A Practical Guide to 'Free Energy' Devices

Device Patent No 37 Author: Patrick J. Kelly

This is a slightly re-worded copy of this patent, as some words have changed their meaning since this patent was issued. If you wish to see the original, then http://www.freepatentsonline.com will allow you to download a copy without any charge.

Patent US 685,957 5th November 1901 Inventor: Nikola Tesla

APPARATUS FOR THE UTILISATION OF RADIANT ENERGY

To all whom it may concern:
Be it known that I, Nikola Tesla, a citizen of the Unites States, residing at the borough of Manhattan, in the city, county and State of New York, have invented certain new and useful improvements in Apparatus for the Utilisation of Radiant Energy, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

It is well known that certain radiations - such as those of ultra-violet light, cathodic, Roentgen rays, or the like - possess the property of charging and discharging conductors of electricity, the discharge being particularly noticeable when the conductor upon which the rays impinge is negatively electrified. These radiations are generally considered to be ether vibrations of extremely small wave lengths, and in explanation of the phenomena noted, it has been assumed by some authorities that they ionise, or render conducting, the atmosphere through which they are propagated. However, my own experiments and observations lead me to conclusions more in accord with the theory heretofore advanced by me that sources of such radiant energy throw off with great velocity, minute particles of matter which are strongly electrified, and therefore capable of charging an electrical conductor, or, even if not so, may at any rate discharge an electrified conductor, either by bodily carrying off its charge or otherwise.

My present application is based upon a discovery which I have made that when rays or radiations of the above kind are permitted to fall upon an insulated conducting-body connected to one of the terminals of a capacitor, while the other terminal of the capacitor is made to receive or carry away electricity, a current flows into the capacitor so long as the insulated body is exposed to the rays, and under the conditions specified below, an indefinite accumulation of electrical energy in the capacitor takes place. After a suitable time interval during which the rays are allowed to act, this energy may manifest itself in a powerful discharge, which may be used for the operation or control of mechanical or electrical devices, or rendered useful in many other ways.

In applying my discovery, I provide a capacitor, preferably of considerable electrostatic capacity, and connect one of its terminals to an insulated metal plate or other conducting-body exposed to the rays or streams of radiant matter. It is very important, particularly in view of the fact that electrical energy is generally supplied to the capacitor at a very slow rate, to construct the capacitor with the greatest care. I prefer to use the best quality of mica as the dielectric, taking every possible precaution in insulating the armatures, so that the instrument may withstand great electrical pressures without leaking and may leave no perceptible electrification when discharging instantaneously. In practice, I have found that the best results are obtained with capacitors treated in the manner described in Patent 577,671 granted to me on 23rd February 1897. Obviously, the above precautions should be the more rigorously observed the slower the rate of charging and the smaller the time interval during which the energy is allowed to accumulate in the capacitor. The insulated plate or conducting-body should present to the rays or streams of matter, as large a surface as is practical, I having ascertained that the amount of energy conveyed to it per unit of time is, under otherwise identical conditions, proportional to the area exposed, or nearly so. Furthermore, the surface should be clean and preferably highly polished or amalgamated. The second terminal or armature of the capacitor may be connected to one of the poles of a battery or other source of electricity, or to any

conducting body or object whatever of such properties or so conditioned that by its means, electricity of the required sign will be supplied to the terminal. A simple way of supplying positive or negative electricity to the terminal is to connect it to an insulated conductor supported at some height in the atmosphere, or to a grounded conductor, the former, as is well known, furnishing positive, and the latter negative electricity. As the rays or supposed streams of matter generally convey a positive charge to the first terminal of the capacitor mentioned above. I usually connect the second terminal of the capacitor to the ground, this being the most convenient way of obtaining negative electricity, dispensing with the necessity of providing an artificial source. In order to use the energy collected in the capacitor for any useful purpose, I also connect to the capacitor terminals, a circuit containing an instrument or apparatus which it is desired to operate, and another instrument or device for alternately closing and opening the circuit. This latter device can be any form of circuit-controller with fixed or moveable parts or electrodes, which may be actuated either by the stored energy or by independent means.

