor were fully loaded, then that is 15 kilowatts of power, easily enough to power a household.

Please bear in mind that if the electromagnets are made from iron, whether laminated or not, that iron restricts the frequency, probably to 500 Hz or less, and so it is necessary to keep the frequency that low if using a solid-state circuit to drive the transformer. For 60 Hz output with mechanical switching, requires the motor to run at 3,600 rpm which is fairly fast although definitely achievable. Also, the output power will be limited by the current handling capacity of the wire in the secondary winding. The first page of the Appendix shows the current capacities for the standard AWG and swg wire sizes.

Because this Figuera design is so important, being low-voltage, high power and not needing tuning I have recently been asked to explain it in greater detail and suggest some component values for people starting to experiment with it. I am not an electronics expert, and so my suggestions need to be taken as just that, namely, suggestions for a possible starting point for experimentation.

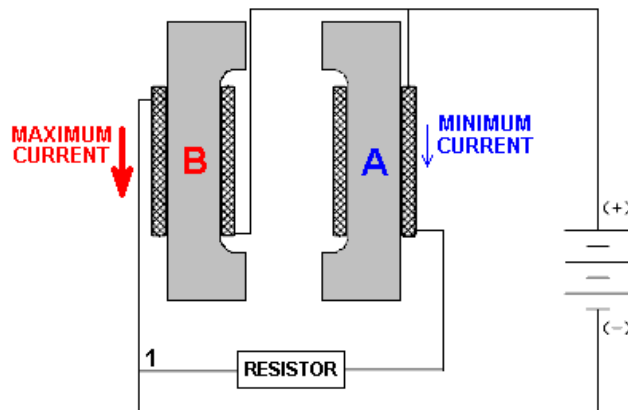
The first point is that the two halves of the primary winding of the transformer become electromagnets when current flows through their windings. The strength of an electromagnet increases as the current flow increases. Large current: strong magnet. Small current: weak magnet.

Clemente Figuera's circuit is arranged so that the current through the windings is made to vary so that when one magnet is strong, the other one is weak. It works like this:



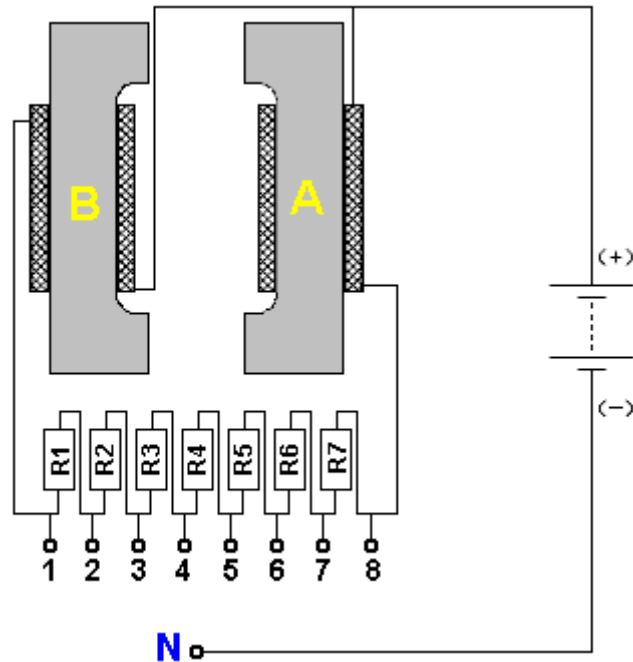
When the mechanical (or transistor) switching connects the battery to point '8' in the previous diagrams, we get the situation shown above. Current from the battery flows directly through the right-hand electromagnet "A", making it the strongest magnet that it can be at that battery voltage. The electromagnet "B" on the left gets current flow from the battery all right, but that current is reduced because it has to flow through the resistor.

When the switching changes and the battery is connected to point "1" in the previous diagrams, we get this arrangement:



Here, electromagnet "B" is free of the resistor and gets it's maximum possible current, making it the strongest magnet which it can be at that battery voltage, while electromagnet "A" has it's current reduced by the resistor getting in the way, making it the weakest magnet it can be when the system is running.

If we switched between these two positions, we would get a square wave style of operation, but Clemente did not do that. Instead, he split the resistor into seven parts (if Fig.14 is drawn correctly, one part having only half the resistance of the other parts). This makes the arrangement like this:



When the battery negative “N” is connected to point “2”, then the current flow through electromagnet “B” is hindered by resistor R1, but the current flow through electromagnet “A” is hindered by resistors R2 and R3 and R4 and R5 and R6 and R7, which together, have a far higher resistance than R1 on its own. This makes the current flow through electromagnet “B” far greater than the current flow through electromagnet “A”.

When the battery negative “N” is connected to point “3”, then the current flow through electromagnet “B” is hindered by resistor R1 and resistor R2, but the current flow through electromagnet “A” is hindered by resistors R3 and R4 and R5 and R6 and R7, which together, have a far higher resistance than resistors R1 and R2. This makes the current flow through electromagnet “B” still greater than the current flow through electromagnet “A”.

When the battery negative “N” is connected to point “4”, then the current flow through electromagnet “B” is hindered by resistors R1, R2 and R3, and the current flow through electromagnet “A” is hindered by resistors R4, R5, R6 and R7, which together, have a higher resistance than resistors R1, R2 and R3. This makes the current flow through electromagnet “B” somewhat greater than the current flow through electromagnet “A” (nearly a balanced flow as resistor R7 is only half the value of each of the other resistors).

When the battery negative “N” is connected to point “5”, then the current flow through electromagnet “B” is hindered by resistors R1, R2, R3 and R4, while the current flow through electromagnet “A” is hindered by resistors R5, R6 and R7, which together, now have a lower resistance than resistors R1, R2, R3 and R4. This makes the current flow through electromagnet “B” somewhat less than the current flow through electromagnet “A”.

When the battery negative “N” is connected to point “6”, then the current flow through electromagnet “B” is hindered by resistors R1, R2, R3, R4 and R5, while the current flow through electromagnet “A” is hindered by resistors R6 and R7, which together, now have a much lower resistance than resistors R1, R2, R3, R4 and R5. This makes the current flow through electromagnet “B” much less than the current flow through electromagnet “A”.

When the battery negative “N” is connected to point “7”, then the current flow through electromagnet “B” is hindered by resistors R1, R2, R3, R4, R5 and R6, while the current flow through electromagnet “A” is hindered by resistor R7, which has a very much lower resistance than resistors R1, R2, R3, R4, R5 and R6 together. This makes the current flow through electromagnet “B” very much less than the current flow through electromagnet “A”.

Clemente has arranged the battery switching sequence to be to points 1, 2, 3, 4, 5, 6, 7, 8, 8, 7, 6, 5, 4, 3, 2, 1, repeating over and over again. This makes the connections to points 1 and 8 to be twice as long compared to the connection times for the intermediate points, giving a sine-wave shape rather than a sawtooth shape.

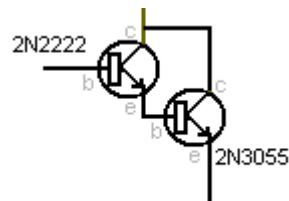
There is current flow through both electromagnets at all times. The current flow is never broken although, as you can see, the intensity of the current flow varies all the time with each electromagnet getting stronger than the other one repeatedly.

The mechanical switching used by Clemente will work perfectly well, although there will be motor noise and wear on the switch contacts. A solid state version will be silent, more reliable and much longer lasting. There are many

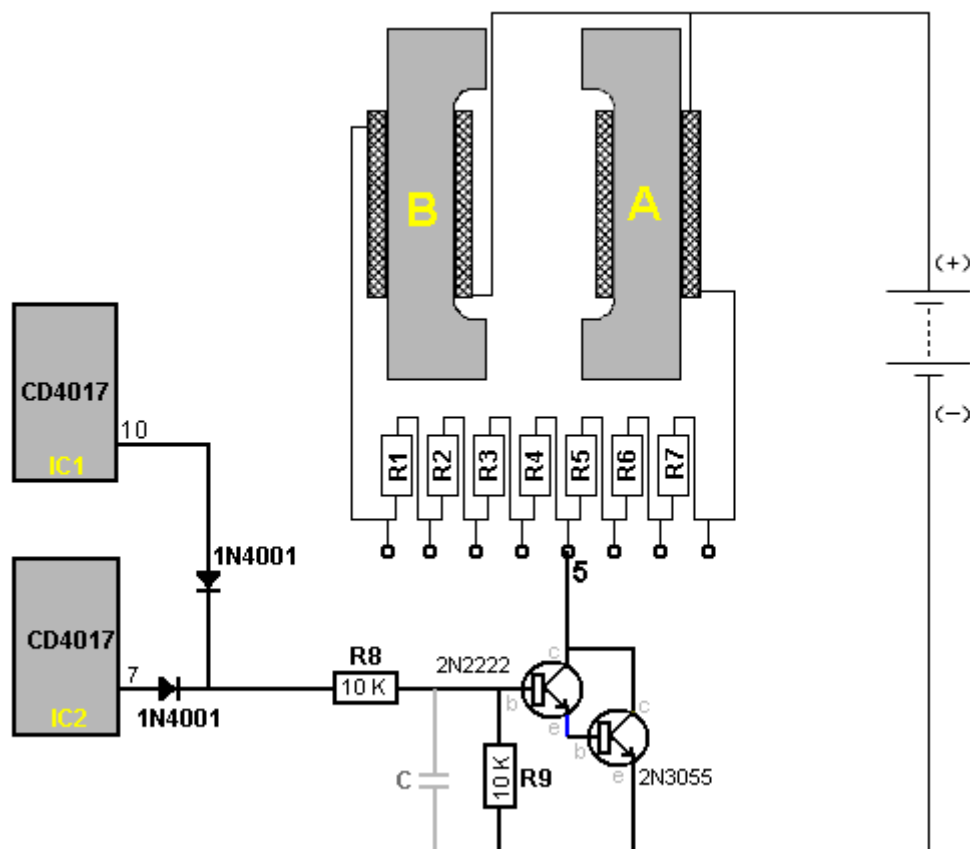
different way to build most electronic circuits and each builder will have his own favourite way of constructing the circuit. This Figuera circuit does not specify the battery voltage and so some people will want to use a twelve volt battery. As many FET transistors need as much as ten volts in order to switch on properly, a twelve volt supply is probably a little low for them, and so I suggest using the older bipolar transistors.

As the transistor has to carry the current which passes through the electromagnets, it needs to be able to handle considerable current flow. The very common 2N3055 transistor can do that (as can many other suitable transistors). The switching rate is very, very slow for a transistor and so speed is not an issue. The voltage is very low, and so that is not an issue either and so the 2N3055 transistor is definitely a possible choice.

In common with most high-power transistors, the current gain is low being between 20 and 30 typically. That means that to switch it on properly, a current of one twentieth of the switched current has to be fed into the base of the transistor. That base current is too high to be convenient, so we can raise the transistor gain to around 6000 by adding in a low-power transistor such as the 2N2222 transistor. The two transistors are connected together in a configuration called a 'Darlington Pair' which looks like this:



In this arrangement, the two Collectors are connected together, while the Emitter of the 2N2222 transistor feeds into the Base of the 2N3055 power transistor. With a high gain of six thousand or so for our transistor pair, we need to limit the current flowing through their combined Base-to-Emitter junction, and so we introduce a current limiting resistor R8 in the following circuit suggestion:



The 10K resistor value shown would limit the transistor current to about nine amps, while a 4.7K resistor would allow around eighteen amps. Each transistor pair is only on for one eighth of the time, but the 2N3055 transistors need to be mounted on a heat-sink. If a single metal plate is used as a heat-sink for all eight 2N3055 transistors, then mica washers (available from the supplier of the transistors) must be used between each transistor and the plate because the Collector of each 2N3055 transistor is its metal case and in this circuit, the Collectors do not connect to a common point. The mica washers pass heat but not electricity. Separate heat-sinks can, of course, be used.

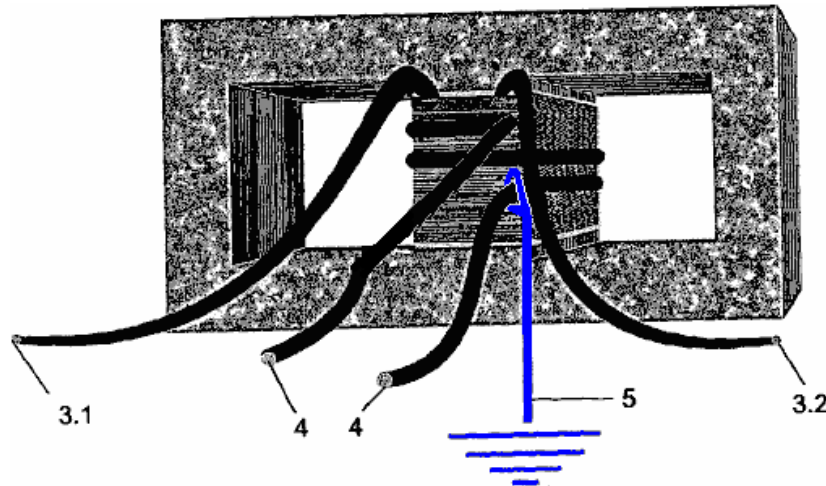




## The Self-Powered Generators of Barbosa and Leal

In July 2013, two Brazilian men, Nilson Barbosa and Cleriston Leal, published a series of patents which appear to be very significant. Their patent WO 2013/104042 published on 18th July 2013, is entitled “Electromagnetic device for Capturing Electrons from the Ground to Generate Electricity” and has some very interesting features. It describes a simple device which they describe as an “electron trap”. Their patents are written in Portuguese and an attempted translation of three of them is included at the end of the Appendix.

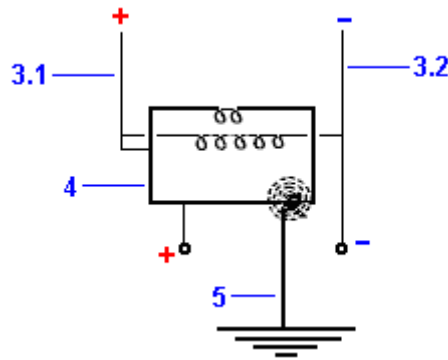
An unusual feature of this design is the fact that it has a continuous conductive loop, in which it is claimed, current flows continuously, even without the need for an applied voltage. Instead, it is the magnetic fields of electromagnets which keep the current flowing. They state that an insignificant amount of input power produces a substantial power output, and they consider a COP of 100 to be about the minimum performance which can be expected from the design. That is a 1 watt input for a 100 watt output. One version of the electron trap looks like this:



The inventors describe their device like this: “this electromagnetic-field-generating device, powered by a power source, produces an electromagnetic field which induces an electric current in a closed conductive circuit, creating an interaction between the magnetic poles of the equipment and the magnetic poles of the earth - through both electromagnetic attraction and repulsion. An endless supply of electrons is drawn from the earth into the conductive closed loop, which is connected to the ground through a conductive interconnected grid. The attracted electrons add to the current already flowing in the conductive closed loop, making power available for driving high-power loads, although the device itself is supplied with only a small amount of power.”

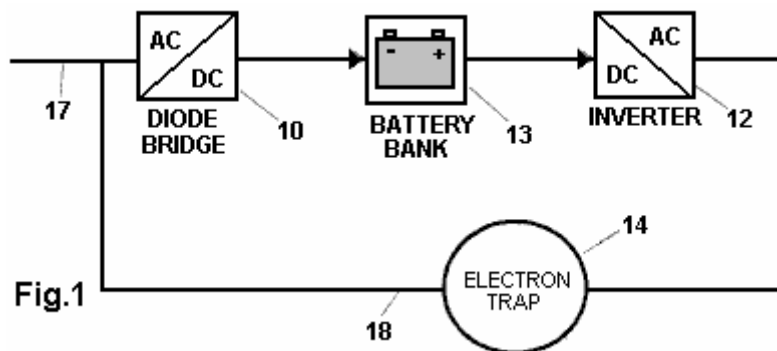
One very interesting feature is that the continuous-loop coil formed by wire 4 in the diagram above, is literally, only two turns of wire. The power-gaining mechanism, amazingly, is the earth wire (shown in blue) which is merely wrapped around wire 4 and not directly connected to it as the electron-transfer link is by induction. With this arrangement, the current circulating in the closed loop wire 4, attracts more electrons from the ground, flowing through the wrapped connection of wire 5, into wire 4, augmenting the current flow there by a major amount. Wire 3 can have an alternating voltage applied to it in order to get alternating current in wire 4, but please understand that the current flowing in wire 4 is **not** the result of the current in wire 3. If the current in wire 3 is DC, then the current in wire 4 will be DC as this is **not** a conventional transformer, but instead, it is an electron trap, operating in an entirely different way.

The electron trap can be connected in an AC circuit of this type:



Here, the earth wire **5** is wrapped around the continuous loop wire **4**, feeding it additional electrons captured from the ground. The ends of wire **4** are connected together to form the loop, and that connection also forms the positive side of the output (where a DC output is being produced). The magnetic field produced by the current flowing in wire **3**, acts on the electron flow coming from the earth, but as it does not provide any of the electric power flowing in wire loop **4**, the current flowing in wire **3** can be tiny, without affecting the power output.

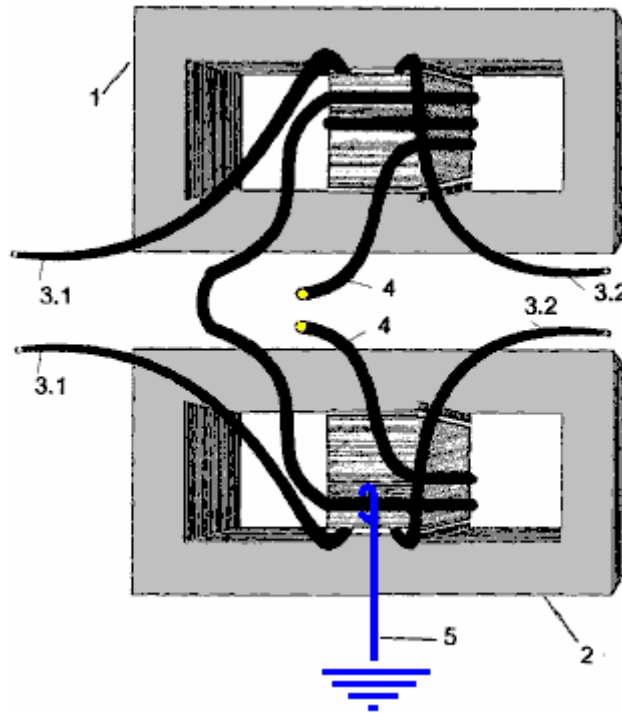
In their patent WO 2013/104043, also of 18th July 2013, they show several different ways of connecting their electron trap in a useful circuit. For example, like this:



Here, the battery **13**, is used to power an ordinary inverter **12**, which produces a high alternating voltage, in this case, at very low power. That voltage is applied to the wire 3.1 to 3.2 of the electron trap, creating an oscillating magnetic field, which creates an oscillating inflow of electrons into the closed loop wire (**4**), which creates an amplified electrical output at the same frequency – typically 50 Hz or 60 Hz as those are the common mains frequencies. That amplified power output from the electron trap **14**, is passed along wire **18** to an ordinary diode bridge **10**, and the pulsing DC from the bridge is smoothed and used to replace the battery input to inverter **12**. The battery is now switched out of the circuit and, as well as making the overall circuit self-powered, the power coming from the electron trap is used to recharge the battery if it needs recharging (and/or, perhaps, to charge the batteries of an electric car). Because the electron trap needs almost no input power at all, the input power to the inverter is very small, and so a good deal of additional AC power can be drawn off through cable **17**, and used to drive powerful electrical loads, with no electrical power being needed from the battery. Being self-powered, the COP value for the circuit is infinity.

Just as there are several different ways of using an electron trap in a circuit, there are several ways of constructing and connecting an electron trap. While it is possible to arrange the components so that the power output is 2-phase or 3-phase, here we will just deal with the ordinary, household, single-phase power supply.

The first variation is to use more than one frame. Two frames can be connected like this:

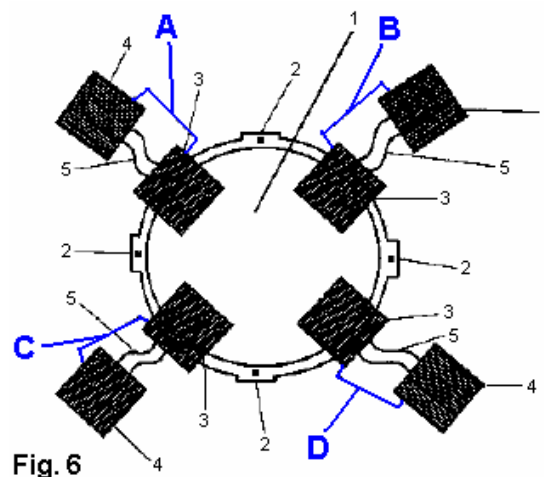


This is the actual drawing from the patent and it presents a slight problem in that it is not physically possible to implement the number 4 wire in the way shown. Each frame will have two complete turns wound on it, although the drawing does not show this. Because of the inaccuracy of the drawing, I am not able to say if the coil turns on frame 2, are in the same direction as those on frame 1. There are four possible ways of winding these 2-turn coils when interconnecting them, so perhaps experimentation can be used to determine which method works best.

With this two-frame arrangement, there is just the one earth wire 5, as before, again, it is wrapped around wire 4 rather than being physically connected to it. The continuous wire loop 4 has two ends as before, but there are now two 3.1 wire ends and two 3.2 wire ends. The Portuguese translation programs produce highly questionable results for this area of the patent, but I gather that the inventors intend the two 3.1 ends to be connected together and the two 3.2 ends to be connected together, and then the joined ends are treated exactly as before, effectively putting the two windings in parallel.

One disadvantage of this design is that it is not portable due to the earth connection. Barbosa and Leal deal with this problem in their patent WO 2013/104041 of the same date where they show a method of constructing an electron trap which collects excess electrons from the air. If you feel that there are no excess electrons in the air, then consider the fact that all of the aerial designs in chapter seven all extract and use those electrons. Also, consider the amount of electricity in a lightning strike, where much of the electrical energy comes from the air, and remember that world wide, there are between 100 and 200 lightning strikes every second.

The free-electrons-in-the-air electron trap is somewhat more complicated than the earth-wire electron trap, with four pairs of coils (3 and 4) being mounted inside two aluminium hemispheres (1):



The methods for using the air-electrons trap are the same as those for the earth-wire electron trap.

An earth-wire video demonstration is here: <http://www.youtube.com/watch?v=iRSP7h73u-Q> with 22 watts producing 6 kilowatts.



An attempted translation of the three Barbosa/Leal patents is here:

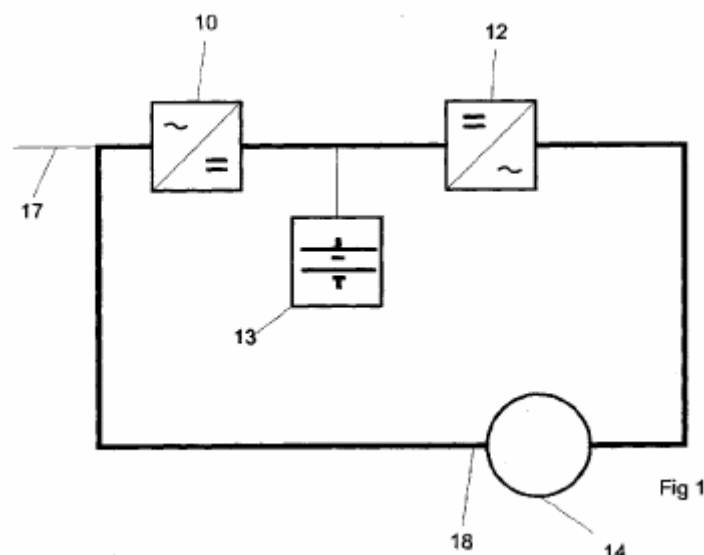
WO Patent 2013/104043

18th July 2013

Inventors: Nilson Barbosa and Cleriston Leal

## ELECTRIC ENERGY GENERATION SYSTEM WITH FEEDBACK

Note: These three patents are in Portuguese and what is shown here is a low-quality attempt at translation into English using a translation program. The originals can be downloaded free from: [http://worldwide.espacenet.com/singleLineSearch?locale=en\\_EP](http://worldwide.espacenet.com/singleLineSearch?locale=en_EP).



### Abstract:

The present invention relates to electric energy generation equipment comprising a basic circuit formed by a rectifier (10), for example, an AC/DC converter connected in series to an inverter (12), for example, a DC/AC converter, and a bank of batteries (13) connected in series between the rectifier (10) and the inverter (12). An electron-capturing element (14), which can be either a free space electron-capturing element or, alternatively, an earth electron-capturing element, is connected in series to the basic circuit formed by the rectifier (10), the inverter (12) and the battery assembly (13). The bank of batteries (13) powers the basic circuit because it is connected to the system. Consequently, the inverter (12) converts direct current into alternating current and supplies this

current to the electron-capturing element (14). After receiving the electric current from the inverter (12), the electron-capturing element (14) starts capturing electrons from the alternating current and powering the rectifier (10), which converts the alternating current into a direct current in order to recharge the bank of batteries (13) and power the inverter (12) which powers the electron-capturing element, closing the feedback loop, and also providing electric energy for consumption by external loads.

WIPO Patent Application WO/2013/104043 Filing Date: 01/11/2013  
Application Number: BR2013/000016 Publication Date: 07/18/2013

Assignee: EVOLUÇÕES ENERGIA LTDA (Rua Santa Tereza 1427-B Centro - Imperatriz -MA, CEP -470 - Maranhão, 65900, BR)

## **SELF-POWERED ELECTRICITY GENERATOR.**

### **Technical field**

The present invention relates to a device for generating electricity, in particular self-powered equipment for generating electricity.

### **Description of the Related Art**

There are many methods for generating electricity using electromagnetism, but all of these are electromechanical devices using magnets and have limited generating capacity and an ecological impact which makes them unsuited to large scale projects.

### **Objectives of the Invention**

The aim of this invention is the sustainable generation of electricity, using a generator which is able to produce large amounts of electricity from an extremely low input current, which initially is supplied by a bank of batteries, but subsequently is supplied by the output from the generator which is also able to power external loads.

The above objective, and other objectives, are achieved by the present invention through the use of a typical Uninterruptible Power Supply circuit comprising of an AC/DC rectifier feeding a battery bank which powers a DC/AC inverter, which is connected to a device to trap electrons from space (as described in Brazilian patent application No. BR1020120008378 of 13th January 2012) or alternatively, a device which extracts electrons from the Earth (as described in Brazilian patent application No. BR1020120008386 of 13th January 2012), which then passes the extracted electrons to the AC/DC rectifier, charging the battery bank, thus closing the loop as well as providing electricity to power external loads.

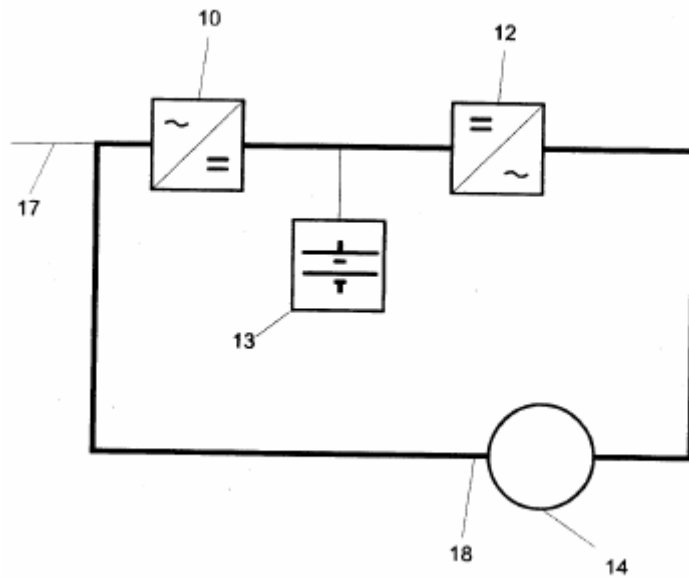
The self-powered system for generating electricity from the present invention can be fixed or mobile. It is fixed when using electron capture from the earth due to the ground connection, or mobile when using electron capture from space.

The self-powered electricity generating system of this invention may be configured in several different ways, each using the same inventive concept but using different arrangements of components. Different versions include single-phase, two-phase or three-phase versions, producing outputs of any power and voltage.

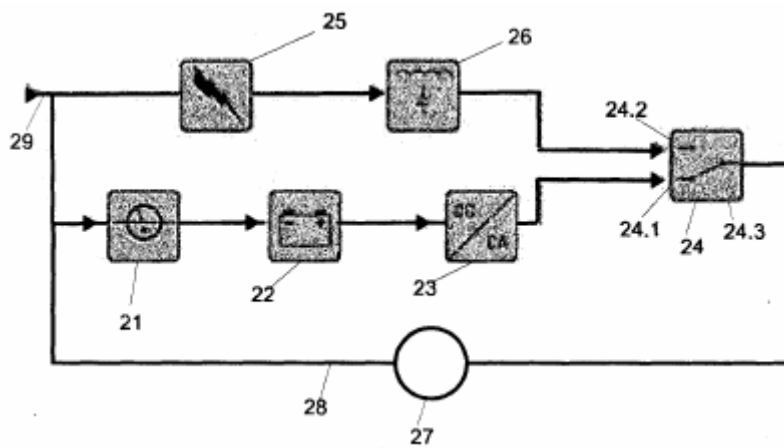
### **Brief Description of the Drawings**

The present invention will now be described with the aid of drawings, but this patent is not limited to the versions and details shown in these drawings, although they show additional details and advantages of the present invention.

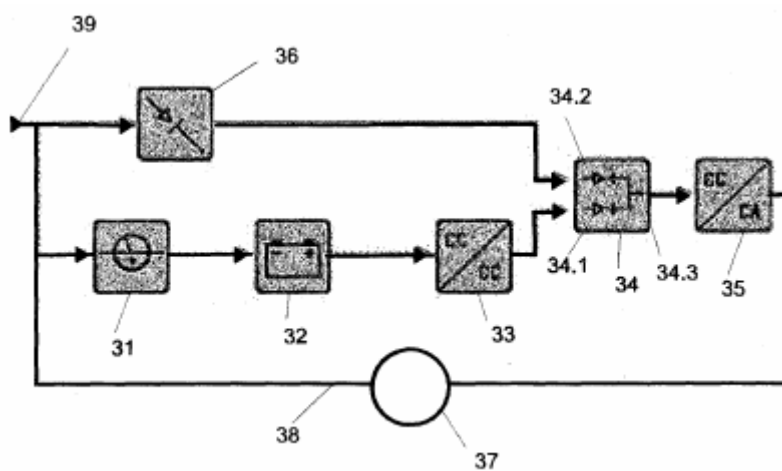
### **The drawings:**



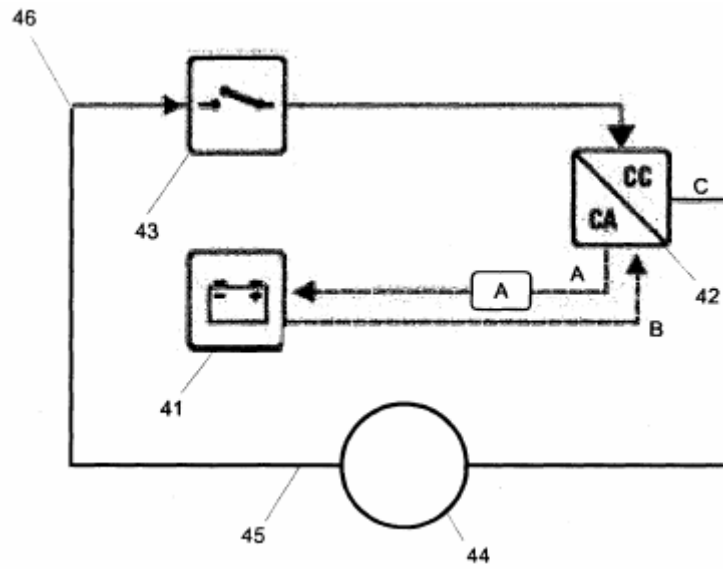
**Figure 1** - shows a basic circuit system for self-powered electricity generation of the present invention



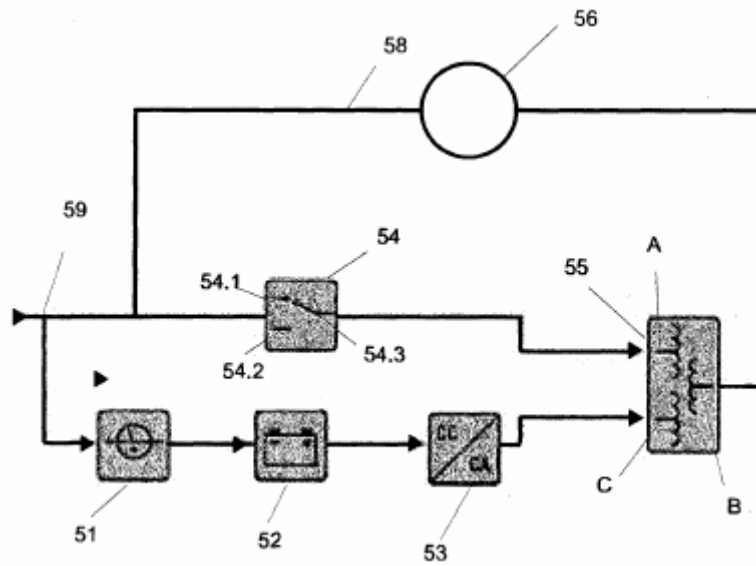
**Figure 2** - shows a first embodiment of the constructive system for self-powered electricity generation of the present invention;



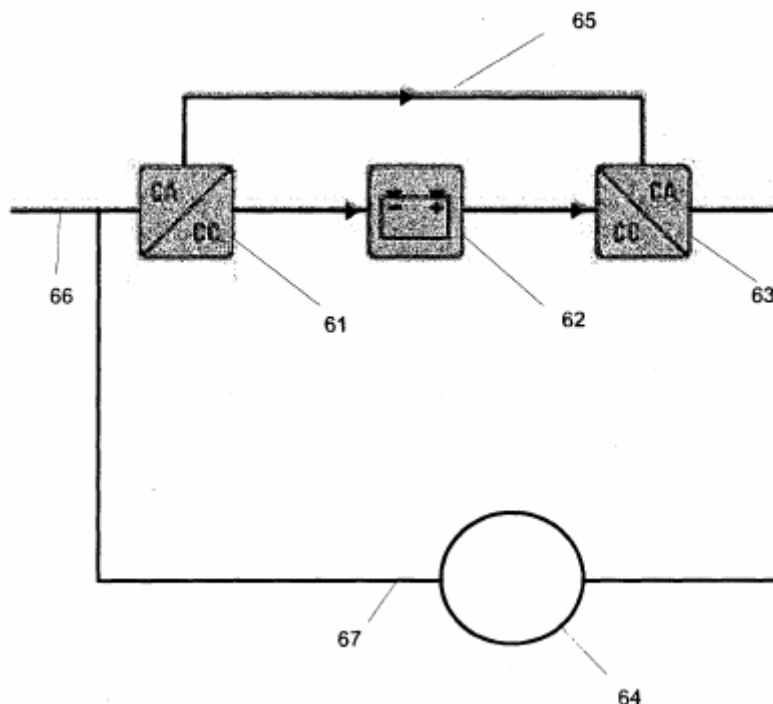
**Figure 3** - shows a second embodiment of the self-powered system for generating electricity of the present invention;



**Figure 4** - shows a third embodiment of the self-powered system for generating electricity of the present invention;



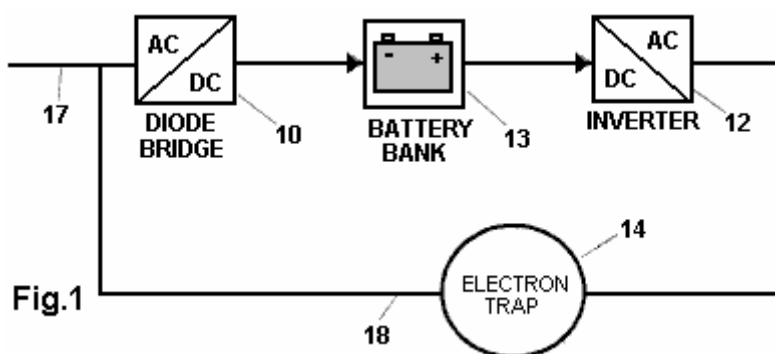
**Figure 5** - shows a fourth embodiment of the self-powered system for generating electricity of the present invention;



**Figure 6** - shows a fifth embodiment of the self-powered system for generating electricity of the present invention;

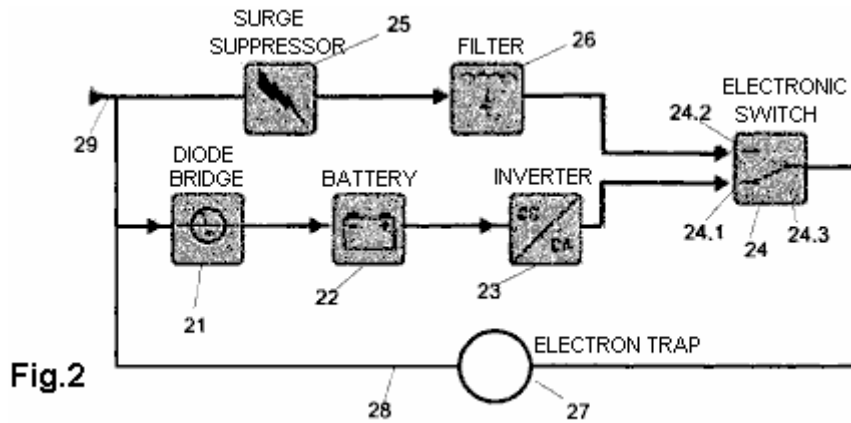
**Detailed description of the Invention:**

There are different ways of closing the self-feeding cycle depending on the circuit configuration chosen. Some of these arrangements are shown in **Figures 2 to 6**, wherein the main circuitry continues to oscillate, continuously generating instant electricity.



As shown in **Fig.1**, the self-powered system for generating electricity comprises a basic circuit consisting of a rectifier (AC/DC converter) **10** which is connected in series to an inverter (DC/AC) **12**. A bank of batteries **13** is connected between the rectifier **10** and the inverter **12**. The output from the DC/AC inverter **12**, connects to an electron-trap **14** which can extract electrons from space (as described in Brazilian patent application No. BR1020120008378 of 13th January 2012) or alternatively, extracts electrons from the Earth (as described in Brazilian patent application No. BR1020120008386 of 13th January 2012).

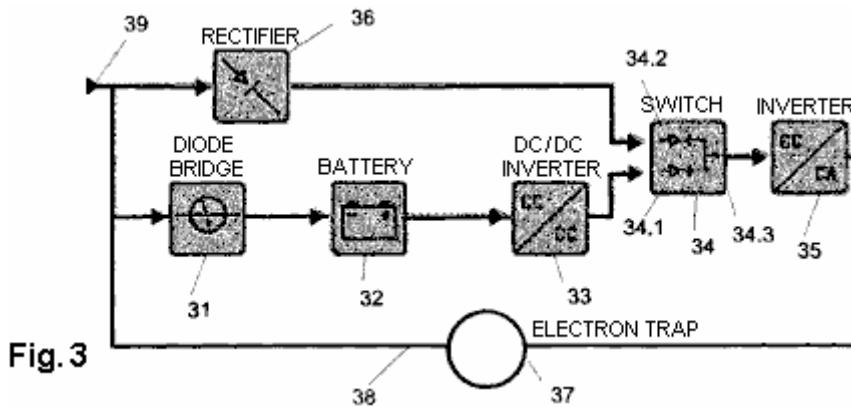
When connected, the battery bank **13** provides power to the DC/AC inverter **12** which converts the direct current into alternating current and provides current to the electron-trap **14**. The output of the electron trap **14** is passed through wire **18**, to the AC/DC bridge rectifier **10**, which keeps the battery bank charged as well as powering the DC/AC inverter **12**. Additional power is passed to external equipment through wire **17**.



**Fig.2**

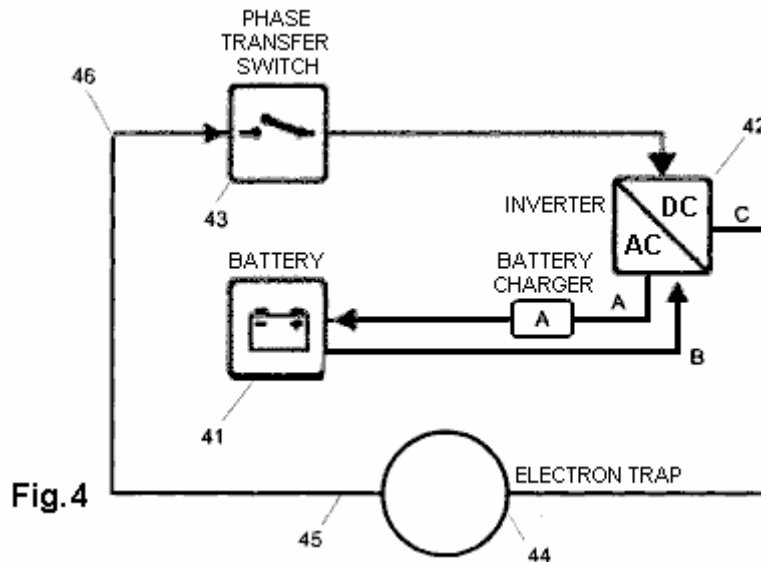
**Fig.2**, shows another embodiment of the system of this self-powered electric power generation equipment. It comprises a typical Uninterruptible Power Supply circuit of a battery charger (AC/DC converter) **21** connected to a drive device (a DC/AC inverter) **23** and between them, a battery bank **22** forming the basic circuit. Additional devices are an electron-trap **27** which may collect free electrons from space (as defined in Brazilian patent application No. BR1020120008378 of 13th January 2012) or, alternatively, collects electrons from the Earth (as described in Brazilian patent application No. BR1020120008386 of 13th January 2012). The 3-phase electronic switch **24** normally connects **24.1** to **24.3** connecting the electron trap **27** to inverter **23**. Connected in parallel is the surge suppressor **25**, which, when activated, via filter **26**, causes switch **24** to disconnect the **24.3** to **24.1** link and instead, connect **24.3** to **24.2**.

An alternative arrangement for use in emergency situations, is to use the system no longer self-powered. For this, the system is comprised of a power input from an external power source, directly to the interconnection point **29** to provide power to surge suppressor **25**, which provides power to feed the power output point **28** in order to power external loads. When the electron-trap **27** is turned off, the electronic transfer switch **24** reverts to its default position which connects point **24.1** to point **24.3** causing the circuit to function, once again, in its self-feeding mode. As soon as the electron sensor **27** provides sufficient power to the over-voltage sensor **25**, it operates the transfer switch **24** through filter **26**, ending the self-feeding phase and supplying energy directly to the power output point **28**, in order to feed external loads.



**Fig.3**

**Fig.3** shows another embodiment of the self-powered system for generating electricity, comprising a device which includes the basic circuit of a typical Uninterruptible Power Supply, consisting of a battery charger (AC/DC converter) **31** connected to a drive device (inverter DC/AC) **35** and attached to them, a battery bank **32**. This basic circuit together with other devices is connected to an electron-trap **37** for collecting free electrons from surrounding space or, alternatively, an Earth-connected electron trap **37**. We have then, a bank of batteries **32** connected to the DC/DC converter **33**, which is connected to the phase transfer switch **34 / 34.1** which is connected to point **34.3**, which connects to the inverter **35**, and so, the electron-trap **37**.

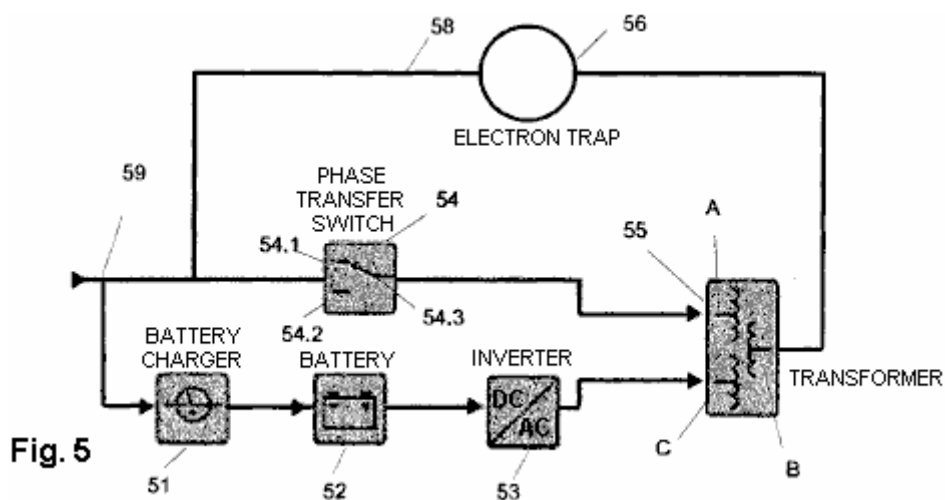


**Fig. 4**

**Fig. 4** shows another embodiment of the system for self-powered electricity generation which is comprised of a basic circuit of a typical uninterruptible power supply, consisting of a battery charger (AC/DC converter) **A** connected to an inverter (DC/AC) **42** and attached to them, battery bank **41**, and this basic circuit together with other devices are connected to a free space electron-capture device **44** or an earth-connection electron-trap **44**. Comprising thus, a battery charger **A** connected to a battery bank **41**, which is connected in series with inverter **42** at point **B** which is in series with point **C** of inverter **42** which is in series with the electron sensor **44**, which is in series with the phase transfer switch **43** via the three-phase load output connection point **45**. The phase transfer switch **43** is in series with the inverter **42**, which is connected in series the (AC/DC converter) battery charger **A** feeding the battery bank **41**.

An alternative construction for use in emergency situations, in which the system ceases to be self-powered, the system may include power input from an external power source, via the interconnection point **46**, thus providing electricity output **45**, to power external loads. The battery bank **41** provides power to the inverter **42** which converts the direct current into alternating current and feeds the electron trap **44**. The phase transfer switch closes when the batteries need recharging.

Sensor **44** captures electrons, producing alternating current, which feeds the phase transfer switch **43** with alternating current input power. The phase transfer switch **43** feeds the inverter **42** which charges the batteries, closing the self-powering loop which provides power at the output **45**, feeding both the power input and any external loads.



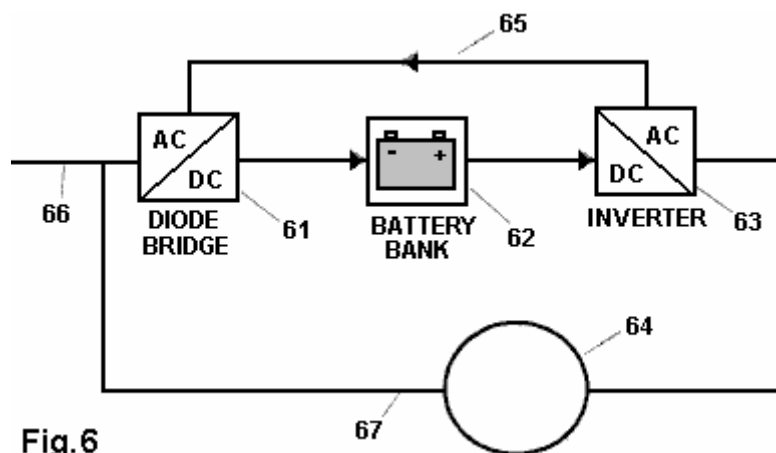
**Fig. 5**

**Fig. 5** shows another embodiment of the system for self-powered electric power generation equipment comprising a circuit which includes a typical uninterruptible power supply comprising a battery charger (AC/DC converter) **51** connected to a DC/AC inverter **53** and attached to them, a battery bank **52**. This basic circuit together with other devices are connected to a space free-electron capture device **56** (as defined in Brazilian patent application No. BR1020120008378 of 13/1/12) or, alternatively, an earthed free-electron collector **56** (as defined in Brazilian

patent application No. BR1020120008386 of 13/1/12). This then comprises a battery charger **51** which is connected in series with a battery bank **52**, which is connected in series with the inverter **53**, which is connected in series with the transformer **55** at its point **C**, which is in series with its point **B** which is in series with the electron collector **56**, which is in series with the battery charger **51** which is connected to the load exit point **58**, which is also the circuit entry point **59**, which is in series with the phase transfer switch **54** section **54.1**, which is connected to terminal **54.3**, which is in series with point **A** of the transformer **55** which exits at point **B**. Points **A** and **54.3** as well as the parallel points **54.1** and **54.2**, are all parallel to the battery charger **51**, the battery bank **52**, the inverter **53** and to point **C** of the transformer **55**.

An alternative construction for use in emergency situations, in which the system ceases to be self-powered, the system may include an external power input point **59**, allowing phase transfer switch **54** to provide power output **58**, to feed external loads. Battery bank **52** provides power to the inverter **53**, which converts the direct current into alternating current, feeding point **C** of the transformer, which comes out at points **B** and **A** of the transformer **55**. Point **B** of the transformer feeds the electron-trap **56** producing alternating current which feeds the battery charger **51**, recharging the battery bank **52**.

The battery charger **51** is connected in parallel with the transfer switch **54** via connection points **54.1** and **54.3**, feeding point **A** of the transformer, which comes out at point **B**. Point **A** of the transformer and the switch transfer points **54.3** and **54.1** are in parallel to the battery charger **51**, the battery **52**, the inverter **53** and point **C** of the transformer **55**.



**Fig.6** shows another embodiment where a rectifier **61** is connected to an inverter **63** and a battery bank **62**, and to a space free-electron trap **64** or alternatively, an earth electron trap **64** comprising thus, a delta (AC/DC) converter **61**, which is connected in series to a battery bank **62**, which is connected in series with the (DC/AC) inverter **63**, which is in series with the electron collector **64** which is connected in series with the delta converter (AC/DC) **61** whose AC part is in series with the alternating AC current inverter **63** via a connecting wire **65** which is in parallel with the DC part of the delta converter **61** with the battery bank **62** and the DC part of inverter **63**. An alternative construction for use in emergency situations, in which the system ceases to be self-powered, the system may comprise a power input from an external power source, via the interconnection point **66** connected to the delta converter **61**, the output **67** supplying power, to the external loads.

Battery bank **62** provides power to the inverter **63**, which converts the direct current into alternating current, powering the free-electron collector **64**. The captured electrons from collector **64** form an alternating current which feeds the delta converter **61** via an output power load wire **67**.

The alternating part of the three-phase delta converter **61** is fed with alternating current from inverter **63** via connecting wire **65**, which is connected in parallel to the continuous DC delta converter **61**, which feeds the battery bank **62** and with the continuous portion the inverter **63**, closing the cycle of self-feeding and supplying power at the output **67**, which is the output power point.

