

Chapter 1 : Nikola Accuses Tesla of Design Patent Infringement on Truck Features

Nikola Tesla received numerous patents for his well-known inventions such as: motors, the alternating current power system, wireless power transmission, etc. What most don't realize is that Tesla patented many other inventions as well, including a fountain, a flying machine and a lightning rod.

Patents 1â€™ 50[edit] U. Patent 0,, - Commutator for Dynamo Electric Machines - January 26 - Elements to prevent sparking on dynamo-electric machines; Drum-style with brushes. Patent 0,, - Electric Arc lamp - February 9 - Arc lamp with carbon electrodes controlled by electromagnets or solenoids and a clutch mechanism; Corrects earlier design flaws common to the industry. Patent 0,, - Regulator for dynamo electric machines - March 2 - Two main brushes connected to helices coil ends; Intermediate point branch shunt connection for third brush. Patent 0,, - Regulator for Dynamo Electric Machines - March 2 - Auxiliary brush[es] shunting a portion or whole of the field helices coil; Regulates energy flow; Adjustable level of current. Patent 0,, - Regulator for Dynamo Electric Machines - October 19 - Automatic regulation of energy levels; Mechanical device to shift brushes. Patent 0,, - Dynamo electric machine - March 22 - Improve construction; Facilitate easier construction; Reduce the cost; Magnetic frame; Armature; Alternating current synchronous motor. Patent 0,, - Electro magnetic motor - May 1 - Mode and plan of operating electric motors by progressive shifting; Field Magnet; Armature; Electrical conversion; Economical; Transmission of energy; Simple construction; Easier construction; Rotating magnetic field principles. Patent 0,, - Electro Magnetic Motor - May 1 - Novel form and operating mode; Coils forming independent energizing circuits; Connected to an alternating current generator; Synchronous motor. Patent 0,, - System of Electrical Distribution - May 1 - Current from a single source of supply in the main or transmitting circuit induce by induction apparatus; Independent circuit s ; Electric distributor. Patent 0,, - Electro Magnetic Motor - May 1 - Rotation is produced and maintained by direct attraction; Utilizes shifting poles; Induction magnetic motor. Patent 0,, - Electrical Transmission of Power - May 1 - New method or mode of transmission; Dynamo motor conversion with two independent circuits for long distance transmission; Alternating current transmission; Includes a disclaimer; Economic; Efficient. Patent 0,, - Electrical Transmission of Power - May 1 - Improvements in electromagnetic motors and their mode or methods of their operations; Motor is wound with coils forming independent circuits on the armature; Armature is mounted to rotate between two different poles; Armature will eventually synchronize with that of the generator; Windcoils or coils on the field magnets; Expose to continuous current to maintain a permanent field. Patent 0,, - Method of Converting and Distributing Electric Currents - May 1 - Related to electric distribution systems; Current is from a single main source or suitable transmitting circuit; Induction into an independent circuit; Divide the current from a single source; Transformations; Discovery of method to avoid prior liable and dangerous methods; True Dynamic induction. Patent 0,, - Commutator for dynamo electric machines - May 15 - Relates to dynamo-electric machines or motors; Improvements on devices to collect or communicate currents; Avoids destruction and wear of machine; Avoid adjustments due to destruction and wear; Enable practical construction of very large dynamo electric machines or motors with the minimum number of communicator segments; Increases safety and efficiency. Patent 0,, - System of electrical distribution - October 2 - Related to previous electric distribution systems developed by Tesla; Examples of systems in operation with motors or converters, or both, in parallel; Examples of systems in parallel; Examples of systems in series. Patent 0,, - Dynamo Electric Machine or Motor - October 2 - Improvement in the construction of dynamo or magneto electric machines; Novel form of frame and field magnets that renders the machine more sturdy and compact as a structure; Requires fewer parts; Less difficulty in construction; Lower expense; Useful to alternating and continuous current machines. Patent 0,, - Dynamo Electric Machine - October 9 - Relates chiefly to the alternate current machine invented by Tesla; Related to patents numbered US and US; Seeks to avoid mechanical drawback of running high frequency machines; Efficient at low speeds; Producing rotating magnetic poles in one element of the machine and drive the other at a different speed. Patent 0,, - Regulator for Alternate Current Motors - October 9 - Improvement in the electrical transmission systems; Means of regulating and power of the motor or motors; Used with system