My discovery will be more fully understood from the following description and drawings, where **Fig.1** is a diagram showing the general arrangement of the apparatus as usually employed.

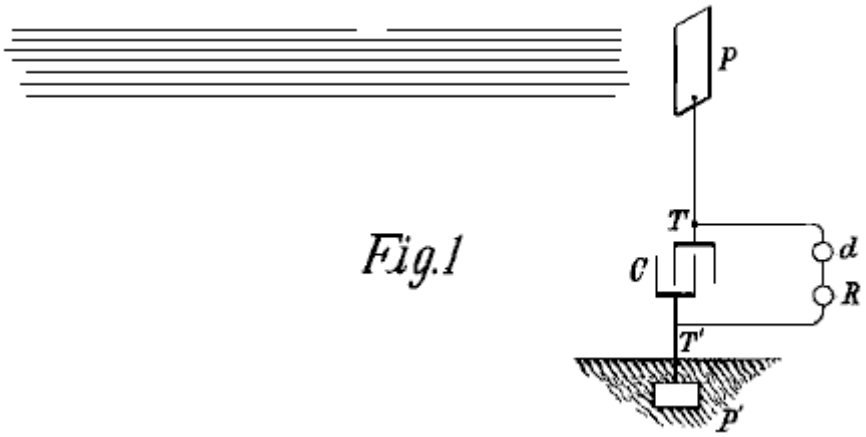

Fig.1

Fig.2 is a similar diagram, illustrating in more detail, typical forms of the devices or elements used in practice.

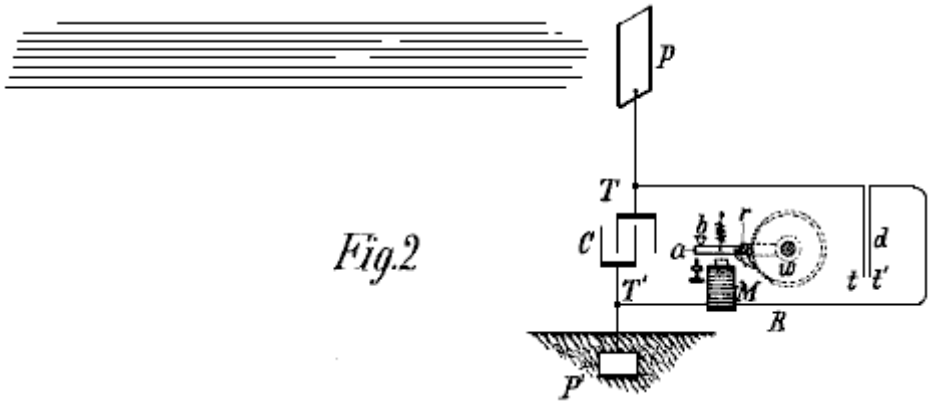

Fig.2

Fig.3 and **Fig.4** are diagrams of modified arrangements suitable for special purposes.