Having described examples of preferred embodiments, it should be understood that the scope of the present invention encompasses other possible forms of construction, using the electron collectors connected to a basic circuit of a typical uninterruptible power supply of energy, known as a UPS, comprising a rectifier device (an AC/DC converter) **10**, connected to one inverter (DC/AC converter) **12**, and attached between them, an energy storage device (typically, a battery bank).

A very important part of the above patent is the device described as a “collector of free-electrons”, either from the earth or from space. We have to go to the patent applications mentioned above to find the details of these designs:

Application Number: BR2013/000015, Publication Date: 07/18/2013, Filing Date: 01/11/2013

Assignee: EVOLUÇÕES ENERGIA LTDA (Rua Santa Tereza 1427-B Centro - Imperatriz, MA- CEP -470 - Maranhão, 65900, BR)

## ELECTROMAGNETIC ELECTRON TRAP FOR ELECTRIC POWER GENERATION

### Technical Field

The present invention refers to electromagnetic equipment for electric power generation or alternatively for thermal power generation. More specifically equipment capable of producing abundant electricity and thermal energy from a tiny amount of input electrical energy

### Description of the Related Art

According to Lenz's law, any induced current has a direction such that the magnetic field it generates opposes the change in magnetic flux which produced it. Mathematically, Lenz's Law is expressed by the negative sign (-) that appears in the formula of Faraday's Law, as follows.

The magnitude of the induced emf ( $\varepsilon$ ) in a conducting loop is equal to the rate of change of magnetic flux ( $\Phi_B$ ) with time:

$$\varepsilon = - \frac{d\Phi_B}{dt} \quad \text{Equation 1}$$

As an example of application of Faraday's Law, we can calculate the electromotive force induced in a rectangular loop that moves in or out, with constant speed, a region of uniform magnetic field. The magnetic field flux through the surface limited by the loop is given by:

$$\Phi = xLB \quad \text{Equation 2}$$

and its variation in time:

$$\frac{\Delta\Phi}{\Delta t} = \left(\frac{\Delta x}{\Delta t}\right)LB = vLB \quad \text{Equation 3}$$

So:

$$\varepsilon = vLB \quad \text{Equation 4}$$

and if the coil has a resistance (R) and the induced current:

$$i = \frac{\varepsilon}{R} = \frac{vLB}{R} \quad \text{Equation 5}$$

A conductor traversed by an electric current immersed in a magnetic field undergoes the action of a force given by:

$$F = IL \times B \quad \text{Equation 6}$$

Thus, the effect of the current induced in the loop appears as forces  $F_f$ , and  $F - FM$ . The first two cancel each other out and the third is cancelled by an external force  $P_{EXT}$  needed to maintain the constant speed loop.

As the force  $FM$  must oppose the force  $F_{EXT}$ , current (i) induced in the loop by varying the magnetic flux must have the meaning indicated in **Fig.3**. This fact is a particular example of Lenz's Law.

Considering the experimental activities discussed with Faraday's law, when a magnet approaches a coil, the induced current in the coil has a direction as shown in **Fig.1**. This generates a magnetic field whose north pole is

facing the north pole of the magnet, that is, the field generated by the induced current opposes the motion of the magnet.

When the magnet is moved away from the coil, the current induced in the coil has a direction opposite to that shown in **Fig.1**, thereby generating a magnetic field whose south pole is facing the north pole of the magnet. The two poles attract each other, that is, the field generated by the induced current opposes the movement of the magnet away from the coil. This behaviour is present in all current power generators, and known as 'engine brake' is highly undesirable as it increases the resistance and so, the energy loss.

When two electromagnetic coils are placed facing each other, as shown in **Fig.2**, there is no current in either of them. At the instant of power-up of one of the coils, the current in the coil, generates an induced current in the second coil. When powered up, the current in the coil goes from zero to its maximum value, and then remains constant.

Thus, when the current is changing, the magnetic field generated by it, (whose north pole faces the second coil) is also changing and so the magnetic flux of this field through the second coil is also changing. Then there is a current induced in the second coil whose sense is such that the magnetic field it generates tends to decrease the flow mentioned above, that is, its north pole confronts the north pole of the first field coil.

When the power switch is opened, the current in the first coil drops from its maximum value to zero, and correspondingly its magnetic field decreases. The flux of the magnetic field in the second coil also decreases, and the induced current now flows in the opposite direction. This current flow direction produces an enhancing magnetic field, that is, it has a south pole facing the north pole of the field of the first coil.

Thus, there is a realisation of the principle of conservation of energy, expressed by Lenz's law, wherein any induced current has an effect which opposes the cause that produced it. Assuming that the induced current acts to favour the variation of the magnetic flux that produced the magnetic field of the coil, it would have a south pole facing the north pole of the approaching magnet, causing the magnet to be attracted towards the coil.

If the magnet were then released, it would experience an acceleration toward the coil, increasing the intensity of the induced current and thus create an enhanced magnetic field. This field, in turn, would attract the magnet with increasing force, and so on, with a continuing increase in the kinetic energy of the magnet.

If energy were to be withdrawn from the magnet-coil system at the same rate at which the kinetic energy of the magnet increases, then there would be an endless supply of energy. So it would be a perpetually operating motor, which would violate the principle of conservation of energy. Therefore, it can be concluded that current generators feature a large energy loss during the generation of electricity.

### **Objectives of the Invention**

An objective of the present invention is to contribute to the generation of sustainable energy, proposing an electromagnetic machine capable of producing abundant electricity from an extremely low input of electrical energy.

The above objective and other objectives are achieved by the present invention by a device comprised of at least one electromagnetic field-generating device (without a core or with at least one core) powered by an electrical power source (without a core or with at least one core) having their coils, or sets of coils, wound on at least one common conductive member in a closed circuit which itself has a polarised voltage which is connected to at least one conductive interconnection element which is connected to a grounding grid, these interconnections creating a new technical effect, namely, the appearance of an electric current which keeps circulating in a closed conductive loop, and which can therefore be used to power external loads.

The device which is the object of the present invention operates as follows: the electromagnetic field generating device, powered by a power source, produces an electromagnetic field which induces an electric current in a closed conductive circuit, creating an interaction between the magnetic poles of the equipment and the magnetic poles of the earth - through both electromagnetic attraction and repulsion. An endless supply of electrons is drawn from the earth into the conductive closed loop, which is connected to the ground through a conductive interconnected grid. Attracted electrons add to the current already flowing in the conductive closed loop, making power available for driving high-power loads, although the device itself is only supplied with a small amount of power. Thus, advantageously, the device which is the object of the present invention, acts as a trap for electrons from the earth and this allows the generation of electricity.

Advantageously, the present electromagnetic equipment generates either electricity or thermal energy, providing access to this new source of energy is through an electromagnetic field. The interconnections of the components

of the electron-trap of the present invention, cause an advantageous new technical effect, namely, the appearance of an electric current which keeps circling in the conductive closed circuit, with or without voltage being applied and even without a load being connected to the loop - provided that the electron-trap is connected.

The proposed sensor can also be used to generate thermal power, depending on the form in which you want to use the effect of the flow of electrical current produced in this electromagnetic equipment.

For the generation of thermal energy in amounts proportional to the power of the electron-trap, through the movement of electrons in the conductive closed loop itself, the resistance should be increased by increasing the number of turns around the cores in the conductive element of the closed circuit, and in that instance, the coils of the electromagnetic field generating device, will then be made of heat-insulated electrical circuit components, bearing in mind the required temperature which is to be produced. The thermal energy generated by the electron-trap can be used in any application from domestic to industrial applications.

This technology can also be used for various technical purposes in electric machines. By "electrical machines", it should be understood to include: static electrical machines, transformers, ballasts, rotating electrical machines, synchronous machines, dual power supply machines, current rectifiers in synchronous cascade, external pole machines, synchronous current machines alternating current machines and/or direct current machines, electronic equipment and electrical resistances. The capture of electrons can provide single-phase, two-phase or three-phase supplies, operating at low, medium or high voltage.

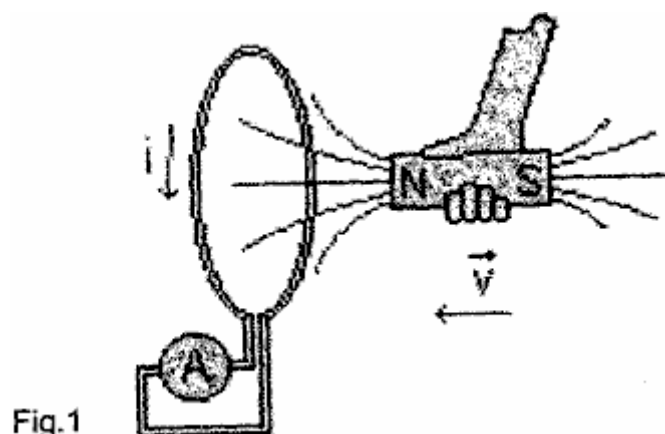
The capture of electrons by induction, does not impact on the environment. The fact is that we use as the capturing force, only a negligible amount of electricity relative to the current captured by the sensor. The relationship between power input and the quantity of electricity generated by the electron-trap is at least 1 to 100, that is, for each 1 watt provided to the sensor, there is at least 100 watts of power available for external loads. This relationship, however, is not limited, as it depends on the mounting of the electron-trap and the objectives of the circuit, and so, the generated power can be greater than 100 times the input power.

Another advantage of the earthed electron- trap proposed in the present invention is that the electron-trap can transport electrons from point "A" to point "B" without a voltage drop across the closed-loop conductive element - if it is biased with a voltage - regardless of the distance between the points depending on the strength and quantity of the electromagnetic field generating devices. It is also possible to transport electrons when the conductive element in a closed circuit is itself not polarised. Thus, the electric current is transported without voltage, just by the magnetic field formed between the device and the generator of the electromagnetic field.

### Brief description of the Drawings

The present invention will now be described with the aid of drawings, but the design is not limited to the implementations shown in these drawings, although they show other details and advantages of the present invention.

The figures show:



**Fig.1** - illustrates Faraday's law.

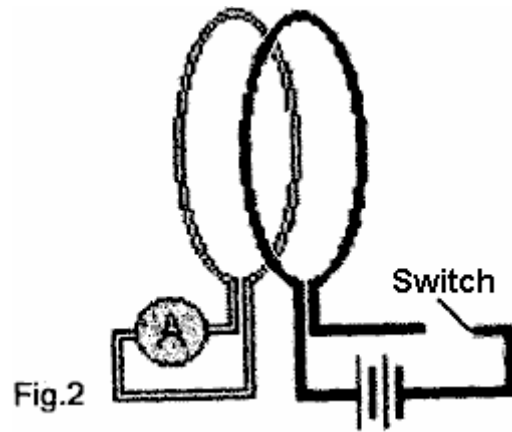


Fig.2 – is a representation of Faraday's law.

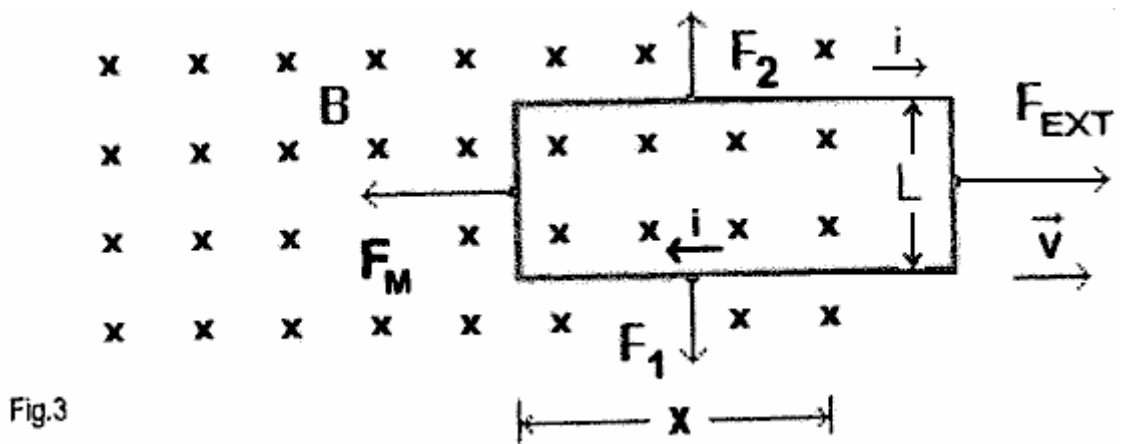


Fig. 3 – is a representation of Faraday's law.

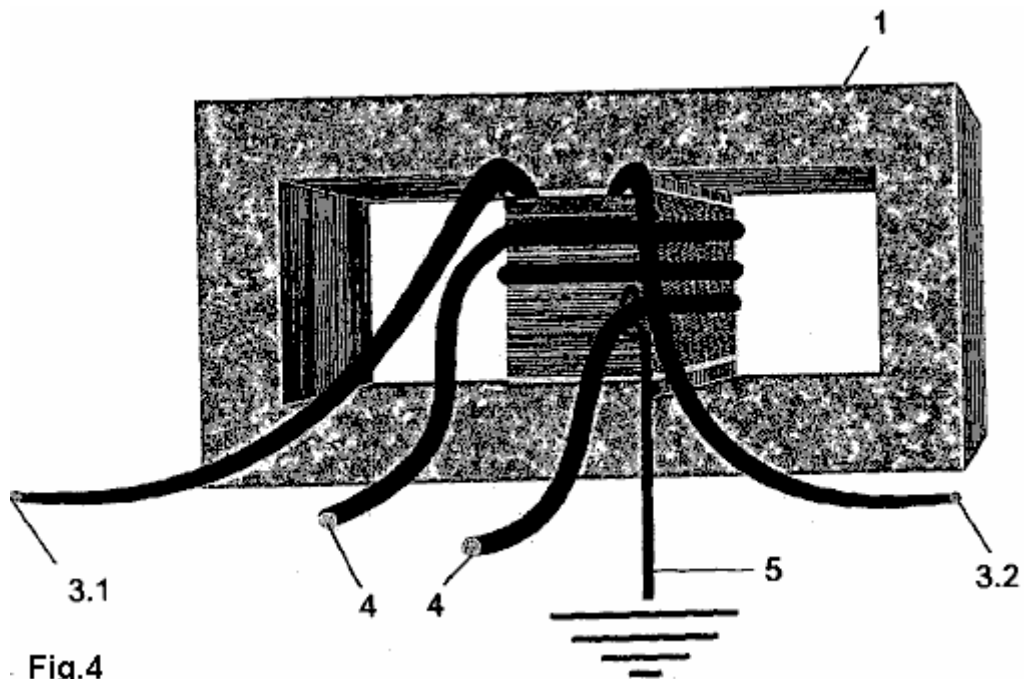


Fig. 4 - is a perspective view of an electron-trap with a single phase coil.

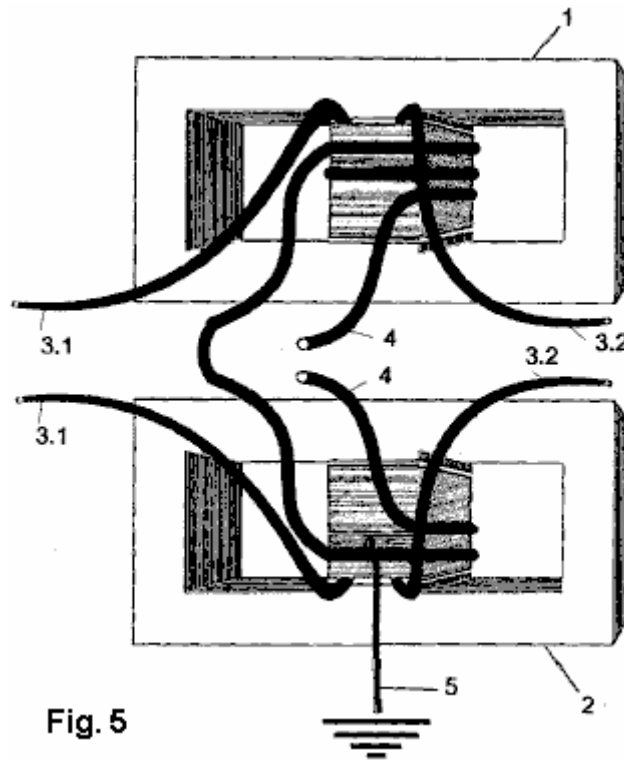


Fig. 5

**Fig.5** – is a perspective view of a single-phase electron trap with two coils.

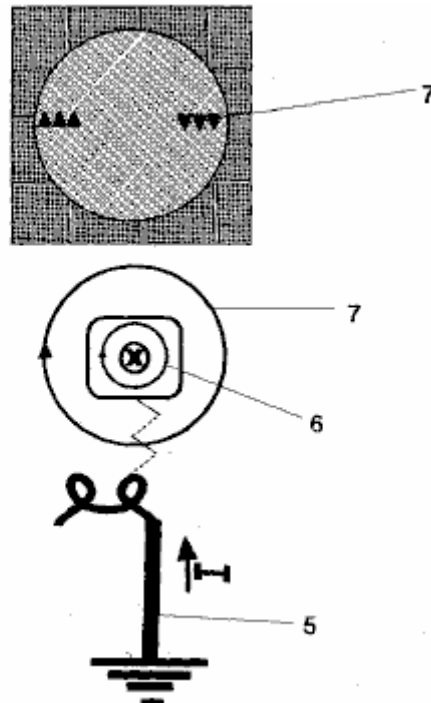
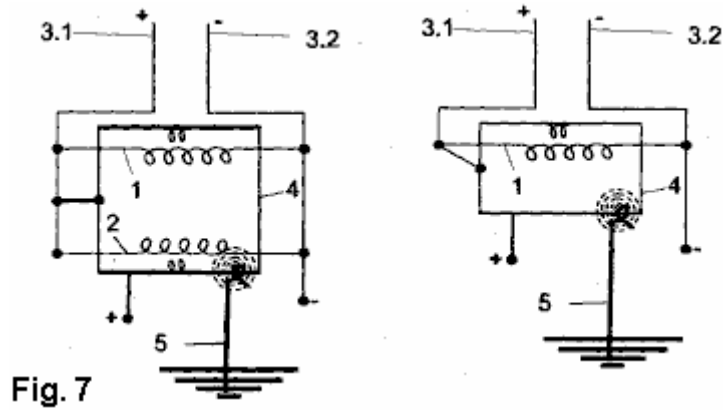
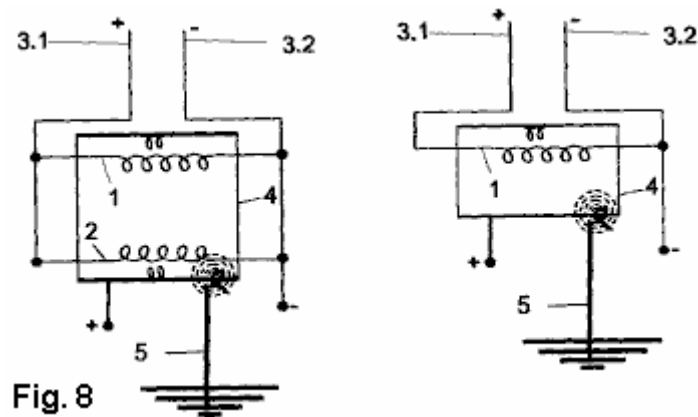


Fig. 6

**Fig.6** - is a representation of the effect of electromagnetic flux in the coils around the cores of the electron trap.

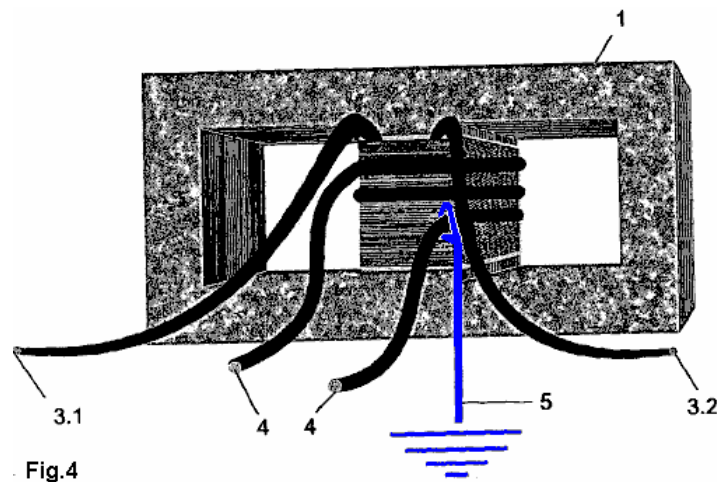


**Fig.7** - is a representation of an electrical circuit with two coils of the link/coil conductor polarised.



**Fig.8** - is a representation of an electrical circuit with two coils of the link/coil conductor not polarised.

#### Detailed Description of the Drawings

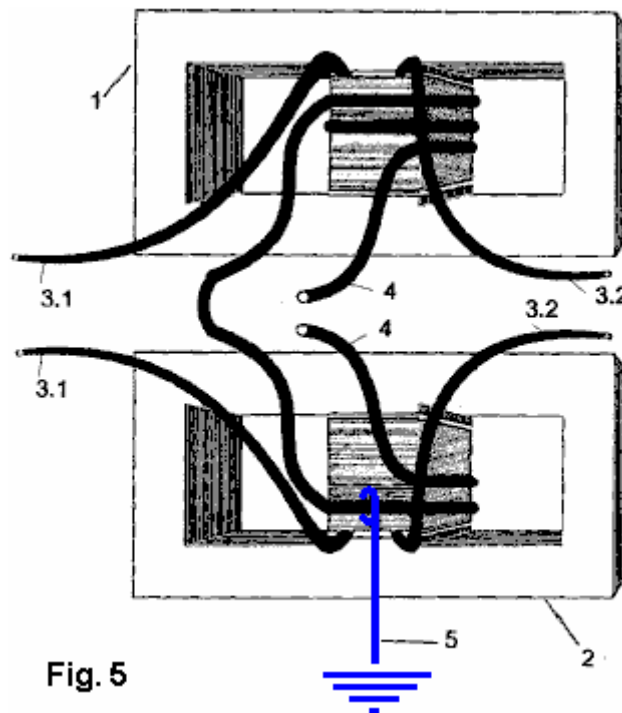


**Fig.4** shows one of several types of electron-trap proposed by the present invention, where the electron-trap is single-phase and consists of at least one electromagnetic field-generating device with at least one set of coils, in this case it happens to be an electromagnetic type coil with one common magnetic core, but it could alternatively have any number of windings of any kind and shape. However, the electron-trap proposed by the present invention can be constructed with a different type of electromagnetic field generating device, such as an electromagnetic inductor or magnet of any type or shape, or any combination of them, and in unlimited numbers for each phase of the electron trap.

When winding these coils, for example, coil **4-4**, each coil must have at least one complete turn, preferably two turns if the objective is to generate electricity, and preferably four turns if the objective is provide thermal energy. The number of turns in the coils wound around the common core, is directly related to the amount of current to be generated.

At least one conductive interconnection element, in this case the driving member **5** - which can be copper or any other suitable conductive, material whether insulated or not insulated, connects or loop-links wire **4** to the ground grid. The connection between the conductor **5** and wire **4** is by electromagnetic induction. Winding **4** is also the power supply for the loads which are to be powered by the captured electrons.

Also in **Fig.4**, the power wires **3.1** and **3.2** (live phase and neutral) have an input from an external power coil **1** which can be energised from any external source of electricity such as a power grid. The trapped electrons can be configured to supply DC or AC current. Thus, if the coil **1** power source is alternating electrical current - AC, then the electron-trap provides alternating electrical current. If the power source is continuous electrical current - DC, then the electron-trap provides continuous electrical current - DC. The electrical supply provided by the trapped electrons can be single-phase, two-phase or three-phase, and at low, medium or high voltage.



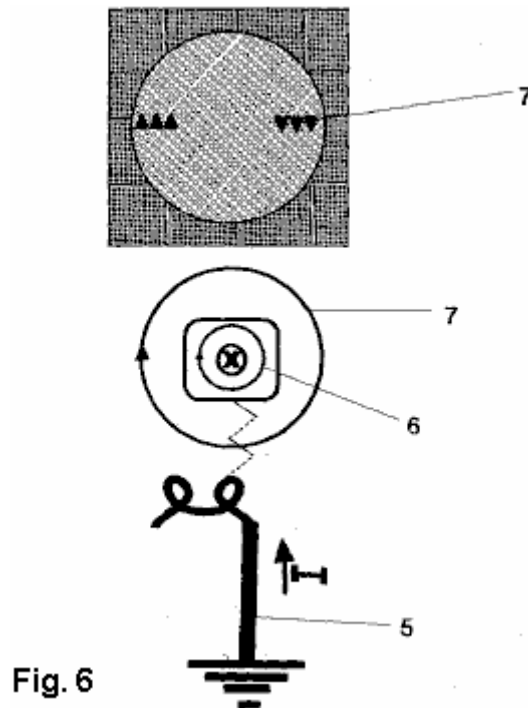
**Fig.5** shows an electron-trap with two single-core phase coils: **1** and **2**, although these coils may be of any type and shape. However, the electron-trap proposed by the present invention can be constructed with other types of electromagnetic field generating device, with at least one electromagnetic inductor or electromagnet which can be of any type and shape, with any combination of them, and in unlimited quantities in each phase of the electron-trap.

The coils on frames **1** and **2** may have other shapes, but they must each have at least one complete turn, particularly in coil **4**. The number of turns in this winding are directly related to the amount of current to be generated. This coil also makes the interconnection between the coils **1** and **2** forming the link between their two cores.

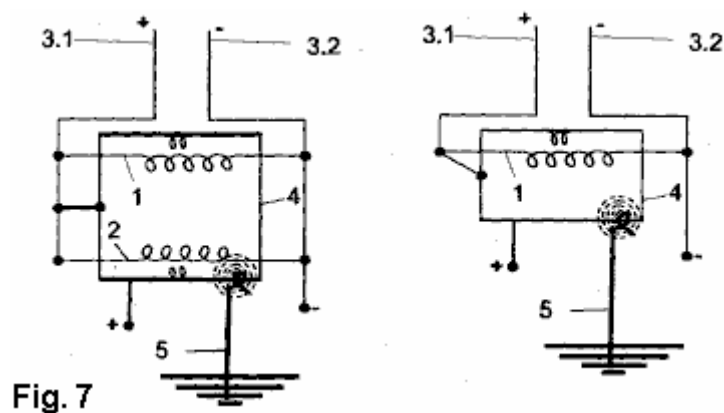
At least one conductive interconnection element, in this case the driving member **5** - which can be copper or any other suitable conductive, material whether insulated or not insulated, connects or loop-links wire **4** to the ground grid. The connection between the conductor **5** and wire **4** is by electromagnetic induction.

In electron-traps which have numerous sets of coils **1** and **2**, the ends of all of the power-supply conductors **3.1** can all be connected to each other, and all of the **3.2** conductor ends may be connected together. Thus, all of the coils **1** and **2** can be fed exactly the same voltage. The power to energise coils **1** and **2** can be provided from any external source of supply of electricity such as a power grid.

In electron-traps which have numerous coils **1** and **2**, a single coil winding **4** connects the cores of all of the coils **1** and **2**.

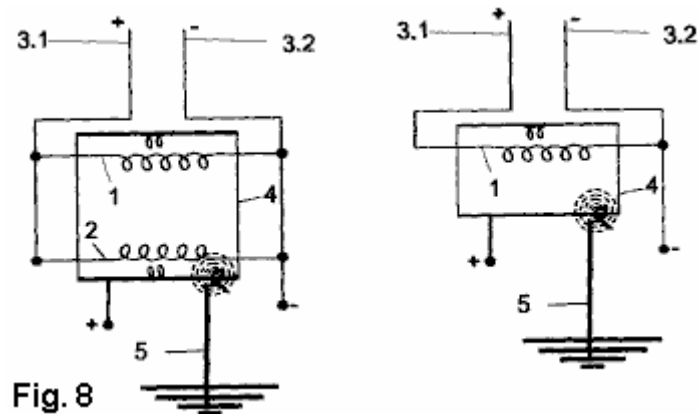


The diagram shown in **Fig.6**, illustrates the magnetic induction **6** around the core "X" of the coil **1**. This induction causes electrical current flow in the conductor coil link **7/4**, attracting electrons from the earth, through the conductive member **5**, to the magnetic field of the electron-trap, where those electrons are added to the current generated by induction in the link coil **4** conductor loop circulating between north and south magnetic poles.



**Fig.7** shows how the connections should be made in one version of the electrical circuit of the electron-trap proposed in this invention. The diagram shows the electrical circuit of an electron-trap where the link/coil driver **4** is polarised with a voltage. This is one form of construction for an electron-trap which has two coils **1** and **2**, where a link/coil loop conductor **4** is biased with a voltage, that is, there is a link connecting the coil conductors **4** of a power supply **3.1** or **3.2**, whatever the stage.

In this way, earth electron-traps, by adopting this circuit, that is, with the link/conductor loop **4** and polarised voltage on coils **1** and **2**, besides being used as a power source for external loads, can also be used for thermal power generation.



**Fig.8** shows how connections should be made in another electric circuit electron-trap proposed in this invention. the circuit illustrates a circuit of an electron-trap with a non-polarised link / coil driver **4**. This is one form of construction of the electron-trap where a link / coil conductor **4** of the spiral conductor coils **1** and **2** is not polarised, that is, there is no such link connecting conductor / conductor coil conductors **4** of a coil **3.1** or **3.2**.

Thus, earth electron-traps adopting this circuit, that is, with the link coil not polarised, the current flows without there being voltage in the link/coil conductor **4** joining the first and second coils by electromagnetic induction. They can also be used for generating thermal energy.

The structure of the circuit - in the open or closed coils **1** and **2**, and always in the closed link / loop lead **4** - makes it possible to generate current by induction and electron capture by electromagnetism on the link conductor **4** - where current is generated and stays in motion with or without voltage, as the coils **1** and **2** are being fed. Thus, the present invention provides a new concept for electrical energy generation, since it is obtained from an electric current circling without consumption and even without an output load being attached to it.

Additionally, because the induced electrical current flows regardless of the voltage present, it can be used as a current stabiliser for electrical networks whether they be single-phase, two-phase or three-phase, with low, medium or high voltage.

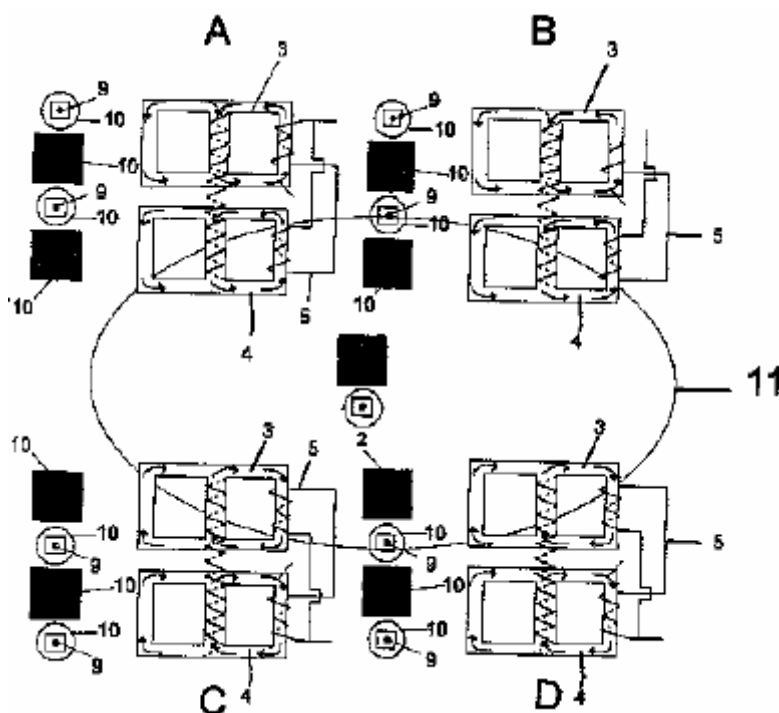
# ELECTROMAGNETIC DEVICE FOR CAPTURING FREE SPACE ELECTRONS TO GENERATE ELECTRICITY

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Assignee: EVOLUÇÕES ENERGIA LTDA (Rua Santa Tereza 1427-B Centro - Imperatriz -, MA - CEP -470 - Maranhão, 65900, BR)



## Abstract:

The invention relates to a device that comprises at least three sets (A, B, C, D) of at least one device for generating an electromagnetic field (3) and (4), powered by an electricity source (without a core or with at least one core) the cores thereof or any extension thereof, preferably the windings or sets of windings thereof, being surrounded by at least a single conductive element forming a polarised and energised closed-circuit (5), the sets of electromagnetic-field generating devices (3) and (4) being linked together by their opposing poles to encourage the interaction of their electromagnetic fields, which ideally, are located between two hollow metal hemispheres (1) so as to concentrate and enhance the electromagnetic fields, these interconnections causing, as a novel technical effect, the emergence of an electrical current that circulates, with or without voltage, in the conductive element forming a closed-circuit (5) - even if no load is connected.

## Description:

### "ELECTROMAGNETIC EQUIPMENT FOR FREE ELECTRON-CAPTURE FROM SPACE, FOR ELECTRICITY GENERATION".

## Technical Field

The present invention relates to electromagnetic equipment for electrical power generation and/or thermal power generation. More specifically, equipment capable of producing abundant electricity and thermal energy from a tiny input of electrical energy.

### Description of the Related Art

According to Lenz's law, any induced current has a direction such that the magnetic field it generates opposes the change in magnetic flux that produced it. Mathematically, Lenz's Law is expressed by the negative sign (-) that appears in the formula of Faraday's Law, as follows.

The magnitude of the induced emf ( $\varepsilon$ ) in a conducting loop is equal to the rate of change of magnetic flux ( $\Phi_B$ ) with time:

$$\varepsilon = - \frac{d\Phi_B}{dt} \quad \text{Equation 1}$$

As an example of application of Faraday's Law, we can calculate the electromotive force induced in a rectangular loop that moves in or out, with constant speed, a region of uniform magnetic field. The magnetic field flux through the surface limited by the loop is given by:

$$\Phi = xLB \quad \text{Equation 2}$$

and its variation in time:

$$\frac{\Delta\Phi}{\Delta t} = \left(\frac{\Delta x}{\Delta t}\right)LB = vLB \quad \text{Equation 3}$$

So:

$$\varepsilon = vLB \quad \text{Equation 4}$$

and if the coil has a resistance (R) and the induced current:

$$i = \frac{\varepsilon}{R} = \frac{vLB}{R} \quad \text{Equation 5}$$

A conductor traversed by an electric current immersed in a magnetic field undergoes the action of a force given by:

$$F = IL \times B \quad \text{Equation 6}$$

Thus, the effect of the current induced in the loop appears as forces  $F_i$ , and  $F - F_M$ . The first two cancel each other out and the third is cancelled by an external force  $P_{EXT}$  needed to maintain the constant speed loop.

As the force  $F_M$  must oppose the force  $F_{EXT}$ , current (i) induced in the loop by varying the magnetic flux must have the meaning indicated in **Fig.1**. This fact is a particular example of Lenz's Law.

Considering the experimental activities discussed with Faraday's law, when a magnet approaches a coil, the induced current in the coil has a direction as shown in **Fig.2**. This generates a magnetic field whose north pole is facing the north pole of the magnet, that is, the field generated by the induced current opposes the motion of the magnet.

When the magnet is moved away from the coil, the current induced in the coil has a direction opposite to that shown in **Fig.2**, thereby generating a magnetic field whose south pole is facing the north pole of the magnet. The two poles attract each other, that is, the field generated by the induced current opposes the movement of the magnet away from the coil. This behaviour is present in all current power generators, and known as 'engine brake' is highly undesirable as it increases the resistance and so, the energy loss.

When two electromagnetic coils are placed facing each other, there is no current in either of them. At the instant of power up one of the coils, the current in the coil, generates an induced current in the second coil. When powered up, the current in the coil goes from zero to its maximum value, and then remains constant.

Thus, when the current is changing, the magnetic field generated by it, (whose north pole faces the second coil) is also changing and so the magnetic flux of this field through the second coil is also changing. Then there is a current induced in the second coil whose sense is such that the magnetic field it generates tends to decrease the flow mentioned above, that is, its north pole confronts the north pole of the first field coil.

When the power switch is opened, the current in the first coil drops from its maximum value to zero, and correspondingly its magnetic field decreases. The flux of the magnetic field in the second coil also decreases,

and the induced current now flows in the opposite direction. This current flow direction produces an enhancing magnetic field, that is, it has a south pole facing the north pole of the field of the first coil.

Thus, there is a realisation of the principle of conservation of energy, expressed by Lenz's law, wherein any induced current has an effect which opposes the cause that produced it. Assuming that the induced current acts to favour the variation of the magnetic flux that produced the magnetic field of the coil, it would have a south pole facing the north pole of the approaching magnet, causing the magnet to be attracted towards the coil.

If the magnet were then released, it would experience an acceleration toward the coil, increasing the intensity of the induced current and thus create an enhanced magnetic field. This field, in turn, would attract the magnet with increasing force, and so on, with a continuing increase in the kinetic energy of the magnet.

If energy were to be withdrawn from the magnet-coil system at the same rate at which the kinetic energy of the magnet increases, then there would be an endless supply of energy. So it would be a perpetually operating motor, which would violate the principle of conservation of energy. Therefore, it can be concluded that current generators feature a large energy loss during the generation of electricity.

### **Objectives of the Invention**

The present invention aims to contribute to the generation of sustainable energy, proposing electromagnetic equipment capable of producing abundant electricity from an extremely low input of electrical energy.

The above objective and other objectives are achieved in the present invention by a device comprising at least three sets of at least one electromagnetic field generating device (without a core or with at least one core) powered by an electrical power source, having their cores or any extension of them, with their coils or sets of coils, wound on at least one common conductive member in a closed circuit which is polarised by a voltage source, and these sets of electromagnetic field generating devices are arranged with their poles in confrontation, to promote the interaction of electromagnetic fields, and, preferably, positioned between two hollow metallic hemispheres, in order to focus and enhance their electromagnetic fields - these interactions cause a new technical effect - the emergence of an electric current which keeps flowing in a closed loop, with or without voltage being applied to that closed loop, current which is capable of powering external loads - even if no load is attached to it.

The device which is the object of the present invention operates as follows: Sets of electromagnetic field generating devices to be powered by an electrical power source, produce an electromagnetic field which induces an electric current in a closed conductive circuit, creating an interaction between the magnetic poles, and through repeated electromagnetic attraction and repulsion, provides an endless supply of electrons to the conductive closed loop itself.

The electrons attracted by this technique, augment the current flowing in the closed conductive loop, which provides the current to power external loads of high power, in spite of the fact that the device itself is supplied with only a small level of power. Thus, advantageously, the device which is disclosed in the present invention forms a trap for electrons from space, resulting in the generation of electricity. The interconnections of the components of the electron-trap cause, a new technical effect, namely, the appearance of an electric current which keeps circling in a closed circuit, even without any voltage being applied to the closed circuit, and even without a load being connected to it. The present electromagnetic equipment generates electricity or thermal energy, providing access to this new source of energy through the use of an electromagnetic field.

The proposed sensor can also be used for the generation of thermal energy depending on the form of circuit which is to be used, resulting from the flow of electric current produced by this electromagnetic equipment.

This field generates a flow of electric current induced by electromagnetic coils, which appears in the linking interconnecting devices generating electromagnetic fields with electromagnets, inductors or magnets. This chain operates in a manner favourable to the variation of the magnetic flux produced by the magnetic field in the electron-trap. Thus, it creates a north pole and a south pole, providing an endless supply of electric current without resistance between the links which interconnect the devices which are generating the electromagnetic fields. So, induced electric current is generated with or without voltage in the interconnection links of electromagnetic field-generating devices, depending on the connection method of the electrical circuit of the electron-trap.

The free-electrons collected by the space electron-trap can form alternating current (AC) or direct current (DC). The ratio of input power to output power is 1 to 100, that is, the generated power can be 100 times greater than the input power when there is at least one link / coil driver between the coils and the inductors or electromagnets. This relationship, however, is not limited to a factor of 100, as it depends on the shape of the electron-trap and its objective.

Another advantage of the free space electron-trap of the present invention is that, with thermal insulation of the components in the electric circuit, it is possible to produce thermal energy at low, medium or high temperature, through the movement of the electrons in the conductors, coils and/or electromagnets. The temperature generated is linked directly to the number of turns in the coils.

Thermal power generation performed by the sensor can be used for boiling and/or evaporation of liquids to be used in other types of energy generation, for example, replacing the use of coal and natural gas.

Another advantage of the proposed electron-trap of the present invention is that the electron-trap can transport electrons from one point "A" to a point "B", without a voltage drop in the link - if it is polarised - regardless of the distance between the points, depending on the strength and quantity of the electromagnetic field-generating devices. It is also possible to transport the electrons when the link devices generating the electromagnetic field are not polarised. In this way, the electric current is conveyed without voltage but only by the magnetic field formed between the coils. This methodology can be used in various fields.

Because of its simple construction, the electron-trap is a simple device which is compact, and performs low-cost power generation which can be used in all types of machinery, equipment and devices of all kinds, and many areas of application which require electricity in order to operate. The electron-trap can have single-phase, two-phase or three-phase output, and can generate electric current at low, medium or high voltage.

### Brief description of the Drawings

The present invention will now be described with the aid of drawings, but the design is not limited to the implementations shown in these drawings, although they show other details and advantages of the present invention.

The figures show:



Fig.1 - illustrates Faraday's law.

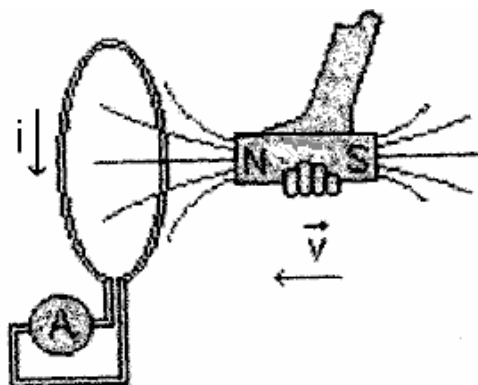
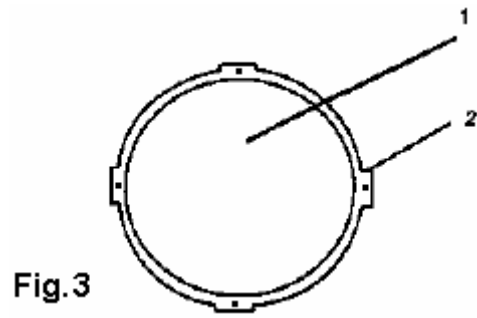
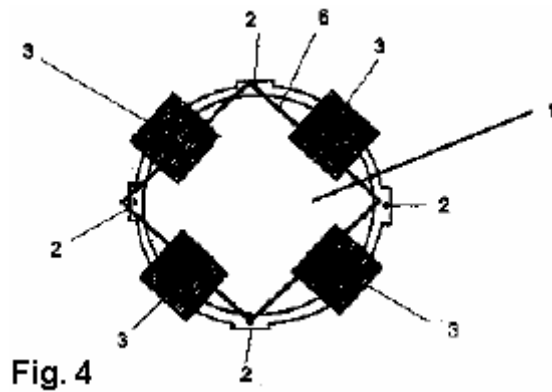


Fig.2 illustrates Faraday's law where a magnet approaches a coil of just one turn..



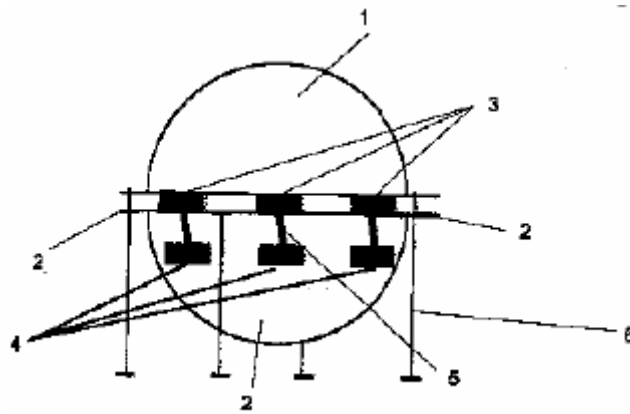
**Fig.3**

**Fig.3** is a view of one metallic hemisphere seen from above.

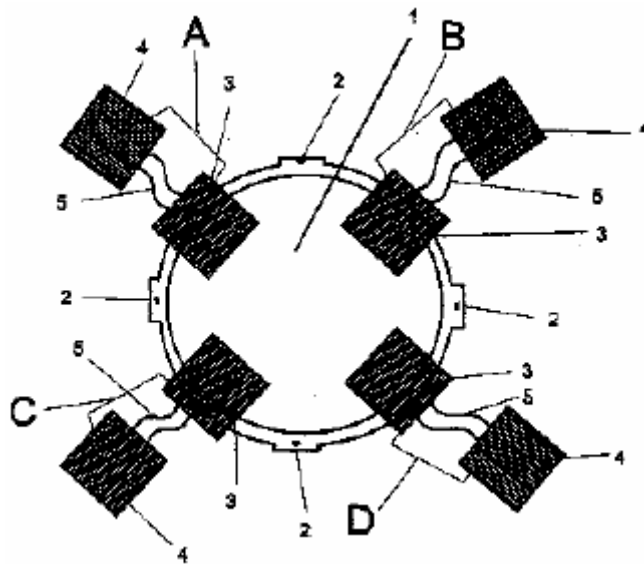


**Fig. 4**

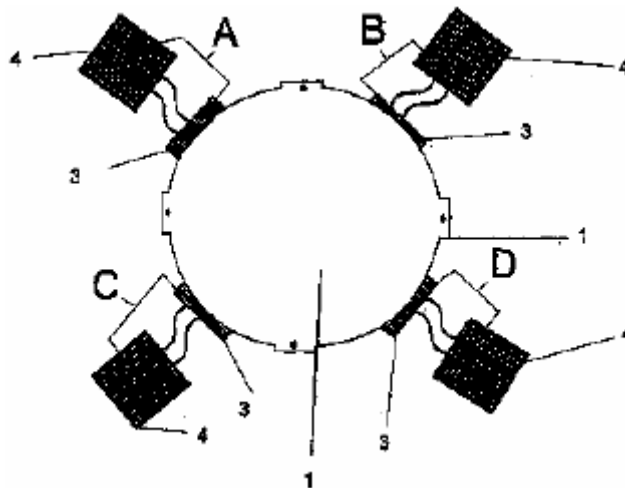
**Fig.4** is a bottom view of the hemisphere with the coils in place.



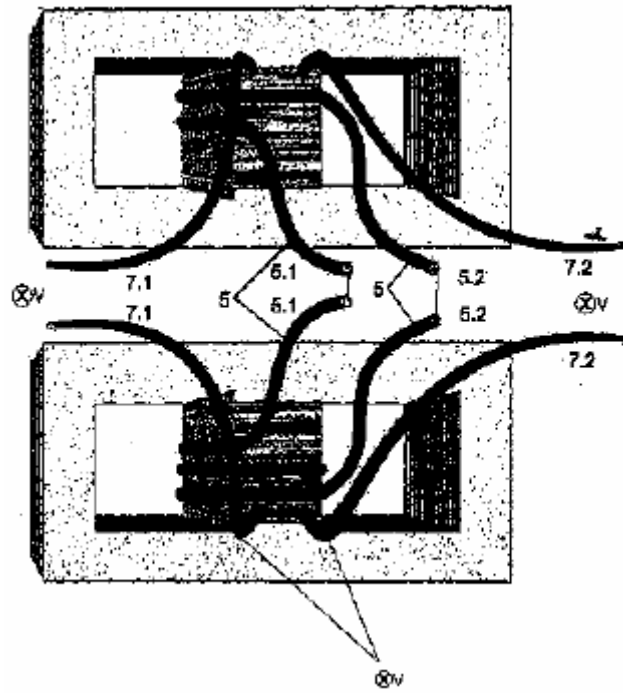
**Fig.5** is a side view of the free-space electron-trap.



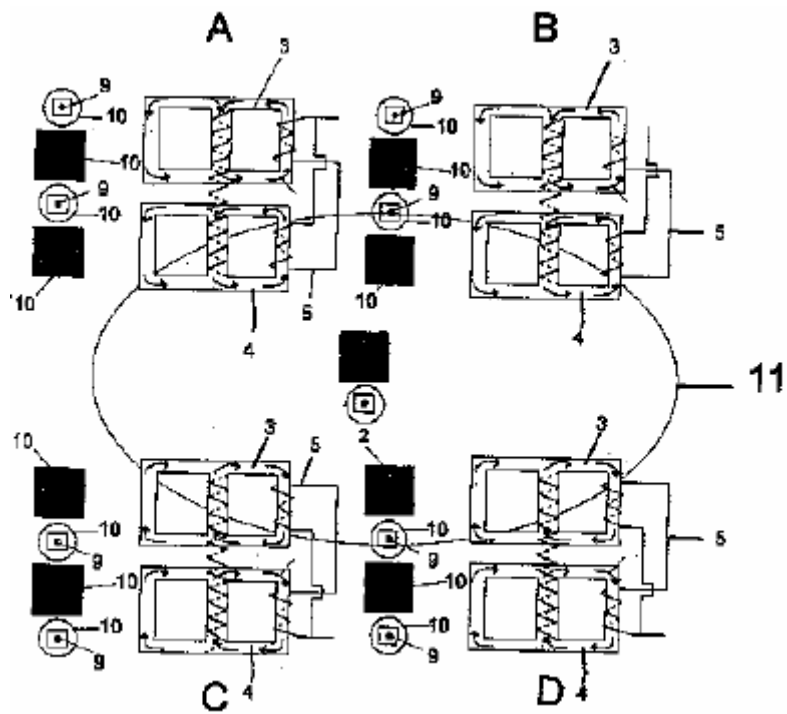
**Fig.6** is an underside view of the space electron-trap, with its coils and electromagnets



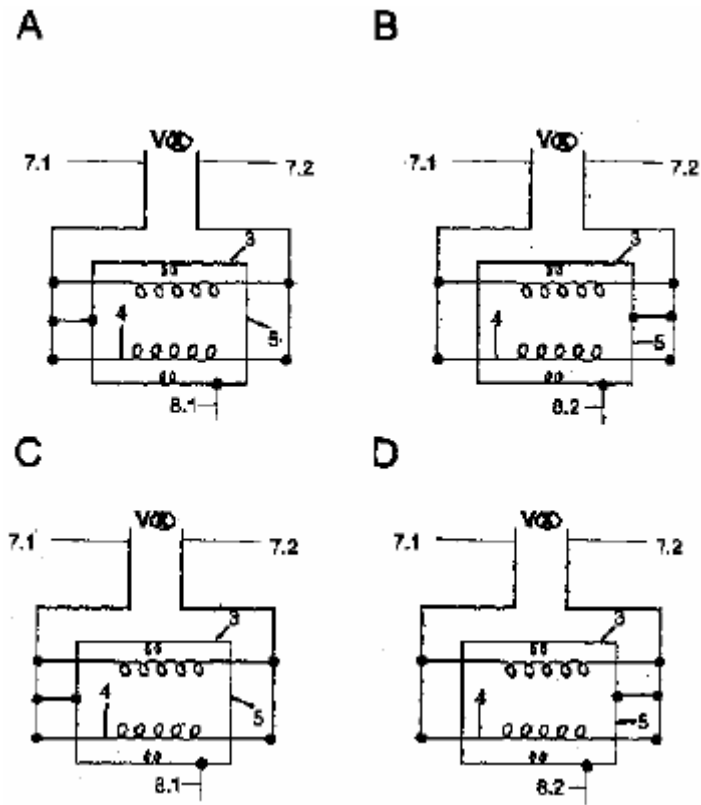
**Fig.7** a view from above of the space electron-trap with its coils and electromagnets.