of multiple motors primarily or systems with motors and transformers that have independent energizing circuits which act to set up progressive or shifting magnetic poles i. Patent 0,, - Thermo Magnetic Motor - January 15 - Widely known that heat applied to a magnetic body will lessen its magnetizing ability; High enough temperatures will destroy the magnetic field; Mechanical power by a reciprocating action obtained from the joint action of heat, magnetism, and a spring or weight or other force ; In this patent, the application of heat to a body that is magnetized by induction or otherwise to the action of heat until the magnetism is neutralized to allow a weight or a spring to give action and lessen the action of the heat to restore the magnetic effect to move the body in the opposite direction. Patent 0,, - Method of Operating Electro Magnetic Motors - April 16 - Improvements to previous instances of synchronous motors; Previous instances of synchronous motors have not been started by the alternating current generators; New discovery of simple method or plan of operating such motors; Requires no other device other than the motor itself; Conversion from a double circuit motor and which will start under the actions of an alternate current into a synchronizing-motor; synchronous motor definition. Patent 0,, - Electro Magnetic Motor - June 25 - Torque, instead of being the result in the difference in the magnetic periods or phases of the poles or to the attractive parts to whatever due, is produce to the angular displacement of the parts which, though movable with the respect to one another, are magnetized simultaneously, or approximately so, by the same currents; Concerns the armature and the field laminations of the magnetic core for the greatest magnetic attractions; Best means to achieve these results. Patent 0,, - Method of Electrical Power Transmission - June 25 - New and useful method of bringing up the motor to a desirable speed; Forms of alternating current machines, connected to alternating current generators, can be run as synchronous motor; Prior, alternating current will not start it; Construct a generator with two coils or sets of coils and connect them with a motor of corresponding coils or sets of coils; By means of two line wires, the motor and generator in like fashion; Related to US for means of starting ; Will operate as a single-circuit synchronizing system. Patent 0,, - Dynamo Electric Machine - July 16 - Relates to class of machines referred to as "Unipolar" machine i. Patent 0,, - Method of Obtaining Direct current from Alternating Currents - October 22 - Superiority of alternating currents discussed; Delineates machines to convert alternating currents to direct or continuous currents at will at one or more points; Obtain direct currents from alternating currents; Active resistances to opposite electrical character, whereby the currents or current-waves of opposite character will be diverted through different circuits. Patent 0,, - Electro-Magnetic Motor - December 3 - Induction motor with two or more energizing circuits; alternating currents of differing phases are passed to produce rotation or operation of the motor; simple way consists of two circuits; alternate way consists of one line that divides the alternating current in the motor circuit and effects an artificial lag in one of the circuit of branches such as by a different induction capacity. Patent 0,, - Method of Operating Electro-Magnetic Motors - December 3 - Related to US; Alternative improvements to synchronous motors; Torque and synchronous actions in motors; different field circuit of differing induction; Windings and shunts; Increases tendency to synchronize. Patent 0,, - Electro-Magnetic Motor - December 3 - Induction motor operation with two or more windings; securing differing phase differences; Phase proportional to the induction and inverse to the resistance encountered by the current; one circuit the energizing circuit should have high induction and low resistance along with possessing the greater length or number of turns and the converse in the other which has few turns of finer wire or wire that has higher resistance ; magnetic quantities of the poles should be approximately equal; Self-induction cores are much longer. Patent 0,, - Electro-Magnetic Motor - December 3 - Induction motor operation with two or more windings; Differing phases; Structural and operational conditions; Armature operation conditions and the obedience to the energizing circuit and stator; Construction and organization principles. Patent 0,, - Armature for Electric Machines - December 24 - Construction principles of the armature for electrical generators and motors; Simple and economical; Coils of insulated conducting wire or ribbon may be wound or formed into bobbins; Position of the bobbins dictate the windings; Armature has polar projections and maximum core-surface exposure to the field magnetic poles; Related to other applicant patents, numbers US, US, GB Patent 0,, - Electro-Magnetic Motor - December 31 - Electric generator; Employment of an artificial cooling device; Enclosing the source of heat and that portion of the magnetic circuit exposed to the heat and artificially cooling the said heated part; Combination of an