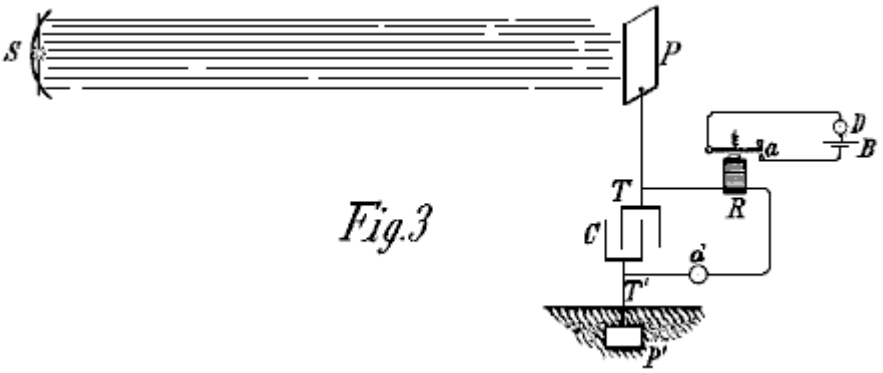

Fig.3

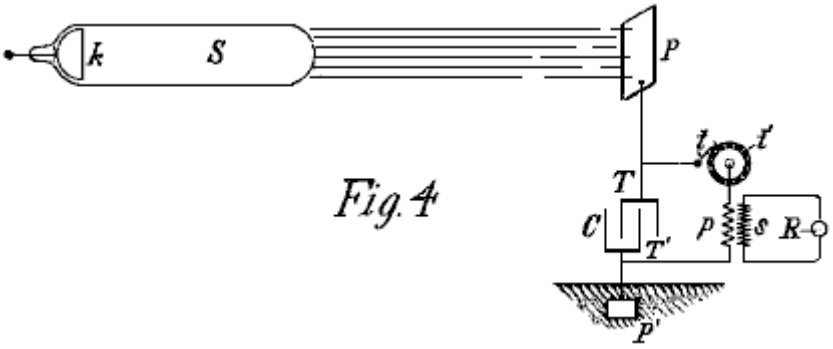

Fig.4

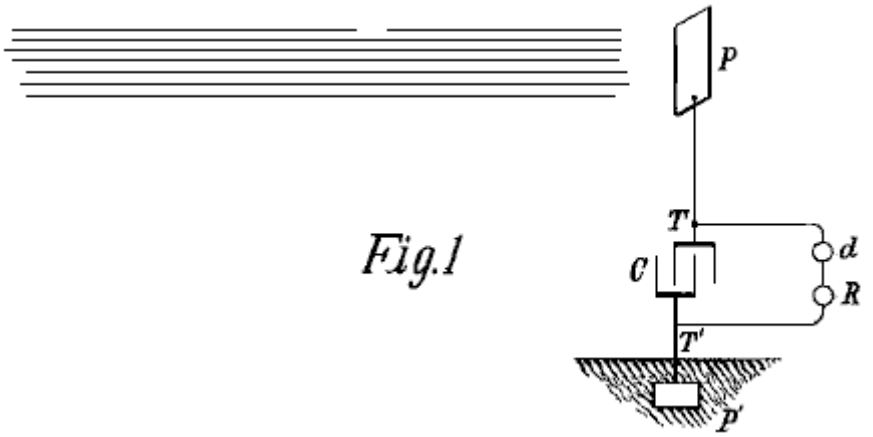

Fig.1

Fig.1 shows the simplest form, in which **C** is the capacitor, **P** the insulated plate or conducting-body which is exposed to the rays, and **P'** another plate or conductor which is grounded, all being connected in series as shown. The terminals **T** and **T'** of the capacitor **C** are also connected to a circuit which contains a device **R** which is to be operated, and a circuit-controlling device **d** as described above.

The apparatus being arranged as shown, it will be found that when the radiation of the sun, or any other source capable of producing the effects described above, fall on plate **P**, there will be an accumulation of energy in capacitor **C**. I believe that this phenomenon is best explained as follows: The sun, as well as other sources of radiant energy , throws off minute particles of positively electrified matter, which striking plate **P**, create an electrical charge on it. The opposite terminal of the capacitor being connected to the ground, which can be considered to be a vast reservoir of negative electricity, a feeble current flows continuously into the capacitor, and since these supposed particles are of an inconceivably small radius or curvature, and consequently, charged to a very high voltage, this charging of the capacitor may continue as I have actually observed, almost indefinitely, even to the point of rupturing the dielectric. If the device **d** be of such character that it will operate to close the circuit in which it is included when the capacitor voltage has reached a certain level, then the accumulated charge will pass through the circuit, operating the receiver **R**.