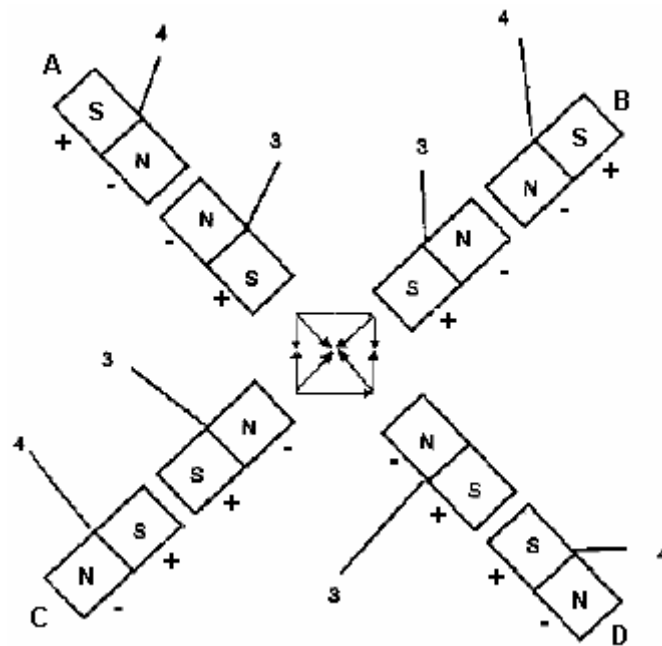
**Fig.8** is a perspective view of an electron-trap with its coils.



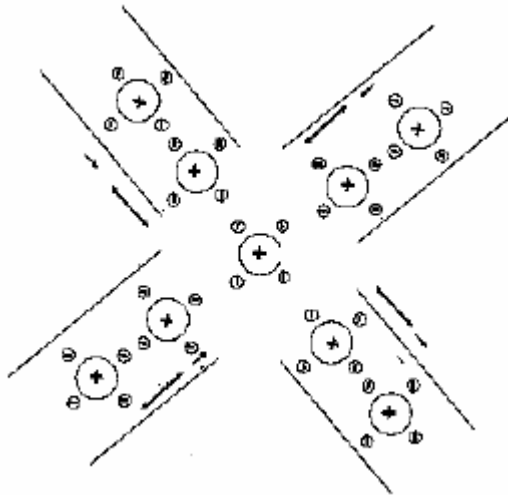
**Fig.9** shows the circuit diagram of the device, indicating the effect of electromagnetic field.



**Fig.10** - shows the circuit diagram of the connection of the inductor coils in sets (A, B, C and D).

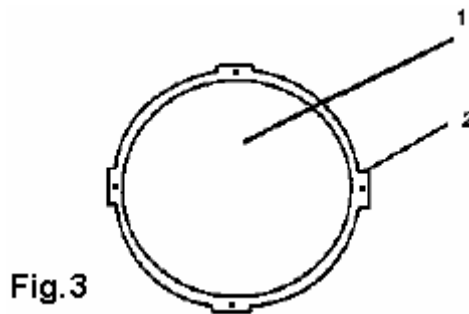


**Fig.11** - is an electromagnetic diagram representation of north and south poles of the sets of coils (A, B, C and D).



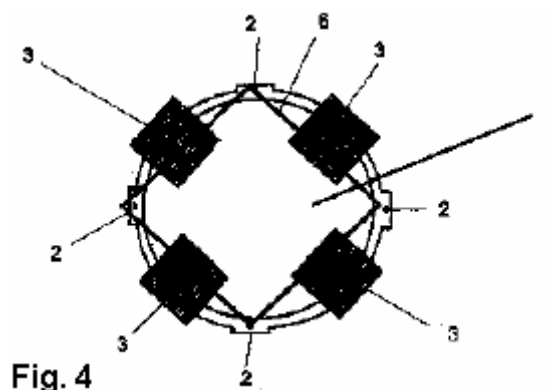
**Fig.12** is a representation of the electrons being attracted and repelled by the device.

### Detailed Description of the Drawings



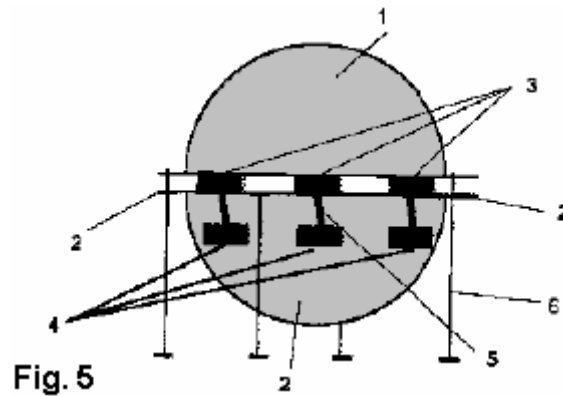
**Fig.3**

**Fig.3** is a top view of one of the two hollow metallic hemispheres 1 which is part of the electron trap of free space proposed in this invention. Hemisphere 1 is preferably made from, but not limited to, aluminium, and it has mounting tabs 2.



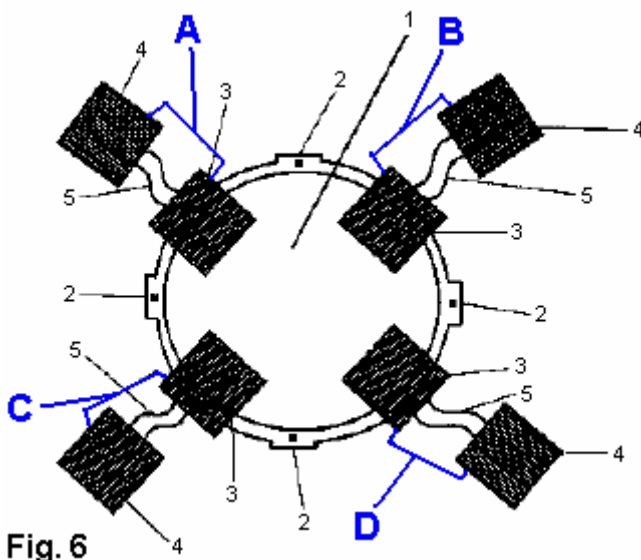
**Fig. 4**

**Fig.4** is a bottom view of metallic hemisphere 1. It has four electromagnetic field generating devices 3, positioned around the hemisphere and fixed to support 6 which is attached to hemisphere 1 by mounting tabs 2.

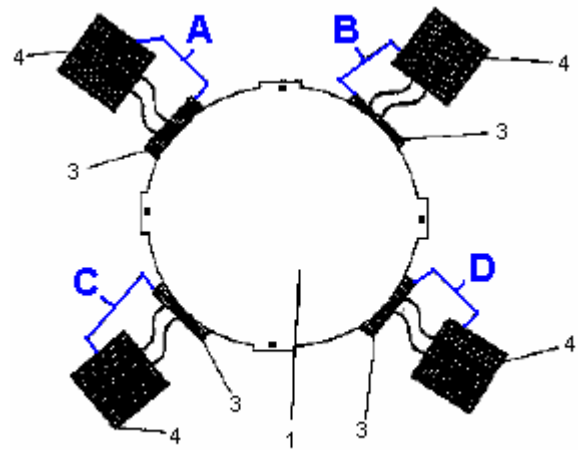


**Fig. 5**

**Fig.5** is a side view of the free space electron-trap. It shows the two metallic hemispheres **1** and **2** (which form an imperfect sphere), and three of the coils **3** which are attached to the mounting tabs **2** and three inductors **4** which form the closed circuit itself, and which are attached by conductors **5**, and support member **6** on which are mounted coils **3** and their components.



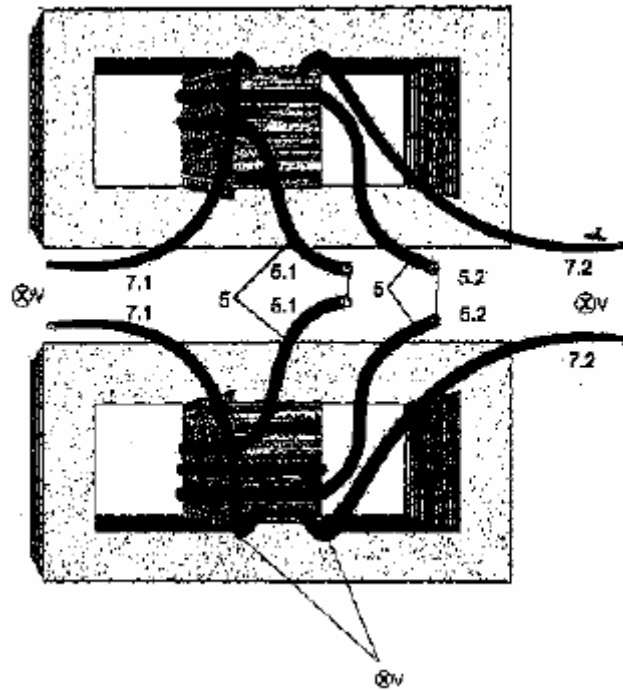
**Fig. 6**



**Fig. 7**

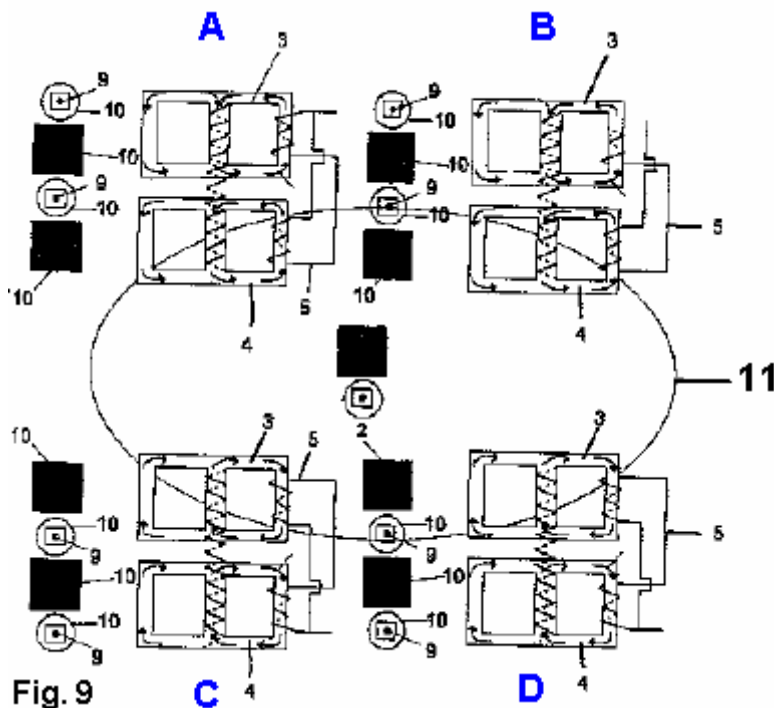
**Fig.6** and **Fig.7** show the top and bottom views of the metallic hemisphere **1** which accommodates four coils **3** attached to the holder **6** (not shown) which is secured to the hemisphere **1** by its mounting tabs **2**. **Fig.6** also shows the inductors or electromagnets **4** their corresponding coils **3** and their interconnecting conductors **5**. Each coil **3** and its linked inductor **4** forms a set. In **Figures 6** and **7** there are four such sets, marked **A**, **B**, **C** and **D**. The coils **3**, connected by their links **5**, each have at least one turn, and if the objective is to generate electricity, then preferably two turns, and if the objective is thermal energy, then four turns. The coils **3** may have various different shapes. The number of turns in the coil **3** are directly related to the amount of current to be generated, and the connecting links **5** may be either a single conductor or more than one conductor, the cross-sectional area of conductor **5** being selected to carry the current which is to be generated.

In sets **A**, **B**, **C** and **D**, the link conductors **5** have at least one turn around coils **3**. This winding is connected to the respective electromagnets **4** of each set (**A**, **B**, **C** and **D**) as shown in **Figures 6** and **7**. Please note that the inductors and electromagnets **4** can be any type of inductor, and other types of coil may be used.



**Fig.8** shows the inter-connecting coils **5** for each of the five sets **A, B, C** or **D** linking between coils **3** and **4** in each set. As shown in **Fig.6** and **Fig.7**, the link **5** makes the connection between coils **3** and **4**. This means that the wires marked **5.1** are all connected together, and the wires marked **5.2** are all connected together. Doing this, establishes the interconnection links **5** shown in the drawings. The power supply wires marked **7.1** are connected together as are the wires marked **7.2**. The wires marked **7.1** are connected to the live phase of the external power supply, while the other ends marked **7.2** are connected to the neutral of the external power supply.

In the space free-electron trap of the present invention, the coils **3** can be either single-phase, two-phase or three-phase. Also, the coils **3** may be powered by any voltage (V). The power coil **3** can be energised by any source of electrical energy such as a power grid. The electron-trap can be configured to produce alternating current or direct current. So, if the external power supply is alternating electrical current - AC, then the electron-trap provides an alternating electrical current output. If the power supply is DC, then the electron-trap provides an output of continuous electrical current - DC. The electron-trap can be configured for single-phase, two-phase or three-phase operation, with low, medium or high voltage outputs.



**Fig.9** shows an electron-trap circuit diagram with four sets **A, B, C** and **D** of inductor coils **3** and **4**. Induction is produced around core **9** of the three sets of coils **A, B, C** and **D**. The effect of the interaction of the

electromagnetic fields **11** is shown. The induction via core **9**, causes the circulation of electric current in the links **5**, attracting the free electrons through the electromagnetic field of the trap. Then, the electrons join with the current generated by induction on link **5**, circulating between the magnetic poles north-south and south-north.

By way of example, the coils **3** are shown wound on a single phase column type core, but these can also be of any kind or shape. The electron-trap proposed by the present invention can be constructed with another type of electromagnetic field generating device which has at least one electromagnetic coil or magnet or electromagnetic inductor which can be of any kind or shape, or any combination of those, and with any number in each phase of the electron-trap.

The electron capture occurs through an electromagnetic field which is formed with the connection of coils **3** with the electromagnets or inductors **4** through the links **5** between the eight components.

This closure produces the displacement of the electrons in the coil **3** set (**A**) (for simplicity, referred to as coil **3A**), these electrons are attracted by the protons of coil **3D**, and are repelled by the electrons of the electromagnetic field of the coil **3D** itself. These coil **3D** electrons are attracted by the protons of the coil **3B**, and are repelled by the electrons of the electromagnetic field of coil **3B**. These electrons of coil **3B** are attracted by the protons of coil **3C**, and are repelled by the electrons of the electromagnetic field of the coil **3C** itself. Similarly, the **3C** coil electrons are attracted by protons of the **3A** coil, and are repelled by the electrons of the electromagnetic field of the coil **3A** itself. These coil **3A** electrons are attracted by the protons of the **3D** coil, and are repelled by the electrons of the electromagnetic field of the **3D** coil itself. Analogously, the coil **3D** electrons are attracted by the protons of the coil **3B**, and are repelled by the electrons of the electromagnetic field of the coil **3B** itself. These **3B** coil electrons are attracted by the protons of coil **3C**, and are repelled by the electrons of the coil itself induced **3C**, and then the coil **3C** electrons are attracted by protons of coil **3A**, and are repelled by the electrons of the electromagnetic field of the coil **3A** itself. That cycle continues as the sets of coils **A**, **B**, **C** and **D** are being fed by a voltage. These endless attractions and repulsions generate an electric current in the link coil **5**.

In the electron-trap, the voltage is stable. Regardless of the amount of current generated-which can be very high, the voltage will be the same in the electric circuit of the sensor, because the current moves through the attraction and repulsion of the electrons, regardless of voltage.

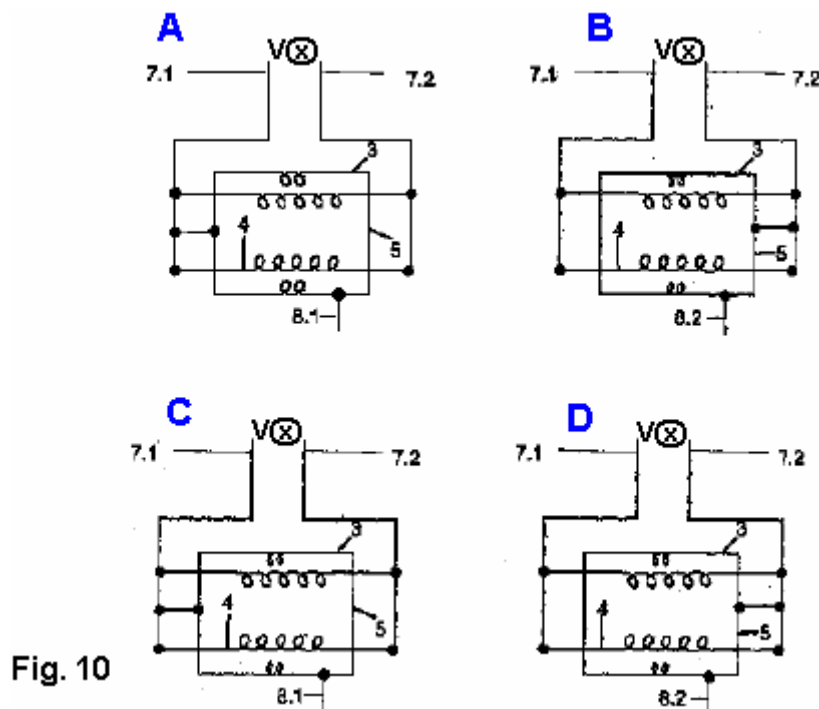


Fig. 10

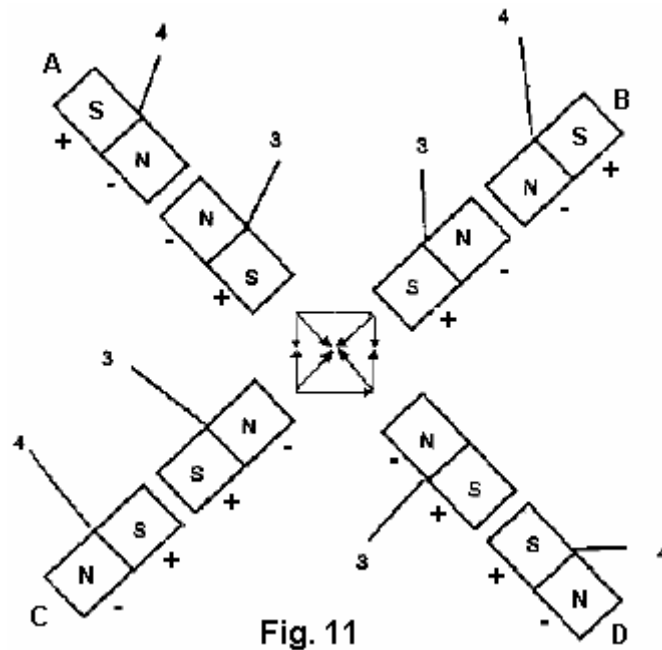
**Fig.10** illustrates a circuit diagram of the electrical connection between the coils **3** and **4** in sets **A**, **B**, **C** and **D**. It can be seen that the sets **A**, **B**, **C** and **D** are enclosed between the coils **3** and their associated inductors or electromagnets **4**. The supply conductors **7.1** and **7.2**, of sets **A**, **B**, **C** and **D** must be interconnected. When feeding power to the coils **3** and **4** the phase should be connected to **7.1** and the neutral to **7.2**.

The sets **A**, **B**, **C** and **D** after being fed with electric current, generate voltage through the attraction and repulsion of the electrons in the linking coil **5**, where there is at least one output load **8.1**, which should be connected joining sets **A** and **C**, and at least one load output **8.2**, which should be connected joining sets **B** and **D**. The output points **8.1** and **8.2** are the respective phases and neutral of power points **7.1** and **7.2**.

In this way, a single-phase electron-trap is created by two pairs of sets of coils/inductors **3** and **4**.

The **3/4** electromagnet coil set can be replaced by a **3/3** coil set, without any disadvantage to the electron-trap.

Sets **A**, **B**, **C** and **D**, are inserted into a hollow metal hemisphere **1** preferably constructed from - but not limited to - aluminium. The hemisphere **1**, whose function is to concentrate and maximise their electromagnetic fields, simulating an electron cloud, has a fixed support **6** connected to attachment tabs **2**, and to which the coils **3** are fixed.

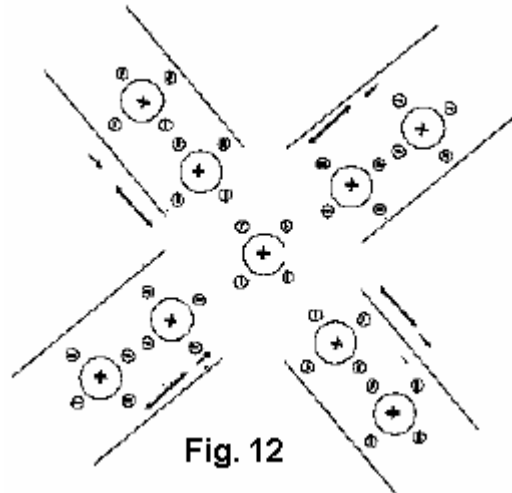


**Fig. 11**

**Fig.11** is a diagram of the electromagnetic north and south poles of the inductor coils **3** and **4** of sets **A**, **B**, **C** and **D** of the electron-trap. The electromagnetic behaviour described for **Fig.9** is again demonstrated by the formation of the magnet assembly to the North Pole and South Pole being attracted and repelled by the lines of force of the magnet from the point "A" to point "D", point "A" to point "B", the point "B" to point "C", point "C" to point "A", and so on, as long as there is an electromagnetic field. The electromagnetic field of the space electron-trap provides that induced current in a direction similar to the variations of the magnetic flux that produced it. So, the magnetic field creates a north pole and a south pole in each of the sets **A**, **B**, **C** and **D**, as shown in **Fig.11**.

By feeding the coils **3** of the electron-trap with a desired voltage a magnetic field is generated in coils **3**, between the four sets **A**, **B**, **C** and **D**, which form a flow of electrons. This flow of electrons augments the electron flow which is circulating in the closed-loop link-coil **5**, thus implementing free electron capture from space. The electromagnetic field of the coil **3A** runs north to south, the electromagnetic field of the coil **3B** runs north to south, the electromagnetic field of the coil **3C** flows from south to north, and the electromagnetic field of the coil **3D** flows from south to north, as shown in **Fig.11**. It should be noted that the sets **A**, **B**, **C** and **D** can be formed by any combination of coil, magnet and electromagnet.

The south to north electromagnetic field induces current flow in the coil **3A**. The north to south electromagnetic field induces current flow in the coil **3B**. The north to south electromagnetic field induces current flow in the coil **3C** and The north to south electromagnetic field induces current flow in the coil **3D**. The induced current flow can have any power and it can be single-phase, two-phase or three-phase current.



**Fig. 12**

**Fig.12** shows the electrons being attracted and repelled by the induction coils **3** and **4**. Being repelled and attracted by electromagnetic induction, the electric current flows without resistance.

The electron-trap produces electromagnetic waves which can be used for various purposes, including signal transmission at any frequency and for any purpose. The capture is caused by these electromagnetic waves. The same physical effect can be achieved by the combination of the capture devices of other technologies, including electromechanical, electric, electronic, electromagnetic, or through the combination of a magnet or any other magnetised materials.

The space free electron-trap of the present invention is a renewable source of electrical power production and a new way of generating energy through the capture effect, generating flows of electrons, generating ordered movement of electrons - electric current - as shown in **Figures 9, 11, and 12**. Electrons can move without any voltage difference in the continuous loop **5**. Alternatively, the loop may be biased with any chosen voltage.

The relevant Barbosa and Leal patents in Portuguese can be downloaded here:

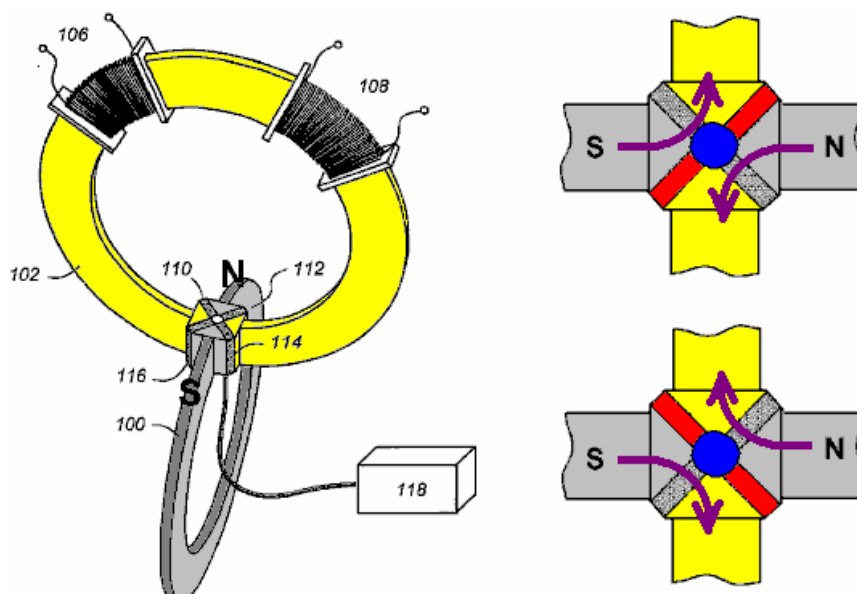
<http://www.free-energy-info.tuks.nl/Barbosa1.pdf>

<http://www.free-energy-info.tuks.nl/Barbosa2.pdf>

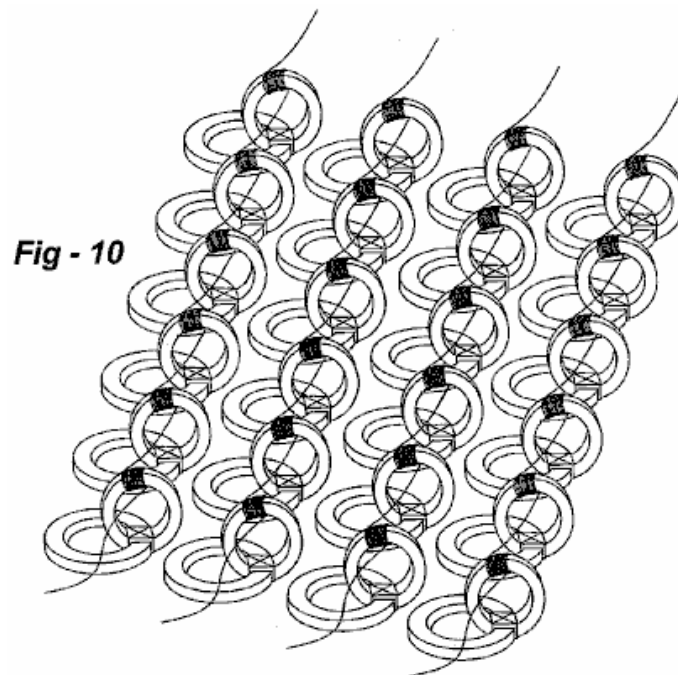
<http://www.free-energy-info.tuks.nl/Barbosa3.pdf>

### **The Solid-State Magnetostrictive System of Annis and Eberly.**

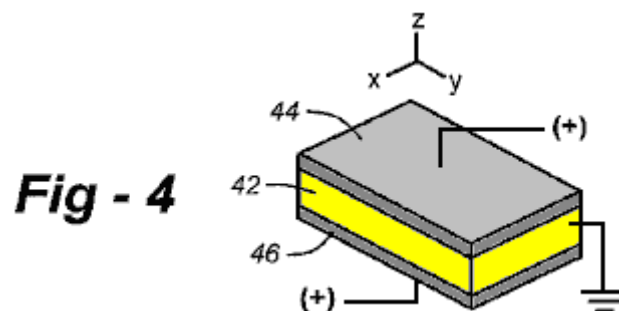
Theodore Annis & Patrick Eberly have produced a variation on this multiple-magnetic-path method which is shown in their US Patent Application 20090096219. They have opted to use a motionless reluctance switch which is a solid-state device which can block magnetic flow when energised. They have arranged one of their devices like this:



The ring shown in grey is a magnet which connects to the ring shown in yellow through two diagonal 'reluctance' (magnetic flow) switches. The yellow ring can carry magnetic flux and the control box marked **118** switches the diagonal strips on and off in turn, causing the magnetic flux to reverse it's direction through the yellow ring. The coils wound on the yellow ring pick up this reversing magnetic flux and pass it out as an electric current. While only one pair of rings are shown here, the design allows for as many rings as are needed to be connected together as shown here:



The patent says: "The currently preferred motionless reluctance switch is described by Toshiyuki Ueno & Toshiro Higuchi, in their paper entitled „Investigation of the Dynamic Properties of a Magnetic Flux Control Device composed of Laminations of Magnetostrictive Piezoelectric Materials" – University of Tokyo 2004. As shown in Fig.4, this switch is made of a laminate of a Giant Magnetostrictive Material **42**, a TbDyFe alloy, bonded on both sides to a Piezoelectric material **44**, **46** to which electricity is applied. The application of electricity causes the reluctance of the piezoelectric material to increase.



The full patent is included in the Appendix.

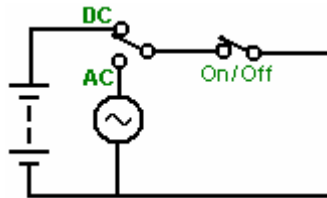
### The Motionless Generator of Richard Willis.

On 28th May 2009 a European Patent application was filed by Richard Willis, entitled "Electrical Generator". During a TV interview, Richard stated that his design has COP=3,600. Available commercially from his Canadian company and sold under the name "Magnacoster", early in 2010 his advertised pricing is US \$4,200 for a unit which has four separate 100 amp 12V outputs, giving a combined maximum output power of 4.8 kilowatts. A larger unit is priced at US \$6,000 with four separate 24V outlets providing a 9 kilowatt combined output. The house-powering unit which is supplied with a 12 kilowatt inverter to provide mains AC power and which gets connected direct to the circuit-breaker box of the house, is priced at US \$15,000. One particularly interesting statement made by Richard is that the output power

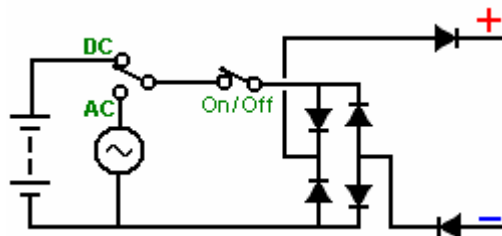


is at a higher frequency than the input power. He suggests that the electrical signal bounces around inside the device, multiplying the power as it goes and giving the output higher voltage and higher current than the input. The design of the device is most interesting as it is very simple. It is shown in his patent application WO 2009065219, a somewhat reworded copy of which is included in the Appendix to this eBook. Richard's web site is <http://www.vorktex.ca/page/235610203>. However, while Richard's designs do indeed work, he appears to be experiencing problems with the output wiring melting due to the very high current, and more importantly, the generation of high levels of unwanted electromagnetic radiation. These problems appear to have prevented him from supplying any commercial units at this time.

The circuit is based on a pulsed coil and two magnets and it has a number of unusual features. The power supply is unusual:

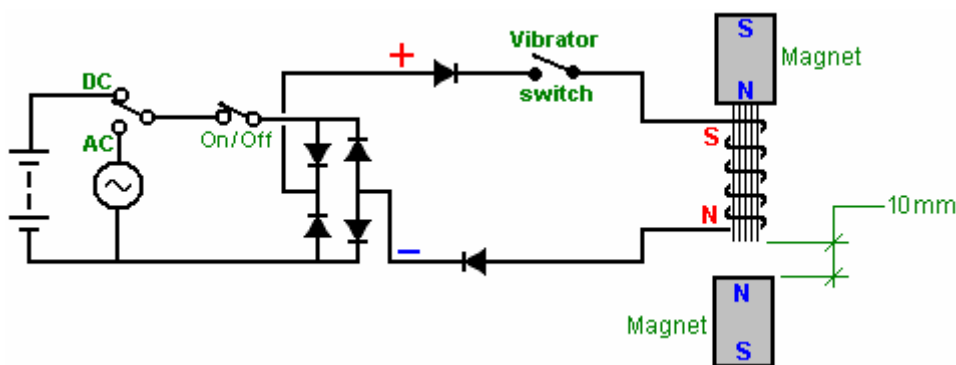


Richard arranges it like this so that either DC or AC can be used as the input power and so he follows that arrangement with a diode bridge, followed by two more diodes as shown here:



This is an interesting arrangement when the input is DC as it would be a more usual arrangement to have the diode bridge only in the AC input section and not included for the DC input where it just drops the input voltage and wastes electrical power unnecessarily. Still, that is the way it is shown in the patent, so that is the way it is shown here.

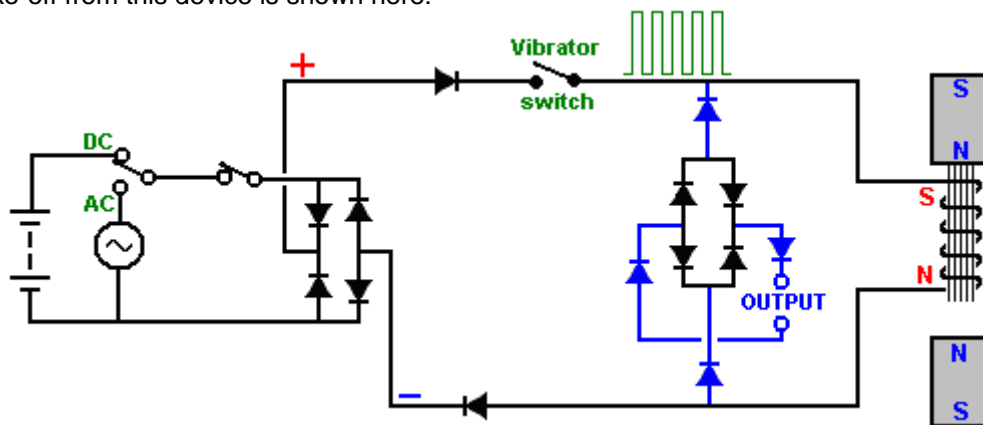
The input power supply is fed to an electromagnet but is converted into a pulsed supply by the use of an interrupter switch which may be mechanical or electronic:



As can be seen, the arrangement is particularly simple although it is an unusual configuration with the electromagnet core touching one of the permanent magnets and not the other. The magnet and electromagnet poles are important, with the permanent magnet North poles pointing towards the electromagnet and when the electromagnet is powered up, it's South pole is towards the North pole of the permanent magnet which it is touching. This means that when the electromagnet is powered up, it's magnetic field strengthens the magnetic field of that magnet.

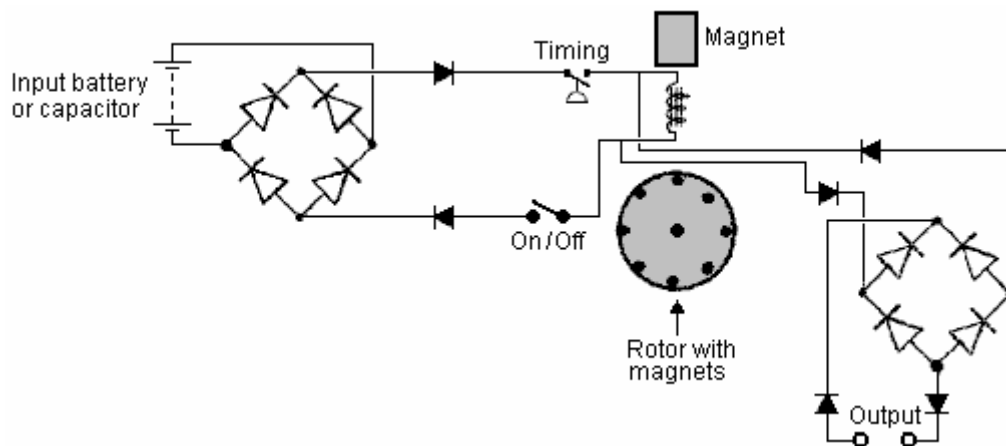
There is a one-centimetre gap at the other end of the electromagnet and it's North pole opposes the North pole of the second permanent magnet. With this arrangement, each electromagnet pulse has a major magnetic effect on the area between the two permanent magnets. In the diagram shown above, just a few turns of wire are shown on the electromagnet core. This is just for clarity and it does not mean that only a few turns should be used. The strength of the magnets, the electromagnet wire thickness and number of turns are related to each other and experimentation will be needed to determine the best combination.

The energy take-off from this device is shown here:



Richard states that the input power can be anywhere from under one volt to one million volts while the input current can be anything from under one amp to one million amps, so he clearly envisages a major range of constructions and components. The core material for the electromagnet is specified as ferrite, mumetal, permalloy, cobalt or any non-permeable metal material. It seems likely that iron filings embedded in epoxy resin is likely to be a suitable material as it can respond very rapidly to sharp pulses and it seems clear that in common with almost every other similar free-energy device, the rapidity of rise and fall of the power pulse is of major importance. Having said that, Richard states that the frequency of pulses in the output section is greater than the frequency of pulses applied to the input section. From this it seems likely that the device should be tuned so that the input pulses should be at a lower harmonic of the resonant frequency of the device. It is worth reading Richard's full description which is near the end of the Appendix.

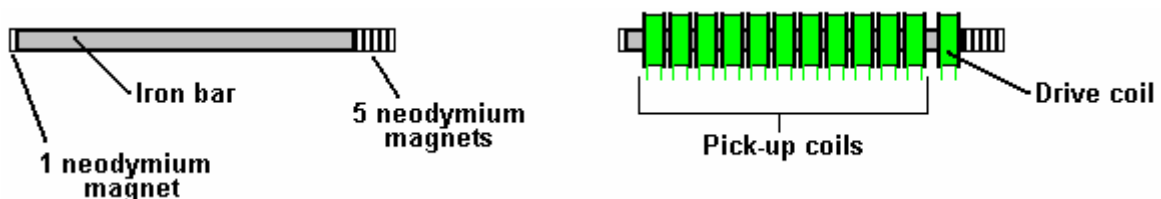
A second version of the circuit looks like a modification of the John Bedini pulsed rotor battery charging circuit with a rotor substituting for the second permanent magnet:



This enhances the operation of the Bedini device by providing an initial magnetic field in the coil.

### The Generator Proposal of "Silverhealtheu".

One of the EVGRAY yahoo forum members whose ID is 'silverhealtheu' has described a simple device which appears to be not unlike the Richard Willis generator above.

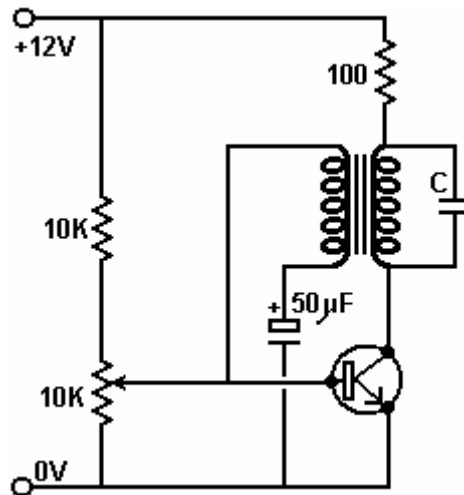


The device consists of an iron bar one inch (25 mm) in diameter and one foot (300 mm) long. At one end, there is a stack of five neodymium magnets and at the opposite end, a single neodymium magnet. At the end with the five

magnets, there is a coil of wire which is strongly pulsed by a drive circuit. Down the length of the bar, a series of pick-up coils are positioned. Each of these coils picks up the same level of power that is fed to the pulsing coil and the combined output is said to exceed the input power.

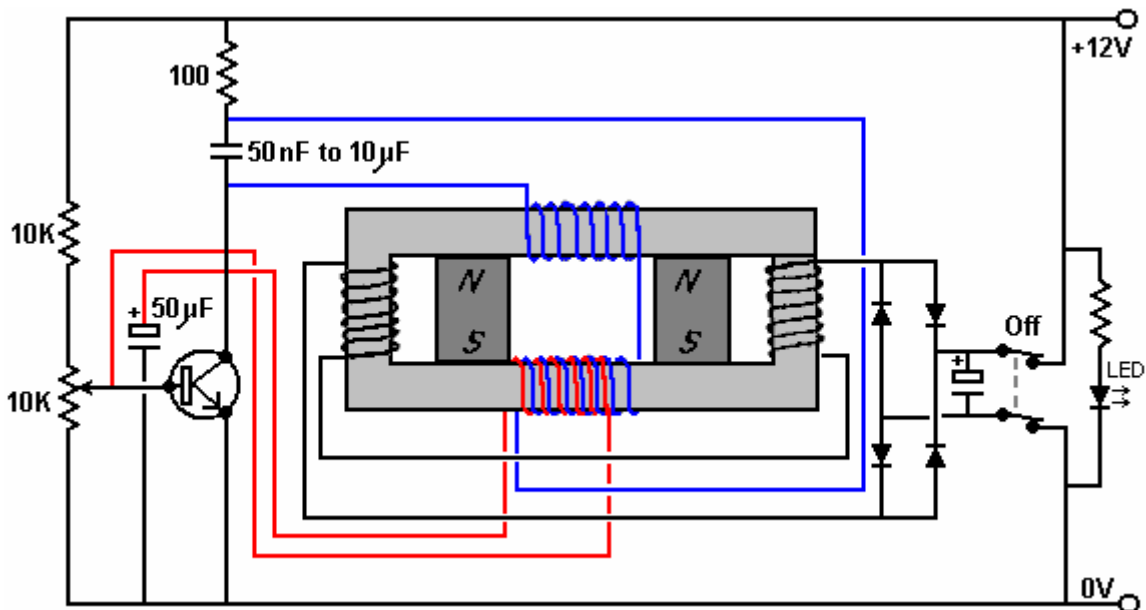
### Stephan Leben's Circuits.

There is an interesting video posted on YouTube at [http://www.youtube.com/watch?v=9zh\\_C3yvJH0](http://www.youtube.com/watch?v=9zh_C3yvJH0) where Stephan W. Leben whose ID is "TheGuru2You" posts some really interesting information. He starts with a circuit produced by Alexander Meissner in 1913 and shown here:



Stephan states that he has built this circuit and can confirm that it is a self-resonating powering circuit. Once a twelve volt supply is connected to the input terminals, the transistor switches on powering the transformer which feeds repeating pulses to the base of the transistor, sustaining the oscillations. The rate of oscillation is governed by the capacitor marked "C" in the circuit diagram above and the coil across which it is connected.

Stephan suggests combining Alexander Meissner's circuit with Charles Flynn's magnetic amplification circuit. Here the transformer is switched to become the Charles Flynn oscillator winding plus a second winding placed alongside for magnetic coupling as shown here:



The transistor stage is self-oscillating as before, the transformer now being made up of the red and blue coil windings. This oscillation also oscillates the Flynn magnetic frame, producing an electrical output via the black coils at each end of the magnetic frame. This is, of course, an oscillating, or AC output, so the four diodes produce a full-wave rectified (pulsating) DC current which is smoothed by the capacitor connected to the diodes.

This circuit would be started by touching a 12 volt source very briefly to the output terminals on the right. An alternative would be to wave a permanent magnet close to the red and blue coils as that generates a voltage in the coils, quite sufficient to start the system oscillating and so, becoming self-sustaining. Stephan suggests using the piezo crystal from a lighter and connecting it to an extra coil to produce the necessary voltage spike when the coil is held close to the blue coil and the lighter mechanism clicked.

A surprising problem would be how to switch the device off since it runs itself. To manage this, Stephan suggests a two-pole On/Off switch to disconnect the output and prevent it supplying the input section of the circuit. To show whether or not the circuit is running, a Light-Emitting Diode ("LED") is connected across the output and the current flowing through it limited by a resistor of about 820 ohms.

Anyone wanting to try replicating this device will need to experiment with the number of turns in each coil and the wire diameter needed to carry the desired current. Stephan states that you need to have at least twice the weight of copper in the (black) output coils as there is in the (blue) input coils in order to allow the device produce excess power. The first page of the Appendix shows the current carrying capacity for each of the standard wire diameters commonly offered for sale. As this is a fairly recently released circuit, I am not aware of any replications of it at this time.

### **Floyd Sweet's "VTA" Generator.**

Another device in the same category of permanent magnets with energised coils round it (and very limited practical information available) was produced by Floyd Sweet. The device was dubbed "Vacuum Triode Amplifier" or "VTA" by Tom Bearden.

The device was capable of producing more than 1 kW of output power at 120 Volts, 60 Hz and can be wired to be self-powered. The output is energy which resembles electricity in that it powers motors, lamps, etc. but as the power increases through any load there is a temperature drop instead of the expected temperature rise.

When it became known that he had produced the device he became the target of serious threats, some of which were delivered face-to-face in broad daylight. It is quite possible that the concern was due to the device tapping zero-point energy, which when done at high currents opens a whole new can of worms. One of the observed characteristics of the device was that when the current was increased, the measured weight of the apparatus reduced by about a pound. While this is hardly new, it suggests that space/time was being warped. The German scientists at the end of WWII had been experimenting with this (and killing off the unfortunate people who were used to test the system) - if you have considerable perseverance, you can read up on this in Nick Cook's inexpensive book "The Hunt for Zero-Point" ISBN 0099414988.

Floyd found that the weight of his device reduced in proportion to the amount of energy being produced. But he found that if the load was increased enough, a point was suddenly reached where a loud sound like a whirlwind was produced, although there was no movement of the air. The sound was heard by his wife Rose who was in another room of their apartment and by others outside the apartment. Floyd did not increase the load further (which is just as well as he would probably have received a fatal dose of radiation if he had) and did not repeat the test. In my opinion, this is a dangerous device and I personally, would not recommend anyone attempting to build one. It should be noted that a highly lethal 20,000 volts is used to 'condition' the magnets and the principles of operation are not understood at this time. Also, there is insufficient information to hand to provide realistic advice on practical construction details.

On one occasion, Floyd accidentally short-circuited the output wires. There was a bright flash and the wires became covered with frost. It was noted that when the output load was over 1 kW, the magnets and coils powering the device became colder, reaching a temperature of 20 degrees Fahrenheit below room temperature. On one occasion, Floyd received a shock from the apparatus with the current flowing between the thumb and the small finger of one hand. The result was an injury akin to frostbite, causing him considerable pain for at least two weeks.

Observed characteristics of the device include:

1. The output voltage does not change when the output power is increased from 100W to 1 kW.
2. The device needs a continuous load of at least 25W.
3. The output falls in the early hours of the morning but recovers later on without any intervention.
4. A local earthquake can stop the device operating.
5. The device can be started in self-powered mode by briefly applying 9 Volts to the drive coils.
6. The device can be stopped by momentary interruption of the power to the power coils.
7. Conventional instruments operate normally up to an output of 1 kW but stop working above that output level, with their readings showing zero or some other spurious reading.

Information is limited, but it appears that Floyd's device was comprised of one or two large ferrite permanent magnets (grade 8, size 150 mm x 100 mm x 25 mm) with coils wound in three planes mutually at right angles to each other (i.e. in the x, y and z axes). The magnetisation of the ferrite magnets is modified by suddenly applying 20,000 Volts from a bank of capacitors (510 Joules) or more to plates on each side of it while simultaneously driving a 1 Amp 60 Hz (or 50 Hz) alternating current through the energising coil. The alternating current should be at the frequency required for the output. The voltage pulse to the plates should be applied at the instant when the 'A' coil voltage reaches a peak. This needs to be initiated electronically.

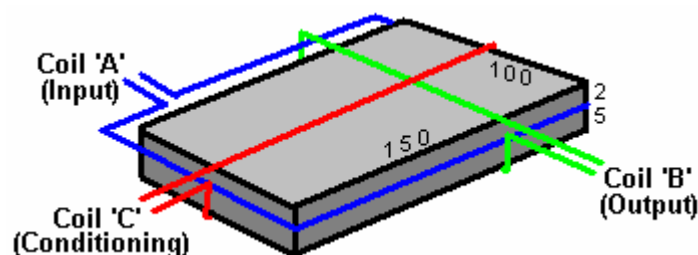
It is said that the powering of the plates causes the magnetic material to resonate for a period of about fifteen minutes, and that the applied voltage in the energising coil modifies the positioning of the newly formed poles of the magnet so that it will in future, resonate at that frequency and voltage. It is important that the voltage applied to the energising coil in this 'conditioning' process be a perfect sinewave. Shock, or outside influence can destroy the 'conditioning' but it can be reinstated by repeating the conditioning process. It should be noted that the conditioning process may not be successful at the first attempt but repeating the process on the same magnet is usually successful. Once conditioning is completed, the capacitors are no longer needed. The device then only needs a few milliwatts of 60 Hz applied to the input coil to give up to 1.5 kW at 60 Hz at the output coil. The output coil can then supply the input coil indefinitely.

The conditioning process modifies the magnetisation of the ferrite slab. Before the process the North pole is on one face of the magnet and the South pole on the opposite face. After conditioning, the South pole does not stop at the mid point but extends to the outer edges of the North pole face, extending inwards from the edge by about 6 mm. Also, there is a magnetic 'bubble' created in the middle of the North pole face and the position of this 'bubble' moves when another magnet is brought near it.

The conditioned slab has three coil windings:

1. The 'A' coil is wound first around the outer perimeter, each turn being  $150 + 100 + 150 + 100 = 500$  mm long (plus a small amount caused by the thickness of the coil former material). It has about 600 turns of 28 AWG (0.3 mm) wire.
2. The 'B' coil is wound across the 100 mm faces, so one turn is about  $100 + 25 + 100 + 25 = 250$  mm (plus a small amount for the former thickness and clearing coil 'A'). It has between 200 and 500 turns of 20 AWG (1 mm) wire.
3. The 'C' coil is wound along the 150 mm face, so one turn is  $150 + 25 + 150 + 25 = 350$  mm (plus the former thickness, plus clearance for coil 'A' and coil 'B'). It has between 200 and 500 turns of 20 AWG (1 mm) wire and should match the resistance of coil 'B' as closely as possible.

Coil 'A' is the input coil. Coil 'B' is the output coil. Coil 'C' is used for the conditioning and for the production of gravitational effects.