enclosed source of heat applied to a portion of said core; Magnetized core or body and a conductor within the field of force; Artificial cooling device for reducing the temperature of the heated portion thereof; Means for bringing a cooling gas or fluid in contact with the heated portion of the core, and means for controlling the admission of the same; The combination and coils wound thereon and a connection with a boiler for admitting steam into the channels, as set forth; Magnetized core containing passages or channels; Means for applying heat to a portion of the core. Patent 0,, - Electro-Magnetic Motor - March 25 - Cites then common language of his motors referred to as the "magnetic lag" motors; Another form of the induction motor with two or more energizing circuits with differing phase differences are passed to produce rotation or operation of the motor; Magnetism lags electrical parts of energizing effects; Manifests these effect simultaneously and not successively; Related to US; Torque is produced to the angular displacement of parts; Best means to achieve these results; prefer the use of alternating currents. Patent 0,, - Pyromagneto Electric Generator - May 13 - Electric generator; Employment of an artificial cooling device; Enclosing the source of heat and that portion of the magnetic circuit exposed to the heat and artificially cooling the said heated part; Combination of an enclosed source of heat applied to a portion of said core; Magnetized core or body and a conductor within the field of force; Artificial cooling device for reducing the temperature of the heated portion thereof; Means for bringing a cooling gas or fluid in contact with the heated portion of the core, and means for controlling the admission of the same; The combination and coils wound thereon and a connection with a boiler for admitting steam into the channels, as set forth; Magnetized core containing passages or channels; Means for applying heat to a portion of the core. Patent 0,, - Alternating-Current Motor - August 5 - Two sets of field-pole pieces of energized independently by the same source; Closed magnetic iron shunts or bridges in sets or series. Patent 0,, - Electrical Transformer Or Induction Device - August 5 - Main magnetic core and the primary and secondary coils interposed by a magnetic shield or screen between the coils or around one of the coils; Coils can be wound upon or built up around the magnetic shield; Adapted to or capable of being magnetically saturated by a predetermined current strength below the maximum in the primary. Patent 0,, - Electro-Magnetic Motor - August 5 - Describes the combination, in an alternating current motor, of an energizing coil and a core composed of two parts one being protected from magnetization from the other one interposed between it and the coil ; A rotating armature is motivated by the induced fields; Alternatively, a field magnet composed of a coil and core with two sections in proximity of the coil and an inner section between the same ; Also, a field magnet each composed of a coil and core with two sections in proximity of the coil and an inner section between the same. Patent 0,, - Electro-Magnetic Motor - January 27 - Describes the combination, in a motor, of a primary energizing circuit connected to a generator and a secondary circuit in inductive relation to the primary; Each circuit has a different electrical character, resistance, induction capability, or number and type of windings. Patent 0,, - Method of Operating Arc-Lamps - March 10 - Abate or render inaudible sound emitted by arc lamps that are powered by or supplied with alternating currents by increasing the frequency of alternations or pulsations above the auditory level. Patent 0,, - Alternating Electric Current Generator - March 10 - A generator that produces alternations of per second or more. Apparatus devised for the purpose of supplying electrical energy in a form suited for the production of certain phenomena, such as lighting. The first patent on the Tesla coil. Nikola Tesla holding a gas-filled phosphor-coated light bulb which was illuminated without wires by an electromagnetic field from the "Tesla Coil". Patent 0,, - System of Electric Lighting - June 23 - Apparatus devised for the purpose of converting and supplying electrical energy in a form suited for the production of certain novel electrical phenomena, which require currents of higher frequency and potential. It specifies an energy storage capacitor and discharger mechanism on the primary side of a radio-frequency transformer. Patent 0,, - Electro-Magnetic Motor - June 30 - Alternating current motor, with field magnets and energizing circuit armature-circuit and a core adapted to be energized by currents induced in its circuit by the currents in the field circuit; Condenser connected with or bridging the armature-circuit e. Patent 0,, - Electrical Meter - June 30 - Method of computing the amount of electrical energy expended in a given time in an electrical circuit; Operates by maintaining by the current a potential difference between two conductors in an electrolytic solution or cell uniform throughout the whole extent of such conductors exposed to the solution; Measurement of the variation of the resistance in one or