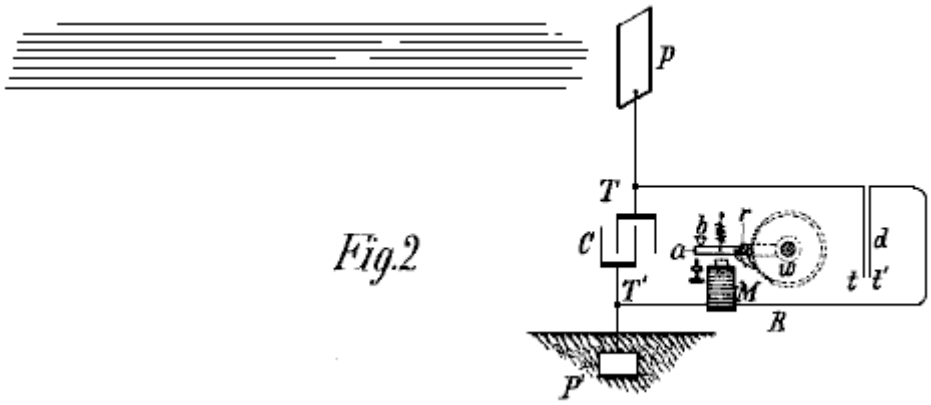

Fig.2

In illustration of this effect, **Fig.2** shows the same general arrangement as in **Fig.1**, and the device **d** is shown composed of two very thin conducting plates **t** and **t'** which are free to move and placed very close to each other. The freedom of movement can be either through the flexibility of the plates or through the character of their support. To improve their action they should be enclosed in a housing which can have the air removed from it. The plates **t** and **t'** are connected in series in a working circuit which includes a suitable receiver, which in this example is shown as an electromagnet **M**, a moveable armature **a**, a spring **b**, and a ratchet wheel **w**, provided with a spring-pawl **r**, which is pivoted to armature **a** as illustrated. When the radiation falls on plate **P**, a current flows into the capacitor until its voltage causes the plates **t** and **t'** to be attracted together, closing the circuit and energising the magnet **M**, causing it to draw down the armature **a** and cause a partial rotation of the ratchet wheel **w**. When the current flow stops, the armature is retracted by the spring **b**, without, however, moving the wheel **w**. With the stoppage of the current, the plates **t** and **t'** cease to be attracted and separate, thus restoring the circuit to its original condition.

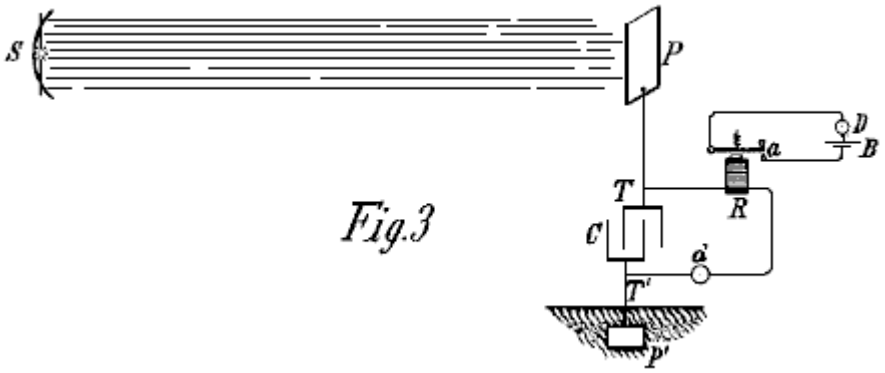

Fig.3

Fig.3 shows a modified form of apparatus used in connection with an artificial source of radiant energy, which in this case may be an arc emitting copious ultra-violet rays. A suitable reflector may be provided for concentrating and directing the radiation. A magnet **R** and circuit-controller **d** are arranged as in the previous figures, but in this case, instead of performing the whole of the work, the magnet performs the task of alternately opening and closing a local circuit, containing a source of current **B** and a receiving or translating device **D**. The controller **d** may, if desired, consist of two fixed electrodes separated by a minute air gap or weak dielectric film which breaks down more or less suddenly when a definite voltage difference is reached at the terminals of the capacitor, and returns to its original state when the discharge occurs.