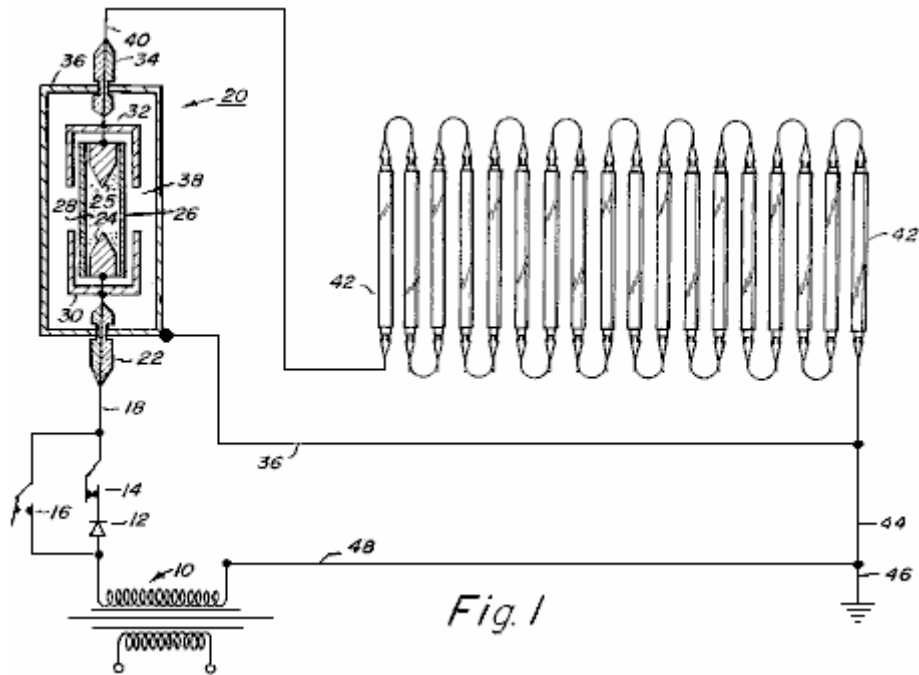
Videos of the operation of the original prototype are available for sale on DVD from Tom Beardon's website: <http://www.cheniere.org/sales/sweetvideos.htm> as he recorded both of these videos. A paper by Michael Watson gives much practical information. For example, he states that an experimental set up which he made, had the 'A' coil with a resistance of 70 ohms and an inductance of 63 mH, the 'B' coil, wound with 23 AWG wire with a resistance of 4.95 ohms and an inductance of 1.735 mH, and the 'C' coil, also wound with 23 AWG wire, with a resistance of 5.05 ohms and an inductance of 1.78 mH.

Recently, some additional information on Floyd Sweet's device, has been released publicly by an associate of Floyd's who goes just by his first name of "Maurice" and who, having reached the age of seventy has decided that it is time to release this additional information. That information can be found in the Appendix. While I am not aware of anybody managing to replicate this device of Floyd Sweet in exactly the way shown here, there is now a

video at <http://www.youtube.com/watch?v=UVhGQaESKEI&feature=g-u-u> where two different experimenters describe their advances, successes and experiences with this arrangement and with closely related configurations.

### The Optical Generator of Pavel Imris.

Pavel was awarded a US patent in the 1970's. The patent is most interesting in that it describes a device which can have an output power which is more than nine times greater than the input power. He achieves this with a device which has two pointed electrodes enclosed in a quartz glass envelope which contains xenon gas under pressure (the higher the pressure, the greater the gain of the device) and a dielectric material.



Here, the power supply to one or more standard fluorescent lamps is passed through the device. This produces a power gain which can be spectacular when the gas pressure in the area marked '24' and '25' in the above diagram is high. The patent is included in this set of documents and it contains the following table of experimental measurements:

**Table 1** shows the data to be obtained relating to the optical electrostatic generator. **Table 2** shows the lamp performance and efficiency for each of the tests shown in **Table 1**. The following is a description of the data in each of the columns of **Tables 1 and 2**.

Column	Description
B	Gas used in discharge tube
C	Gas pressure in tube (in torrs)
D	Field strength across the tube (measured in volts per cm. of length between the electrodes)
E	Current density (measured in microamps per sq. mm. of tube cross-sectional area)
F	Current (measured in amps)
G	Power across the tube (calculated in watts per cm. of length between the electrodes)
H	Voltage per lamp (measured in volts)
K	Current (measured in amps)
L	Resistance (calculated in ohms)
M	Input power per lamp (calculated in watts)
N	Light output (measured in lumens)

Table 1

		Optical	Generator	Section		
A	B	C	D	E	F	G
Test No.	Type of discharge lamp	Pressure of Xenon	Field strength across lamp	Current density	Current	Power str. across lamp
		(Torr)	(V/cm)	(A/sq.mm)	(A)	(W/cm.)
1	Mo elec	-	-	-	-	-
2	Xe	0.01	11.8	353	0.1818	2.14
3	Xe	0.10	19.6	353	0.1818	3.57
4	Xe	1.00	31.4	353	0.1818	5.72
5	Xe	10.00	47.2	353	0.1818	8.58
6	Xe	20.00	55.1	353	0.1818	10.02
7	Xe	30.00	62.9	353	0.1818	11.45
8	Xe	40.00	66.9	353	0.1818	12.16
9	Xe	60.00	70.8	353	0.1818	12.88
10	Xe	80.00	76.7	353	0.1818	13.95
11	Xe	100.00	78.7	353	0.1818	14.31
12	Xe	200.00	90.5	353	0.1818	16.46
13	Xe	300.00	100.4	353	0.1818	18.25
14	Xe	400.00	106.3	353	0.1818	19.32
15	Xe	500.00	110.2	353	0.1818	20.04
16	Xe	600.00	118.1	353	0.1818	21.47
17	Xe	700.00	120.0	353	0.1818	21.83
18	Xe	800.00	122.8	353	0.1818	22.33
19	Xe	900.00	125.9	353	0.1818	22.90
20	Xe	1,000.00	127.9	353	0.1818	23.26
21	Xe	2,000.00	149.6	353	0.1818	27.19
22	Xe	3,000.00	161.4	353	0.1818	29.35
23	Xe	4,000.00	173.2	353	0.1818	31.49
24	Xe	5,000.00	179.1	353	0.1818	32.56

Table 2

		Fluorescent	Lamp	Section	
A	H	K	L	M	N
Test No.	Voltage	Current	Resistance	Input Energy	Light Output
	(Volts)	(Amps)	(Ohms)	(Watts)	(Lumen)
1	220	0.1818	1,210	40.00	3,200
2	218	0.1818	1,199	39.63	3,200
3	215	0.1818	1,182	39.08	3,200
4	210	0.1818	1,155	38.17	3,200
5	200	0.1818	1,100	36.36	3,200
6	195	0.1818	1,072	35.45	3,200
7	190	0.1818	1,045	34.54	3,200
8	182	0.1818	1,001	33.08	3,200
9	175	0.1818	962	31.81	3,200
10	162	0.1818	891	29.45	3,200
11	155	0.1818	852	28.17	3,200
12	130	0.1818	715	23.63	3,200
13	112	0.1818	616	20.36	3,200
14	100	0.1818	550	18.18	3,200
15	85	0.1818	467	15.45	3,200
16	75	0.1818	412	13.63	3,200
17	67	0.1818	368	12.18	3,200
18	60	0.1818	330	10.90	3,200
19	53	0.1818	291	9.63	3,200
20	50	0.1818	275	9.09	3,200

<b>21</b>	23	0.1818	126	4.18	3,200
<b>22</b>	13	0.1818	71	2.35	3,200
<b>23</b>	8	0.1818	44	1.45	3,200
<b>24</b>	5	0.1818	27	0.90	3,200

The results from Test No. 24 where the gas pressure is a very high 5,000 Torr, show that the input power for each 40-watt standard fluorescent tubes is 0.9 watts for full lamp output. In other words, each lamp is working to its full specification on less than one fortieth of its rated input power. However, the power taken by the device in that test was 333.4 watts which with the 90 watts needed to run the 100 lamps, gives a total input electrical power of 423.4 watts instead of the 4,000 watts which would have been needed without the device. That is an output power of more than nine times the input power.

From the point of view of any individual lamp, without using this device, it requires 40 watts of electrical input power to give 8.8 watts of light output which is an efficiency of about 22% (the rest of the input power being converted to heat). In test 24, the input power per lamp is 0.9 watts for the 8.8 watts of light produced, which is a lamp efficiency of more than 900%. The lamp used to need 40 watts of input power to perform correctly. With this device in the circuit, each lamp only needs 0.9 watts of input power which is only 2.25% of the original power. Quite an impressive performance for so simple a device!

### **The Michel Meyer and Yves Mace Isotopic Generator.**

There is a French patent application number FR 2,680,613 dated 19th August 1991 entitled "Activateur pour Mutation Isotopique" which provides some very interesting information. The system described is a self-contained solid-state energy converter which abstracts large amounts of energy from an ordinary iron bar. This is also shown in Michel's Czechoslovakia Patent No.284,333

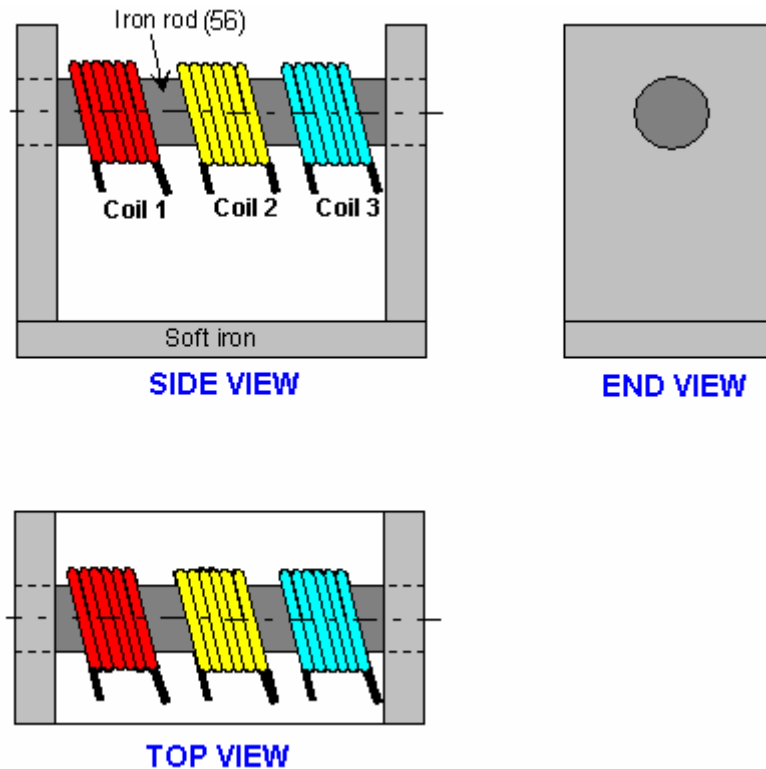
The inventors describes the technique as an "isotopic mutation effect" as it converts ordinary iron (isotope 56) to isotope 54 iron, releasing large amounts of electrical energy in the process. This excess energy can, they say, be used to drive inverters, motors or generators.

The description of the mechanism which is being used by the device is: "the present invention uses a physical phenomenon to which we draw attention and which we will call 'Isotopic Change'. The physical principle applies to isotope 56 iron which contains 26 protons, 26 electrons and 30 neutrons, giving a total mass of 56.52 Mev, although its actual mass is 55.80 Mev. The difference between the total mass and the actual mass is therefore 0.72 Mev this which corresponds to an energy of cohesion per nucleon of 0.012857 Mev.

So, If one introduces an additional 105 ev of energy to the iron core isotope 56, that core isotope will have a cohesion energy level of 0.012962 Mev per nucleon corresponding to iron isotope 54. The instability created by this contribution of energy will transfer the isotope 56 iron to isotope 54 causing a release of 2 neutrons.

This process generates an excess energy of 20,000 ev since the iron isotope 54 is only 0.70 Mev while isotope 56 has 0.72 Mev. To bring about this iron isotope 56 conversion, we use the principle of Nuclear Magnetic Resonance."

The practical method for doing this is by using three coils of wire and a magnetic-path-closing support frame of iron as shown in this diagram:



In this arrangement,

**Coil 1:** Produces 0.5 Tesla when fed with DC, converting the iron bar into an electromagnet

**Coil 2:** Produces 10 milli-Tesla when fed with a 21 MHz AC sinewave signal

**Coil 3:** Is the output coil, providing 110, 220 or 380 volts AC at about 400 Hz depending on the number of turns in the coil

This simple and cheap system has the potential for producing substantial energy output for a very long time. The inventors claim that this device can be wired to be self-powered, while still powering external devices. Coil 1 turns the iron rod into an electromagnet with it's flux channelled in a loop by the iron yoke. Coil 2 then oscillates that magnetic field in resonance with the isotope 56 iron atoms in the rod, and this produces the isotope conversion and release of excess energy. Coil 3 is wound to produce a convenient output voltage.

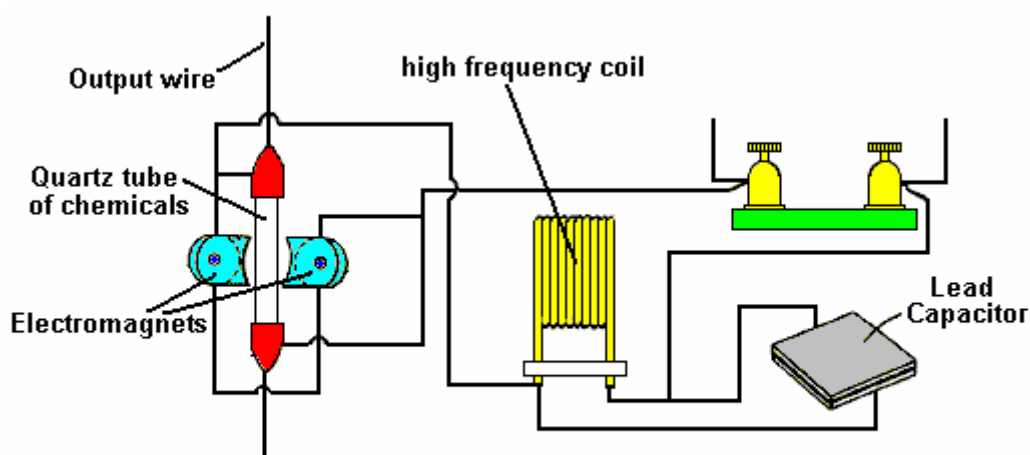
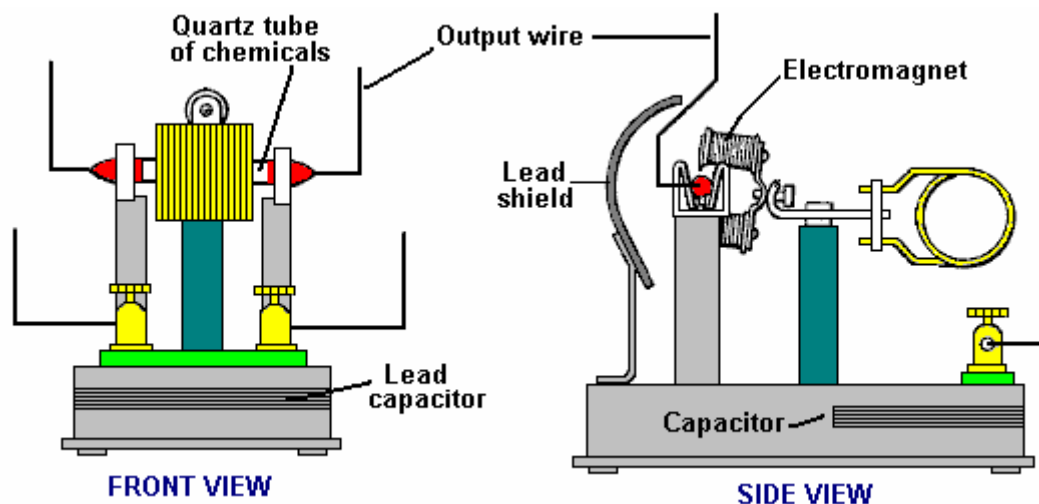
### The Colman / Seddon-Gilliespie Generator.

This device, patented by Harold Colman and Ronald Seddon-Gilliespie on 5th December 1956, is quite remarkable. It is a tiny lightweight device which can produce electricity using a self-powered electromagnet and chemical salts. The working life of the device before needing refurbishment is estimated at some seventy years with an output of about one kilowatt.

The operation is controlled by a transmitter which bombards the chemical sample with 300 MHz radio waves. This produces radioactive emissions from the chemical mixture for a period of one hour maximum, so the transmitter needs to be run for fifteen to thirty seconds once every hour. The chemical mixture is shielded by a lead screen to prevent harmful radiation reaching the user. The patent, GB 763,062 is included in the Appendix.

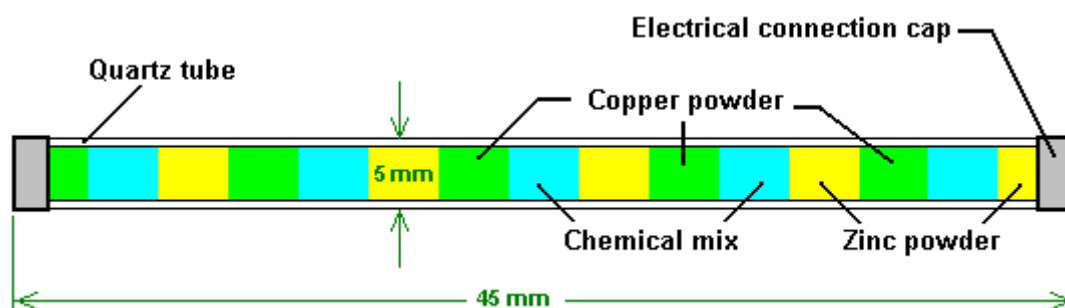
This generator unit includes a magnet, a tube containing a chemical mixture of elements whose nuclei becomes unstable as a result of bombardment by short waves so that the elements become radio-active and release electrical energy, the mixture being mounted between, and in contact with, a pair of different metals such as copper and zinc, and a capacitor mounted between those metals.

The mixture is preferably composed of the elements Cadmium, Phosphorus and Cobalt having Atomic Weights of 112, 31 and 59 respectively. The mixture, which may be of powdered form, is mounted in a tube of non-conducting, high heat resistivity material and is compressed between granulated zinc at one end of the tube and granulated copper at the other end, the ends of the tube being closed by brass caps and the tube being carried in a suitable cradle so that it is located between the poles of the magnet. The magnet is preferably an electro-magnet and is energised by the current produced by the unit. The transmitter unit which is used for activating the generator unit may be of any conventional type operating on ultra-shortwave and is preferably crystal controlled at the desired frequency.



**SCHEMATIC LAYOUT**

The transmitter unit is of any suitable conventional type for producing ultra shortwaves and may be crystal controlled to ensure that it operates at the desired frequency with the necessity of tuning. The quartz tube containing the chemical mixture, works best if made up of a number of small cells in series. In other words, considering the cartridge from one end to the other, at one end and in contact with the brass cap, there would be a layer of powdered copper, then a layer of the chemical mixture, then a layer of powdered zinc, a layer of powdered copper, etc. with a layer of powdered zinc in contact with the brass cap at the other end of the cartridge. With a cartridge some forty five millimetres long and five millimetres diameter, some fourteen cells may be included.





### **The Devices of Don Smith.**

One free-energy developer who had most impressive claims for his devices is the late Don Smith who produced many spectacular devices, generally with major power output. Don says that his understanding comes from the work of Nikola Tesla as recorded in Thomas C. Martin's book "The Inventions, Researches, and Writings of Nikola Tesla" ISBN 0-7873-0582-0 available from <http://www.healthresearchbooks.com> and various other book companies. This book can be downloaded from <http://www.free-energy-info.tuks.nl/> as a pdf file, but a paper copy is much better quality and easier to work from.

Many experimenters have spent considerable time and effort in attempts to replicate the work which Don reports and while  $COP > 1$  has definitely been achieved, high power has not yet been reached. If you want more detail then it can be found here: <http://www.free-energy-info.tuks.nl/DonSmith.pdf> as a free download.

### **Chinese Developer Ming Cao.**

a free-energy developer in mainland China, comments on the designs of Don Smith, and Taniel Kapanadze. He says:

None of these things originate from me, they come from Tesla and God.

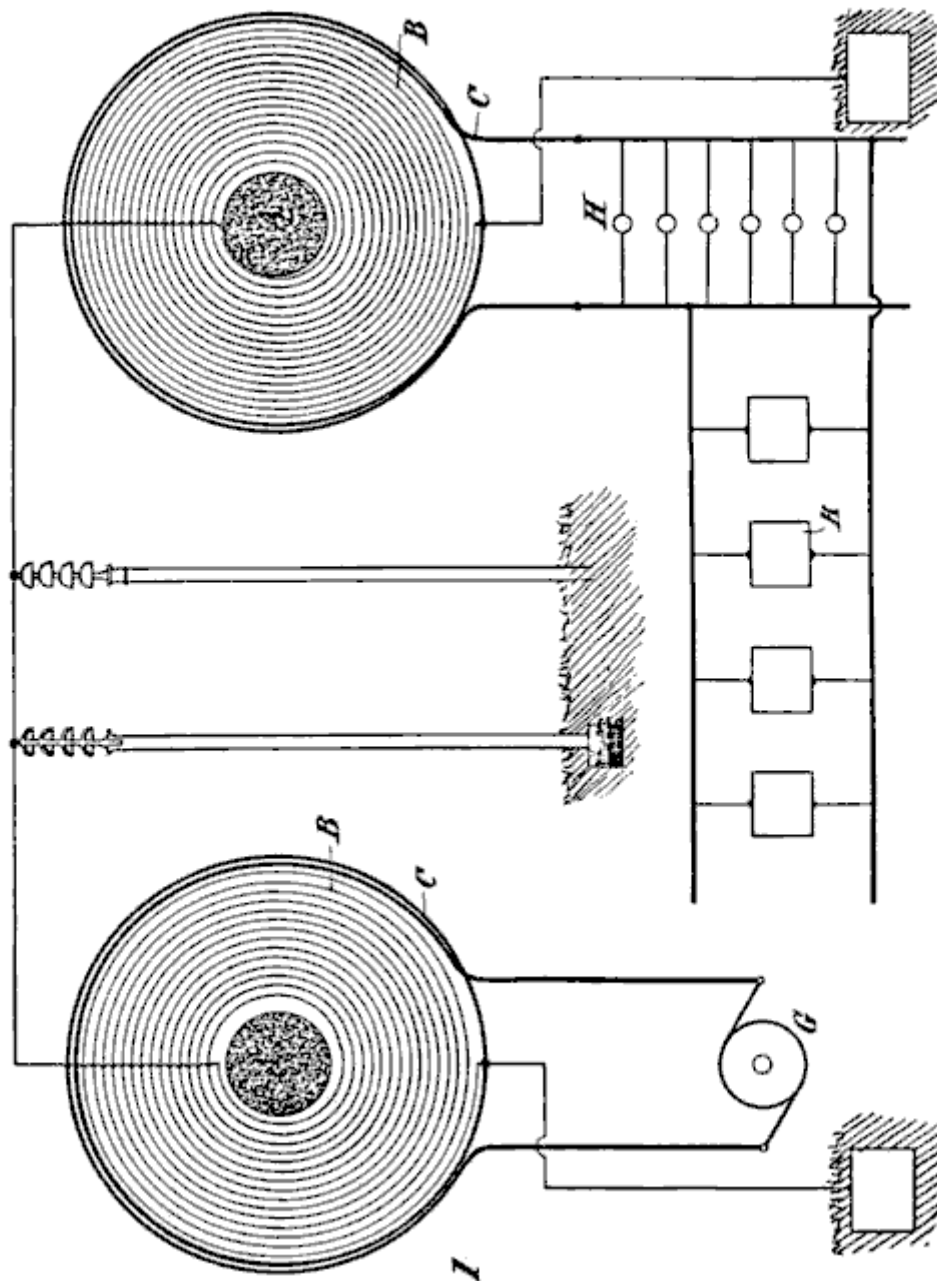
1. The most important issue, is resonance. Don Smith said that we should make the wire length of the primary coil to be one quarter of the wire length of the secondary coil in order that they will resonate together. My experiments show that this is not true. In a Tesla Coil, the primary coil and it's capacitor form a tank circuit which is an L/C circuit, which oscillate at it's own resonant frequency, and when it does that, it generates a longitudinal wave at that exact frequency. The frequency of this longitudinal wave is determined by the inductance of the primary coil combined with the capacitance of it's tank circuit capacitor, and not the wire length of the primary coil alone. The secondary coil with it's sphere at the top, together form an antenna, which transmits this longitudinal wave. The secondary coil and it's top sphere together form a quarter-wave resonant antenna for this longitudinal wave. They do not form an L/C circuit and that is why very few people have managed to replicate Don Smith's devices.
2. In the devices of Don Smith and Taniel Kapanadze, there is no sphere. We see a single coil as the secondary. This is no longer a quarter-wave antenna, but a half-wave antenna. The highest voltage shows up at the very centre of this coil, and zero voltage shows up at the two ends of the coil winding. These are where the energising coil and the pick up coil should be positioned.
3. The longitudinal wave which passes through the secondary coil is not a current at all, it is a signal running through it, so if we let the secondary to charge a capacitor, we will get nowhere. All we will get is hot electricity caused by the loose induction coupling. The arc at the top of a typical Tesla coil is lightning voltage, and no capacitor on earth can handle that voltage, so even a very high voltage capacitor will be over stressed and the arc will shock through it.
4. The speed of this wave is well defined. It depends on the total capacitance of the coil, and the sphere if there is one. In a typical Tesla coil, the bigger the sphere, the bigger the capacitance, and the lower the resonant frequency of the secondary coil. People are trying to explain it by L/C circuit theory, but this is not necessarily true. Increased capacitance will slow the wave down. If there is no sphere, as in the devices of Don Smith and Taniel Kapanadze, the total capacitance is quite small, and so, the speed of the wave should approach the value  $(\pi/2) \times C$ , where C is the speed of light. This speed of the longitudinal wave is claimed by Tesla himself. I kind of verified this by experiment. I said "kind of", because in my experiment, I got a speed of  $(\pi/2) \times C \times (8/9)$ . The wave is slowed down by the copper losses and the capacitance of the coil, mostly the capacitance, but it's definitely faster than the speed of light.
5. So, to tune the secondary, we should not use the speed of light at all, Don was playing a game with us here. Take Don's device as an example. If we position the primary coil at the centre of the secondary coil, then that

middle point of the secondary should either be grounded or connected to a large metal sphere, and each half of the secondary coil should act as a half-wave antenna. Also, the pick-up coils should be located at the two far end terminals. The speed of the longitudinal wave along the secondary coil is unpredictable and so we can only predict a general speed range, we cannot tell whether it is already resonating by performing calculations. Like Nick Giannopoulos's arrangement (see below) and Tesla's patent diagram, there are two quarter wave coils, whose inner terminals are connected together and open to the air. Here 'open to the air' means that it is different from the other turns of the coil. The longitudinal wave is climbing the turns rather than passing along the wire. But at the end of each quarter wave coil, there is no other turn to climb any more, only a long wire for it to travel along. This straight long wire is open to the air and provides a capacitance for the whole device, and this additional capacitance will slow down the longitudinal wave which is passing through it, so that the resonant frequency for the combination of these two secondary coils will be lower. But if we eliminate the straight wire, and make it a single half-wave secondary coil, the longitudinal wave can keep climbing the turns, and there's no additional capacitance, so that the speed of the longitudinal wave will be very close to  $(\pi/2) \times C$ , and the resonant frequency will be higher. We can use the same wire length and same diameter coil former to build different devices, which will work at completely different frequencies. So the resonant frequency is unpredictable and we need to find the exact frequency by equipment measurement, or it won't work. The only correct way of tuning the secondary is shown by Eric Dollard in his video of the 1980s, entitled "Eric Dollard Transverse and Longitudinal Wave" which at the present time can be found on YouTube at <http://www.youtube.com/watch?v=6BnCUBKgnc>.

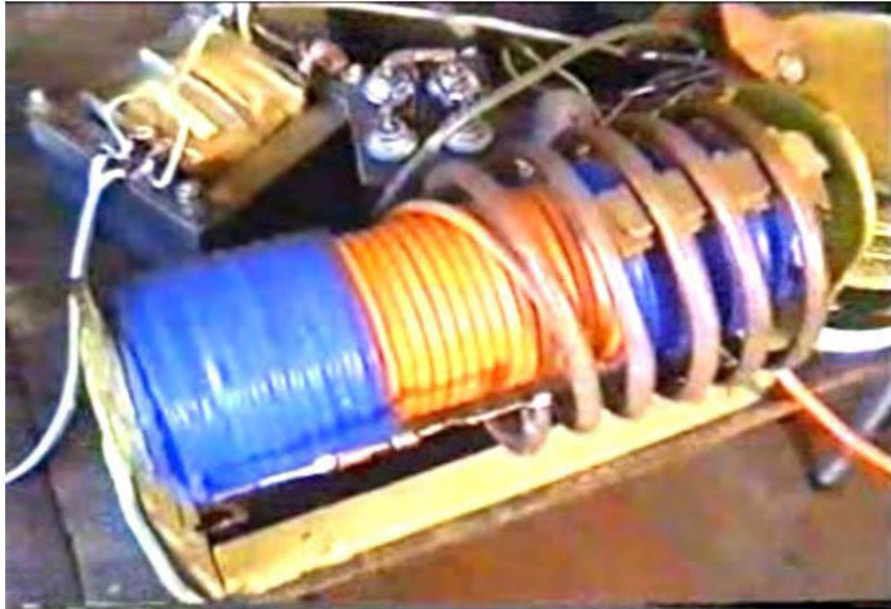
6. A pick-up coil is always necessary, and it should be positioned near the zero node of a standing wave. This is one of the only two ways of harness the longitudinal wave. This method is the dynamic way, the other way is the static method, which I believe was used by Ed Gray.
7. In Dr. Peter Lindemann's book and video, he says that Tesla is using unidirectional current. I have to disagree with this. When we charge a capacitor and discharge it through a spark gap, the discharge current "bounces" between the two plates of the capacitor, until the energy is all lost at the spark gap. This process repeats itself endlessly in a typical Tesla Coil. We can see this primary waveform with an oscilloscope and it is alternating current. Thousands of Tesla Coils work in this way and generate lightning. I am confident that this is how it operates.
8. It is not like Don Smith said, that doubling the voltage quadruples the output. It does look like that, but it is actually the current flowing through the primary doing the job. Of course we increase the current by increasing the breakdown voltage of the spark gap by widening the gap. But fundamentally, it is the current which is doing the job. Ed Gray's tube uses a short straight copper bar as the energising 'coil', but it's not a coil, it has little inductance to generate voltage, it only has high current passing through it to energise the longitudinal wave. Of course I haven't actually seen this process, it is a conclusion which is not fully based on experiment.
9. The larger the number of turns in the pick-up coil, the higher the output voltage will be. I still cannot understand how the pick-up process works, but it does pick up more energy.

I get all these by low voltage from a signal generator, as I haven't finished building a high voltage device yet, although I'm already working on it. But I think it's safe for me to believe that these results are solid and good enough to share.

Here is a image from Tesla's patent 593,138 Electrical Transformer.



We can see it's exactly the same as Nick Giannopoulos' setup, except that Tesla is using a generator in this diagram, I believe for simplicity. As long as the generator is generating the exact frequency of current, it will work fine. The secondary at the energising side is a quarter-wave coil, and at the pick-up side is another quarter-wave coil. The highest voltage is at the far end of these two secondary coils and their connecting wire, and zero voltage is at the very outside turn of each of the coils. Now if we change the spiral form coil to helical, it becomes Nick's set-up. And let's take this further, we can shorten the connecting wire until the two solenoid secondary coils actually become one big coil, then, when combined it is a half-wave coil, and the highest voltage is at the middle point of it. Now it becomes Don Smith's and Taniel Kapanadze's device, like this:



Because the energy is also coming back from the energising side, Kapanadze adds another pick-up coil right underneath the primary energising coil. This arrangement, I think, is very hard to replicate, because it is so very hard to tune, for several reasons:

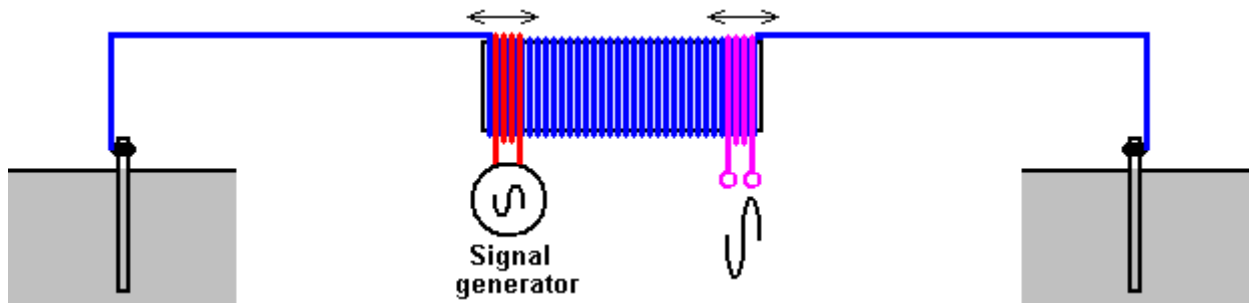
1. The Secondary wire length is rather short, and the wave speed is very very close to  $(\pi/2) \times C$ , so the frequency should be very high, at least 5-7MHz I would guess, or perhaps even higher.
2. The pick-up coil and the energising primary coil is too close to the centre point of the half wave secondary coil. Because the centre point is the point of highest voltage, if the input is a little high, there would be arc shock between the secondary to the energising coil and the pick-up coil, at lightning voltage levels, and so even the best isolation is useless. Also, the centre point is very very sensitive, any conductor close to it will add to the total capacitance of the coil and of course that will alter the half-wave resonant frequency. This adds more difficulty to the tuning adjustment. Besides, after all, people don't even know it's a half-wave coil if he doesn't tell us.
3. The coupling coefficient **K** is a little high, this will increase the hot transformer effect by inductive coupling, and that will not help at all.

Don Smith did indeed say something useful. He said that we can make the secondary coil a fixed size, and then slide the primary coil inside it. Well based on experimental results, this sliding process is altering the actual effective length of the secondary coil. In general, we should assess coil size by counting the turns from the turn right underneath the primary energising coil, to the turn right underneath the pick-up coil, this section is the actual secondary, and this section should be a half-wave resonate coil, the rest of the coil just sits there doing nothing.

But it's not that simple, the terminals of the secondary coil should connect to the earth or to a large sphere, or a typical Tesla Coil secondary with the same quarter-wave resonant frequency. Otherwise the signal will bounce backwards and forwards in the coil producing a mess, or generating an arc, and this is bad for performance, and this is why a solid ground connection is desirable. And this is the true meaning when Don says "slide the primary coil to do the fine tuning".

So, returning to the Kapanadze device, the energising coil covers a large area of the secondary coil, making the effective length of the secondary coil very much shorter, again, boosting the working frequency of the device even higher. For such a device, it is impossible to tune it without a 20Mhz signal generator, an oscilloscope and complete understanding of how a longitudinal wave behaves. For a start, I don't even know where to connect the oscilloscope probe or which terminal should connect to the ground, I'm so lucky to be able to watch Eric Dollard's old video, and I recommend everybody to watch that video, watch it over and over again, also many other educational videos from Eric. A lot of fundamental stuff about how a longitudinal wave behaves are explained there, it's like a treasure map covered in dust in a quiet corner of an open library.

Ming's video <http://www.youtube.com/watch?v=1p41KLfOM2E&feature=youtu.be> demonstrates what he is saying here. For the video he uses an input coil, a monitoring coil and a secondary coil, each end of which is earthed using separate earth connections:



Ming also remarks:

For the set-up in the video, the secondary coil is wound using 1mm diameter enamelled copper wire, 365 turns around a 160mm diameter PVC pipe. The total coil length is 39.5cm. The total wire length of the secondary is approximately 182m. The white material is several layers of insulating glue to prevent arcing between adjacent turns when working with high voltage. The primary coil and the pick-up coil are wound with audio cable which is more than 4 square millimetres in cross section. The primary coil has 2 strands, 2 turns. The pick-up coil has 4 strands and only one turn. I use this thick wire, because I am going to use these coils for my high voltage project.

For a low voltage experiment like shown in the video, it would be quite adequate to use ordinary copper wire of 1 square millimetre cross section (swg 18 or AWG 17). If the secondary wire length is reduced, then the resonant frequency will be higher, but the principle is the same.

If only low voltage is going to be used - perhaps just to study the nature of longitudinal waves, then the secondary coil can be made using very thin wire of 0.3 to 0.4mm diameter (swg 30 to swg 27) enamelled copper wire, which will cost much less. I made my coils with thick wire because I intend to continue using high voltages.

It's been a long time, but I've got some more understanding about harnessing radiant energy. I have made two additional videos: <http://www.youtube.com/watch?v=WJUfj53geBo> and <http://www.youtube.com/watch?v=BdBjKVyKBZA>. In these two videos, I explain the method of converting Tesla's 'cold' electricity to normal 'hot' electricity by storing it in a capacitor. I strongly believe that, the method shown in the second video is exactly what Don is doing with his famous device, which has no pick-up coil, just a two-part secondary.

In the first video, I replace the pick-up coil with an uncoated sheet of copper, to show people that, this is not a transformer, and so, is not based on electromagnetic induction. The pick-up coil is fundamentally, a piece of metal which can be electrified by a longitudinal wave. I can remove the diode and the capacitor, and just let the copper sheet discharge to ground through a spark gap and two ordinary 200-watt incandescent light bulbs connected in series, the light bulbs are pretty bright although not fully lit, but pretty bright in spite of this being a non-resonant situation. They look like this:



The copper sheet is electrified, and its charge is flowing to ground, and it is this very process which forms the current. So if we consider it as a transformer, and consider the pick-up coil as an inductor, and add a load to this "inductor" to form a closed loop, then we are going in the wrong direction.

Then I re-read about Nick Giannopoulos' device, and I noticed that he said that the light coming from his bulb is blue and white. Following his circuit diagram, I believe that it is like this:



I get this kind of light when I attach the light bulb directly to the sheet copper without an earth connection or any other additional wire. Here at this stage, we have no 'hot' electricity. The blue-white light is caused by the high voltage of the metal, to which the bulb is attached. The high voltage is not caused by induction, it is purely static charge on the metal surface, caused by longitudinal wave electrification. If we use Tesla's specially made bulbs as shown in his lectures, we have his single-wire lighting system, and we will have a very bright light suitable for general-purpose lighting instead of this kind of blue-white light. Generally speaking, my bare copper sheet is the equivalent of Nick's pick-up coil plus his step-down transformer, which, of course, is not a transformer at all.

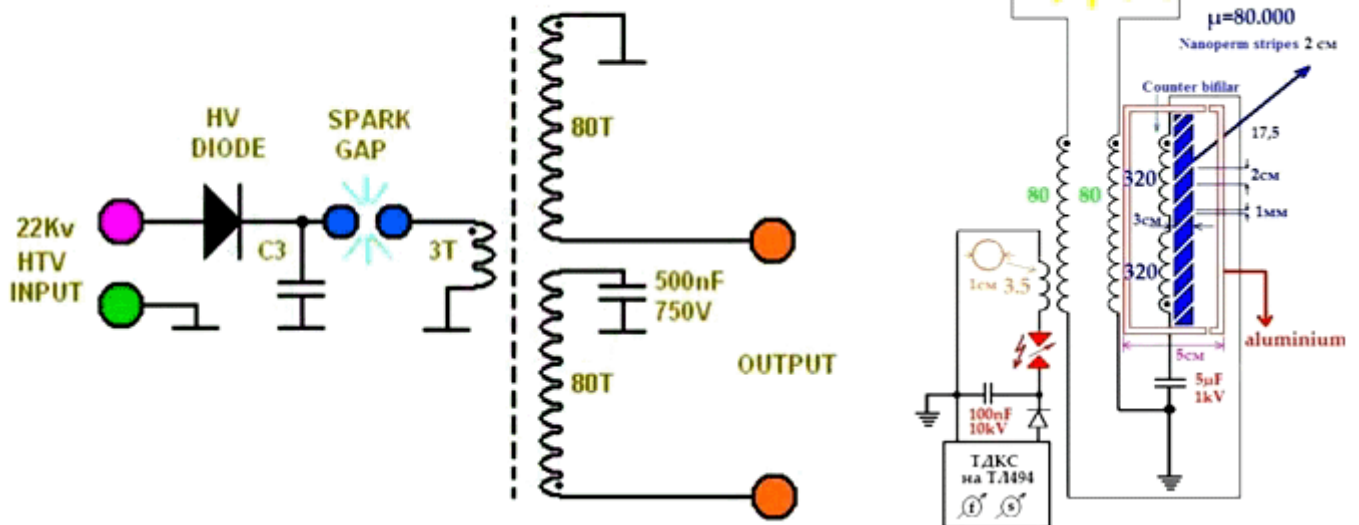
Note: As will be seen in the videos, Ming uses two separate earth connections. One is the earthing wire of his mains electricity and the other is a connection to his cold water pipes.

### **A Russian Developer**

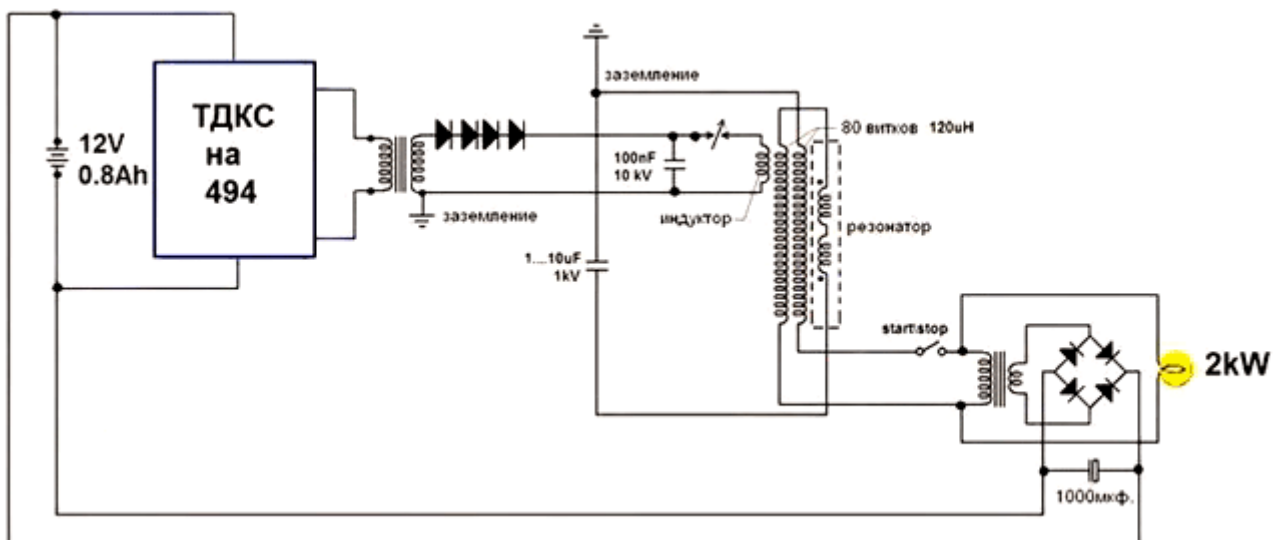
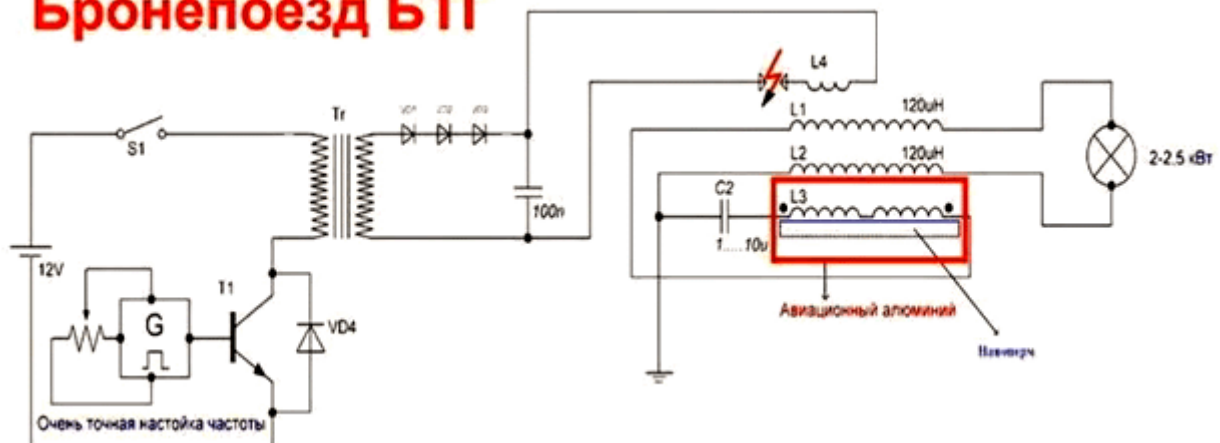
A Russian developer has lit a large light bulb with a self-powered Kapandze-style circuit:

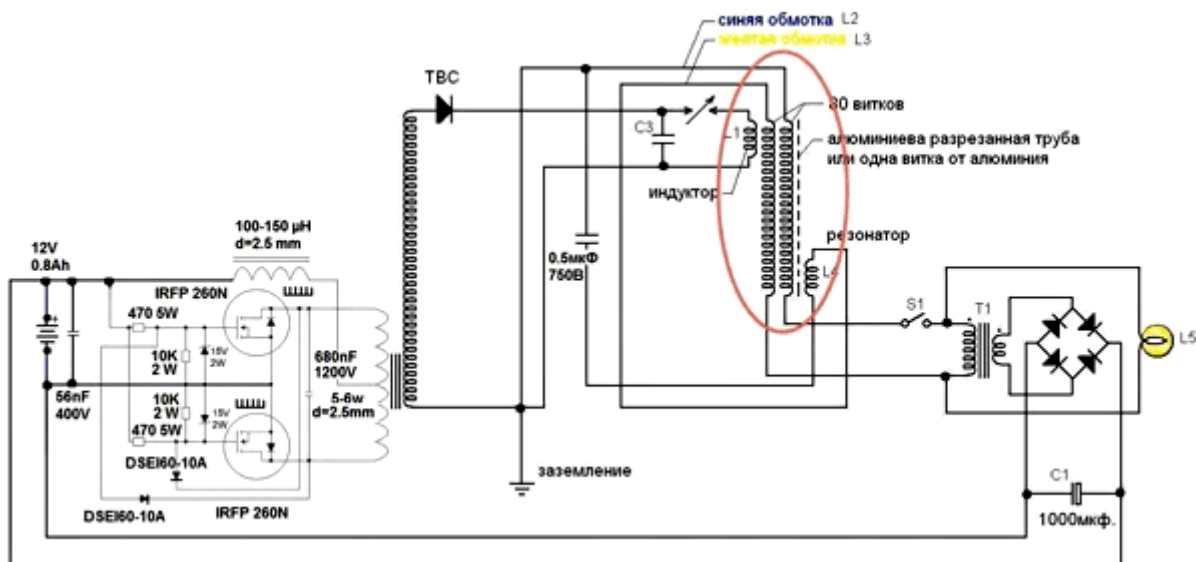
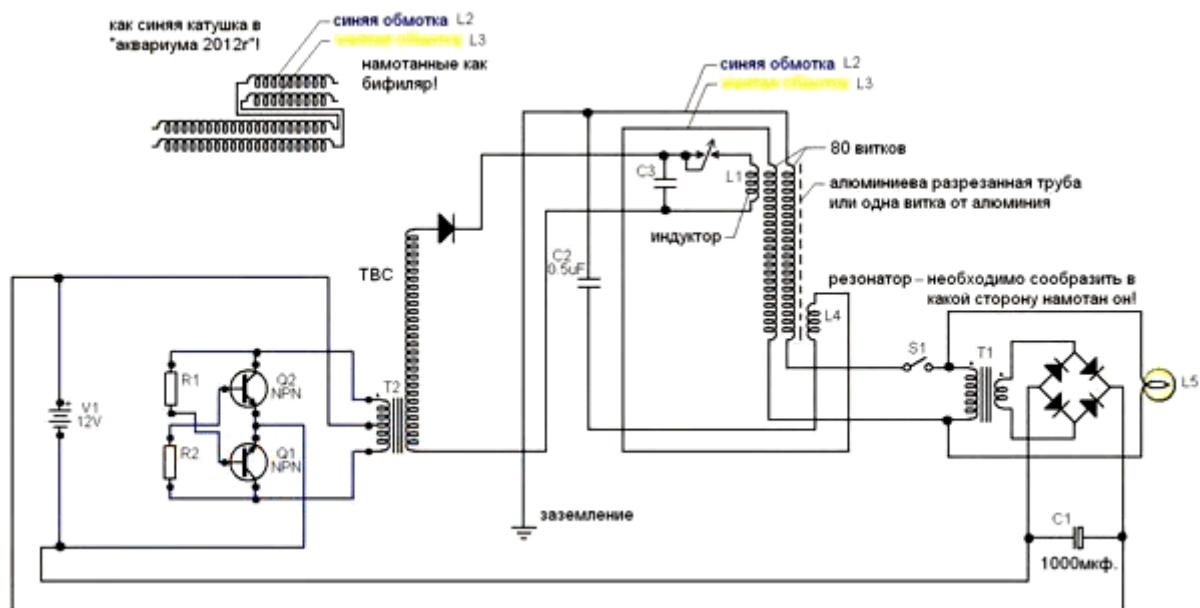
## GOST-armored trains

### ENERGY AMPLIFICATION WITH HIGH VOLTAGE SPARK GAP



## Бронепоезд БТГ





Video at <http://www.youtube.com/watch?v=5nxKqfkndw&feature=youtu.be> shows self-powered bulb (needs an earth connection):