both conductors due to the gain or loss of metal by electro-deposition; Electrolytic cell and conductors passing through the cell and connected in series with a translating device; One or more resistances connected with the conductors and cell for establishing a potential difference between the two conductors through the solution of the cell; Tubular cell contains electrolytic solution and closed at each end. Patent 0,, - Electric Incandescent Lamp - June 30 - Incandescent lamp consisting of two isolated refractory conductors contained in a non-striking vacuum and adapted to produce light by incandescence; Globe or receiver exhausted to the non-striking point with two mounted isolated bodies or metal wires of refractory conducting material to emit light and sealed in; Terminal to connect with an electrical energy source; Refractory conducting material not to be rendered incandescent coated or covered with insulation. Patent 0,, - Electro-Magnetic Motor - September 22 - Alternating current non-synchronizing electric motor coupled with a synchronizing alternating current motor whereby the former starts the latter and throws it into synchronism with its actuating current; Switch mechanism for directing the current through either or both of the motors; Combination of two motors one an alternating current torque motor [e. Patent 0,, - Method of and Apparatus for Electrical Conversion and Distribution - November 3 - Apparatus devised for the purpose of converting and supplying electrical energy in a form suited for the production of certain novel electrical phenomena which require currents of higher frequency and potential. Patent 0,, - Electro-Magnetic Motor - December 8 - Alternating current motor provided with two or more energizing or field circuits; One circuit connected to current source and the other or others in inductive relation thereto; One circuit connected to alternating currents and the other constituting high potential secondary circuit; Condenser interposed in the inductive circuit. Patent 0,, - Electrical Condenser - December 8 - Electrical condenser composed of plates or armatures immersed in oil; Plates or armatures can be adjustable. Patents 51â€™ [edit] U. Patent 0,, - System of Electrical Transmission of Power - December 13 - Alternating current generator consisting of independent armature-circuits formed by conductors alternately disposed; Currents developed differ in phase and the field magnet poles in excess of the number of armature-circuits; Motor having independent energizing circuits connected to the armature-circuit of the alternating current generator; Rotating magneto-electric machine yielding a given number of current impulses or alterations for each turn or revolution; Poles which in number are less than the number of current impulses produced in each motor-circuit by one turn or revolution; Multipolar alternating-current machine. Patent 0,, - Electrical Transmission of Power - December 26 - Method of operating motors having independent energizing circuits; Passing alternating currents through circuits and retarding the phases of the current in one circuit to a greater extent; Directing alternating currents from a single source through both circuits of a motor and varying or modifying the relative resistance or self-induction of motor circuits, producing in currents differences in phases. Patent 0,, - System of Electrical Power Transmission - December 26 - Motor having independent energizing circuits connected with a source of alternating currents; Means of rendering the magnetic effects to said energizing circuit of difference phase; Armature within the influence of the energizing circuit; Energizing circuits connected in derivation or multiple arc and of different active or variable resistance or self-inductance ; Pairs of mains connected and a multiple circuit differential phase; Change of time-period of currents passing through an electro-motive phase-changing device interposed between the mains and the destination; Includes a correction. Patent 0,, - Electrical Transmission of Power - January 2 - Method of operating electro-magnetic motors; Passing alternating currents through one of the energizing circuits and inducing by such current in the other energizing circuit or circuits of the motor. Coil for Electro-Magnets; bifilar coils. Electrical conductor, ; Early example of coaxial cable. Patent 0,, - Coil for Electro-Magnets - January 9 - Effect of mutual relation self-induction exploited; Adjacent coil convolutions formed parts exists so that the potential difference is sufficient to neutralize negative effects; Object to avoid expensive, cumbersome, and difficult condensers; Bifilar coil winding technique. Patent 0,, - Electrical Conductor - February 6 - Prevent loss in line conductors; Insulate and encase conductors with a sheathing which is connected to the ground; Sheath or screen; Coaxial cabling. Patent 0,, - Means for Generating Electric Currents - February 6 - Generating and utilizing electrical energy discovered by Tesla; related to US and US; Maintenance of intermittent or oscillatory discharges of a condenser of suitable circuit containing translating devices; Discharges take place in insulating liquids such as oil ; Varying spark gap distances; Keep circulating