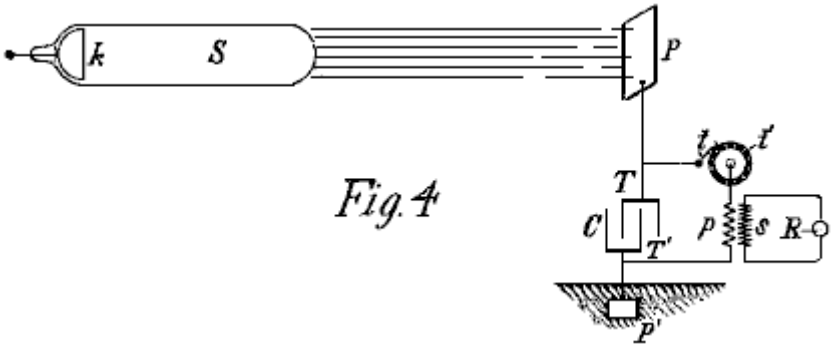

Fig.4

Still another modification is shown in **Fig.4**, in which **S**, the source of radiant energy is a special form of Roentgen tube devised by me, having only one terminal **k**, generally of aluminium, in the form of half a sphere, with a plain polished surface on the front side, from which the streams are thrown off. It may be excited by attaching it to one of the terminals of any generator with sufficiently high electromotive force; but whatever apparatus is used, it is important that the tube has the air inside it removed to a high degree, otherwise it might prove to be entirely ineffective. The working, or discharge circuit connected to the terminals T and T' of the capacitor, includes, in this case, the primary winding **p** of a transformer, and a circuit-controller comprised of a fixed terminal or brush **t** and a moveable terminal **t'** in the shape of a wheel, with conducting and insulating segments, which may be rotated at an arbitrary speed by any suitable means. In inductive relation to the primary winding **p**, is a secondary winding **s**, usually of a much greater number of turns, to the ends of which is connected a receiver **R**. The terminals of the capacitor being connected as shown, one to an insulated plate **P** and the other to a grounded plate **P'**. When the tube **S** is excited, rays or streams of matter are emitted from it and these convey a positive charge to the plate **P** and capacitor terminal **T**, while the capacitor terminal **T'** is continuously receiving negative electricity from plate **P'**. As already explained, this results in an accumulation of electrical energy in the capacitor, and this continues as long as the circuit including the primary winding **p** is interrupted. Whenever the circuit is closed by the rotation of the terminal **t'**, the stored energy is discharged through the primary winding **p**, giving rise to induced currents in the secondary winding **s**, which operates the receiver **R**.

It is clear from what has been stated above, that if the terminal **T'** is connected to a plate supplying positive instead of negative electricity, then the rays should convey negative electricity to plate **P**. The source **S** may be any form of Roentgen or Leonard tube, but it is obvious from the theory of action that in order to be very effective, the impulses exciting it should be wholly, or mainly of one sign. If ordinary symmetrical alternating currents are employed, then provision should be made for allowing the rays to fall on plate **P** only during those periods when they can produce the desired result. Obviously, if the source radiation is stopped or intercepted, or the intensity varied in any manner such as periodically interrupting or rhythmically varying the current exciting the source, there will be corresponding changes in the action upon the receiver **R** and thus signals may be transmitted and many other useful effects produced. Further, it will be understood that any form of circuit-closer which will respond, or be set in operation when a predetermined amount of energy is stored in the capacitor, may be used instead of the device already described in connection with **Fig.2**.

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