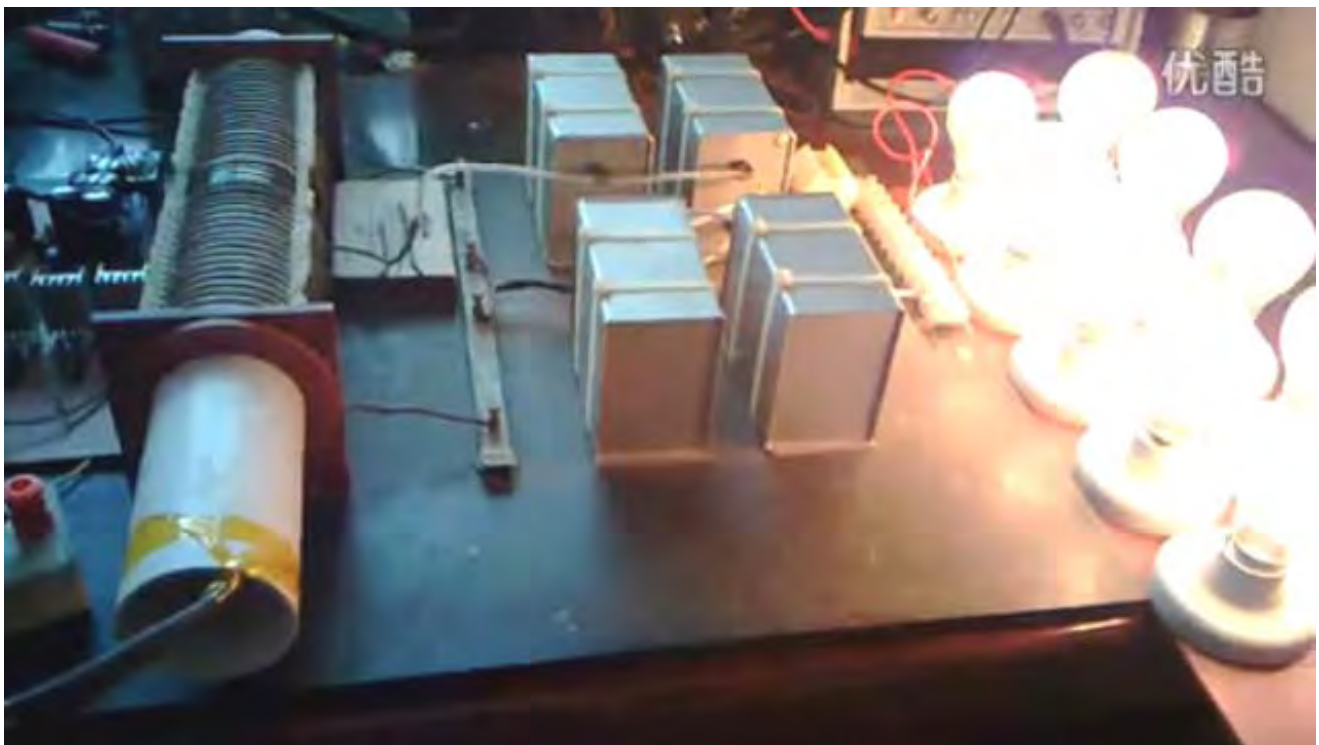


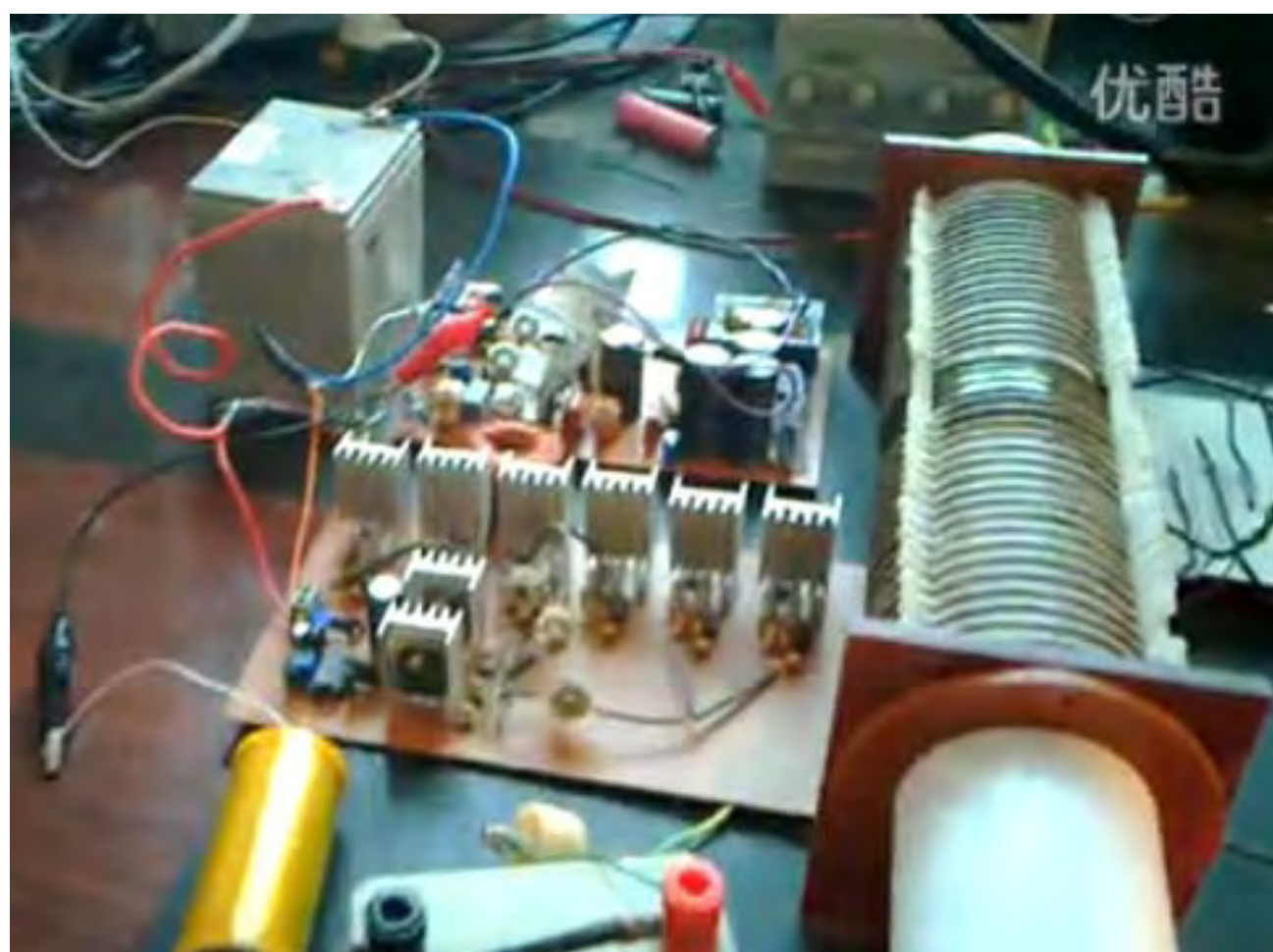
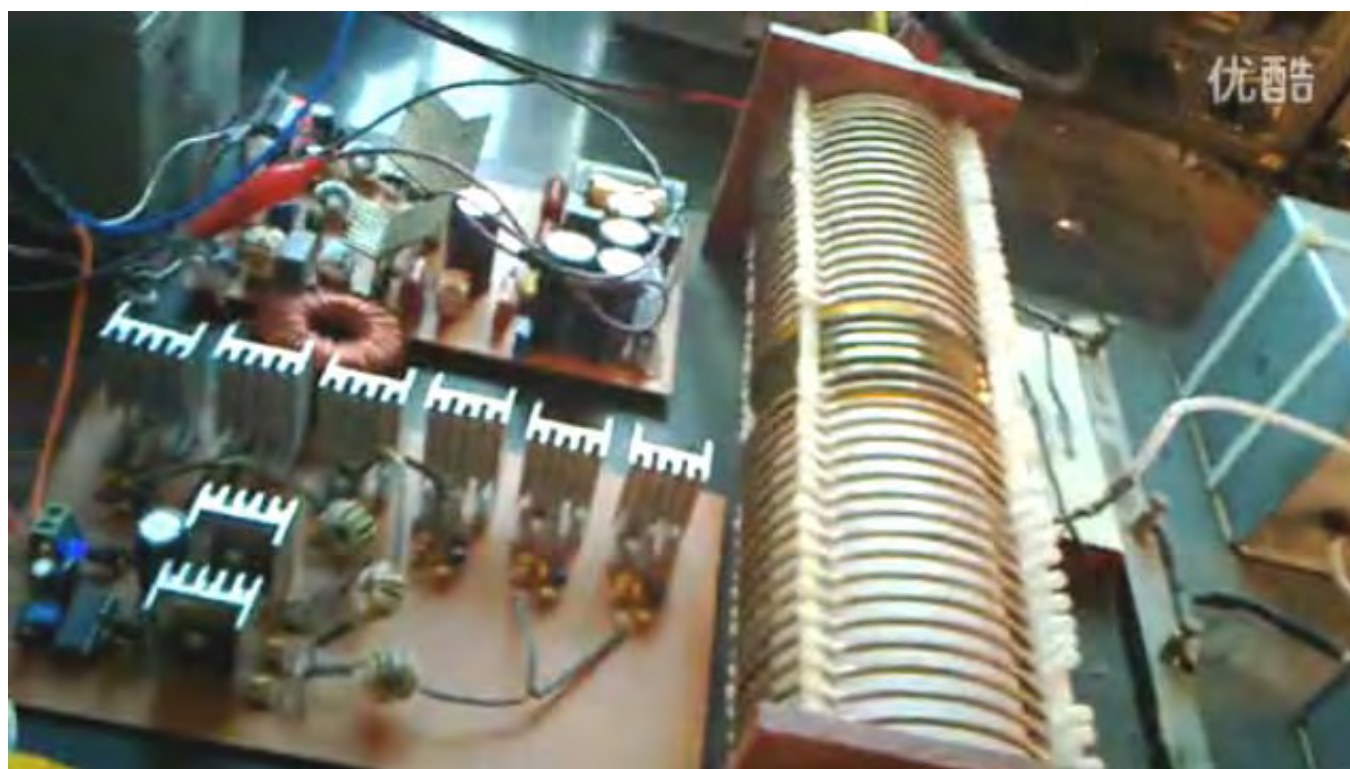
**‘Salty Citrus’ Chinese Developer.**

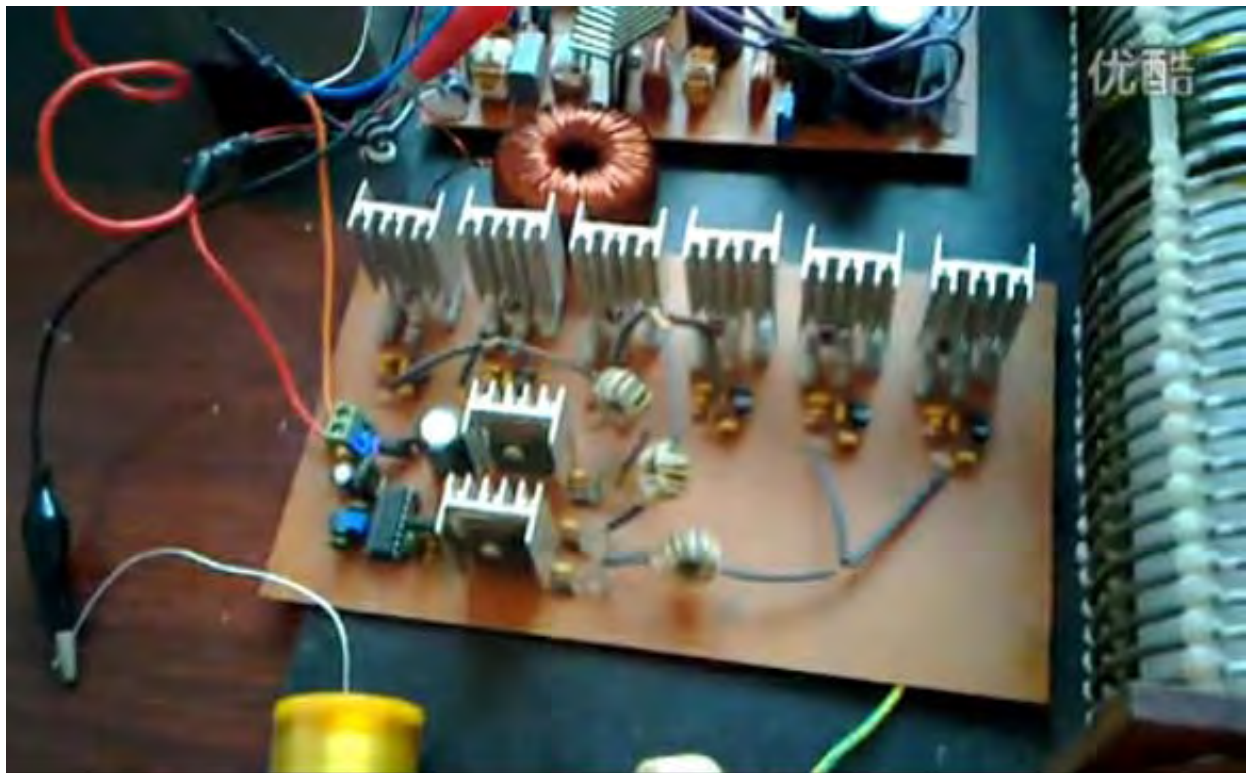
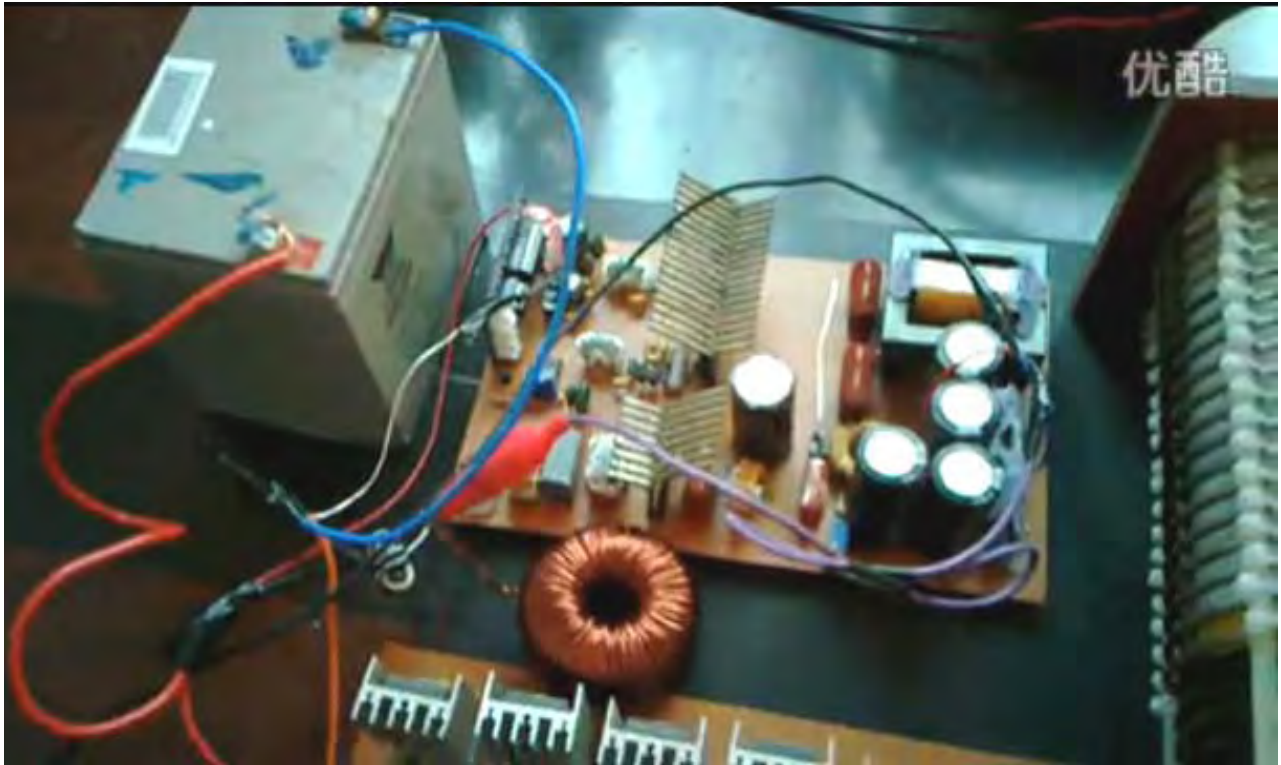
A Chinese developer whose forum ID is ‘Salty Citrus’, has replicated Don Smith’s main device very successfully. Using an input of 12V at 1A to 2A (24 watts) he is lighting ten 100-watt light bulbs to a high level of brightness. The Chinese language video relating to this can be seen at:

<http://www.energysea.net/forum.php?mod=viewthread&tid=1350&extra=&page=1>

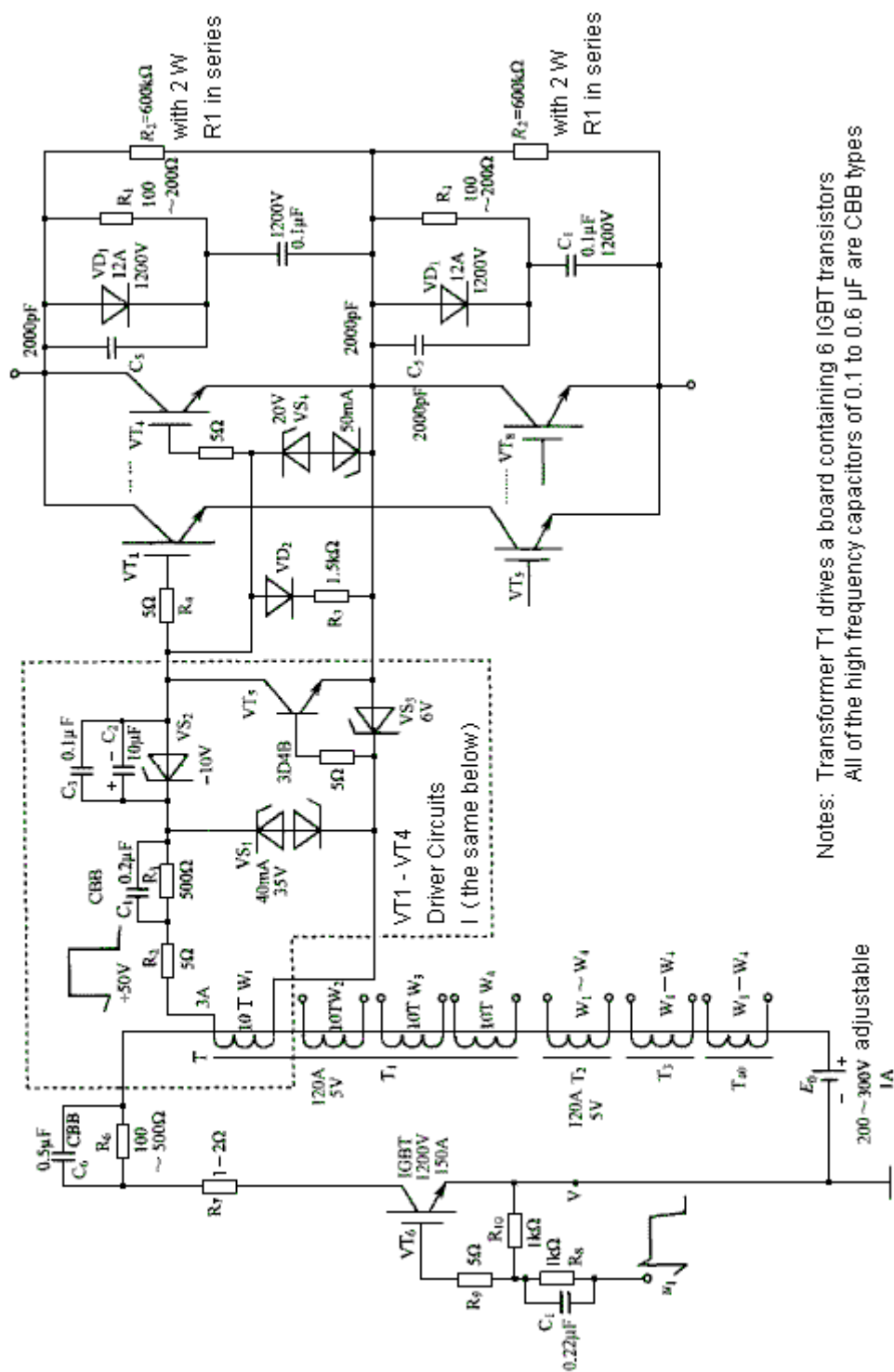
Here are some of the frames from that video:



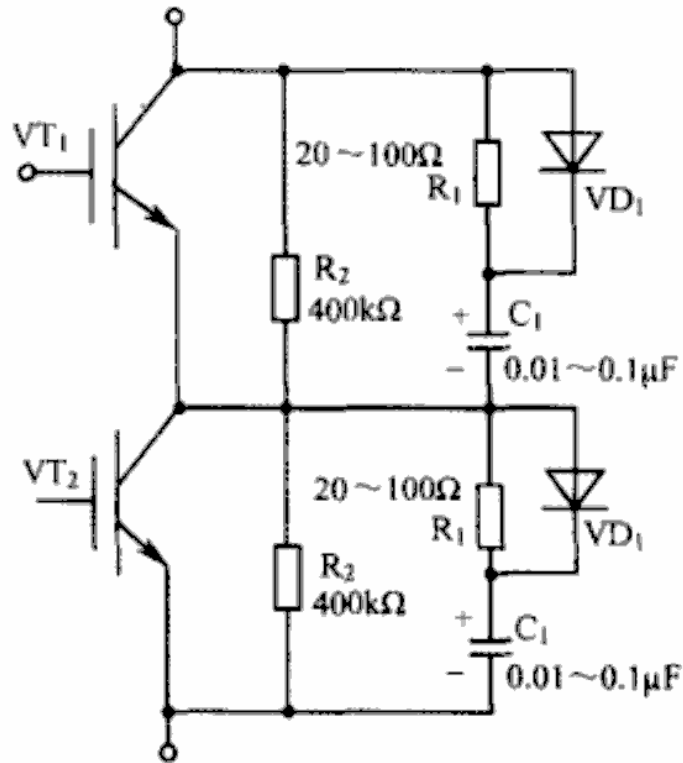




The circuitry used is shown here:



Notes: Transformer T1 drives a board containing 6 IGBT transistors  
All of the high frequency capacitors of 0.1 to 0.6  $\mu\text{F}$  are CBB types



Subsequently, a forum post by a Mexican man says:

Hello 'Salty Citrus',

I love your video!!!! I can really appreciate the amount of work you and your group have spent to develop and perfect the Don Smith / Tesla free-energy device. Thank you for pursuing such a noble cause.

I am intrigued by your switching network using the CREE CMF20120. How did you wire the MOSFET's? You used a UCC3825A Pulse-Width Modulator to clock the signal --> MOSFETS --> Gate Drive Transformers (x3) --> push-pull transistors --> CMF20120? Did you run the CMF20120 in series? Sorry about so many questions, but I am totally impressed by your ingenuity, and completely agree that your solid-state solution has undoubted benefits over Tesla's conventional spark gap.

I would be honoured if you could take the time to answer my questions. I would love to replicate your circuits.

I wish you the best of luck with your endeavours.

Sincerely,

'Lost\_bro' (half a world away)

-----

Re: 'Lost\_bro'

Thanks for the compliment. The success does credit to my team. Thanks to my team. Yes, the CMF20120 run in series in this solution. The voltage balancing between each MOSFET is critical as is the balancing between RC and DC voltage created by R.

Welcome to our forum for the exchange of information. China is an hospitable country. If you have any information or ideas, please don't hesitate to share them with us. 'Half a world away' is not a great distance.

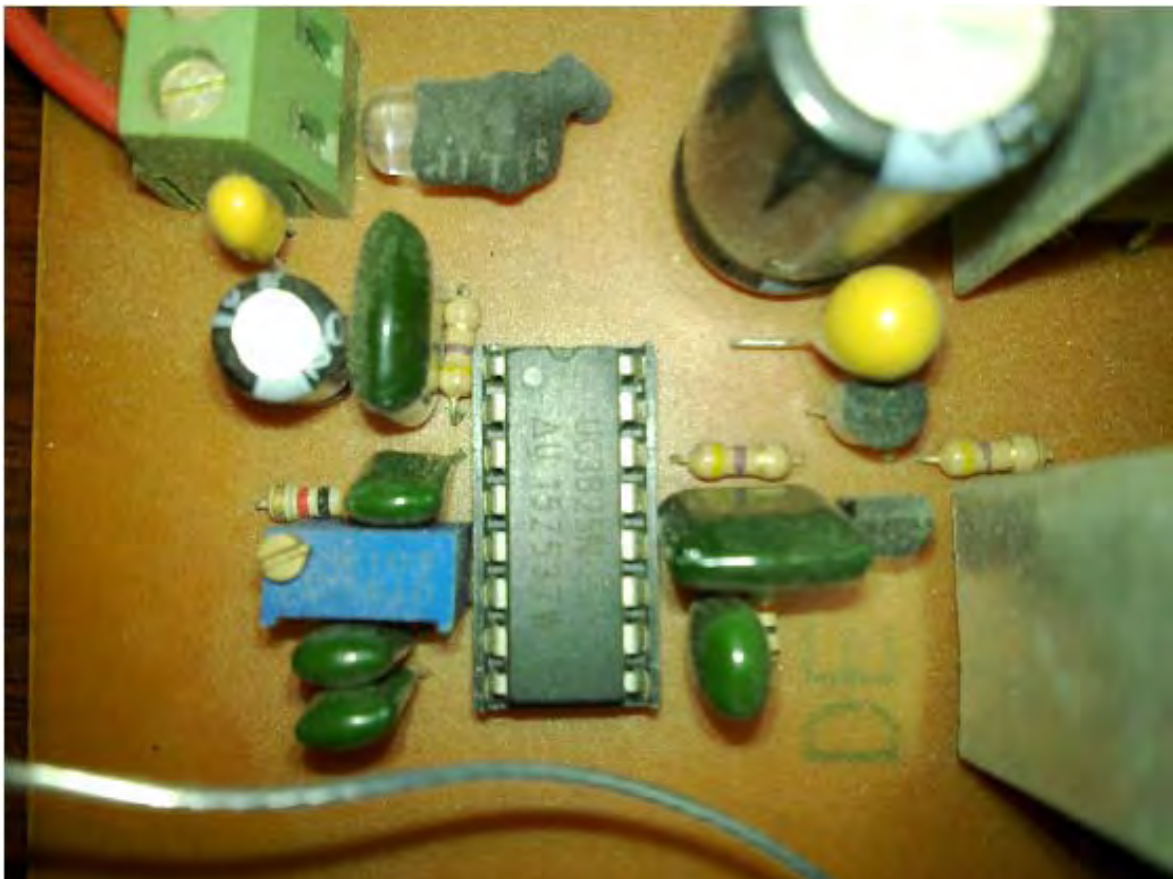
All the best,

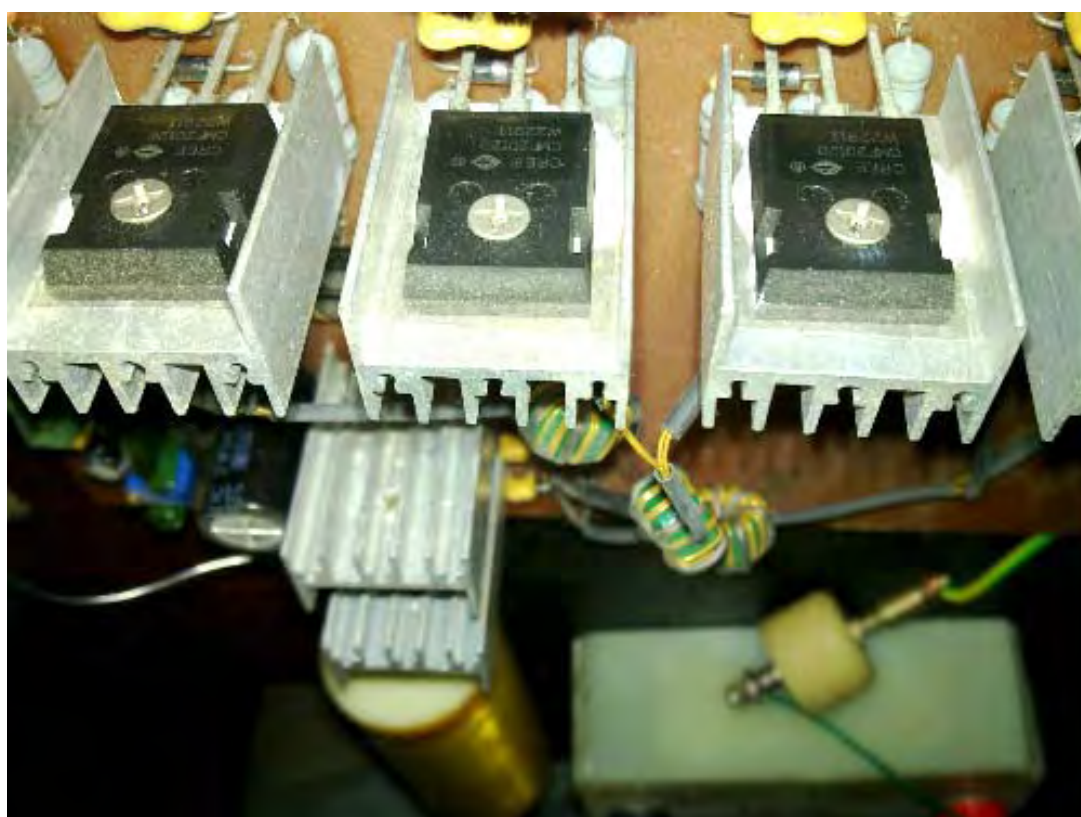
Sincerely

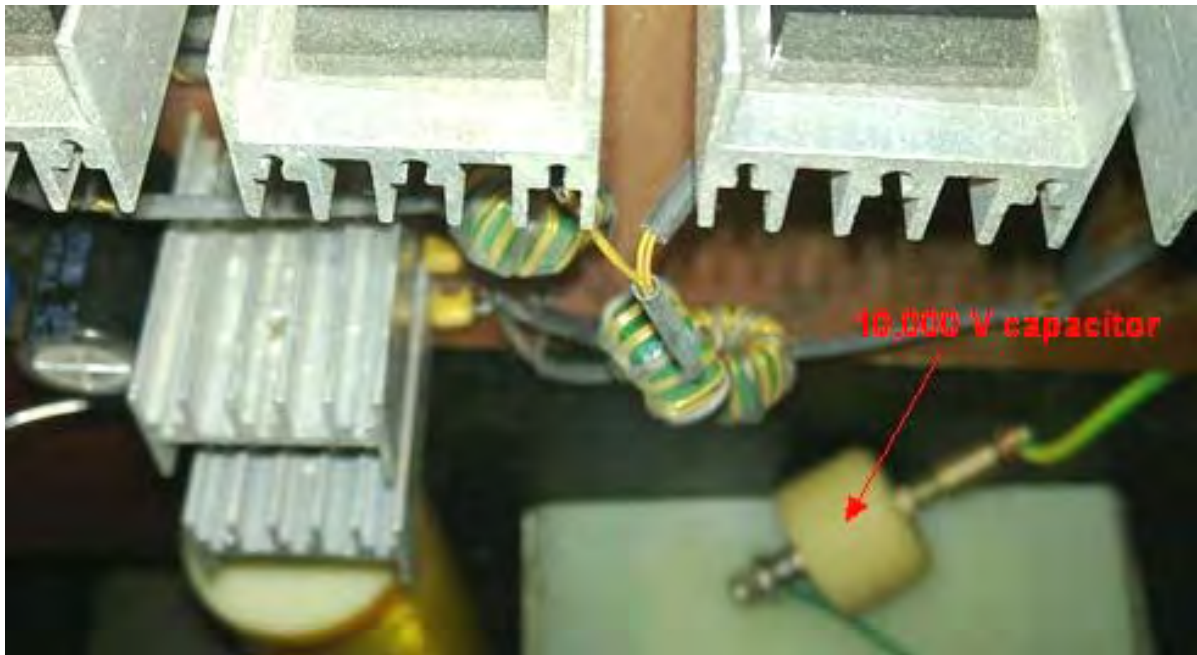
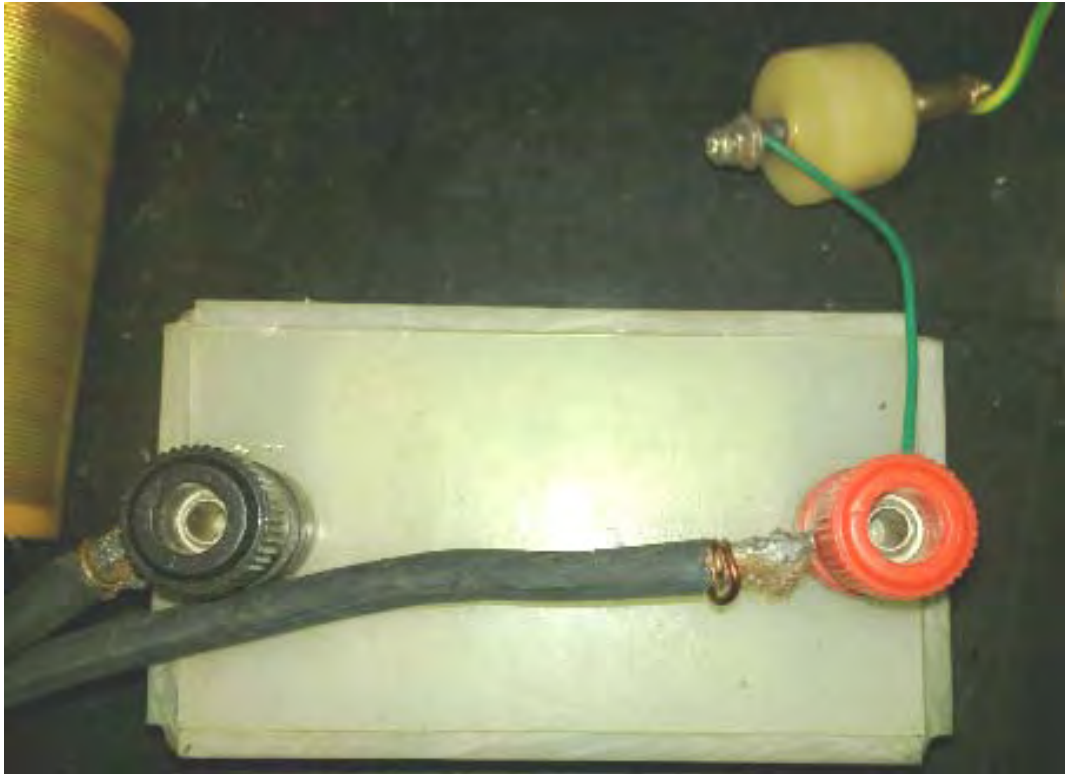
'Salty Citrus'

An earlier entry on the Chinese forum translates as:

Here is an earlier build. It is simple and has no step-down section and so cannot be self-powered:









Each bulb is 100 watts. The first board has a 12-volt input and an adjustable output which can be varied from 500V to 1600V (any higher voltage would damage the four 450V 20 microfarad capacitors). In the video, the variable resistor is used to set the voltage level of the FBT after boost as the voltage step-up circuit can go up as high as 3,000 volts.

The L2 coil is wound in a single direction and has just one tap at the centre. The idea is from Tesla's Colorado Springs Notes, in which Tesla disclosed the best method for a resonant driver. The frequency used in this circuit is about 230 kHz.

Question: There is nothing to do with quarter-wavelength, but is there anything with the length of the L1 and L2 coils on quarter-wavelength?

Answer: I think that the phase is more important.

Question: Do you need a Phase-Locked Loop circuit with a certain phase difference?

Answer: Basically, I use a fixed frequency, I have tried a Phase-Locked Loop and the effect is the same.

Question: Do you use direct drive with the spark gap only being used to limit voltage?

Answer: You can use a vacuum tube to drive it.

Question: If you drive it directly, then the loading will be very big and the current will increase, whereas if you use a spark gap, then the spark will become smaller and the current will be steady.

Answer: If the load affects the input, then you cannot drive it even with a spark gap. If you trigger with a spark gap, then the load will not increase the input. The spark gap is just a switch.

Question: Is there any direct Lenz relationship between the load and the primary?

Answer: Once the phase has been adjusted, the primary has no adverse effect on the secondary.

Commenting on his circuitry, 'Salty Citrus' states:

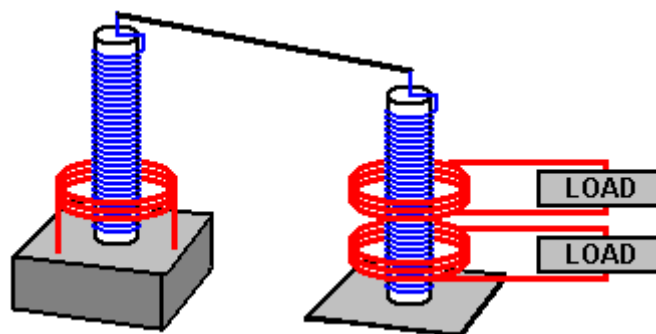
The diode symbols with a tick indicate a Zener diode (or bidirectional TVS-Transient Voltage Suppressor or "varistor"). For example, in this circuit, they are used to suppress the Grid voltage of the MOSFET, to maintain the gate voltage within the range of +20V to -20V. The above circuit is just a description of the structure of the MOS series method. Specific components will be needed for your own requirements considering the MOSFETs being used in your construction.

The voltage E0 can be adjusted. The source can be made using a TL494 IC operating at 12V, or alternatively, an adjustable, voltage-stabilised inverter can be used. The voltage setting depends on the numbers of MOSFETs which are being used in series and the parameters of Grid voltage and the turns ratio of the isolation transformer. The circuit is arranged so that each MOSFET has its own separate isolation transformer, and all of the primary windings of those transformers are connected in series to form a single current path. The number of turns in the primary of each isolation transformer is exactly the same. To drive an IGBT(or MOSFET), VT6 provides a high-frequency pulse current to drive the Gates of the MOSFETs, so as to achieve consistent switching.

In my circuit, the frequency used is 220 kHz, for this frequency, I use six MOSFETs type CMF2012 (1200V, 37A, Resistance Drain-to-Source of just 80 milliohms). This MOSFET from CREE has excellent performance, but you have to design the drive circuit carefully, 2V to 22V for the Gate voltage will be best. I particularly stress that it is very important that MOSFETs operated in series, require voltage balancing and an accurate drive. Especially important is having synchronized drive signals and the rise and fall time of the drive signal should be as short as possible, so that the switching time difference between the MOSFETs will be short, and that improves the high frequency operation.

## Tesla Coils Back-to-Back

I have been told of one man who used his common sense and produced an impressive result. He used a Tesla Coil as the driving force, and then used a second Tesla Coil back-to-back with the first one, to step the high voltage back down again. Doing that, he was able to light a series of powerful light bulbs from the "L1" output coils. He also confirmed that doubling the voltage, quadrupled the power output, verifying what Don said. He also found that adding additional coils with bulbs to the output Tesla Coil, did not increase the input power at all, did not cause any of the existing light bulbs to shine any less brightly, and yet lit the additional bulbs. That would appear to be confirmation of Don's statement that any number of magnetic copies of the original oscillating magnetic field of the first Tesla Coil, can provide a full-power electrical output without requiring any additional input power. I'm no expert, but my understanding of the arrangement is:



As the large diameter coil is exactly one quarter the length of the smaller diameter coil, there is an automatic resonance of both when the applied frequency is just right. As the first narrow coil is identical to the second narrow coil, they are also automatically resonant together. Again, as the large coils which feed the loads are exactly one quarter the wire length of the narrow coils, they also resonate at the common frequency and at that frequency, the input power is at its minimum while the output power is at its maximum. The spike at the top of each of the narrow coils is connected with a wire to channel the generated power from the first Tesla Coil to the second one.

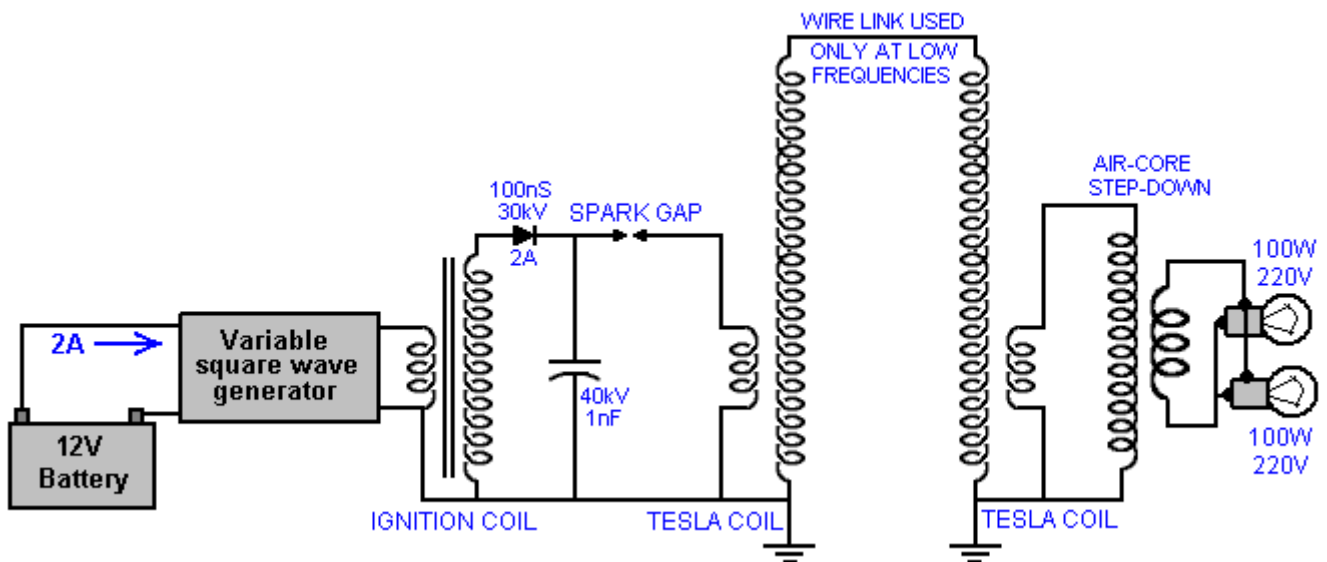
This arrangement may seem too simple to be effective, but with Tesla technology "too simple" just does not apply. This can be seen clearly from the work of **Nikanor "Nick" Giannopoulos**. Before he ever learned anything about electronics, Nick read and understood Nikola Tesla's "Colorado Spring Notes" (<http://www.free-energy-info.tuks.nl/TeslaCSN.pdf> 60Mb) and this helped with his present level of understanding. Interestingly, and perhaps not surprisingly, Nick had difficulty with conventional electronics after becoming familiar with Tesla's technology.

Nick used a square wave signal generator adjustable from 50 kHz downwards and with a fully adjustable Mark/Space ratio. This was used to drive an oil-filled car ignition coil, which, as he points out is not a Tesla Coil in spite of the frequently held view that it is. Ignition coils only operate at low frequency due to the limitations of their core material. However, John Stone points out that certain coil designs, such as those for the Fiat 'Punto' car, are built in such a way that replacing the core with ferrite should be possible, and that would allow high frequency operation.

Anyway, Nick uses a standard car ignition coil at lower frequency and uses it to feed a spark gap like this which is constructed from two chipboard screws:



His circuit is:



Nick has had very impressive results from his circuit, although it is still very much a work in progress with more development and testing still to be done. The 24 watt input of 12V at 2A is producing two very brightly lit 220V light bulbs. This does not tell us very much about the actual output power as bulbs are notorious for lighting brightly at low power levels, especially if the frequency is high. But, a very important point is the quality of the light which is an unusual, blue-white colour, quite unlike the colour produced when connected to the 220V mains supply. This is generally a sign of the power being 'cold' electricity. While he has not yet had the opportunity to test it, Nick believes that the circuit as it stands now is quite capable of powering much higher loads, and considering the colour of the light, I would be inclined to agree with him, although anything like that has to be tested and proven before any solid conclusions can be drawn from what is already known about the performance. The circuit performance is much improved if two separate physical earth ground connections are made.



Please don't fall into the trap of thinking that because the sparks are occurring at less than 5 kHz, that the Tesla coils also operate at that frequency. If you strike a bell which vibrates at 400 Hz, does that mean that you have to hit it 400 times every second in order to hear it? Actually, no, you don't, and the same thing applies here where the resonant frequency of the Tesla coils is approximately 650 kHz. The primaries are wound on 100 mm diameter PVC pipe sections and 19 turns of 1.02 mm diameter enamelled copper wire is used for them (19 swg or #18 AWG). The secondary coils are wound on 70 mm diameter PVC pipe using 0.41 mm diameter enamelled copper wire (27 swg or #26 AWG) with a total length of four times the primary winding wire length. As you will see later on in this chapter, resonance in a coil involves a standing wave inside the wire. That standing wave is created by the signal bouncing off the end of the wire and being reflected back. At frequencies other than the resonant frequency, this results in a constantly changing set of many different waves travelling in both directions and at different intensities (what could reasonably be described as a total mess). When the resonant frequency is fed to the coil, then all of that mess disappears and just one waveform remains, and at any point along the wire, that waveform appears to be stationary although, of course, it is not actually stationary, just the effect of the peaks always occurring at exactly the same spot and the troughs occurring at exactly the same spot, making successive waves look exactly the same as the previous one.

This feature has one very practical aspect, namely that if you run the same wire away from the coil turns to connect to whatever the next circuit component happens to be, then the wave inside the wire will not bounce back at the end of the coil turns but will continue on to the end of the wire before bouncing back. So, the connecting wire length has to be included when reckoning the wire length in the turns of the coil. On the other hand, if the wire in the coil turns is terminated at the ends of the coil and wire of a very different diameter is used for connecting to the next component in the circuit, then the signal inside the wire will bounce back from the sudden change in wire diameter and so the connecting wire length will not be part of the wire length in the turns of the coil. This is an important feature if you are aiming for an exact 4:1 wire length ratio (and 4:1 wire weight) between the Tesla Coil windings in order to impose an automatic resonance between the two windings.

It should be noted that PVC (especially non-white PVC) has a very restrictive effect on high frequency coils. At low frequencies, PVC is ok, but it drags down the coil performance as the frequency rises, lowering the "Q" (for "Quality") factor of the coil. Using acrylic instead of PVC overcomes this. Alternatively, coating the PVC with a high-voltage insulating material such as shellac or one of the proprietary coating agents, will improve matters considerably. The ideal, of course, is to have no former at all and have the coil standing unaided because of its own strength.

## **The Screened Transformer of Joseph Boyd.**

It is not at all clear if the Boyd power system should be located here or in chapter 7 which deals with aerials. Joseph talks about the way that radio circuits operate and why only very limited power appears to be the limit of

radio receivers. He explains a method of extracting serious levels of power from a transmitting coil and a receiving coil, but the higher power levels require an input oscillator, and so, while an aerial and earth can be used for lower power levels, input power is needed for optimum performance. Here is part of Joseph's patent application:

**US Patent Application 2008/0129397**

**5th June 2008**

**Joseph Boyd**

## **ELECTROMAGNETIC ELECTRIC GENERATOR**

### **Abstract:**

An electrical generator that uses a high frequency oscillator in a tuned circuit, set to resonate with the transmitter coil of a full-length high frequency transformer unit, to generate electromagnetic energy, to transform this energy to electrical energy and to collect this energy.

### **1. Field of the Invention**

The present invention is an electrical generator that uses a high frequency oscillator in a tuned circuit, set to resonate with the transmitter coil of a full-length high frequency transformer unit, to generate electromagnetic energy, to transform this energy to electrical energy and to collect this energy.

### **2. Description of the Related Art**

If an oscillator circuit is properly connected to a tuned antenna so that it resonates, a current will flow between the aerial and the ground, and this produces the high frequency electromagnetic air waves and ground waves of our radios and other electronic equipment.

An oscillator of the same type used in electromagnetic wave transmission equipment is used to generate the electromagnetic energy used in this patent. These electromagnetic transmitters are well developed and are used world wide, and broadcast at frequencies that extend from the longest radio waves to the very short ones. Certain radios send their signals great distances, some even travelling around the world.

Although these high frequency electromagnetic energy waves are all around us, this energy has long been considered impossible to collect on a large scale due to the induction characteristics of the electromagnetic wave as it passes a metallic object. As the wave goes by a wire tuned to resonate at the frequency of the wave, it induces an electrical charge in the wire, but to use this charge, we need another wire to close the circuit and let the charge flow. If we use another wire alongside the first wire and connected to it, the wave induces a charge in it exactly like in the first wire and no current will circulate in the two wires.

This problem of collecting the energy of the wave was solved by the invention of the half-length electromagnetic transformer, but the half-length electromagnetic transformer applies only to the means of collecting the atmospheric energy. The invention of the full-length electromagnetic transformer of this invention, however, allows us to combine the generation of the electromagnetic wave and the electrical converter into one compact unit.

### **BRIEF SUMMARY OF THE INVENTION**

Basically, this unit uses an oscillating electric current to generate an electromagnetic wave, which releases a much greater electric current, and the total electrical energy derived in this manner, is over and above the amount of energy needed to operate the equipment.

It has long been assumed that the only energy involved in high frequency electromagnetic transmission is that supplied by the operator to drive his equipment. The actual energy of the electromagnetic wave is often over a hundred times greater than this since the amount of electromagnetic energy in the earth is practically unlimited, there appears to be no limit to the size of the electromagnetic generators, or to the size of the power plants based on this energy source. This energy is available, world wide, free for the taking.

This energy is related to the light waves and is probably a variation of the light waves, however, the radio type waves are longer than light waves and are vibrating at a lower frequency. Light waves are a source of high energy just for the taking, also. Anything that is brought up to a high heat, will give off light energy. A very small wire in a light bulb, when brought to a high heat will release a light ray of such power that it will go all the way to the moon. This is natural energy, produced by the speed of the earth through space. Using the math of Dynetics, the speed of the earth necessary to give any pound of earth the atomic energy of one pound of uranium, came out exactly the same as the speed of light (186,300 miles per second). The fact that the math came out exactly at this speed leaves little doubt that the speed of the earth through space is the speed of light, and that every pound of material on earth has the energy of one pound of uranium, due to this speed.

The electromagnetic energy in the low frequency range differs from other types of energy, in many ways, but of interest to us is that it is propagated by electrical currents, travels through the air like the light waves, and is detected and may be collected, when it induces an electric charge in a wire.

This is an ideal source of energy. The generators may be hand-held or large enough to replace the biggest power plants. They may be used to drive motor cycles, sleds, autos, trucks, trains, ships and planes. The fact that the output is in the form of electrical energy is, in itself, a great benefit, but the fact that the generating equipment is light and compact is a real plus for all types of mobile equipment.

It is possible that this invention will supply all of the electrical energy needed in the homes making the distribution lines unnecessary, and if used to drive automobiles, our dependence on oil will be a thing of the past.

This invention makes possible an abundance of energy, available to mankind any where in the world. Even the poorest nations will have an abundance of energy.

The oscillating equipment that generates the electromagnetic wave used in this invention includes an oscillator, of some type driving a tuned transmitter coil that resonates with a tuned collector coil in a full-length electromagnetic transformer. The induced current is collected in the collector coil and may be rectified and stored in a battery or used to do work. The oscillator circuit is an ordinary oscillator circuit, driven by a tube, crystal or even an electoral arc, and the tuning means and rectification set-up are standard.

The basic element that is novel to this invention is the full-length electromagnetic transformer unit that is made up of two or more metallic pipe like sheaths side by side. The sheaths are not connected together, electrically. Two or more coils are wound in the sheaths.

The transmitter coil uses an insulated wire, which is threaded up through one sheath, and down through another sheath a number of times forming a long flat continuous circuit of wire inside of the pipe like sheaths. And then the collector coil is threaded up through the sheaths, and wound the same way. The two coils may have a different number of turns. The coils are tuned to resonate at the oscillator frequency and an electromagnetic wave is generated in the transmission coil. The wave induces a charge in that part of the collector coil that is in the same sheath, and next to it, and if the wave is moving up in the sheath, the charges of all of the collector wires in that sheath are moving up, and if the wave is moving down, the charges of all of the collector wires are moving down. But the transmitter wave in one sheath does not induce a current in the wires of another sheath, nor does it induce a current in a wire outside of that sheath. This allows a current induced in one sheath to freely circulate in the other sheaths or on an outside wire.