flow in liquid; Illustrates preferred manner. Patent 0,, - Reciprocating Engine - February 6 - Provide a means of engines, which under the applied forces such as elastic tension of steam or gas under pressure, that will yield constant oscillatory movements in wide limits ; Function is constant irrespective of the loads, frictional losses, or other factors which degrade other engines ; Convert pressure into mechanical power; Better at higher temperatures and pressures than previous engines; Same principles of this engine appear later in the modern gasoline motors of automobiles; often cited by enthusiasts as a version of the "earthquake machine. Patent 0,, - Incandescent Electric Light - February 6 - Related to US; Incandescent electric lamps; Particular forms of the lamp in which a light giving small body or button of refractory material is supported by a conductor entering a very highly exhausted globe or receiver; Conducting screen surrounds the supporting conductor; Single node vacuum tube. Patent 0,, - Electric Railway System - February 20 - Utilizes high potentials and high frequencies; Insulated and screened supply conductor along the line of travel; Induction bar or plate in inductive relation to the screened conductor and an electrical connection to the motor. Patent 0,, - Electrical Meter - February 20 - Method of measuring the amount of electrical energy expended in a given time in an electric circuit of alternating currents; High tension discharge through a rarefied gas between two conductors; Computing from the amount of the particles thrown off from the conductors or one of the same by action of the discharge of the energy expended; Primary coil in series with a translating device; High tension secondary; Two carbon conductors sealed in an exhausted receiver and coated with an insulating material on three sides, one terminal of each conductor being connected to a terminal of a secondary. Patent 0,, - Steam Engine - April 10 - Cylinder and reciprocating piston with a spring and controlling slide valve of an engine adapted to be operated by steam or a gas system under pressure of an independently controlled engine of constant period operating the said valve. Patent 0,, - Electromagnetic Motor - August 14 - Alternating current motor with energizing coils adapted to be connected with an external circuit of cores of different magnetic susceptibility so as to exhibit differences of magnetic phase under the influence of an energizing current; Rotary armature of magnetic poles and coils adapted to be connected with the external circuit surrounding the same; Cores constructed of different size, length, mass, or material whereby their magnetic phase will differ in time. Patent 0,, - Alternating Motor - February 25 - Related to US and US; Mode and plan of operating electric dynamic motor generators by progressive shifting; Magneto-electric machine; Dynamo motor conversion with two independent alternating current circuits; Transmission of energy; Rotating magnetic field principles. Electrical Condenser; Examples of improved capacitors. Patent 0,, - Electrical Condenser - September 15 - Condenser constructed or provided with means for exclusion of air or gas; Armature composed of a conducting liquid; Armatures in two separate bodies of conducting liquid insulated electrically and contained in a receptacle; Insulating liquid seal on the surface of the conductive liquids. Patent 0,, - Apparatus for Producing Electrical Currents of High Frequency and Potential - September 22 - Conversion of direct current into currents of high frequency. It consists of a supply-side circuit whose current is diverted into a charging circuit of high self-induction, a condenser charged by the supply circuit , another circuit with low self-induction which the same discharges through and raises the potential of the condenser , and means for controlling the charging and the discharging of same, the said method consisting in varying the relation of the varying frequencies of the impulses in the circuit comprise the system. Additionally, the brushes are phased so that the on states discharges never overlap. Resultant back-emf is rectified to capacitors, and fed through a Tesla coil to a load. Patent 0,, - Manufacture of Electrical Condensers, Coils and Similar Devices - February 23 - Improvements of condensers, transformers, self-induction coils, rheostats, and other similar devices; Used in areas where currents of high potentials are brought into close proximity; Method of excluding gas or air from the dielectric environment of such devices; Insulated material rendered fluid by heat; Material permeated the interstices of device and held under pressure; Material cooled and solidified under pressure. Patent 0,, - Apparatus for Producing Currents of High Frequency - June 8 - Related to US; Conversion of electric current of ordinary character into high frequency and high potential; Can use either continuous i. Patent 0,, - Electrical Transformer - November 2 - Novel form of transformer or induction-coil and a system for the transmission of electrical energy by means of the same; Improvement of electrical transformers; Develops electric currents of high potential; Corrects construction principles heretofore manufactured; Higher potential for transmission

than has ever been practically employed heretofore; Free from the danger of injury from the destruction of insulation; Safe to handle; High-frequency power supply for lighting and other applications. Patent 0,, - Electrical Circuit Controller - August 16 - A circuit controller see also , , , , ; Conductive fluid make and break circuit; Nozzle and conductor construction and their relative method of operation; Single source of power for operation; Nozzle and receptacle interaction; Combination of rotating receptacle and motor, a magnetic body in receptacle, and an exterior mounted magnetic body. Patent 0,, - Electric Circuit Controller - August 16 - A circuit controller see also , , , , ; Conductive fluid make and break circuit; Conductive liquid forming terminals; Two orifices with relative movement that can direct jets or streams; Two insulated compartments; Jets or streams are brought into intermittent contact. Patent 0,, - Electric Circuit Controller - August 16 - A circuit controller see also , , , , in which one terminal body moves through jets or streams intermittently and intercepts jets or streams; Conductive fluid make and break circuit; Rotary conductor; One terminal body moves through jets or stream intermittently and intercepts jets or streams; One rigid terminal receives directed jets or streams; Combination in a receptacle of a conducting disk and an insulated disk; Stationary tube or duct to direct jets or streams toward the conductor across the path of intermittent projections. Patent 0,, - Electrical Igniter for Gas Engines - August 16 - Ignition system principles used today in automobiles; Operation of a machine that requires a spark, flame, or any other similar effect; More certain and satisfactory for use of and control by the machine or apparatus; Charging and discharging a condenser through switch or commutator. Patent 0,, - Electric Circuit Controller - August 16 - A circuit controller see also , , , , , Circuit comprising, in combination, a receptacle containing fluid, means for rotating the receptacle, and a terminal supported independently of the receptacle and adapted to make and break electric connections; Receptacle contains a conductive and non-conductive fluid; Means of rotating the receptacle; Terminal adapted to make and break electrical connection with the conductive fluid within or under the non-conductive fluid. Patent 0,, - Electrical Circuit Controller - October 4 - A circuit controller see also , , , , , Patent 0,, - Electric Circuit Controller - November 8 - A circuit controller see also , , , , , Conductive fluid make and break circuit; Combination with rigid and fluid conductors adapted to be brought intermittently into contact with each other; Means for imparting rotary motion to rigid and fluid conductors; Means to rotate by the movement of a fluid conductor. Patent 0,, - Method of and Apparatus for Controlling Mechanism of Moving Vehicle or Vehicles - July 1 - Tesla "Boat" patent; Art of controlling the movements and operation of a vessel or vehicle at a distance; Electromagnetic waves conveyed to vessel by the natural media and rendering by their means the controlling-circuit active or inactive; New and useful improvements in methods of and apparatus for controlling from a distance; Solution for controlling from a given point the operation of mechanisms; No intermediate wires, cables, or other form of electrical or mechanical connection with the object save the natural media in space; explanation of most practical and effectual method and apparatus; Remote control. Patent 0,, System of Transmission of Electrical Energy. The lower part is the generating coil and the upper part would have been a balloon supporting a conducting line at 30, feet. Patent 0,, [3] - System of Transmission of Electrical Energy - March 20 - Wireless transmission of electric power ;Tesla applied for this patent in September [4] This wireless power transmission scheme consisted of transmitting power between two tethered balloons maintained at 30, feet, an altitude where he thought a highly conductive layer of the atmosphere would exist. He based the idea on the same low pressure conductivity phenomenon noticed in a Crookes tube. Tesla also thought the system could be used to "transmit intelligible messages to great distances" and thought the layer he energized would "illuminate upper strata of the air" providing nighttime lighting for people below. Patent 0,, [6] - Apparatus for Transmission of Electrical Energy - May 15 - Related to US; New and useful combinations employed; Transmitting coil or conductor arranged and excited to cause currents or oscillation to propagate through conduction through the natural medium from one point to another remote point therefrom and a receiver coil or conductor of the transmitted signals; Production of currents of very high potential; Transmitting station and receiving station. Patent 0,, - Means for Increasing the Intensity of Electrical Oscillations - March 21 - A method for producing a "great increase in the intensity and duration of the electrical oscillations excited in a freely-vibrating or resonating circuit by maintaining the same at a low temperature". Producing increase intensity and duration of electric oscillations; Combination of a circuit to