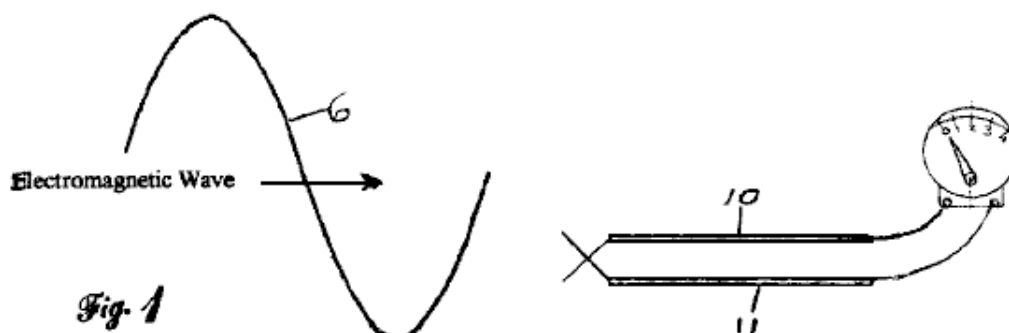
When the transmitter coil is brought up to resonance and broadcasts its electromagnetic wave inside of the sheaths, it benefits us in two ways. It keeps the wave inside of the sheaths and prevents it from spreading far and wide, and it concentrates the wave on that part of the collector coil in the same sheath.

Since each of the collector wires are of the same length, say  $\frac{1}{2}$  wave length of the electromagnetic wave, and since they are parallel and side by side, a resonant electromagnetic wave induces equal charges in all of the collector wires within the sheath. These induced currents are exactly in phase and are connected in series, so that the voltages add up to an amount proportional to the number of turns.

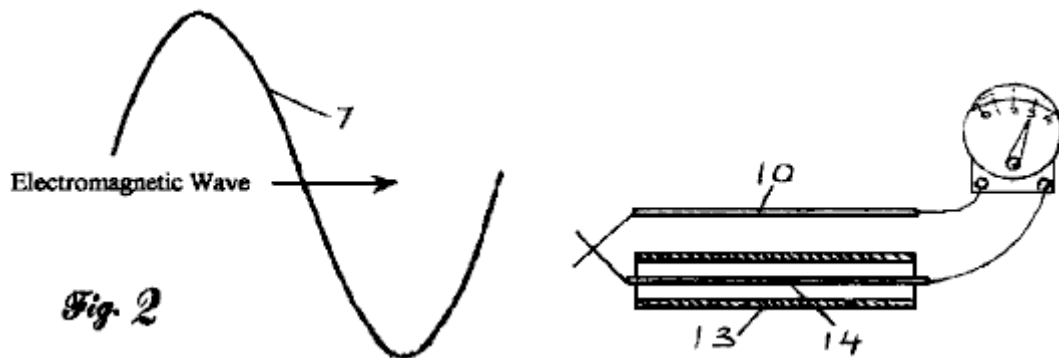
More than two sheaths may be used with the coils wound inside, or the full length-transformer may be combined with the half-length transformer where the winding is part inside the sheath and part outside of the sheaths. The oscillator may be replaced by an aerial in cases where low power is needed. The inductance coil may be left entirely outside of the transformer, and the coupling made to the transmission coil by magnetic induction.

These and other objects, features and advantages of the present invention will become more apparent upon reading the following specification in conjunction with the accompanying drawing figure.

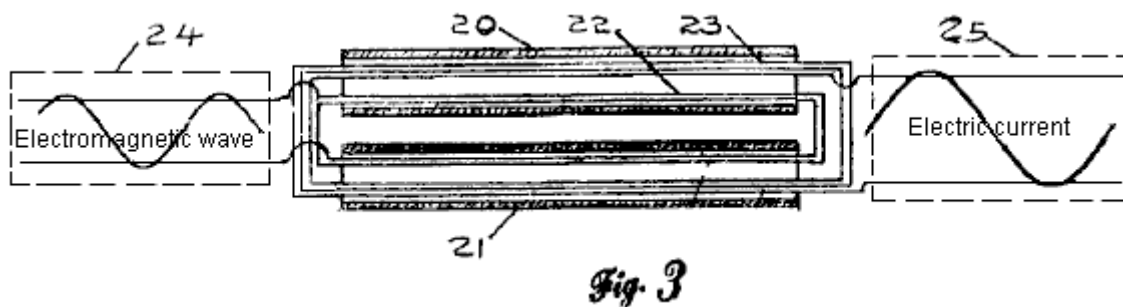
#### **BRIEF DESCRIPTION OF THE FIGURES**



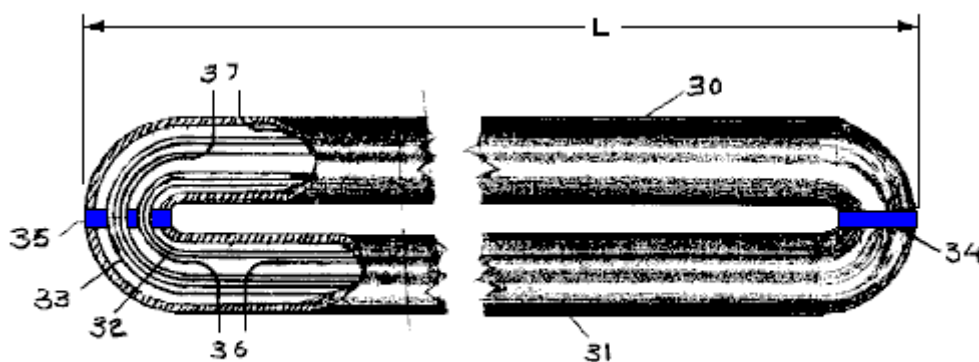
**Fig.1** is a view of an electromagnetic wave, due to resonance, passing two side by side wires tuned to the same frequency. The wave generates equal alternating charges in each wire, and no current flows when the wires are connected.



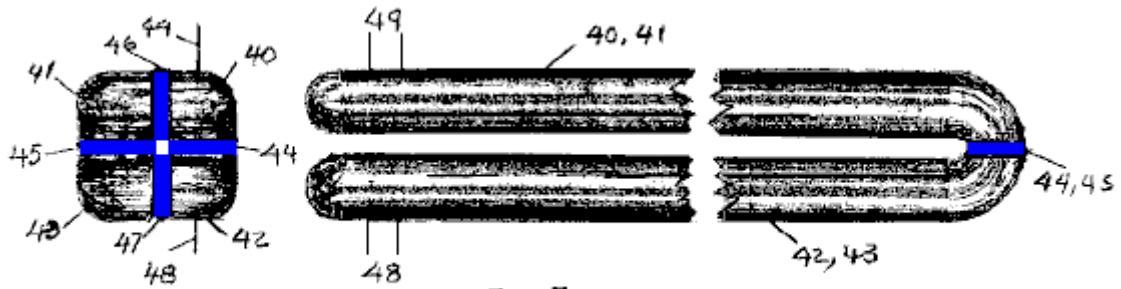
**Fig.2** is a view of a resonating electromagnetic wave passing two wires, tuned to resonate, where one wire is surrounded by a metal sheath. The outer metal sheath stops the wave and prevents it from inducing a charge in the shielded wire. The Charge induced in the outside wire now flows freely through the shielded wire.



**Fig.3** is a view of a full length electromagnetic transformer made of two metallic pipe like sheaths, having two wires threaded up through the inner opening of one sheath and down through the inner opening of the other sheath, a number of times to form two continuous coils. When an electromagnetic wave is fed into the tuned transmitter coil, an alternating current is induced in the tuned collector coil.

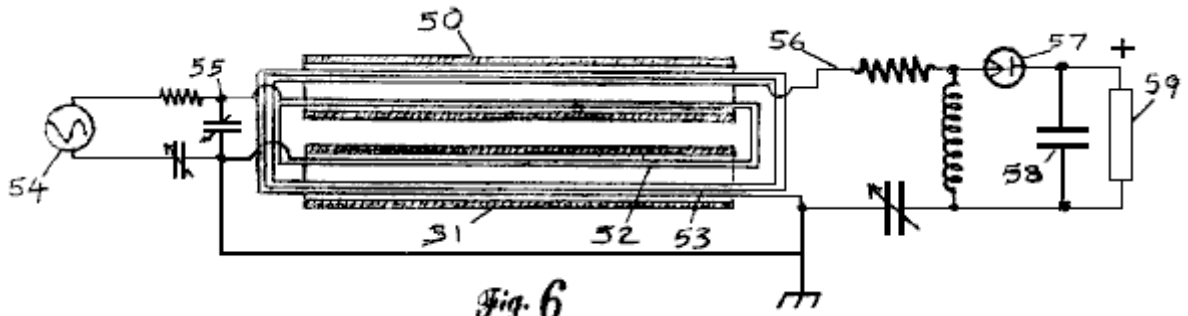


**Fig.4** is a view of a full-length electromagnetic transformer, having two sheaths, insulated from each other, and a cutaway portion shows the coils inside.



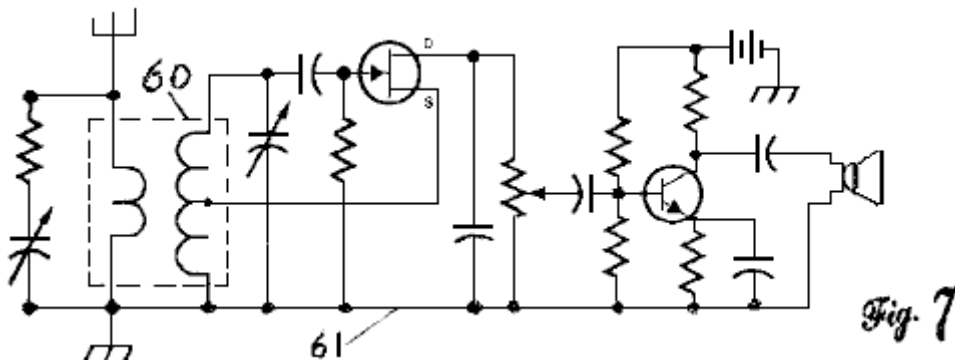
**Fig. 5**

**Fig.5** is a view of a full-length electromagnetic transformer, having four sections insulated from each other.



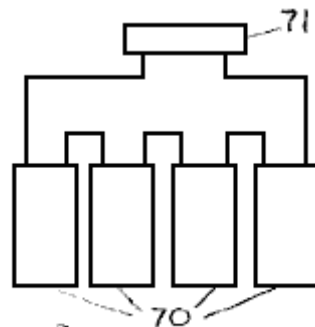
**Fig. 6**

**Fig.6** is a section view of a full length electromagnetic transformer made of two metallic pipe like sheaths, where an oscillator circuit is fastened to a tuned transmitter coil, which induces a current in the tuned collector coil; and a half-wave rectifier circuit converts the high frequency current to DC current.



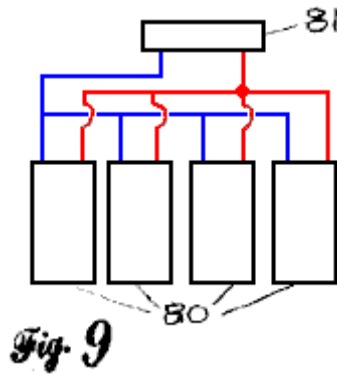
**Fig. 7**

**Fig.7** shows a view of a full-length transformer, used as an inductance in a radio receiver or other similar electronic circuit 61. In this case the transmitter coil is between the aerial and ground, and the collector coil acts as the radio frequency inductance.



**Fig. 8**

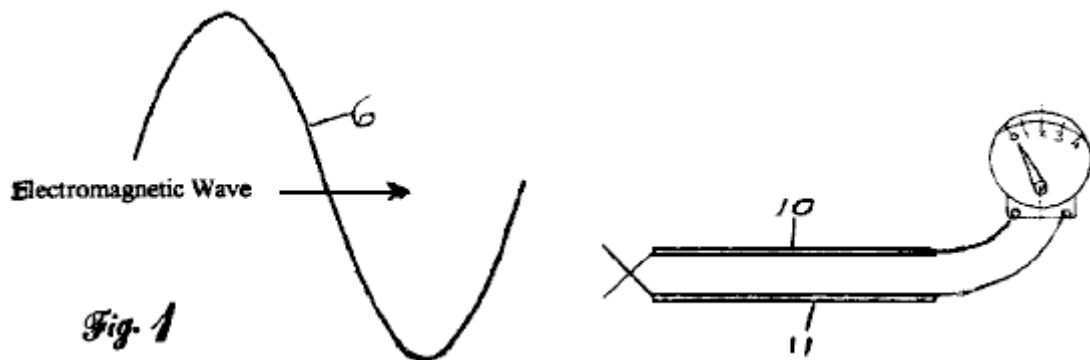
**Fig.8** shows a number of full-length transformers, connected in series. They all have rectifiers to convert the high frequency AC current to DC current and the voltages at the load add up.



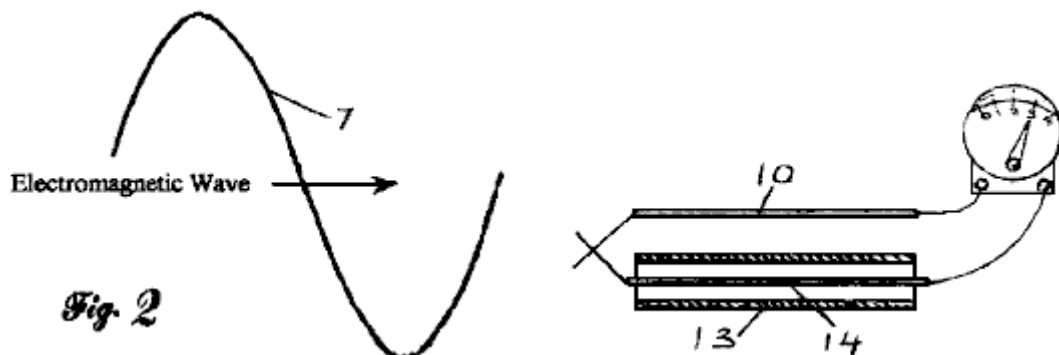
**Fig.9** shows a view of a full-length transformer, connected in parallel. In this case the currents at the load add up.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

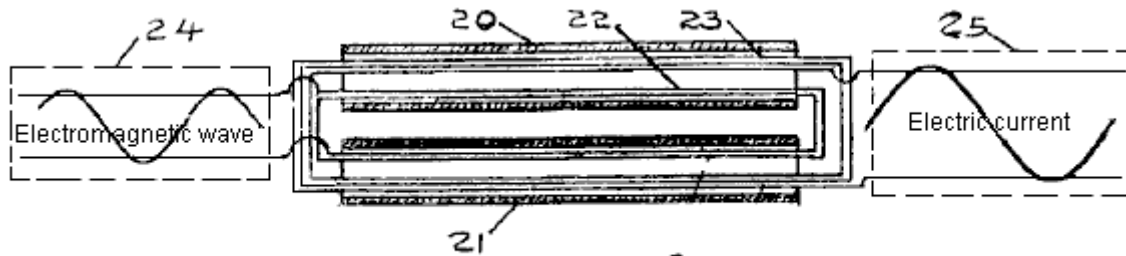
When a circuit is made to resonate at some frequency, it generates an electromagnetic wave. These waves move at the speed of light and travel great distances, and this makes possible our radios, televisions and cell phones. These waves, in passing a wire suspended in the air, set up alternating charges in the wire, varying at the frequency of the wave. If we put an inductance, that is tuned to the frequency of the wave, between the wire and the ground the circuit will resonate and charges will flow back and forth on the wire. This allows us to pick out the wave we are interested in, amplify it and read its message. We have long known that the voltage of the wave we choose to receive is greatly amplified when we make our circuit resonate at that wave's frequency, but we have been unable to accumulate this additional energy from the wave because we are limited to what energy we can pick up by the equipment that we use.



**Fig.1** shows why this is so. The passing electromagnetic wave 6 generates an alternating electric charge in the wire 10, tuned to the wave frequency to close the circuit so that the induced charge can circulate, we have added a second wire 11, but if we connect the ends of the wires together, the electromagnetic wave 6 induces a charge in the second wire exactly like the one in the first wire, and no current will flow. Any effort to circulate the charge induced in wire 10 is blocked by an equal opposing charge in 11.

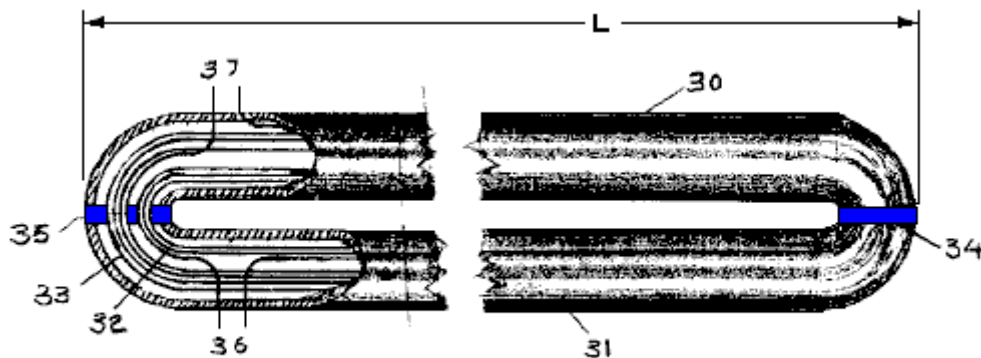


In **Fig.2** we have replaced the wire 11 with a metallic, pipe like sheath 13 having an insulated wire 14 inside when an electromagnetic wave 7 passes, the wave is stopped at the sheath 13 and does not induce any charges in the inner wire 14. This allows the inside wire 14 to conduct the charge induced in the wire 12.



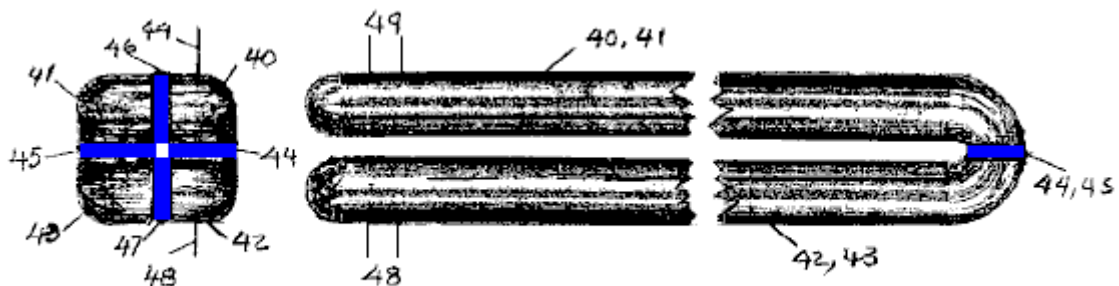
*Fig. 3*

In **Fig.3** we see two sheaths **20** and **21**, parallel and insulated from each other. Two separate coils **22** and **23** are wound inside the sheaths. The coil **22** is the transmitter coil and it is tuned to resonate at the frequency of the oscillator circuit **24**, and this generates an electromagnetic wave that induces a current in the collector coil **23**, which is adapted and used in the tuned collector circuit **25**.



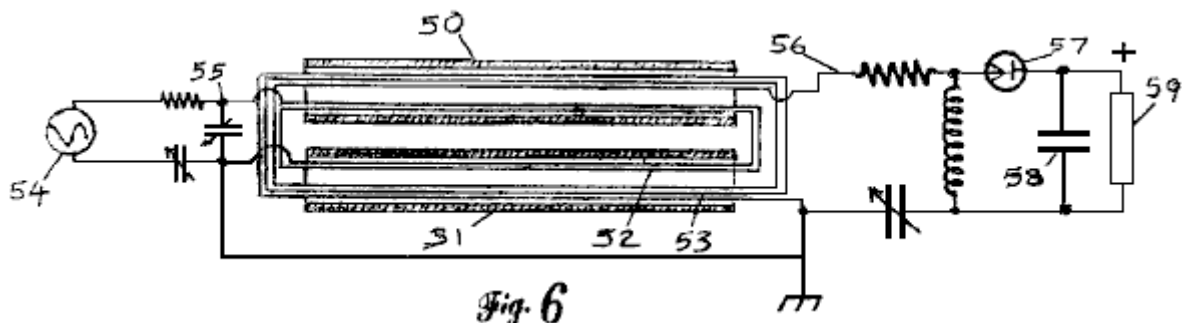
*Fig. 4*

**Fig.4** is a view of a full-length electromagnetic electric generator using two separate sheaths **30** and **31**, where the electromagnetic wave is almost completely contained within the sheaths. The sheaths are parallel and insulated from each other by insulators **34** and **35**. The transmitter coil **32** and the collector coil **33** are shown in the cut-away, and are wound completely inside the sheaths. Additional coils may be added as needed. The transmitter coil **32** is tuned to resonate at the frequency of the oscillator circuit, which connects in at **36**. And this generates an electromagnetic wave that is contained within the sheaths and induces a current in the collector coil **33**, which is tuned to resonate at the wave frequency and is coupled to the collector circuit at the terminal **37**. The insulating separators **34** and **35** are necessary to prevent induced current from flowing in the sheaths **30** and **31**.

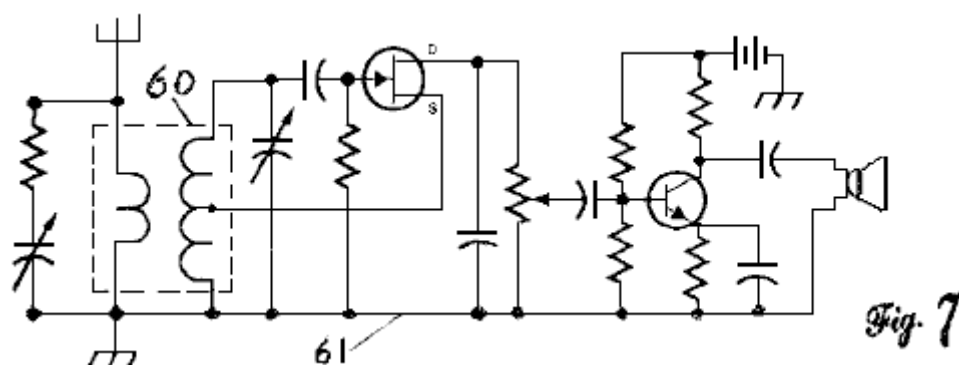


*Fig. 5*

A number of sheaths may be combined, as is shown in **Fig.5**. In this case four sheaths **40**, **41**, **42** and **43** are combined, so that the coils wound inside the sheaths are in series, and the sheaths are electrically separated by the insulators **44**, **45**, **46** and **47**. The tuned circuit for the transmitter coil is hooked up at connectors **48**, and the collector circuit connects to the collector coil at **49**.

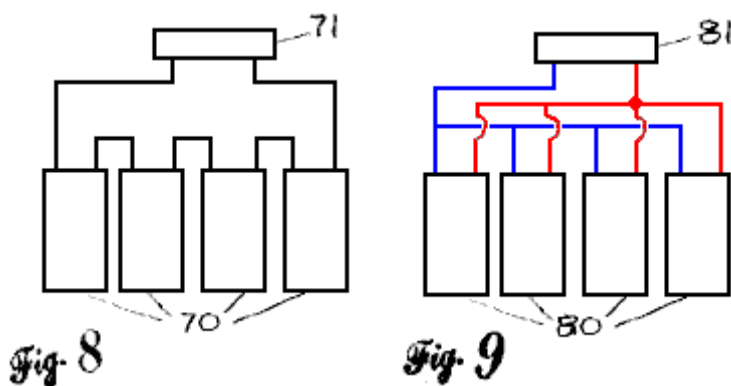


A simple circuit for operating the full-length electromagnetic transformer is shown in **Fig.6**. The two sheaths **50** and **51** are shown with the transmitter coil **52** and collector coil **53**. The transmitter coil is connected to the tuned circuit **55**, which is driven by the oscillator **54**. The oscillator **54** is tuned to oscillate at some frequency and the transformer circuit **55** and collector circuit **56** are tuned to resonate with it. At resonance the transmitter coil **52** emits an electromagnetic wave which induces a current in the collector coil **53**. Shown here is a half-wave rectifier **57** and capacitor **58** connected to the load **59**. The rectifier is necessary on each collector unit, because we can add the direct currents of the separate units, but the alternating currents of the units might be out of phase and without the rectifier they would cancel out.



**Fig.7** shows the transmitter coil connected between an aerial and the ground, where the aerial circuit and collector circuit are tuned to resonate at a desired frequency to greatly boost the sensitivity and to amplify the signal. This type application will work equally well with transmitters.

Also, using the half-length transformer as an aerial and the full-length transformer as the radio frequency transformer works the same with both receivers and transmitters. The oscillator circuit can use a high frequency magnetic inductance and the full-length transformer unit to resonate with a half-length transformer which acts as an aerial. A unit such as this would greatly add to the power of a radar system.



The full-length units, when combined with rectifiers, may be connected in series as in **Fig.8**, or in parallel as in **Fig.9**

While the invention has been disclosed in it's preferred forms, it will be apparent to those skilled in the art that many modifications, additions, and deletions can be made therein without departing from the spirit and scope of the invention and its equivalents as set forth in the following claims.

## Claims:

1. An electric generator that uses an oscillating circuit to resonate with inductances enclosed in a full-length electromagnetic transformer unit, comprising: two or more parallel, metallic, pipe-like sheaths, insulated from each other; an electromagnetic transmitter coil, which is wound inside the sheaths, using an insulated wire, threaded up through the inside opening of one of the sheaths and down on the inside of a second sheath, one or more times, to form a continuous coil; a means of tuning the transmitter coil to the frequency of the oscillating circuit, so that the transmitter coil resonates and generates an electromagnetic wave that is contained within the sheaths; a collector coil composed of an insulated wire, threaded up through the inside opening of one of the sheaths and down on the inside of a second sheath, one or more times, to form a continuous coil, wherein the electromagnetic wave of the transmitter coil induces an electric charge in the collector coil; and a means of tuning the collector coil to resonate at the frequency of the oscillating circuit; so that the electromagnetic wave induces a current in the collector coil, and since the coil is contained within the sheaths, the current is free to flow, and the high frequency alternating current, so generated, can be used elsewhere in an electronic circuit, or altered and used as a power source.
2. The full-length electromagnetic transformer unit of claim 1, where the collected current is rectified, and the DC current is stored in capacitors and used to do work.
3. The full-length electromagnetic transformer unit of claim 1, where the transmitter coil acts as a tuned inductance, in a receiver, between the aerial and the ground, and a tuned collector coil resonates to increase the sensitivity and the amplitude of the signal.
4. The full-length electromagnetic transformer unit of claim 3, where the tuned transmitter coil resonates with an oscillator and an aerial to act as a transmitter for radios, televisions, cell phones, radars and computers.
5. The full-length electromagnetic transformer unit of claim 1, where the lengths of the sheaths are some multiple of the wave length of a particular electromagnetic frequency.
6. The full-length electromagnetic transformer unit of claim 5, where a number of the units are connected in parallel to increase the current.
7. The full-length electromagnetic transformer unit of claim 5, where a number of the units are connected in series to increase the voltage.
8. The full-length electromagnetic transformer unit of claim 5, where the parts are reduced to a size small enough to fit in, and supply power to, a cell phone, a lap-top computer, or other electrical appliance.
9. The full-length electromagnetic transformer unit of claim 1 further comprising three or more, metallic, parallel, side by side, pipe like sheaths, where the sheaths are not electrically connected, and have two or more coils wound inside the sheaths.

\*\*\*\*\*

Up to the present time (June 2013), I have not heard of anyone attempting to replicate the design shown in this patent, and so it is just being put forward here in case somebody wants to try it. It appears to be a clever technique. The power gain is maximised by tuning the transmitting and receiving coils to the frequency of the oscillator, although in practice, it is highly likely that the oscillator frequency would be adjusted to the transmitter coil as it is so easy to adjust the frequency of an oscillator.

Boyd does not go into great detail about attaining resonance, and that is generally a major difficulty in any design which does not have automatic tuning. It needs to be borne in mind that the length of wire in each coil (and possibly its weight) is a key factor. Boyd talks about the coils possibly having the same number of turns, and that is fine **provided** that the coils are identical in size, that is, having the same shape when viewed from the top and the same depth of turns when viewed from the side, and exactly the same number of turns with each coil having exactly the same wire length. Resonance in a length of wire, whether it is laid out straight or wound into a coil, tends to confuse many people. Richard Quick's very clear explanation of resonance in any length of wire, in his US patent 7,973,296 of 5th July 2011 is very helpful. He says:

### **“Quarter-Wave” Resonance; Standing Electromagnetic Waves”**

One of the two main types is electrical resonance is referred to here as quarter-wave resonance. This type of resonance depends almost entirely on the length of a wire element. For reasons described below, if a segment or length of wire is one quarter as long as the “voltage waves” which are travelling through the wire, then a set of

“reflected” waves will be added to the emitted waves, in a synchronised alignment which creates stronger “superimposed waves”.

Accordingly, an understanding of the “quarter-wave” phenomenon will help a reader understand how a straightforward and easily-controlled factor (i.e., the length of a wire ribbon which will be used to form a spiral coil) can help create a “quarter-wave” resonant response, which will create the types of electromagnetic pulses and fields referred to as “standing waves”.

The speed at which a voltage impulse is transmitted through a metal wire is extremely fast. It is essentially the same as the speed of light, which travels 300 million meters (186,000 miles) in a single second (that distance would circle the earth more than 7 times).

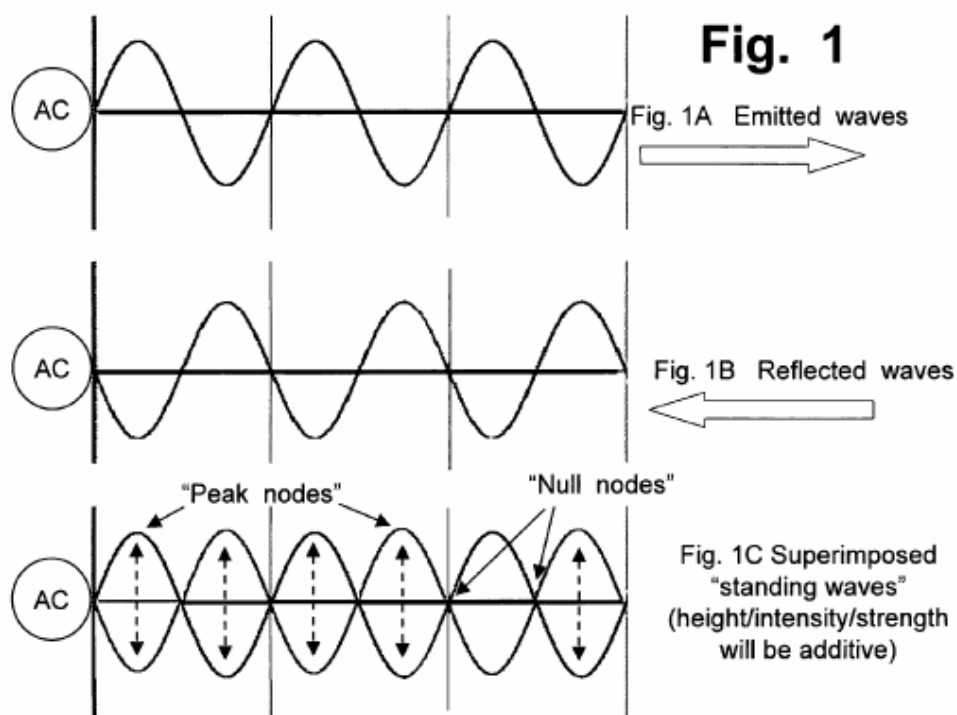
If wavelength (in meters) is multiplied by frequency (cycles per second), the result will be the speed of light, 300 million meters/second. Therefore, the wavelength of an “alternating current” (AC) voltage, at some particular frequency, will be the speed of light, divided by which frequency.

Therefore, using simple division, if an alternating voltage operates at a frequency of 1 megahertz (MHz), which is a million cycles per second, then the “wavelength” at that frequency will be 300 meters. If the frequency halves become 500 kilohertz, the wavelength becomes twice as long (600 meters); and, if the frequency were to increase to 2 megahertz, the wavelength drops to 150 meters.

It should be noted which the term “cycles” is what scientists call “a dimensionless unit”, which drops out and becomes silent when other physical terms are multiplied or divided.

At AC frequencies of 10 kilohertz or greater, the common references to “alternating current” (AC) voltage begin using a different term, which is “radio-frequency” (RF) voltage. Accordingly, RF voltage is a form (or subset) of AC voltage, which operates at frequencies higher than 10 kilohertz. RF power generators are readily available, and are sold by numerous companies which can be easily located by an Internet search, using the term “RF power generator”. For example, Hotek Technologies Inc. (hotektech.com) sells two RF power generators, called the AG 1024 and AG 1012 models, which can provide output power at frequencies ranging from 20 kHz to 1 MHz; the 1012 model has a power output of 1000 watts, while the 1024 model has a power output of 2000 watts. The output frequency of any such RF power supply can be adjusted and “tuned” across the entire range of operating frequencies, merely by turning knobs or manipulating other controls in a power supply of this type.

In a wire having a fixed and unchanging length, the easiest way to create a “standing wave” is to adjust the RF frequency emitted by a power supply with an adjustable frequency, until the “tuned” frequency creates a wavelength which is 4 times as long as the wire. This principle is well-known to physicists, and it is commonly referred to as “quarter-wave” behaviour, since the length of the wire segment must be one quarter as long as the wavelength. Since it is important to this invention, the principles behind it are illustrated in a series of drawings provided in **Fig.1** to **Fig.4**, all of which are well-known prior art.



**Fig.1A** indicates an idealized wavelength of an alternating voltage, depicted by a sine wave which is being sent from an AC power supply (shown by a circle at the left end of a horizontal straight wire) into the “input” end of the wire. The voltage waves travel through the wire towards the right, as indicated by the block arrow in **Fig.1A**. When the waves reach the end of the wire, they cannot leave the wire (at least, not in a simplified and “ideal” system, which is being assumed and used here to explain the principle of how a simple straight wire can create a standing wave). Therefore, the voltage wave will effectively “bounce” or “reflect” back from the tip of the wire, and the “reflected wave” will begin travelling back through the wire, going in the opposite direction, as indicated by the left-pointing block arrow in **Fig.1B**.

Because of the laws of conservation of energy, the reflection and “return travel” of these types of waves, when they bounce off the tip of a wire, is actually quite good, and rather efficient, as discussed below, provided which the wire tip does not emit sparks, arc discharges, or other forms of “escaping” electrical energy.

Accordingly, **Fig.1A** depicts a set of “emitted waves” travelling towards the right, while **Fig.1B** depicts an idealised set of “reflected waves” travelling toward the left along the same wire.

**Fig.1C** illustrates what happens when both sets of waves (emitted and reflected) are superimposed on each other. Since the two sets of waves are travelling at exactly the same speed, and since they have exactly the same wavelength, they will create a “standing wave” pattern when they are added together. As can be visualised from **Fig.1C**, there will be a set of locations, along the length of the wire, which can be referred to as “peak nodes”, where the AC voltage reaches it’s maximum.

At a location halfway between a pair of adjacent “peak nodes”, there will be a spot which can be called a “null node”, a “zero node”, a trough or valley node, or similar terms. At each “null node” location, the AC voltage will appear to be not fluctuating at all. Those are the sites, along the length of the wire, where each “positive” hump (created by a sine wave travelling toward the right) will be counter-balanced and offset by a “negative hump” with exactly the same height, travelling at an identical speed toward the left.

As a result, this type of response within a wire creates a “standing wave”. If the instantaneous voltage is measured at a “null node”, it would appear that nothing is happening, in terms of fluctuating voltage. Furthermore, the “null node” will not be moving, along the length of the wire; instead, it will appear to be standing still.

This can be demonstrated, in a coil, by using a “grounded lead” to test for voltages along the length of a coil. If a “grounded lead” coupled to a volt meter is used to touch the surfaces of a series of strands in a non-insulated coil (such as a coil made of thin copper tubing, wrapped around a plastic cylindrical shape, as used in the types of large transformers used by hobbyists to create “Tesla coils” which will emit large and visually impressive electrical arcs), the “test lead” will detect no apparent voltage at a null node, which will occur at some particular strand in the coil. At a different strand of the coil, the “test lead” will detect an alternating voltage which has twice the strength and intensity of the voltage being emitted by the power supply.

If voltage is measured at a “peak node”, the voltage will be doing something which can be called, using vernacular or laymen's terms, “the full-tilt boogie”. The AC voltage levels will be moving back and forth, between: (i) a very high and intense positive voltage, to (ii) an equally intense negative voltage. This is indicated by the “bubble” shapes shown along the wire in **Fig.1C**.

The “bubbles” which are shown in **Fig.1C** can help someone understand how standing waves are created, and how they act in a synchronised manner. However, which drawing fails to show another result which is very important in what actually happens in a standing wave. For purposes of description and analysis at this introductory level, the system can be assumed to be “ideal”, which implies a perfect “mirror-image” reflection of each wave from the right end of the wire. An “ideal” system also implies that no reflections occur at the left hand end of the wire where the power supply is located, and all “reflected” wave activity simply ceases. In real circuits and wires of this type, second and third order reflections do in fact occur, and they are used to further increase the strength and power output of these types of systems; however, those additional factors and “harmonics” should be ignored until after the basic principles of this type of system have been grasped and understood.

In an ideal system, when the reflected waves (which are travelling toward the left, in the wire segments illustrated in **Fig.1**) are “superimposed” on the emitted waves (travelling toward the right), the “peak” positive voltage which will be instantaneously reached, at the highest point of each “bubble” shown in **Fig.1C**, will occur when the positive peak of an emitted wave crosses a mirror-image positive peak of a reflected wave, travelling in the opposite direction. Accordingly, when those two “positive peak” values are added to each other, the instantaneous positive peak voltage which will occur, in the wire, will actually be twice as intense as the “positive peak” voltage being emitted by the AC power supply.

An instant later, at that exact point on that segment of wire, a negative peak voltage will be created, which will be the sum of (i) the negative peak voltage emitted by the power supply, and (ii) the negative peak voltage of a reflected wave also will pass through, travelling toward the left. At which instant, when those two negative peak voltages are added to each other, the instantaneous negative voltage which will occur, in the wire, will be twice as intense as the “negative peak” voltage being generated by the AC power supply.

A more accurate and representative visual depiction of a “standing wave” in a wire would actually show the heights of the peaks as being twice as tall as the peaks of the emitted voltage waves, and the reflected voltage

waves. However, which depiction might confuse people, so it usually is not shown in drawings of “standing waves”.

Accordingly, the instantaneous response in the wire, at a location halfway between two “null nodes”, is doing something which can fairly and properly be called “the full-tilt double double boogie”. The “double double” phrase (note which it contains not just one but two “doubles”) was added to that phrase, for two reasons:

(i) To emphasise the fact that each and every voltage peak (maximum positive, and maximum negative) will be twice as strong, and twice as intense, as the maximum positive and negative peak voltages emitted by the power supply; and,

(ii) to point out that the frequency of the superimposed “bubbles”, shown in **Fig.1C**, is actually twice as fast as the frequency of the AC cycle which is emitted by the power supply, as discussed below.

The “twice the intensity” result is directly comparable to what an observer will see, if a large mirror is placed behind a light bulb in an otherwise dark room. The mirror effectively keeps the room dark, everywhere behind the mirror, so there is no “magical doubling” of the light in the room; which would violate the basic law of conservation of energy. Instead, what the mirror does is to shift light away from the backside of the mirror, and keep that light energy on the reflective side of the mirror. Anyone standing in front of the mirror will see two apparent light bulbs. Both of those light bulbs (the original bulb, and the reflected image) will have the same brightness (if the mirror is perfect). Therefore, the mirror will double the intensity of the light energy reaching the observer.

That same effect, in a circuit, will happen if the end of a wire acts like a mirror. If a wire does not have any components which will cause it to become an active “emission source” (which is the behaviour of transmission antennas and certain other components), in a way which efficiently releases voltage-created energy into the atmosphere, then the basic rules which require conservation of energy will prevent that energy from simply disappearing and ceasing to exist. As a result, even if the end of a wire is not designed to be a perfect reflector, a large portion of the voltage wave will indeed reflect off the wire tip, and travel back through the same wire, in a “second pass”.

To understand adequately, the type and amount of “wave reflection” which occurs at a wire tip, consider what happens if a light bulb is shining in a room which has shiny, glossy white paint on all the walls and ceilings; then, consider how it would look if the same light bulb were located in a room with all of the walls and ceilings painted “matt black”. The total amount of light which would be available, to carry out a task such as reading a newspaper, clearly would be much greater in the white room, because light reflects off white paint, even though white paint does not even begin to approach the type of “reflection quality or clarity” which a mirror creates. The difference in what happens, when light intensity in a room painted matt black is compared to a room painted a glossy white, does not arise from the presence or absence of “reflection quality or clarity”; instead, it is governed by the laws of conservation of energy. When light shines on to a surface which is painted matt black, the light energy is absorbed by the paint, and it literally warms the paint up. In contrast to that, glossy white paint will not absorb light energy, so it reflects the light back out, for a “second pass” through the air which fills a room.

Because of the laws of conservation of energy, and without depending on any “quality of reflectance” characteristic of wire tips, electrical energy cannot simply disappear, when it reaches the end of a wire. Instead, there are only two things which can happen to that energy:

(i) the electrical energy can be emitted into the surroundings, such as by emitting sparks, arcs, or radio-frequency signals which will carry energy; or

(ii) if the energy is not emitted by the tip of the wire, then, by simple necessity and because of the basic law of conservation of energy, it must be reflected back into the wire, and it will be forced to travel back through the wire again.

If a wire has a long and tapered tip, then the reflected wave might become somewhat diffused, and it might lose some portion of the “clarity” of the wave. However, since wavelengths in the frequencies of interest here are hundreds of meters long, the type of tip created by a conventional wire cutter will not create any significant diffusion, in a reflected wave. And, unlike the white-painted walls of a room, there is not a large area which is available, at the tip of a wire, which can create scatter, spread, or diffusion. As a result, the tip of a wire will be a relatively efficient mirror-type reflector, when an AC voltage is “pumped” into one end of the wire.

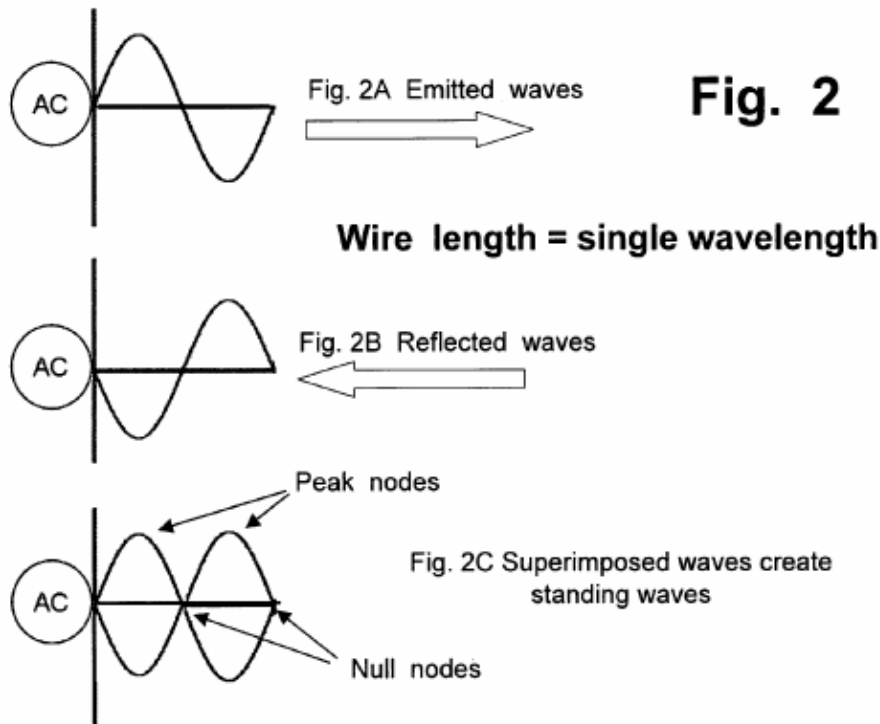
The second factor mentioned above, when the “double-double” boogie phrase was mentioned, relates to a doubling of the frequency of a standing wave. When a standing wave is created in a wire by reflection of an emitted AC voltage wave, the frequency of the standing wave is, quite literally, double the frequency of the emitted wave.

This can be seen, visually, by noting that in the emitted AC voltage, shown in **Fig.1A**, a single complete wavelength contains both a “positive hump” and a “negative hump”. Accordingly, three complete sine waves, divided into three segments by the imaginary vertical lines, are shown in **Fig.1A**.

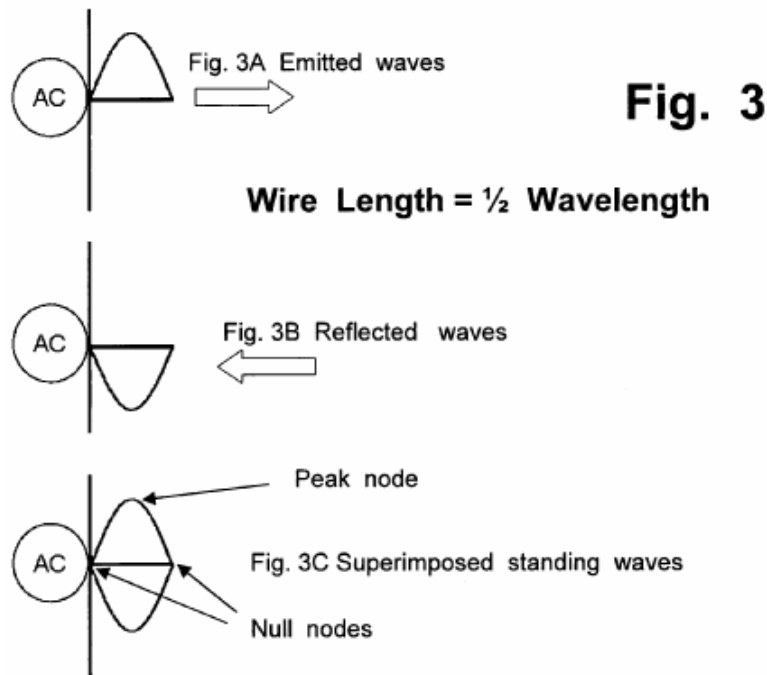
By contrast, each and every “bubble” shown in **Fig.1C** depicts a complete and total “wavelength”, in a standing wave. Six of those standing wave “bubbles” fit into exactly the same length of wire which holds only 3 emitted wavelengths from the power supply.

The “frequency doubling” effect of standing waves is important, because AC systems can convey and release energy in a manner which increases, as the frequency of the AC voltage supply increases. To some extent, this is analogous to saying that, if a motor can be run at twice the speed (while still generating the same torque), then the work output of that motor can be twice as great, at the higher speed. That analogy is not entirely accurate, since work output from an electric device which uses AC power depends on “area of the curve” functions which occur when sine waves are involved. Nevertheless, as a general principle, if the frequency of the voltage peaks increases, then power output will also increase, in many types of electric circuit components.

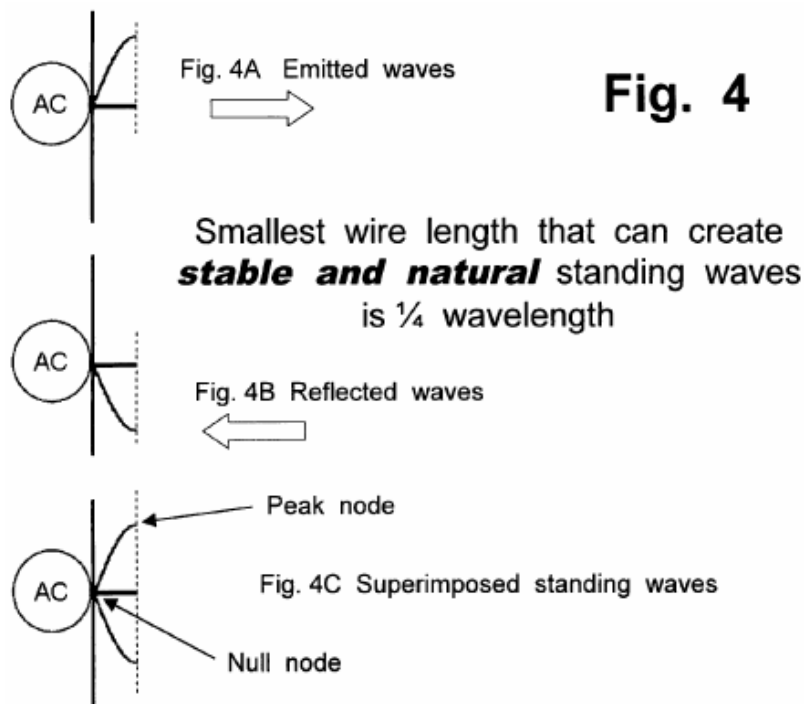
In the three panels of **Fig.1**, the wire length is three times as long as the wavelength of the voltage from the power supply. However, to create standing waves, a wire length does not need to be any particular multiple of the wavelength of an AC voltage. As can be seen by considering **Fig.1C**, the same types of “bubbles” would be created: (i) if the wire length were exactly twice as long as the wavelength; or, (ii) if the wire length were the same length as the wavelength.



Accordingly, **Fig.2** (which includes **Fig.2A** showing an emitted wave, **Fig.2B** showing a reflected wave, and **Fig.2C** showing the superimposed “bubbles”) shows what happens in a wire segment which has a length which is equal to a single wavelength from an AC voltage at a fixed frequency. A resonant standing wave will be formed, with a frequency which is double the frequency of the input AC voltage. which same result will apply, in a wire having any length which is an exact (integer) multiple (such as 1x, 2x, 3x, etc.) of the wavelength of the AC voltage being pushed (or forced, driven, pumped, etc.) into the wire segment.



Moving to still shorter wires, the same principle also applies to any wire with a length equal to one half of an AC voltage wavelength. As shown in **Fig.3** (which includes **Fig. 3A** showing an emitted wave, **Fig. 3B** showing a reflected wave, and **Fig. 3C** showing the superimposed “bubbles”), if the wire length is one half of the wavelength, a natural and resonant standing wave will still form, with a frequency which is double the frequency of the input AC voltage.



Finally, moving to a still shorter wire, the same principle also applies to any wire which has a length equal to one quarter of an AC voltage wavelength, as shown in **Fig.4A**, **Fig.4B**, and **Fig.4C**. Even though it does not stretch across or cover a complete “bubble”, the standing wave shown in **Fig.4C** is nevertheless a stable, natural, and resonant “standing wave”, with a frequency which is exactly twice the frequency of the input AC voltage.

It is possible to create partially stable and semi-resonant responses, using one eighth, one sixteenth, or shorter lengths of wire, by using additional devices which can remove electrical power from the system, or which can generate effects which are usually called “harmonics”. However, those are not the types of natural and stable responses which can be created by a simple, basic system consisting of nothing more than: (i) a wire having a fixed length and a “reflective” tip; and (ii) an AC power source with a frequency which can be “tuned” until it creates a resonant response in any wire segment having a suitable length.