possess freely vibrating excitations and of means for artificially cooling the circuit to a low temperature; Low temperature resonating circuit; Uses of electrical impulse oscillations; A circuit upon which oscillations are impressed, and which is adapted to vibrate freely, in combination with a receptacle containing an artificial refrigerant in which the circuit is immersed; Low resistance oscillators in a series of transmitting and receiving circuits in a system for the transmission of energy. Patent 0,, - Apparatus for Utilizing Effects Transmitted from a Distance to a Receiving Device through Natural Media - November 5 - Heinriech Hertz methods cited; Induction method cited; Ground conduction method cited; Previous methods had limitations that result in great disadvantages for utilization; Wireless transmission developed by Tesla cited; Transmitting station coil arranged and excited to cause arbitrary or intermitted oscillation propagation to another remote point receiver station coil; Air is an excellent insulator; Air strata used for means of conduction for production of generating actions at a distance; Use of metallic conductor; Transmitting apparatus of signals or intelligence should produce effect as strong as possible; Charge a condenser or capacitor to utilize the potential energy. Utilization of Radiant Energy U. Patent 0,, - Apparatus for the Utilization of Radiant Energy - November 5 - 4 illustrations; Radiation charging and discharging conductors; Radiations considered vibrations of ether of small wavelengths and ionize the atmosphere; Radiant energy throws off with great velocity minute particles which are strongly electrified; Rays or radiation falling on insulated-conductor connected to a condenser i. Patent 0,, - Method of Utilizing of Radiant Energy - November 5 - 2 illustrations; Ways of using radiation charging and discharging conductors; Rays or radiation falling on insulated-conductor connected to a condenser i.

Chapter 2 : Nikola Tesla - HISTORY

Nikola Tesla was an inventor who obtained around patents worldwide for his blog. quintoapp.com of Tesla's patents are not accounted for, and various sources have discovered some that have lain hidden in patent archives.