Therefore, since quarter-wave wire lengths are the shortest lengths which can create natural and stable standing waves, the conventional term which is commonly used, to describe what happens when a wire creates a resonant standing-wave response, is a “quarter-wave” response.

In some devices, telescoping components (or other elements which can alter the effective length of a wire-type element) can be used to alter the ability of the element to respond to a fixed wavelength. Many types of antennas use this approach, if they need to process signals which are being transmitted on fixed and known frequencies. However, those examples are not relevant to spiral coil reactors, which will use an approach which involves tuning and adjusting the frequency of the voltage which is being supplied to a reactor, until a resonant response is observed in coils with fixed and unchanging lengths.

It should also be noted that certain types of “tuning” elements (such as capacitors, which can have either fixed or adjustable capacitance levels) can also be coupled electrically to a wire, in a manner which “emulates” adding more length to that wire. This approach can be used to alter (or increase the range of) the frequencies to which a wire circuit will respond resonantly.

### **The ‘Gegene’ Magnetic Arrangement.**

As we have seen from what Don Smith has said, a very effective method of gaining additional power is to make a high frequency magnetic transmitter as that allows several outputs to be taken from the transmitter without increasing the input power in any way. Recently, a clever idea for a simplified version of this has been shared on the web. As far as I am aware, this device was first presented by the Lithuanian ‘FreeEnergyLT’ whose website is at <http://freeenergylt.narod2.ru/dynatron/>



and the information then replicated and documented by J L Naudin on his website <http://jlnaudin.free.fr/gegene/indexen.htm> and named ‘Gegene’ being short for ‘Great Efficiency Generator’. The clever idea is to use a commercial induction hot-plate as the transmitter. These have recently become available at low cost, this one:



Sold in the UK by Maplin, has power levels adjustable from 300 watts to 2000 watts, and costs only £30 delivered to your address. These devices operate by generating a powerful high frequency oscillating magnetic field which induces eddy currents in any magnetic material placed on the surface of the cooker. That is, cookware which is made of cast iron or steel (not stainless steel which is supposedly non-magnetic). The heating is very rapid and completely uniform across the item of cookware which is very helpful when cooking. The hot plate is controlled by sophisticated electronics which will not switch on unless there is an iron object on the plate and which varies the frequency and current in a way chosen by the designer.

The circuitry produces the magnetic field by pulsing current through a large, flat coil in the centre of the case as can be seen in this photograph of a typical induction plate with the case opened:



The brown coil gets hot, and so there are spacers on it to prevent the cool outer casing from picking up the heat of the coil. There is also a fan which draws air in from underneath the case and blows it across the coil in order to keep the heat down.

In order to use this magnetic transmitter, we need to place a suitable output coil on the plate, and power a load from the energy collected by that coil. This is a fairly recent idea and so there is still a good deal of experimentation going on, testing different coils, and various loads. It is generally agreed that the best load is a non-inductive load with halogen lamps and ordinary filament light bulbs being recommended. Halogen lamps are used in some low-cost commercial heaters, and they are very effective method of radiant heating. In his video at <http://www.youtube.com/watch?v=LbAhUwHvJCE>, Laurent powers seven separate 400-watt halogen lamps using a small 800-watt maximum plate which has a small 120 mm diameter transmitter coil:



No particular power output is claimed by Laurent, but as you can see, the 2800 watts of halogen lamps are brightly lit while a wattmeter on the input to the plate reads just 758 watts. It seems to be fairly clear that there is a significant power gain with this arrangement. Then, Laurent places an additional coil on top of the first one and shows it lighting a 100-watt filament light bulb very brightly:

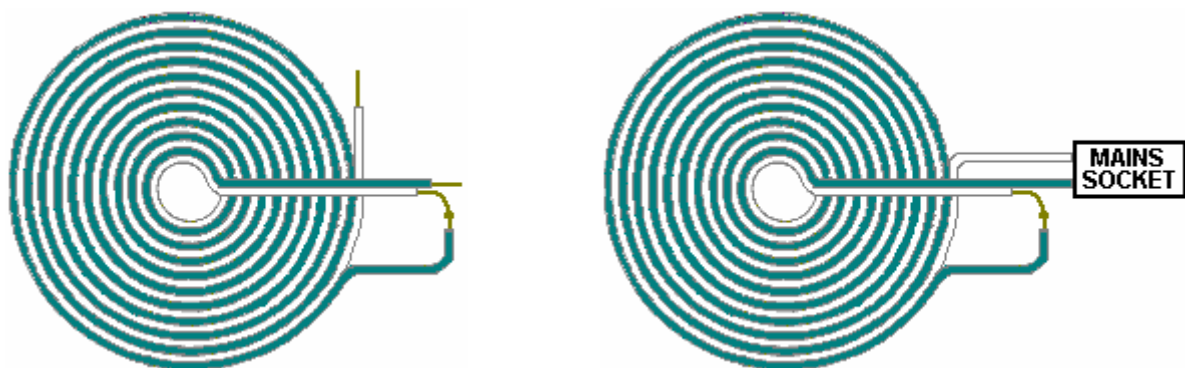


It is actually quite difficult to see the brightness of lamps shown in a video as the video camera automatically turns down the brightness of the recording. The important point here is that there is significant power output from a second coil, without there being any increase in the power input to the transmitter coil in the induction plate.

There are many different designs of electronics in commercial induction plates. Most will not start operating until a magnetic object is placed on top of the plate. If that is done, then the object needs to be removed very promptly as it heats up very rapidly. Fortunately, most plate designs keep operating as soon as the induction process is started and so there is no problem with removing the metal cookware (or whatever is used to start the process). Laurent's very small induction plate does not have that protection circuitry and so starts up as soon as it is switched on.

Jean-Louis Naudin uses a 2000-watt induction plate turned down to its 1000-watt setting. It has a 180 mm diameter pick-up coil. He says that for him, it is essential to have at least 1500-watts of load or else the induction plate will shut down with an error code indicating that no cookware is present.

The coils used are Tesla bi-filar pancake types, typically, attached to a thin sheet of MDF or plywood, say 2 mm thick, with superglue. Laurent's 120 mm coil has ten turns and Jean-Louis' 160 mm coil has sixteen turns, needing about 5 metres of twin-core wire, and Laurent's about 2.5 metres of wire. I suggest that the wire should be rated for mains voltage and have, perhaps 1 sq. mm cross-sectional area of copper wire in each conductor. A Tesla pancake coil is wound like this:



Please remember that this arrangement involves high voltages and so is not suitable for newcomers to electronics. This presentation is strictly for information purposes only and it is not a recommendation that you attempt to implement anything shown here, and if you choose to do so, then the responsibility is yours and yours alone.

### Tariel Kapanadze's Self-Powered Generators

Tariel Kapanadze, like Don Smith, appears to have based his work on that of Nikola Tesla. There has been a video on the web, of one of his devices in operation, but it appears that the video has been removed. However, part of it can be seen here: <http://www.youtube.com/watch?v=I3akywcvb9g> The video commentary was not in English and so the information gathered from it is not as complete as it might be. However, in spite of that, a number of useful things can be learned from it. Unfortunately, Tariel refuses to share the details of his designs.



The video shows a demonstration being staged in a back garden, I believe, in Turkey. Strong sunshine was casting dense shadows which made video detail less than perfect. Essentially, Tariel demonstrated one of his builds of a Tesla-style free-energy device, powering both itself and a row of five light bulbs.

One of the most encouraging things about this video is that the construction and operation was of the most basic kind, with not the slightest suggestion of expensive laboratory work or anything high-precision. This is most definitely a backyard construction within the scope of any knowledgeable person.

Electrical connections were made by twisting bare wires together:



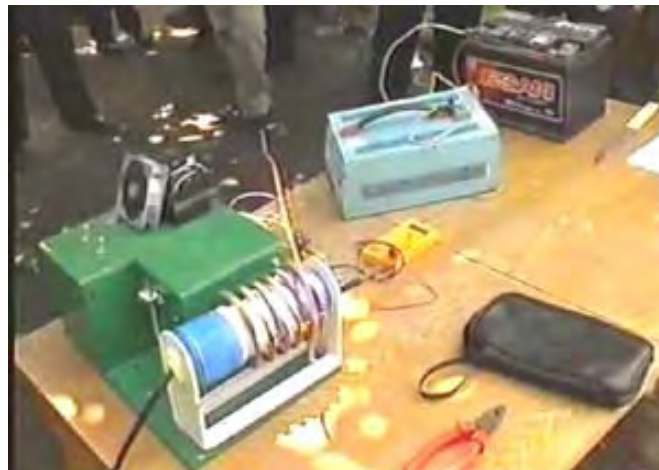
and where necessary, tightening the twist with a pair of pliers:



This shows clearly that a high-power and very useful free-energy device can be made with the most simple of construction methods - no expensive connectors here, just a zero-cost twisted connection.



The device being displayed is a Tesla Coil powered, earth-connected system of the type already described. You will notice that the thick primary winding is not placed at one end of the central secondary winding but is much closer to the centre of the coil. Remember that Don Smith states that if the primary coil is placed centrally, then the amount of current which the coil can deliver is very large, in spite of the fact that most people think that a Tesla Coil can only produce trivial currents. Notice also that this Tesla Coil appears to be mounted on a cheap kitchen-roll holder. I have seen it said that Taniel makes a new device for each demonstration and takes it apart afterwards, so if that is correct, then it is likely that there is no great effort or expense involved in making one of these systems.

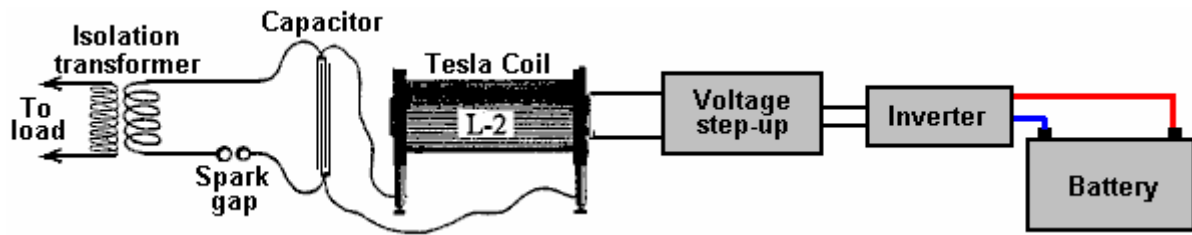


The main operational components are shown here, placed on one small table. There is a lead-acid battery (which is removed later in the demonstration), what appears to be an inverter to produce mains AC voltage from the battery, a high-voltage step-up system housed in a green box for safety reasons, a Tesla Coil, a spark gap mounted on the box and a fan-cooled component, probably a solid-state oscillator system driving the Tesla Coil. Not seen in this picture, is an item contained in a small box which might well be a high-voltage capacitor.

Two earth connections are organised. The first one is an old car radiator buried in the ground:



and the second is a bare wire wrapped around a garden tap's metal pipe and twisted tight as shown above. It is distinctly possible that the circuit is based on this circuit of Tesla's:



Perhaps, the battery powers the inverter which produces mains voltage, which is then stepped up to a high voltage level by the enclosed electronics. This then drives the Tesla Coil, producing both very high voltage and current with the capacitor storing the energy as a reservoir. The spark gap then pulses this energy, driving the primary winding of the isolation transformer which produces a lower voltage at substantial current (depending on the current-handling capacity of the transformer itself) powering the load, which in this case, is a row of light bulbs.

The load is a row of five light bulbs hung from a brush handle placed across the backs of two chairs:



As you can see, this is not exactly high-tech, high-cost construction here, with all of the materials being used for other things afterwards.

Initially, the battery is used to power the inverter and it is demonstrated that the current being drawn from the inverter is substantially less than the power entering the load. In conventional terms, this appears impossible, which is an indication that the conventional terms are out of date and need to be updated to include the observed facts from demonstrations such as this.

As the system is putting out a good deal more power than is required to drive it, might it not be possible to use part of the output power to provide the input power. This is often called "closing the loop" and it is demonstrated in this video as the next step.

First, the circuit is altered so that the input power connection to the inverter is taken from the output. Then the circuit is powered up using the battery as before. The battery is then disconnected and removed altogether, and the people helping with the demonstration pick up all of the active items and hold them up in the air so as to show that there are no hidden wires providing the extra power from some hidden source. The items on the table are not part of the circuit:



There is some additional information on Taniel including videos of some of his more powerful, newer designs at [http://peswiki.com/index.php/Directory:Kapanadze\\_Free\\_Energy\\_Generator#Official\\_Website](http://peswiki.com/index.php/Directory:Kapanadze_Free_Energy_Generator#Official_Website) although it has to be said that there does not appear to be very much on him or his work available at this time.

In December 2009 an anonymous contributor e-mailed to say that Kapanadze returned to the ex-USSR republic of Georgia and that the video soundtrack is in the Georgian language and after the demonstration, the interview is in Russian. He has kindly translated the parts which relate to the device, as follows:

**Question:** What are you showing us today?

**Answer:** This is a device which draws energy from the environment. It draws 40 watts as it starts up, but then it can power itself and provide an output of 5 kilowatts. We don't know how much energy can be drawn from the environment, but in an earlier test, we drew 200 kilowatts of power.

**Question:** Is it possible to solve the energy problems of Georgia?

**Answer:** We consider that they have already been solved.

**Question:** Please tell us in simple terms, how your device works.

**Answer:** (1) Power is drawn from the battery to get the device running  
 (2) If we want, we can use part of the output power to drive a charger and charge the battery  
 (3) When the device is running, we can remove the battery and it then operates self-powered. This particular unit can deliver 5 kilowatts of power which is enough for a family. We can easily make a version which supplies 10 kilowatts. We don't know what the practical power limit is for a unit like this. With this particular device we have here, we do not draw more than 5 kilowatts as we don't want to burn out the components which we used in this build.

**Question:** Does your invention pick up current from mains wires?

**Answer:** The mains has nothing to do with this device. The energy produced comes directly from the environment.

**Question:** What do you call your device and do you dedicate it to anyone?

**Answer:** I would not dream of claiming this device to be my invention, I just found something which works. This is an invention of Nikola Tesla and all the credit is his. Tesla has done so much for mankind but today he is just forgotten. This device is his invention, his work.

**Question:** Why are you so sure that this is a design of Nikola Tesla's?

**Answer:** Because I worked from his invention - his design. I discovered how to get automatic resonance between the primary and secondary windings. The most important thing is to achieve resonance. Melnichenko came close to solving this problem. The government of Georgia refuses to take this invention seriously.

**Question:** You said that resonance must be maintained. Which parts resonate?

**Answer:** Here (pointing to the green box) and here (pointing to the Tesla Coil mounted on the top of the green box). The resonator is inside the green box and at present, it is secret until patented.

**Question:** How much would one of these units cost?

**Answer:** When mass produced, it would cost between 300 and 400 US dollars for a unit which has an output of 5 or 6 kilowatts.

**Question:** How much did it cost you to build this demonstration device?

**Answer:** About eight thousand (currency not specified). Parts had to be got in from twenty different places.

**Question:** Is this your house?

**Answer:** No, I rent this place because we have sold all that we have to make these devices. And, having done it, the government and many scientists say "We are not interested because a device like that is impossible and can't possibly exist!". I have not been allowed to make a presentation to them, but people who understand the Tesla Coil understand how this device works.

Kapanadze is an architect by profession and has not had any training in either physics or Electrical Engineering. The information on which this design was based was downloaded free from the internet.

One of the most important aspects of this video is the confirmation it gives for the work of Tesla and of Don Smith, in that it shows clearly, yet again, that large amounts of energy can be drawn from the local environment, without the need to burn a fuel. Another video: <http://www.youtube.com/watch?v=gErefbcTz-U>

People frequently ask for construction drawings or alternatively, outlets where they can buy one of his devices. Unfortunately, Taniel is not willing to share the details of his designs and so they will probably never be manufactured. Many people have tried to analyse and replicate his design.

## **Kapanadze Analysis by William McFreey**

Shown below are two analysis papers on Taniel Kapanadze's designs. These papers by William McFreey are written primarily for physicists, and so they may not be easily understood by you if you are not familiar with scientific symbols and notation, so please feel free to move past this section..

While William McFreey's paper is highly technical, the designs disclosed in it have been prototyped and proved to be fully functional. However, it needs to be understood that there are several ways of extracting free-energy from our local environment. For example:

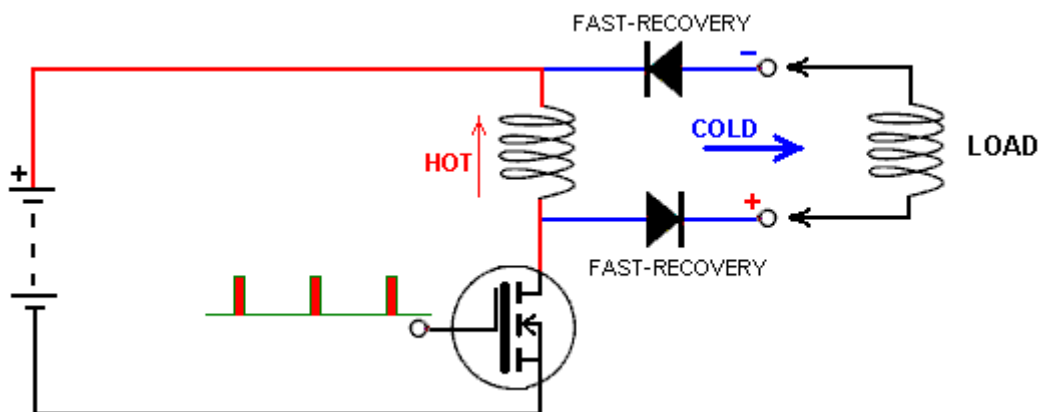
1. Thomas Henry Moray demonstrated that it is possible to draw kilowatts of energy directly from the local environment, using an aerial of relatively minor dimensions.
2. Stanley Meyer demonstrated that water can be separated into a hydrogen and oxygen gas mix using tiny power levels. This allows an ordinary petrol generator to be run self-powered on water alone.
3. Bob Boyce has produced a pulsed toroidal circuit which allows a battery to recharge itself.
4. Robert Adams produced a motor/generator design where permanent magnets generate an electrical output far in excess of the power needed to operate it.
5. Carlos Benitez designed a system which is self-powered and which provides kilowatts of excess power using just simple, standard electronic components.
6. Thane Heins has built and demonstrated simple asymmetrical transformers where the output power is more than thirty times greater than the input power.
7. Clemente Figuera produced a split-transformer design where the Lenz "Law" effect does not apply and so it produces far greater output power than input power.
8. John Bedini designed a pulsed flywheel motor/generator system which ran self-powered for years. Jim Watson built a large version which had many kilowatts of excess power.
9. Dr Oleg Gritskevitch built a self-powered motionless toroidal generator which produced 1.5 megawatts for two years.
10. James Hardy has demonstrated how the jet of water from a powerful water-pump can spin a generator fast enough to self-power the pump and supply additional electrical power for other equipment.
11. Mikhail Dmitriev has produced a gravity-powered generator which uses a small electrical motor to deflect weights on a rotor and that system produces kilowatts of excess power drawn from the gravitational field.

12. Lawrence Tseung has shown how a magnet embedded in an iron frame produces a greater output than the input power when it is powered with DC pulses.
13. Lawrence Tseung has also demonstrated that a heavy rotor powered by electromagnet pulses can have a substantially greater output power than the power needed to drive it.
14. Veljko Milkovic has demonstrated how combining a pendulum with a lever produces a system which has far greater mechanical output power than the mechanical power needed to operate it.
15. Richard Willis has shown how pulsing a magnetic material can produce kilowatts of excess power.
16. James Kwok has shown that introducing air into the bottom of a tank of water can generate tens of kilowatts of excess power through buoyancy.
17. Dietmar Hohl has published his design where permanent magnets cause permanent rotation of a cylinder without the need for any external source of power.
18. Mummar Yildiz has demonstrated a 300 watt permanent magnet only motor and then taken the motor completely apart to prove that there is no other source of power.
19. Lawrence Tseung has produced a variation on the Joule Thief circuit which has greater output power than the input power (something which I personally have built and can confirm).
20. Floyd Sweet produced a system where a tiny amount of power is used to wobble the magnetic poles of a specially conditioned magnet, producing thousands of times greater output power than the input power needed to power the system.

There are many other proven systems. The two papers from William McFreey can be freely downloaded from: <http://www.free-energy-info.tuks.nl/McFreey.pdf>.

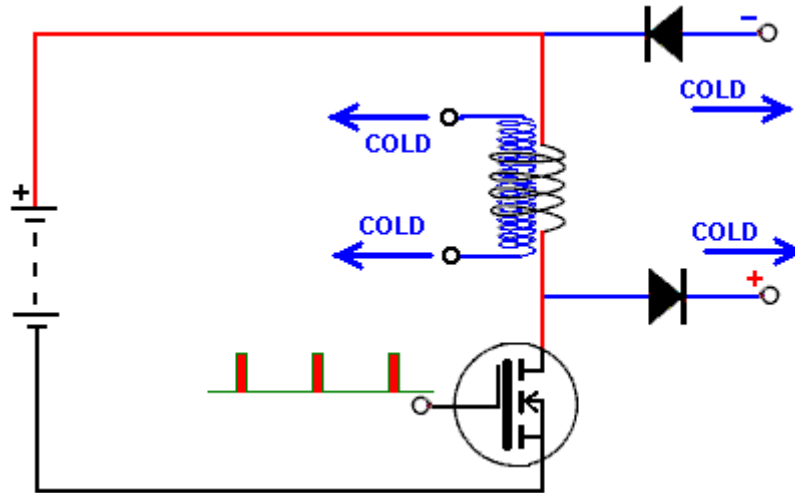
### The Cold Electricity Coil of 'UFOpolitics'

A man who uses the forum ID of 'UFOpolitics' has been sharing his insights and experiences on various different forums, such as the one dealing directly with the production and use of cold electricity in solid-state circuits: <http://www.energeticforum.com/renewable-energy/10529-my-motors-got-me-tap-into-radiant-energy-1.html> His insights are unusual and very important. His basic statement is that if a coil is pulsed, using a circuit like this:



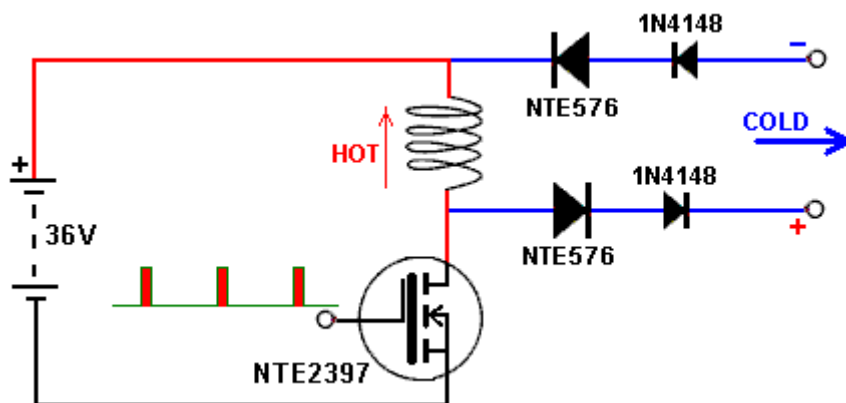
then conventional hot electricity pulses the coil when the transistor is switched ON, but if that current is switched OFF rapidly, then there is an inflow of cold electricity into the coil from the surrounding environment. That inflow of energy can be collected and diverted to power a load through the use of two high-speed diodes which can carry considerable current as the power inflow is substantial. The inflow of energy occurs when the transistor is switched OFF and so it is desirable to have the transistor switched off for most of the time, in other words, a low percentage Duty Cycle for the transistor. There **must** be a significant load on the cold electricity output. If there is not, then the cold electricity will flow back into the hot electricity section of the circuit and it may damage the transistors. Tom Bearden states that resistors boost cold electricity rather than hindering it's flow, so the load should be a coil, a DC motor with brushes or a fluorescent light bulb.

It has been observed that the incoming energy tends to flow inwards towards the centre of the coil, so an additional method of collecting this extra energy is to place a second coil inside the main coil, and wound in the same direction as it, like this:



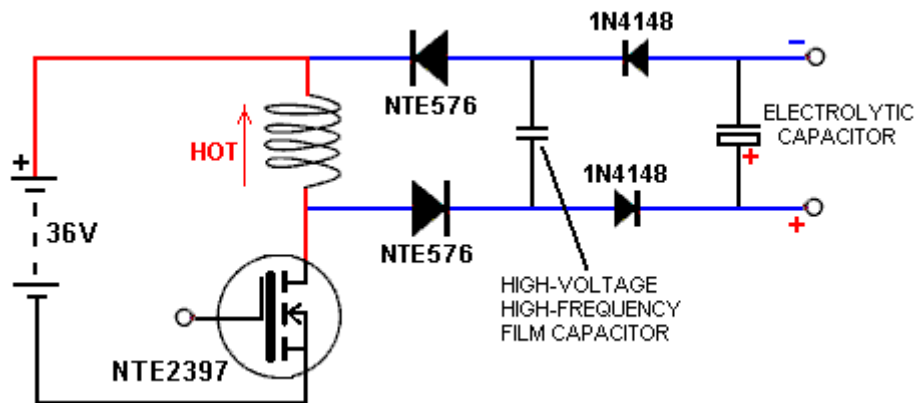
This provides two separate, independent cold electricity power outputs. Diodes are not needed for the inner 'secondary' coil. This inner coil is a pick-up coil and is not related in any way to the number of turns in the hot electricity pulsing coil. Instead, this coil collects inflowing cold electricity during the period when the pulsing coil is switched OFF. The hot electricity pulsing coil can be wound directly on top of the extra pick-up coil or the extra coil can be wound separately and placed inside the main coil spool.

Very surprisingly, it is recommended that the powerful high-speed diode used to channel the cold electricity out of the circuit, be followed by a small 1N4148 silicon epitaxial planar high-speed diode (75V 0.45A) as this is said to clean up the cold electricity output even more. It is important that the cold electricity has to encounter the more powerful silicon diodes before reaching the 1N4148 diodes, so the order of the diodes is very important, and should be as shown here:

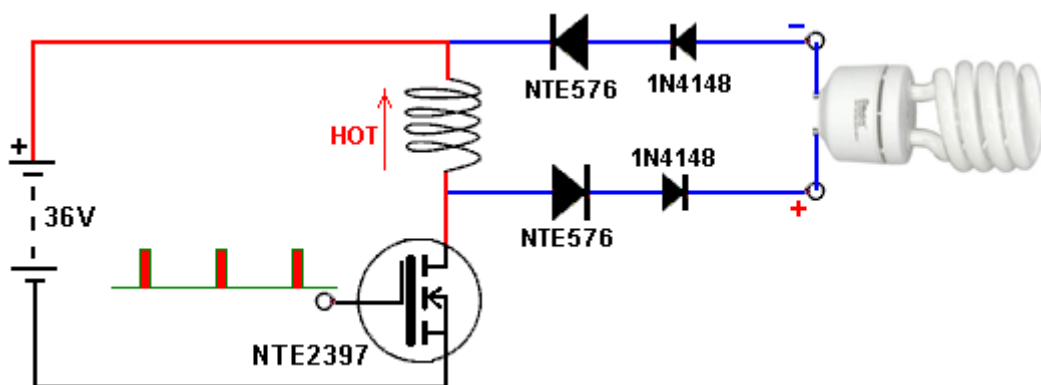


Alternative diodes for the NTE576 (6A, 35nS, 400V) are the NTE577 (5A, 70nS, 1000V) and the HFA16PB (16A, 19nS, 600V). The main requirement is high-speed operation, voltage rating of at least 400V and current rating of at least 5 amps..

There is one additional thing to be done with this circuit when a DC output is required and that is to apply filtering to the output. First, when the energy has passed through the NTE576 (or equivalent) power diodes, it encounters a high-frequency (low capacity) high quality film capacitor placed across the output in order to siphon off any high-frequency voltage ripple before it is passed through the small 1N4148 diodes and into a smoothing and storage electrolytic capacitor. Storing the cold electricity in the electrolytic capacitor converts it into conventional hot electricity.



While this circuit looks like something which you just switch on and it works, that is not the case as there is an essential start-up procedure where the signal applied to the transistor is started at just a few cycles per second and 50% duty cycle and that input is then adjusted carefully and slowly while monitoring the voltages and currents produced by the circuit. This is a seriously powerful system with the capability of producing a major power output.



It is very important that the circuit is not powered up without a suitable load on the cold electricity output. A suitable load is a self-ballasted 230-volt fluorescent light. It must be understood that just flipping the power switch to it's ON position is not sufficient to get an inflow of cold electricity. Instead, it is necessary to progress the start-up sequence carefully, and a fluorescent light is particularly helpful for doing this although a neon bulb is also a popular choice of temporary load, because these devices allow the current flow in the load to be assessed visually.

Before switch-on, the input oscillator is set to 50% duty cycle and minimum frequency. Then the frequency is raised very slowly, causing the lamp to start flashing. As the frequency is raised, the current drawn from the battery needs to be monitored as it is the current flowing through the transistor, and the current is kept down by lowering the duty cycle progressively. This process is continued carefully and if successful, the colour of the light produced will initially be purple or green before reaching continuous bright white light. Videos showing the light produced and the fact that it is not dangerous to life or affected by water can be seen at <http://www.youtube.com/watch?v=W1KALMgFscg&list=UUdmFG5BeS0YnD2b5zasXXng&index=1&feature=plcp>.

The driving force is a series of powerful magnetic pulses, and implementing the physical circuit to achieve that requires careful construction. The battery driving the circuit is a 36 volt combination of cells. The coil is wound as an air-core construction on a 2-inch (50 mm) diameter spool and the DC resistance is arranged to be about 1.4 or 1.5 ohms. This, in turn, requires a substantial drive from the transistor and so it is normal to connect six powerful output transistors in parallel in order to spread the current flow between them as well as dissipating the heat generated across several transistors bolted to a common heat-sink of generous area.

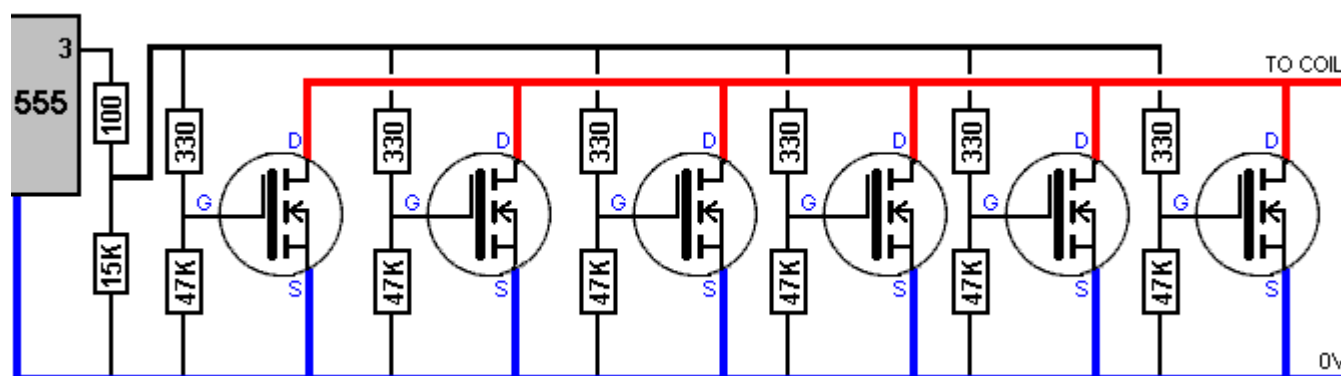
How the coil is wound is something to consider. The objective is to have a coil of about 1.5 ohm resistance and which has the maximum magnetic effect for the current passed through it. Copper wire has become very expensive and so it would be very costly to wind the coil with vast lengths of thick wire, not to mention the very large size and great weight which would be produced by doing that. The copper wire options in Europe are typically to work with half-kilogram reels of wire. The details of some of these are as follows:

Gauge (swg)	Wire length	Total ohms	Amps/strand	Strands	Total amps
14	17.5 m	0.09	9.3	None	-
16	27 m	0.22	5.9	None	-
18	48 m	0.71	3.7	None	-
20	85 m	2.23	1.8	2	3.6
22	140 m	6.07	1.2	4	4.8
24	225 m	15.81	0.73	11	8.0
26	340 m	35.70	0.45	24	11.0
28	500 m	77.50	0.29	52	15.0

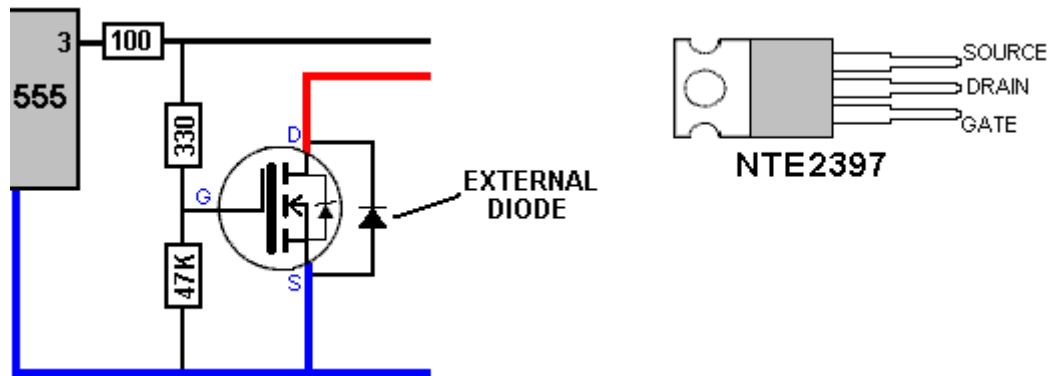
We can see from this that a 500 gram reel of 14 swg wire has a total resistance of just 0.09 ohms and so it would take sixteen reels (weighing 8 kilograms and costing a lot of money) to wind just a one-strand coil using that wire, producing a coil which could carry a current of 9.3 amps. As opposed to that, a single reel of 28 swg could provide 52 separate windings, which when connected in parallel, could carry 15 amps as well as costing and weighing far less. It would be tedious, but not impossible, to wind a 52-strand coil, so a more reasonable number of strands connected in parallel might be used. We are aiming at a DC resistance of about 1.45 ohms in any coil arrangement which we select.

The magnetic field produced by a single strand is generally less than the magnetic field produced by two strands carrying the same total current. So, if we were to pick 22 swg wire, then we could measure out four 33.5 metre lengths, join them at the start, and wind the four strands simultaneously, side-by-side to form a coil with a DC resistance of 1.45 ohms. It is important that the strands are exactly the same length so that they carry exactly the same current and no one strand gets overloaded with current due to it having a lower resistance than the other strands. It should be realised that as the maximum current which the wire can carry is 4.8 amps and the resistance is only 1.45 ohms, the maximum continuous DC voltage which can be sustained by the coil is only 7 volts, and so as a 36-volt battery is being used, we **must** adjust the frequency and duty cycle very carefully, especially since we are starting at very low frequencies. If the full battery voltage is applied continuously to the coil, then the coil will be destroyed.

Various members of the forum have suggested, built and tested different circuits for feeding a variable-frequency variable-duty-cycle drive signal to the output transistor. However, 'UFOpolitics' recommends a simple 555 timer circuit. If you are not familiar with electronic circuits, then read chapter 12 which explains them in some detail, including the 555 timer family of circuits. The point stressed by 'UFOpolitics' is that the output taken from pin 3 of the 555 chip passes first through a 100 ohm resistor and then, every transistor gets a separate feed via a two resistor voltage divider pair. The 47K Gate-to-Ground resistor is to ensure that the FET turns off properly. It may be possible to increase the value of these resistors but they should never be less than 47K.

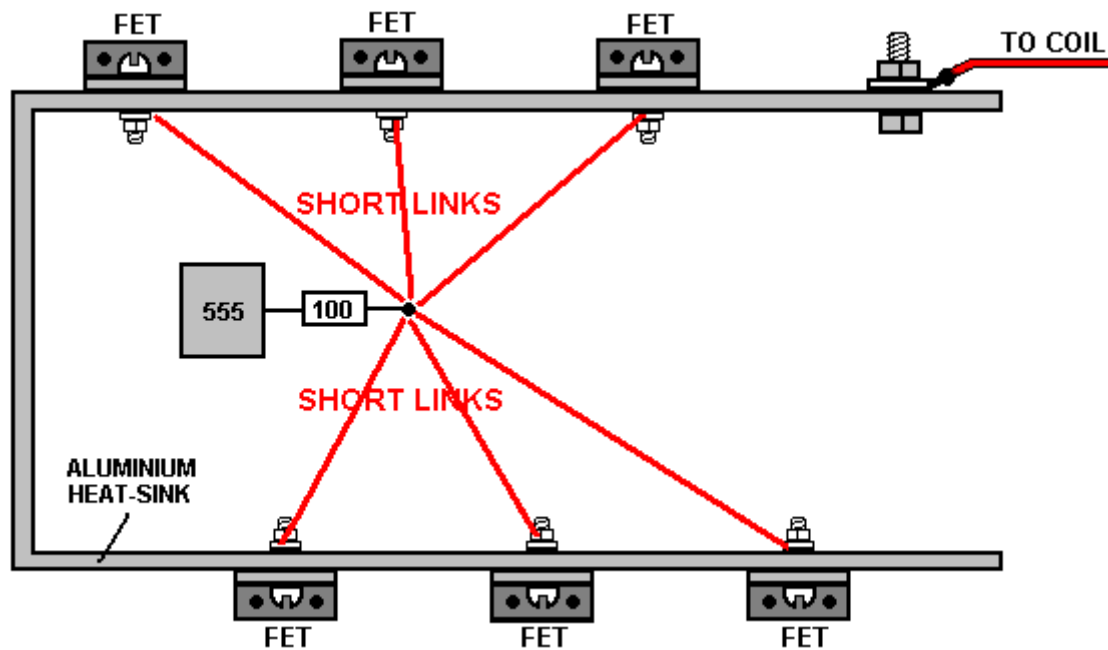


The thick lines in this diagram indicate heavy-duty wiring which can carry high currents without generating any real heat when doing so. It is also recommended that although the FET has an internal diode, an extra external high-speed diode (NTE576 or similar), be connected across each FET in order to boost the switching speed:



A FET has a gate capacitance of about 1 nF. The faster it can be charged / discharged the faster the FET will switch (and stay cool). What determines the speed of charge / discharge for the gate capacitance is the length of wire from driver to gate or gates is inductance (where one metre of wire produces 0.05 $\mu$ H). In addition to that, different lengths of Gate connection wire will create different switching delays and the different inductances can then initiate High Frequency oscillations with repetitive ON/OFF/ON/OFF switching actions. The result might be burned FETS and lack of cold electricity activities.

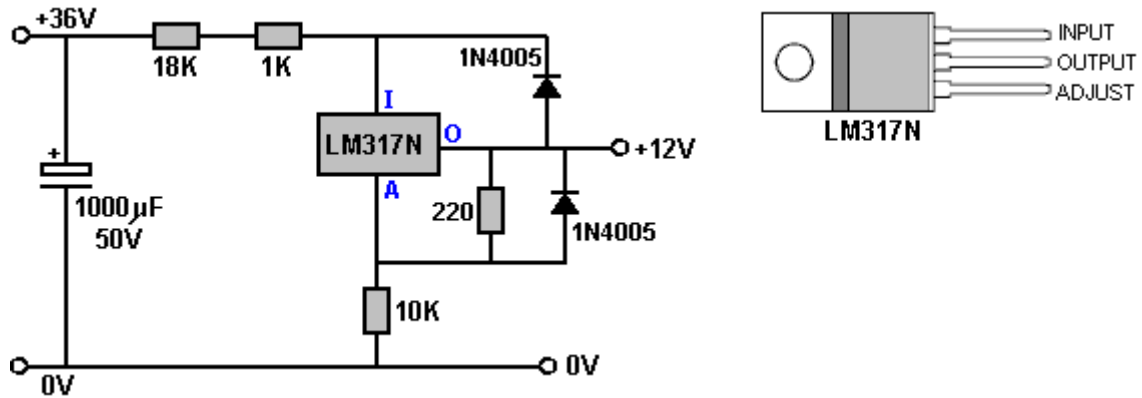
Another point made by 'UFOpolitics' is that the physical layout should have the connecting wires or tracks kept as short as possible and he suggests this layout:



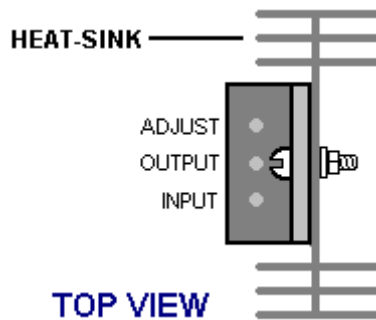
There are two things to note here. Firstly, the 100 ohm resistor coming from pin 3 of the 555 timer IC is positioned centrally between the six FET transistors mounted on the aluminium heat-sink, and that point is carried closer to each FET with a low-resistance conductor to give a good-quality link for the resistors feeding the Gate of each FET. Secondly, the heat-sink itself is also used to provide a low-resistance electrical connection to the coil which the FETs are driving. The connection to the heat-sink is via a nut and bolt clamping a solder tag firmly to a cleaned area of the heat-sink. Each FET is electrically connected to the heat sink through it's mounting tag which forms it's heat-sink connection as well as connecting to the Drain of the Transistor. However, if the aluminium heat sink is a black anodised type, then, apart from cleaning between each FET and the heat-sink contact area, it is worth running a thick wire also linking the central FET pins to the output wire connection point.

The transistors used in the prototype, and recommended for replications are the NTE2397. This is not a very common transistor in Europe at this time and so the popular IRF740 might perhaps be used as it appears to have all of the main characteristics of the NTE2397 transistor. 'UFOpolitics' suggests the 2SK2837 (500V, 20A, 80A pulsed), or the IRFP460 (500V, 0.27 Ohm, 20A and 80A pulsed).

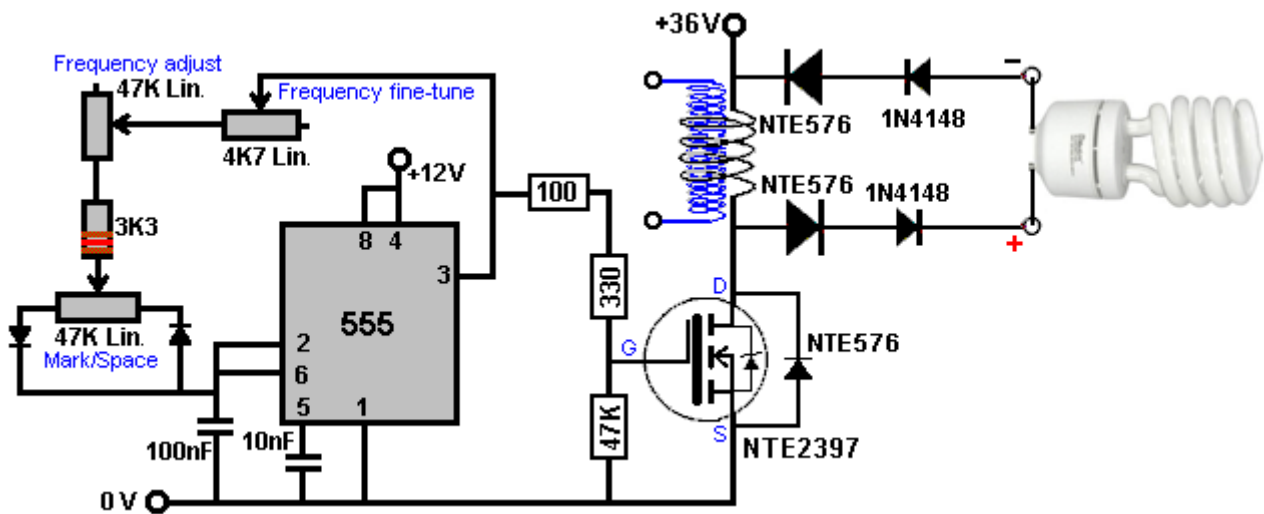
As the 555 timer has a maximum supply voltage of 15 volts, an LM317N voltage-stabiliser chip is used to create a 12-volt supply from the 36-volt battery (a 24V battery could be used):



The LM317N integrated circuit should be attached to a good heat sink as it is dropping off 24 of the 36 volts powering the circuit, and so, has to dissipate twice the power that the NE555 chip uses:



There are various pulsing circuits which have been used successfully with this system. 'UFOpolitics' considers the NE555 chip to be the most straightforward, so perhaps my suggestion for this arrangement might be a suitable choice:

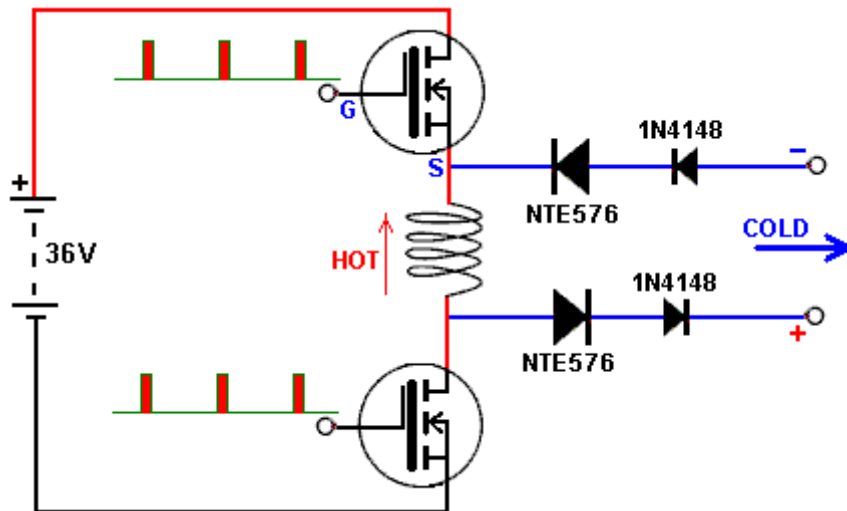


This gives fine control of the frequency and independent adjustment of the Mark/Space ratio or 'Duty Cycle' and it needs only three very cheap components other than the controls. If the expensive multi-turn high quality variable resistors are available, then the 4.7K 'fine-tune' variable resistor can be omitted as those variable resistors make the adjustments easier to control. The 'Lin.' in the diagram stands for 'Linear' which means that the resistance varies steadily at a constant rate as the shaft of the variable resistor is rotated.

In the 'UFOpolitics' circuit, it is important to turn the frequency down to it's minimum value and set the Mark/Space ratio to 50%, before powering the circuit up with a much higher frequency than is advisable and so, causing damage to some of the circuit components.

There are ways to boost the performance over what has already been described. One way is to insert a stainless steel core inside the coil. Stainless steel is supposed to be non-magnetic but in practice, that is not always the case. However, ideally, this steel core is improved by altering it's crystalline structure by heating it up and then quenching it by submerging it in cold water.

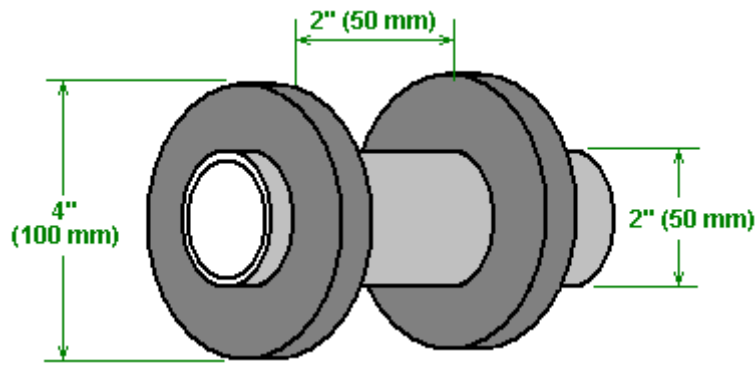
Another improvement is to isolate the coil better at switch-off through the use of a second transistor. Having a 'switched-off' transistor at each end of the coil certainly blocks the flow of hot electricity, but if Tom Bearden is correct, the resistance of the transistors in their OFF state will actually boost the flow of cold electricity as it reacts in the reverse way to how hot electricity reacts. The arrangement is like this:



While this looks like a very simple circuit to implement, that is not the case. The upper transistor is switched ON by the voltage difference between it's Gate "G" and it's Source "S". But, the voltage at it's Source is not fixed but varies rapidly due to the changing current in the coil, and that does not help when solid and reliable switching of the upper transistor is needed. A P-channel FET could be used instead and that would have it's Source connected to the fixed voltage of the Plus of the 36V battery. That would help the switching enormously, but there would still be timing issues between the two transistors switching ON and OFF at exactly the same time. Other circuits have been suggested for doing that type of switching, but in the early stages, 'UFOpolitics' recommends that things be kept as simple as possible, so using just one transistor is the best option.

Switching speed is an item of major importance, even to the extent that the reduction in the speed of switching caused by using more than one transistor in parallel has caused the suggestion to be made that it might actually be a better option to use just one FET since these high-performance FETs are capable of carrying the whole of the switching current, and it is mainly to lower the FET operating temperature that multiple FET use is suggested. Every extra FET used in parallel, slows the switching down. However, it should be realised that there is a somewhat greater risk of burning the FET out if just one is used.

The coil dimensions recommended are two-inch (50 mm) diameter and 2-inch length. The wound coil is likely to be about three-inches (75 mm) so making the flange diameter 4-inches (100 mm) is realistic:



The recommended material is fibreglass which has high heat-resisting properties as well as being easy to work, the personal choice of 'UFOpolitics' is Polyester Resin with Methyl Ethyl Kethol (MEK) Hardener. A suggested alternative is acrylic, which is not as heat resistant. Acrylic is excellent for high-frequency applications but this circuitry does not operate at high frequencies. Whatever spool material is chosen, it needs to be non-magnetic. When connected in the circuit, the start of the coil winding wire goes to the battery positive.

Here is another coil wound on acrylic tube and with all four diodes connected to the ends of the coil:



It should be understood that cold electricity provides almost unlimited power and it has uses which are not readily understood by many people.

'UFOpolitics' suggests that the hot electricity drive circuitry be tested initially using just a resistive load. If everything checks out correctly, then test with a lesser value resistor in series with the coil, and if that checks out satisfactorily, then testing cautiously with the coil on it's own.

Cold electricity can charge batteries rapidly and after a series of charge and discharge cycles, batteries become 'conditioned' to cold electricity and the experiences of Electrodyn Corp. staff show that large conditioned batteries which are fully discharged, can be recharged in under one minute. A member of the present forum has tried this with the 'UFOpolitics' circuit and he reports:

Yesterday a friend and I took 6 identical, old, 12V, 115Ah batteries and made two 36V banks. We set up bank "A" (the better three) to power the device to charge bank "B". Bank A was 37.00v at rest and Bank B was 34.94V.

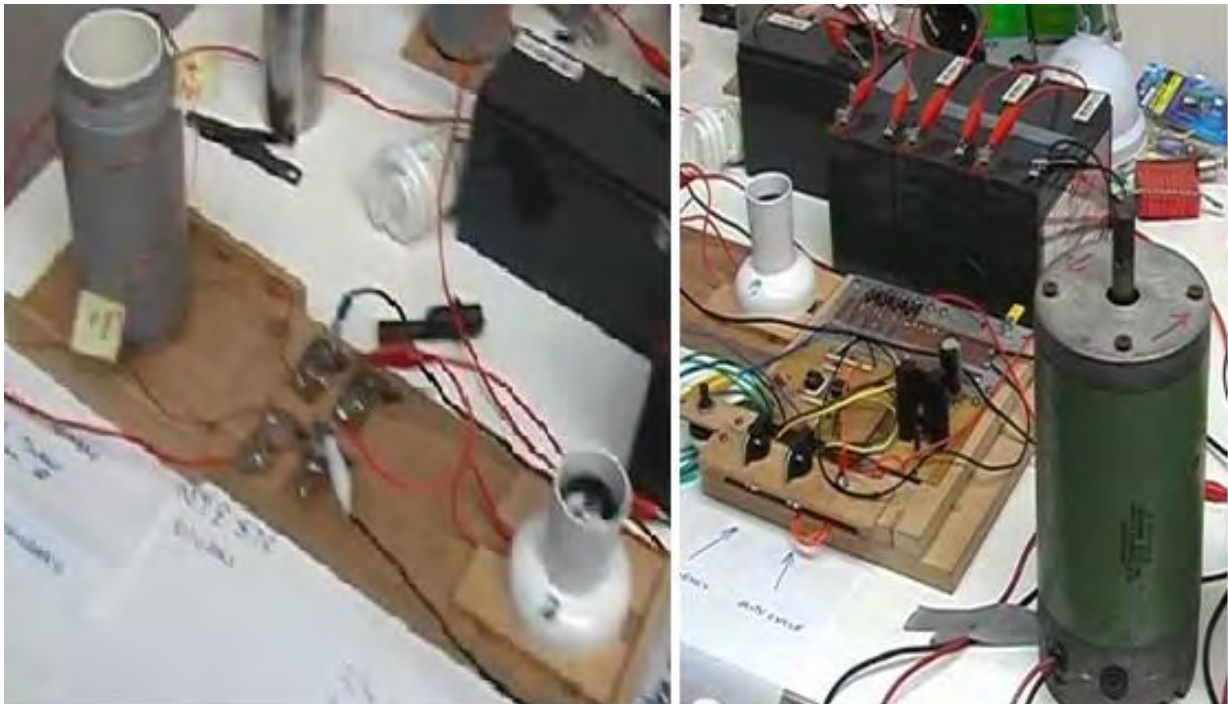
My lowest frequency was 133Hz (I need to change my cap and add another 100k pot with the one which is controlling the frequency) and the duty cycle was at 13%. We started at 2A draw on the Primary circuit.

As I raised the frequency, the batteries on charge jumped up to 38.4V then dropped evenly to 36.27V and started up again (at about 0.01V every 2 seconds). After two and a half hours, they were up to 39.94V. At this point we stopped the charging and let everything rest for 10 minutes. So far everything seems very normal for this kind of charging, except that the device appears to be very stable and powerful...pushing the batteries right on up continuously. The Primary battery voltage dropped initially to 36.20V and stayed there the whole time, then recovered to 36.98V during the 10 minute rest.

Then we switched battery banks A and B and charged the opposite way for about 20 minutes. We stopped and rested things again, swapped the banks back and started charging bank B again for another 20 minutes and stopped. After letting the batteries rest for a few hours in order to get truer readings, bank A was at 37.07V and bank B was at 38.32V. Both battery banks had gained power. These were not very good batteries, either. One of the bank B batteries was at 10.69V at the start. Another interesting note: The amp draw on the Primary dropped from 2A to 1.5A as the frequency was raised from 133Hz to about 550Hz.

This was with the very first use of cold electricity with these low-grade batteries and a major improvement can be expected after many additional charge/discharge cycles. This completely overcomes the factors which make a battery bank unsuitable for household power. If an entire battery bank can be recharged in just minutes, then it opens the way for serious household power using a battery bank.

Cold electricity can also run motors very powerfully. Forum member 'Netica' found that putting a capacitor across the motor terminals improved the running very substantially, giving impressive performance. His video of this is at [http://www.youtube.com/watch?feature=player\\_detailpage&v=7uAYKhrPDPc](http://www.youtube.com/watch?feature=player_detailpage&v=7uAYKhrPDPc) and the motor, running off an air-core coil with no steel insert. His set-up looks like this:



It is also possible to submerge cold electricity circuits in water without causing any harm:



A video of this is located here: <http://www.youtube.com/watch?v=W1KALMgFscg&feature=channel&list=UL> including demonstrating the use of very powerful light bulbs. A general running demonstration is here: [http://www.youtube.com/watch?v=yVzhKpEqUgc&feature=player\\_embedded](http://www.youtube.com/watch?v=yVzhKpEqUgc&feature=player_embedded).

### **Stanley Meyer's Electrical Particle Generator.**

Stan, who is famous for his water-splitting and related automotive achievements, actually held about forty patents on a wide range of inventions. Here is one of his patents which circulates magnetic particles in a fluid, and while the fluid does move, none of the other components in the device move and a high level of constructional skills is not called for. This is a highly efficient generator of electricity.

This is a slightly re-worded excerpt from this Stan Meyer patent. Although it does not state it in the patent, Stan appears to make it understood that this system produces a significant power gain – something with Patent Offices find very difficult to accept.

**Patent CA 1,213,671**

**4th February 1983**

**Inventor: Stanley A. Meyer**

## **ELECTRICAL PARTICLE GENERATOR**

### **ABSTRACT**

An electrical particle generator comprising a non-magnetic pipe in a closed loop having a substantial amount of magnetised particles encapsulated inside it. A magnetic accelerator assembly is positioned on the pipe, which has an inductive primary winding and a low-voltage input to the winding. A secondary winding is positioned on the pipe opposite to the primary winding. Upon voltage being applied to the primary winding, the magnetised particles are passed through the magnetic accelerator assembly with increased velocity. These accelerated particles passing through the pipe, induce an electrical voltage/current potential as they pass through the secondary winding. The increased secondary voltage is utilised in an amplifier arrangement.

### **BACKGROUND AND PRIOR ART**

The prior art teachings expound the fundamental principle that a magnetic field passing through inductive windings will generate a voltage/current or enhance the voltage across it if the winding is a secondary winding.

It is also taught by the prior art, that a magnetic element in a primary inductive field will be attracted at one end of the coil and repelled at the other end. That is, a moving magnetic element will be accelerated in motion by the attraction and repulsion of the magnetic field of the primary inductive winding.

In the conventional step-up transfer, the voltage across the secondary is a function of the number of turns in the secondary relative to the number of turns in the primary winding. Other factors are the diameter of the wire and whether the core is air or a magnetic material.

### SUMMARY OF THE INVENTION

The present invention utilises the basic principle of the particle accelerator and the principle of inducing a voltage in a secondary winding by passing a magnetic element through it.

The structure comprises a primary voltage inductive winding having a magnetic core, plus a low-voltage input. There is a secondary winding with a greater number of turns than the turns in the primary winding, plus an output for using the voltage induced in that winding.

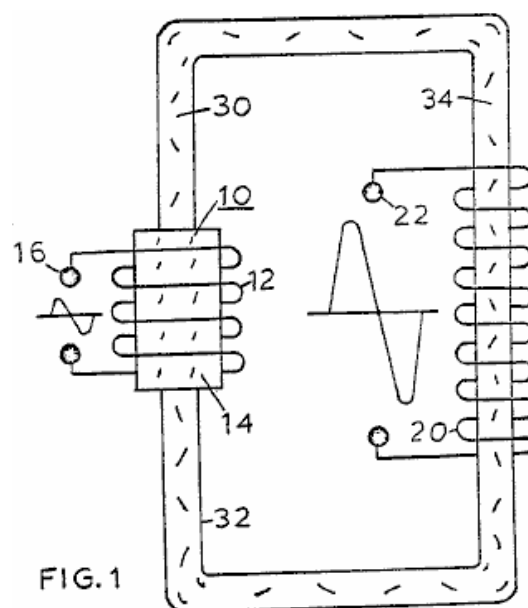
The primary winding and core are positioned on one side of an endless, closed-loop, non-magnetic pipe. The secondary windings are positioned on the opposite side of the endless pipe. The pipe is filled with discrete magnetic particles, preferably of a gas, and each particle has a magnetic polarised charge placed on it.

Due to their magnetic polarisation charges, the particles will sustain some motion. As the particles approach the accelerator assembly, which is the primary coil, the magnetic field generated by the coil attracts the particles and accelerates them through the coil. As each particles passes through the coil, the repulsion end of the coil boosts the particle on it's way. This causes each particle to exit from the coil with an increased velocity.

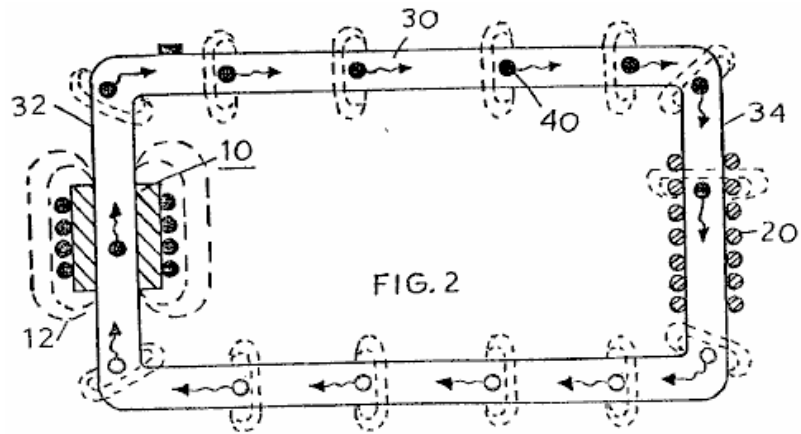
As the magnetic particles pass through the secondary coil winding, they induce a voltage across the ends of that coil. Due to the larger number of turns, this induced voltage is much higher than the voltage across the primary coil.

The main objective of this invention is to provide an electrical generator which is capable of producing a voltage/current of much greater magnitude than has been possible previously. Another objective is to provide a generator which uses magnetic particles and a magnetic accelerator. Another object is to provide a generator which can control the amplitude of the output. Another objective is to provide a generator which can be used with DC, AC, pulsed or other configurations of waveforms. Another objective is to provide a generator which can be used in either a single-phase or a 3-phase electrical system. Another objective is to provide a generator for developing magnetised particles for use in an electrical particle generator. Another objective is to provide an electrical generator which uses readily available components to construct a simple embodiment of this invention.

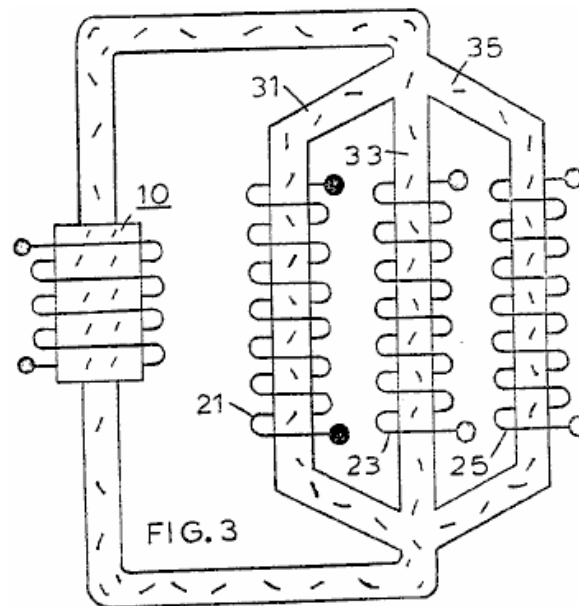
### BRIEF DESCRIPTION OF THE DRAWINGS



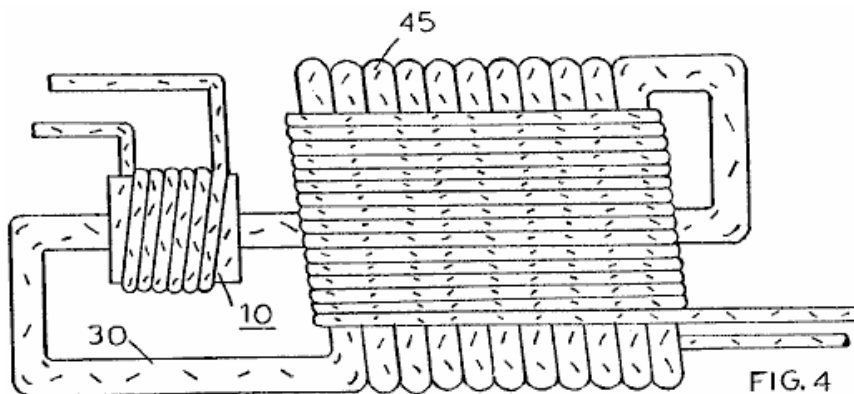
**Fig.1** is a simplified illustration of the principles of the invention, shown partially in cross-section and partially pictorially.



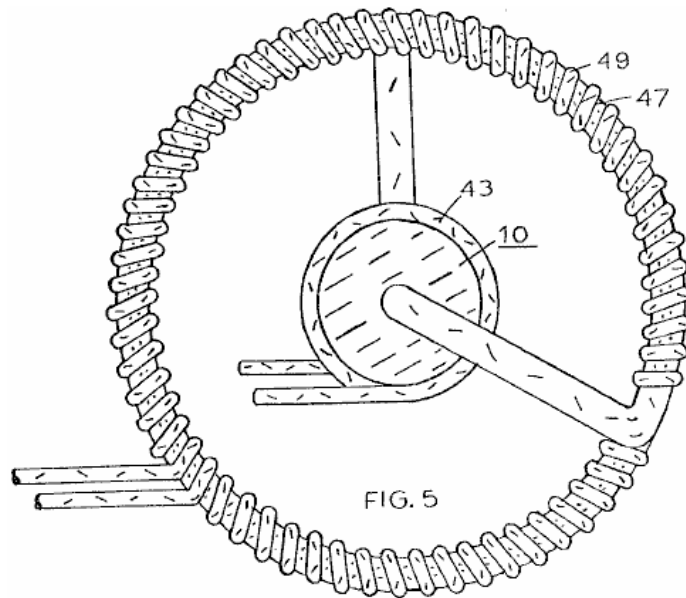
**Fig.2** is an electrical schematic illustration of the embodiment shown in **Fig.1**.



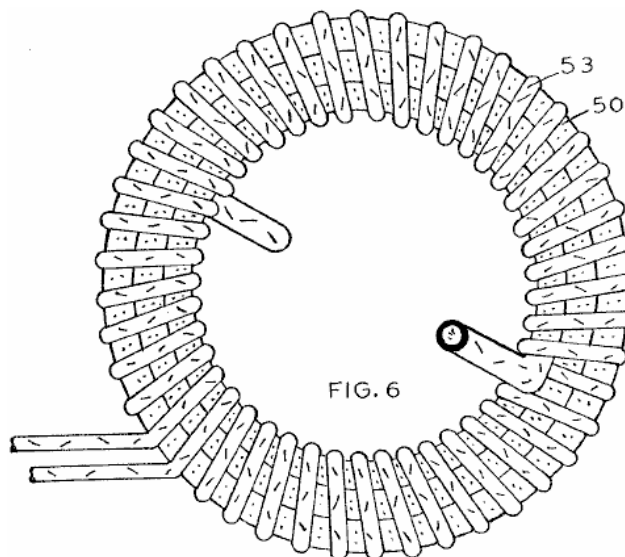
**Fig.3** is an illustration similar to **Fig.2** but which is adaptable to 3-phase use.



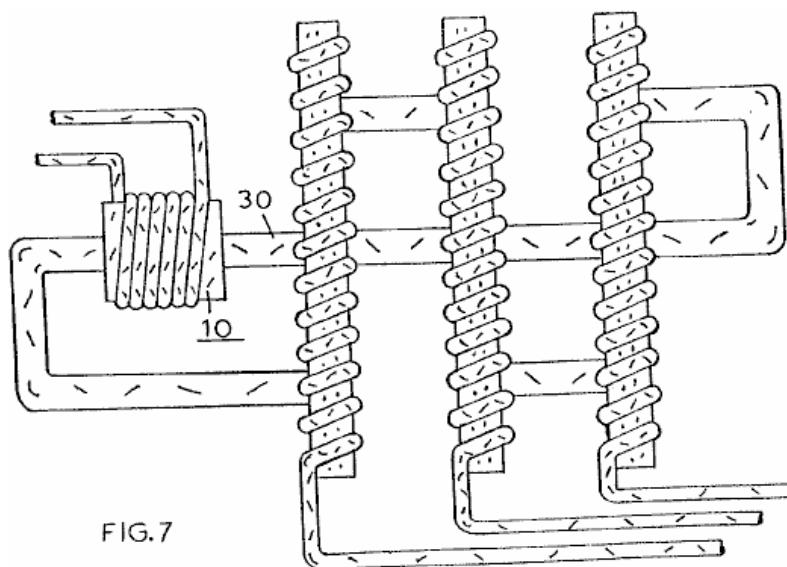
**Fig.4** is a first alternative arrangement of a preferred implementation of the invention.



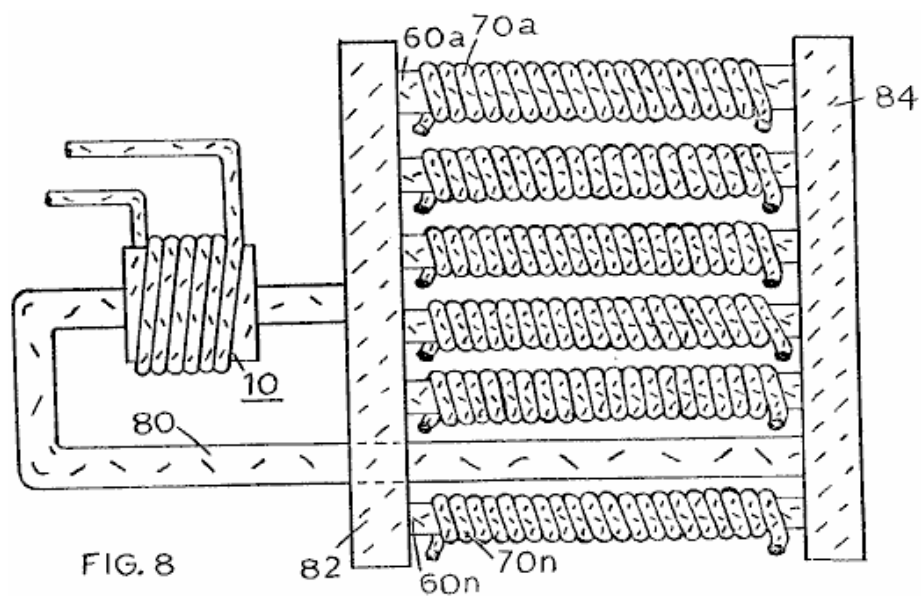
**Fig.5** is another alternative arrangement of a preferred embodiment of the invention.



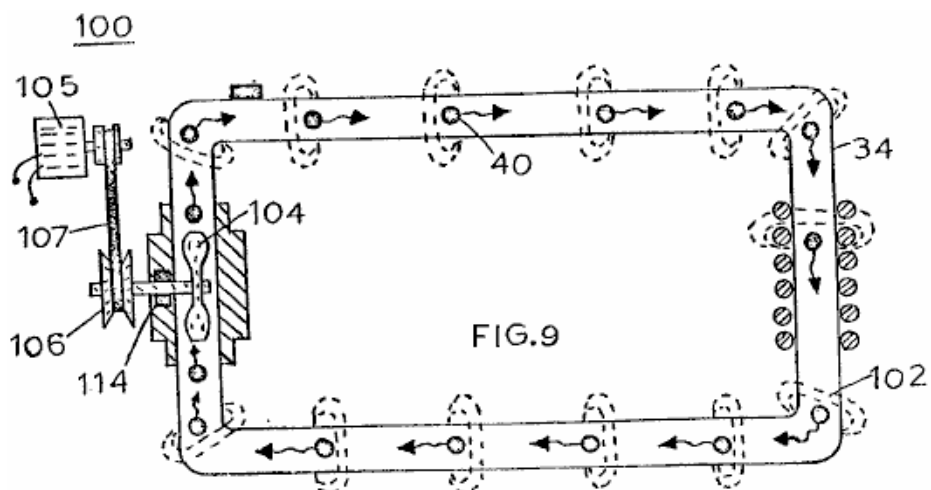
**Fig.6** is another alternative arrangement of a preferred embodiment of this invention.



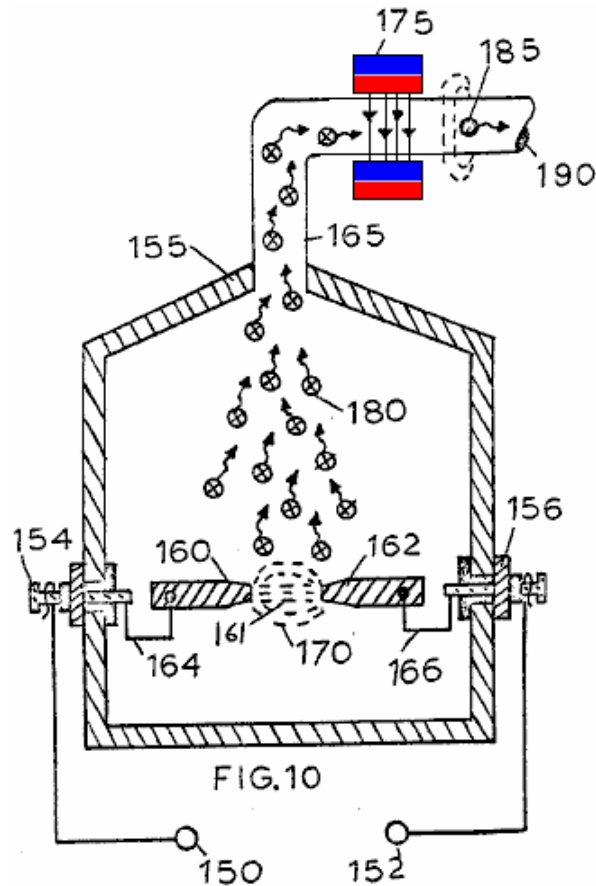
**Fig.7** is another alternative arrangement of a preferred embodiment of this invention.



**Fig.8** is another alternative arrangement of a preferred embodiment of this invention.



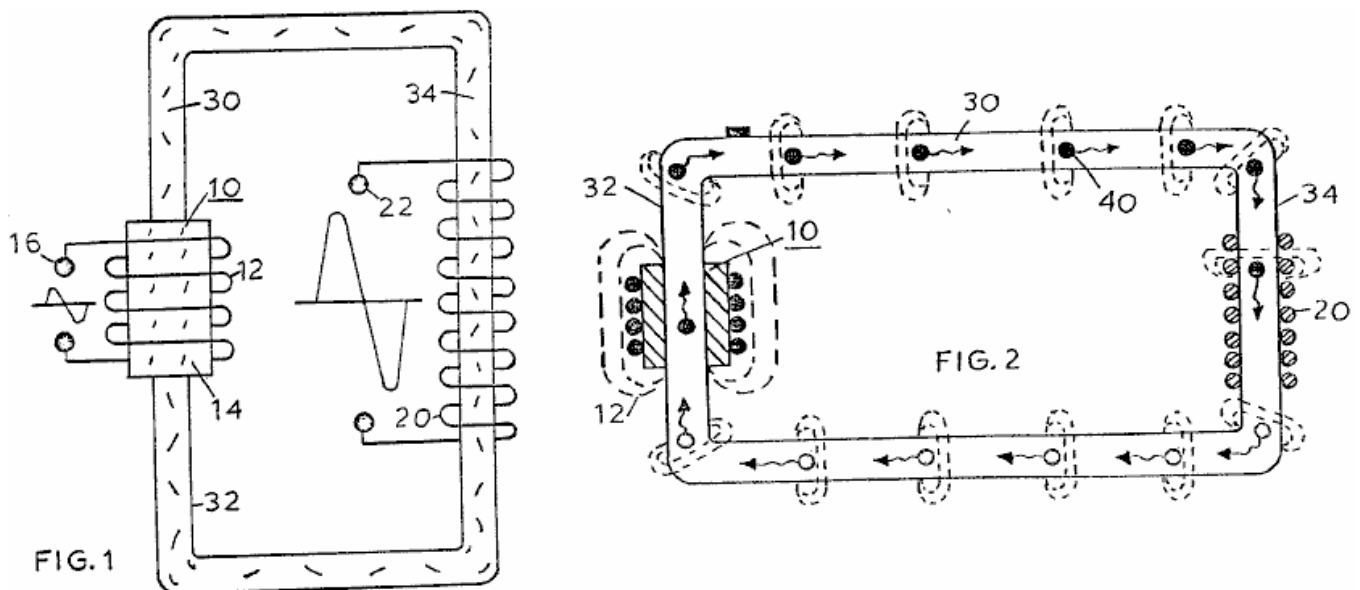
**Fig.9** is an alternative arrangement for a magnetic drive particle accelerator assembly.



**Fig.10** is an illustration of an alternative method of producing the magnetised particles used in this invention.

## DETAILED DESCRIPTION

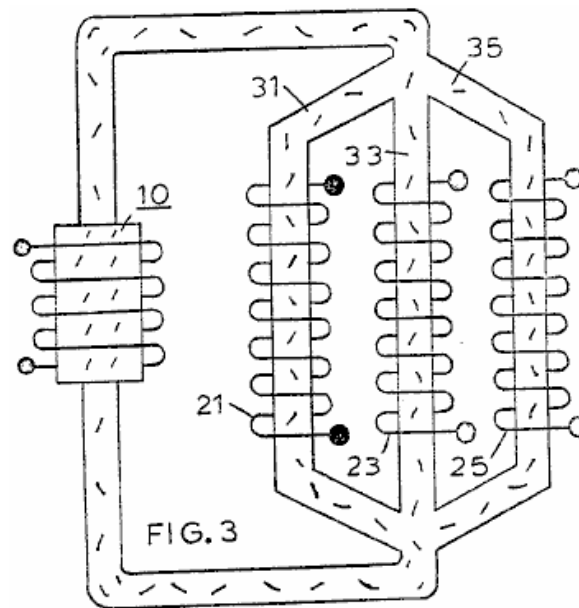
**Fig.1** and **Fig.2** show the invention in it's most simplified schematic form:



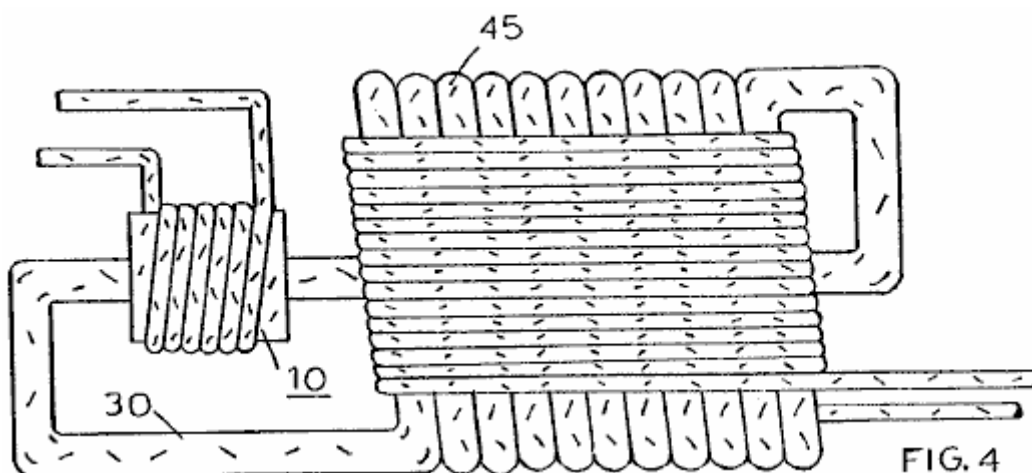
It comprises a primary coil magnetic accelerator assembly **10**, a closed-loop non-magnetic pipe **30**, and a secondary winding **20**. The magnetic accelerator assembly is comprised of primary windings **12**, a magnetic core **14**, and voltage taps **16**. The primary windings are positioned around end **32** of the closed-loop pipe **30** which is made from non-magnetic tubing.

At the opposite end **34** of the closed-loop pipe **30**, are the secondary windings **20**. The end terminals **22** of the secondary winding **20**, allow the voltage generated in the winding to be used. Contained inside pipe **30**, there is a substantial number of magnetic particles **40** as shown in **Fig.2**. The particles **40** must be light enough to be freely mobile and so may be particles suspended in a fluid medium such as gas, liquid or light-weight movable solid particles. Of these options, the use of a gas is preferred. If solid particles are used as the transporting medium, then it may be desirable to remove all air from inside the pipe in order to reduce the resistance to the flowing particles. Each of the particles **40** is magnetised and the following description refers to one individual particle and not to the mass of particles as a whole.

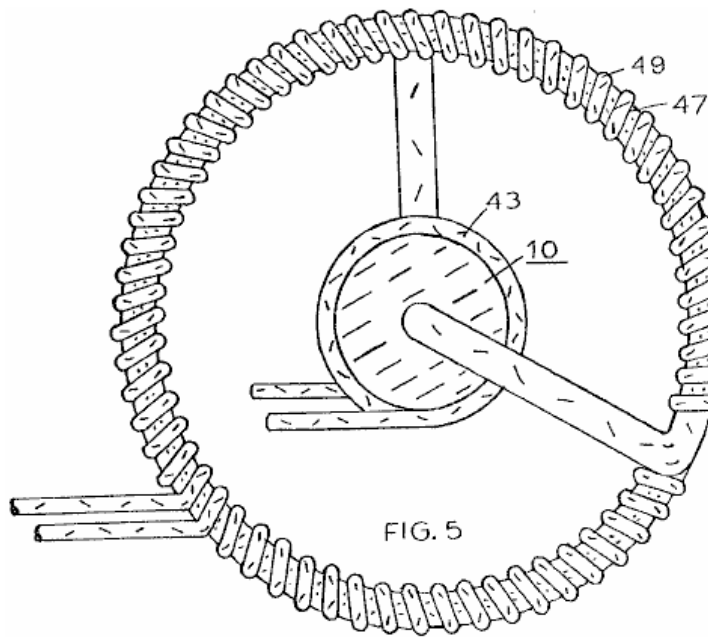
The voltage applied to terminals **16** of primary winding **12**, is a low voltage, and it's magnitude may be used as an input signal control. By varying the input voltage, the accelerator will vary the speed of the circulating particles, which will, in turn, vary the magnitude of the voltage/current output of the secondary winding **20**. The output **22** of the secondary transformer winding **20**, is a high voltage/current output.



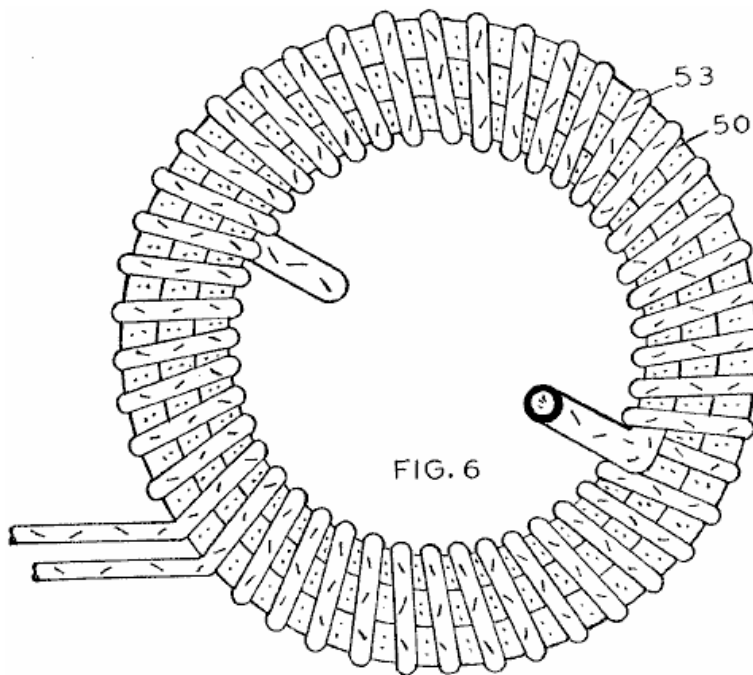
It can be appreciated that the system shown in **Fig.1** and **Fig.2** where there is just one closed loop, provides a single-phase output in the secondary winding **20**. **Fig.3** shows a closed-loop arrangement with three parallel non-magnetic tubes **31**, **33** and **35**, each with it's own output winding **21**, **23** and **25**. Each of these three windings are a single-phase output, and as their three pipes share a common input junction and a common output junction, these three output windings provide a balanced 3-phase electrical system.



**Fig.4** shows an electrical power generator which operates exactly the same as those shown in **Fig.1** and **Fig.2**. Here, the arrangement is for use in an environment where there is a high moisture content. An insulating coating **45**, completely covers pipe **30** as well as all of the electrical windings. **Fig.4** also illustrates the fact that increasing the number of turns for any given wire diameter increases the voltage/current output of the device. In this physical configuration, both vertical and horizontal directions are used which allows a large-diameter pipe to be used with a substantial number of turns of heavy-gauge high-current wire.



**Fig.5** shows a coil arrangement **49**, which uses the entire magnetic flux in the closed-loop tubing **47**. This is a co-axial arrangement with the primary winding **43** as a central core.



**Fig.6** illustrates a concentric spiral configuration of the tubing **50**, with the secondary windings **53** covering it completely.

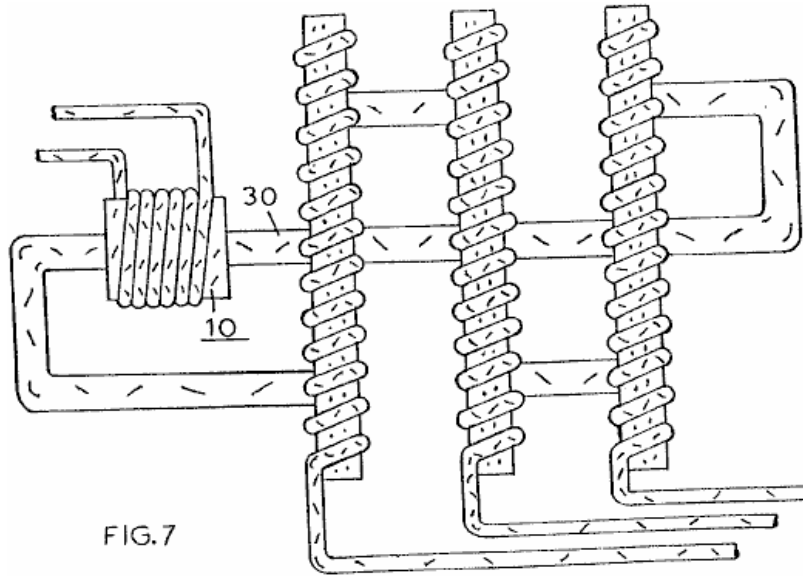


FIG. 7

**Fig. 7** shows an arrangement where the particle accelerator **10** is wound over the tubing **30** in much the same way as in **Fig. 1** and **Fig. 2**. However, in this arrangement, the tubing **30** is a continuous closed loop arranged in a series-parallel configuration where there are three secondary windings providing three separate outputs while the tubing **30** runs in series through those three windings.

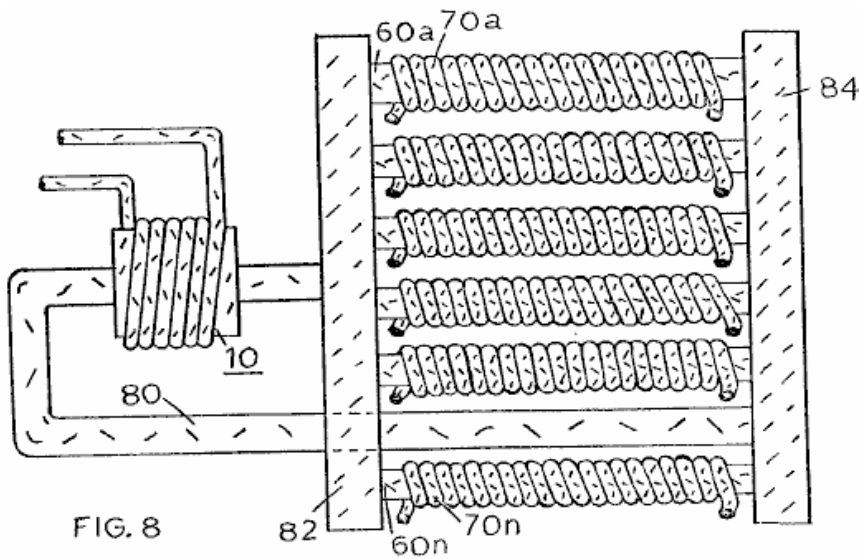
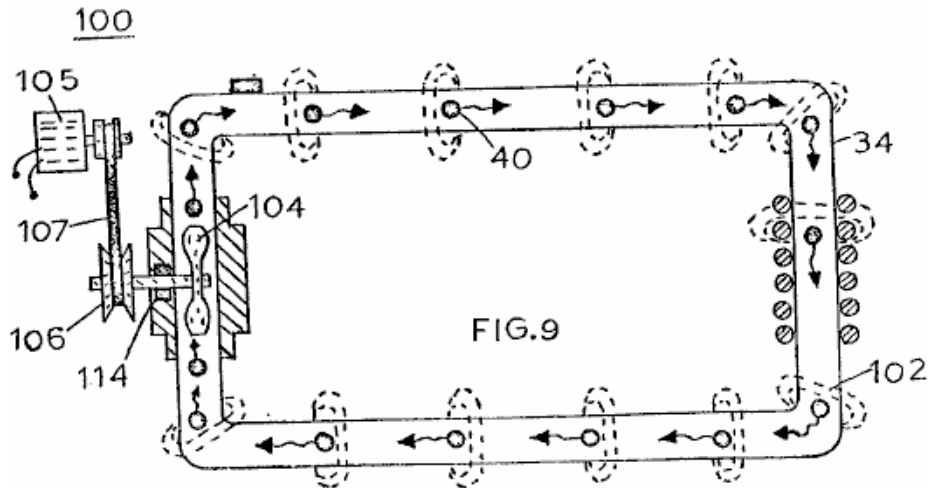


FIG. 8

**Fig. 8** shows a configuration which is the reverse of that shown in **Fig. 7**. Here, there are several pick-up coils wound in series and unlike the earlier configurations, the tubing **80** is not continuous. In this arrangement, there is an input manifold **82**, and an output manifold **84**, and several separate tubes **60a**, **60b**, **60c**, ..... **60n** interconnecting those two manifolds. Each of those separate tubes has its own separate secondary coil **70a**, **70b**, **70c**, ..... **70n** wound on it.

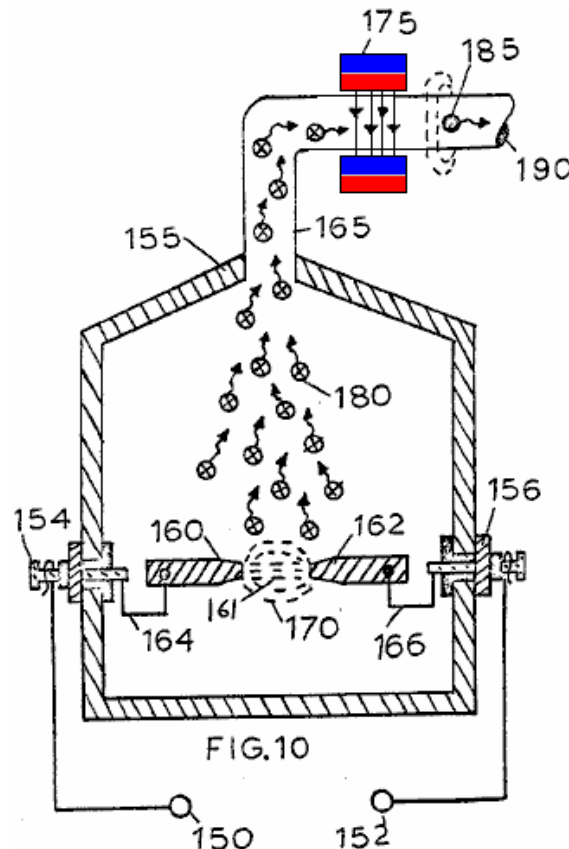


The magnetic particle accelerator **10**, can be different in design to that shown in **Fig.1**. **Fig.9** shows a mechanical particle accelerator **100**. In this arrangement, the magnetic particles **102** are permanently magnetised prior to being encapsulated in the non-magnetic pipe **110**. The particles **102** are accelerated by fan blade or pump **104** rotated by mechanical drive assembly **106**. The mechanical drive for assembly **106** may be a belt-drive pulley **112**, or similar device driven by an electric motor. A sealing bearing **114** keeps the particles **102** inside the pipe **110**.

It has been stated that the magnetic particles traversing the secondary coils, generate a voltage/current in them. It must be understood, however, that the particles are actually traversing the magnetic field of those coils.

Also, the pipe **30** has been described as a non-magnetic pipe. There are certain non-magnetic pipes which would not work with this invention. Pipe **30** must be capable of passing magnetic lines of force.

A significant feature of each of the various embodiments already described, is the generation of the magnetic particles which are encapsulated within the tubing.



**Fig.10** shows an apparatus for carrying out the process of vaporising material to produce suitable particles which are then magnetised by being subjected to a magnetic field. The chamber **155** is an evacuated chamber having

electrodes, made from magnetisable metal, **160** and **162**. A voltage is applied between terminals **150** and **152**, and this drives a current through terminals **154** and **156**, to spark-gap electrodes **160** and **162**, generating an arc which vaporises the tip material of the electrodes, producing particles **180**. These particles rise and enter tube **190**, passing through a magnetic field generator **175**. This gives each particle a magnetic charge and they continue on their way as magnetically-charged particles **185**, passing through port **190** to reach the electrical particle generator described above.

In the simplified embodiment shown in **Fig.1** and **Fig.2**, as well as the other preferred embodiments mentioned, it was indicated that a low voltage was applied to the particle accelerator **10**. Upon acceleration, a high voltage/current would be induced in the secondary pick-up coil **20**. A most significant advantage of the present invention is that the voltage amplification is not related to the shape of the waveform of the input voltage. Specifically, if the input is DC a DC voltage will be output. An AC input will produce an AC output. A pulsed voltage input will produce a pulsed voltage output and an input voltage of any other configuration will produce an output having that same configuration.

### **The Work of Russ Gries.**

Russ Gries has produced a video presentation and analysis of the above Stan Meyer patent. <http://www.youtube.com/watch?v=OnAmTmxBpAQ>.

The very experienced Alex Petty is joining with Russ in working on replicating Stan's system and Alex's web site is at [www.alexpetty.com](http://www.alexpetty.com). A discussion forum linked to this is at <http://open-source-energy.org/forum/> and there is information at <http://www.overunity.com/index.php?topic=5805.285> and high-resolution pictures can also be seen in Russ' video at <http://www.youtube.com/watch?v=JOarpi6sDD4>. Russ' own website is at <http://rwgresearch.com/> and an additional video of the most recent developmental work being undertaken at: <http://www.youtube.com/watch?v=adzVQRsS1KY&feature=youtu.be>.

There are various important things which are commented on and Russ is to be commended for drawing attention to them. For the moment, please forget about HHO as that is a separate issue. As far as I can see, the patent does not claim that the device is COP>1 but instead that the device is a power transformer which potentially has a greater power output than conventional transformers since there is no Lenz Law reverse magnetic path from the output coil winding to affect the input power.

Having said that, Stan in his video points out ways to boost the power of the device, namely:

1. Increase the strength of the magnetic particles
2. Increase the speed of the magnetic particles
3. Lower the distance between the magnetic particles and the output winding.

The magnetic particles can be produced in various ways, but the most effective appears to be by filling the arcing chamber with argon gas and using iron, nickel or cobalt electrodes. The reason for this is that the electric arc does not only generate minute particles of the electrode material, but it also interacts with the argon, stripping off electrons and causing some of the metal particles to combine with the modified argon gas molecules to form a magnetic gas. That gas will always remain a magnetic gas due to the atomic bonding as it is not just minute particles of metal physically suspended in a gas due to their tiny size.

You will recall from chapter 1, that the very successful ShenHe Wang magnet motor/generator has a magnetic liquid as a key component. Here, Stan is producing a much lighter magnetic gas and the advantage of that lightness is that it can be boosted to very high speeds without any danger. The larger the number of modified argon molecules, the greater the magnetic effect when they pass through a coil of wire. The argon gas can be passed through the arc chamber over and over again so that a very high percentage of the gas is magnetic. Alternatively, if you are sophisticated in the design of the particle generator, you can arrange for the molecules which have become magnetic, to be pulled off into storage by a magnetic field.

Stan talks about pumping the magnetic gas through whatever pipe loop arrangement you decide to use, by a pump, but he promptly moves on to using a magnetic coil to boost the gas forward as the coil has no moving parts and so, no mechanical wear. This is only one reason. The main reason is that with magnetic acceleration, the gas speed can become very high indeed and in his video he talks about the speed of light. However, I personally do not believe that anything remotely like a speed that great could be achieved inside a pipe loop of small diameter. Nevertheless, speeds well in excess of what a mechanical pump can achieve are likely to be produced by magnetic acceleration.

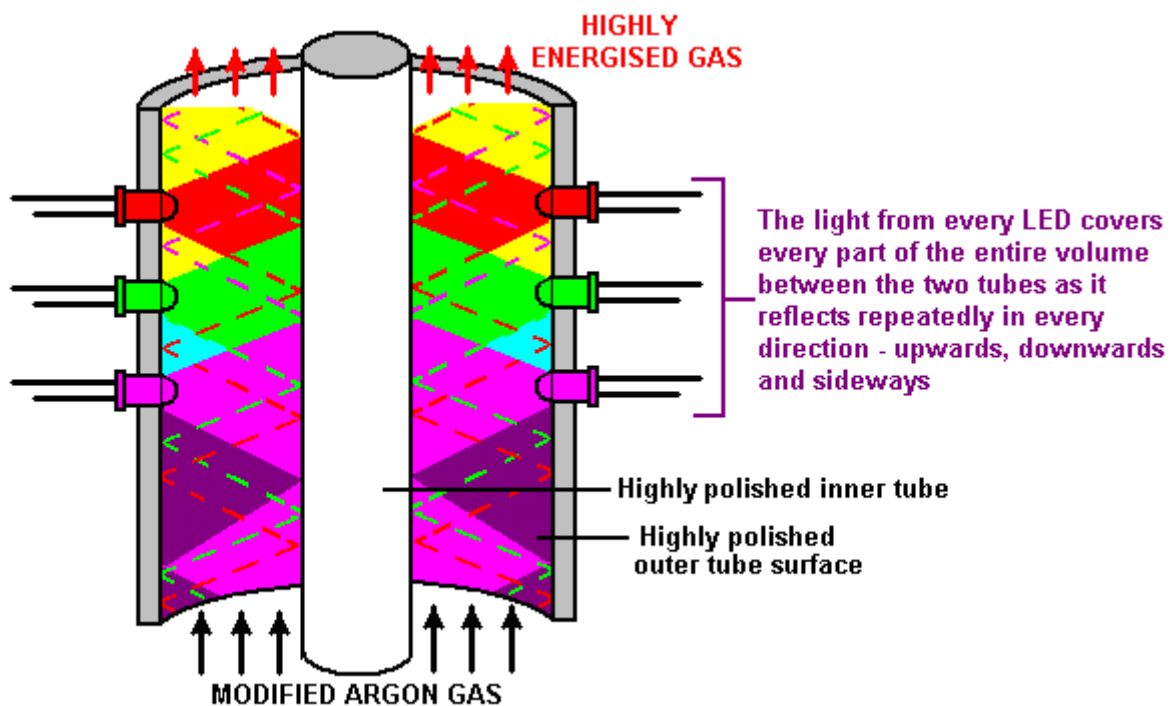
Russ, in his discussion, points out that on most of Stan's surviving prototypes, the coil which is used for the acceleration is constructed using several apparently separate coils, and he speculates that each coil section is powered sequentially, causing a rippling magnetic field. While that is definitely possible, I don't see that a style of coil powering would have any advantage as opposed to powering all of the coils continuously. However, if sequential powering is believed to be an advantage, then the 'Divide-by-N' circuitry of chapter 12 can be used to provide the sequential powering or any more complex sequence.

Stan then points out that the output voltage can be increased by increasing the number of turns on the output coil and/or having additional output coils. This is easily understood conventional electrics. But, he then goes on to point out that the output will also be increased if the electrons of the modified argon molecules are raised to a high orbital level. This places the electromagnetic electrons (as described in chapter 11) closer to the output coils and presumably also allows the gas to be accelerated to a greater speed by the driving magnetic field.

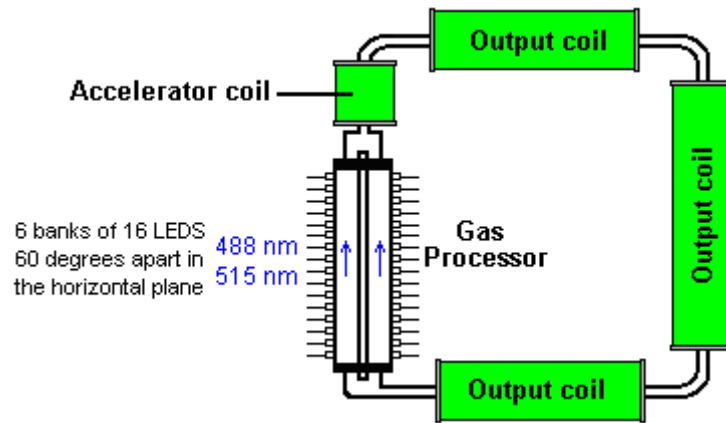
This power boosting of the gas is achieved using Stan's "Gas Processor" described in chapter 10. The Gas Processor pumps electromagnetic energy into the gas through the use of banks of Light-Emitting Diodes which produce light of the correct wavelength to add energy to that particular gas.

If you check on the internet for the wavelength of argon, you find conflicting information, with some sites saying that the wavelength is 1090 nanometres ("nm") and most others saying both 488 nm and 514.5 nm. Most LEDs produce a band of frequencies, so it would be a case of picking LEDs whose band of frequencies include the wanted wavelength.

The Gas Processor itself, consists of a central tube which is polished to a mirror finish on the outside, surrounded by a larger tube which is highly polished on the inside. The LED light is then bounced between these polished surfaces until it is absorbed by the gas which is passed through the gap between the two tubes. This is not easy to illustrate, but it might be shown like this:



In Stan's design, he uses six columns of sixteen LEDs, with each column of LEDs spaced out evenly around the outer tube. So, to boost the Magnetic Particle Generator to greater power levels, a Gas Processor is placed in the loop of tubing:



The Gas Processor normally has a coil mounted at each end and it may be convenient to use coils in those positions as accelerator coils. It may also be an advantage to apply a pulsed high-voltage between the inner and outer tubes of the Gas Processor. As it stands, this looks as if it has a high possibility of being a COP>1 electrical device.

Patrick Kelly

<http://www.free-energy-info.tuks.nl/>