During his teen years, he fell seriously ill, recovering once his father abandoned his demand that Nikola become a priest and agreed he could attend engineering school instead. Wishing to meet Edison himself, Tesla immigrated to the U. Having achieved the feat, Tesla said he was then told that the offer had just been a joke, and he left the company after six months. He filed a number of electrical patents, which he assigned to the company. Success as an inventor In , Tesla met two investors who agreed to back the formation of the Tesla Electric Company. When Tesla demonstrated his device at an engineering meeting, the Westinghouse Company made arrangements to license the technology, providing an upfront payment and royalties on each horsepower generated. Thomas Edison promoted direct current, asserting that it was safer than AC. George Westinghouse backed AC, since it could transmit power over long distances. He explained the difficulty and asked Tesla to sell his patents to him for a single lump sum, to which Tesla agreed, forgoing what would have been a vast fortune had he held on to them. Tesla helped the fair illuminate more light bulbs than could be found in the entire city of Chicago, and wowed audiences with a variety of wonders, including an electric light that required no wires. Challenges along the way Tesla encountered many obstacles. In , his Manhattan laboratory was devastated by a fire, which destroyed his notes and prototypes. Soon after he turned his attention to the wireless transmission of electric power. He believed that his system could not only distribute electricity around the globe but also provide for worldwide wireless communication. There he once drew so much power that he caused a regional power outage. He also detected signals that he claimed emanated from an extraterrestrial source. In Tesla persuaded J. In , Tesla unsuccessfully sued Marconi, claiming infringement on his patents. Unsubstantiated speculation suggested their mutual animosity was the cause. He said that he had a photographic memory, which helped him memorize whole books and speak eight languages. He also claimed that many of his best ideas came to him in a flash, and that he saw detailed pictures of many of his inventions in his mind before he ever set about constructing prototypes. Perhaps because of his nearly fatal illness as a teenager, he feared germs and practiced very strict hygiene, likely a barrier to the development of interpersonal relationships. He also exhibited unusual phobias, such as an aversion to pearls, which led him to refuse to speak to any woman wearing them. Mark Twain frequented his laboratory and promoted some of his inventions. Tesla enjoyed a reputation as not only a great engineer and inventor but also a philosopher, poet and connoisseur. On his 75th birthday he received a congratulatory letter from Einstein and was featured on the cover of Time magazine. His money long gone, Tesla spent his later years moving from place to place, leaving behind unpaid bills. Eventually, he settled in at a New York hotel, where his rent was paid by Westinghouse. On the morning of Jan. Tesla was a real-life Prometheus: Tesla scaled great heights to bring lightning down to earth, yet his rare cast of mind and uncommon habits eventually led to his downfall, leaving him nearly penniless and alone. This article was originally published on The Conversation.

Chapter 3 : USA - Nikola tesla - Google Patents

Nikola Tesla Patents and Inventions. Although Nikola Tesla began his inventing work at the beginning of the s, in the period from to while he was working for the Central Telegraph Office in Budapest, there is no information of him attempting to obtain a patent for any of his inventions.

His is a biography replete with all the elements of tragedy. Tesla, a great discoverer of unsurpassed force, became the focal point of old insidious forces intent on destroying the future for the selfish sake of the status quo. Tesla remains a focal point of wonderment, of dream, and of worlds, which yet should be to those who are familiar with his biography. For them, Tesla stands astride the quaint past century and the gleaming future. He is a technological Colossus, pointing the way to a new dawn. Yet, we find his name stricken from the record in every avenue of which he alone holds priority. This conspicuous absence prompts wonderment. What the world does with discoverers determines the world course. In the life of Nikola Tesla we see the portrayal of our own future, the fate of the world. The achievements of this researcher were lofty. The world has not yet implemented his greatest works. He remains the legend, the theme, the archetype of all Twentieth Century scientists. But who was Nikola Tesla, and where was he from? How did he reach such a mighty stature, and what did he actually invent? Tesla was born in , the son of an illustrious Serbian family. His father, an Orthodox priest, his uncles noteworthy military heroes of highest rank. He was educated in Graz, and later moved to Budapest. Throughout his life he was blessed, or haunted, by vivid visions. In the terminology of Reichenbach he would be termed an extreme sensitive. It was through these remarkable visions that Nikola Tesla invented devices, which the Victorian world had never seen. Indeed, his visionary experiences produced the modern world, as we know it. He attended various Universities in Eastern Europe during his early adulthood. Finding no solace in any of his classes, he sought refuge in a more romantic treatment of science and nature. None could be found. This quantitative regime was mounting force among academes, who were then attempting the total conversion of scientific method. Those who would not accept the new order were compelled to depart from academic pursuits. Tesla totally rejected these notions on the strongest of inner intuitions. Most of his instructors would have said that he was not University material. Tesla, sensitive to every such dogmatic wind, rejected their thesis and sought some better means for knowing nature. If he was to excel in engineering, there could only be cooperation with natural force, never violence. His inner conflict expressed itself openly and candidly, bringing young Tesla into certain disrepute among rigid University authorities. Universities were more like military academies than places where original thinking was conducted in open forum. He had not been aware that Goethe, long before he chose poetry for the vehicle of his scientific themes, had written several magnificent tomes on the natural world. Tesla found to his wonder that Goethe had experienced the very same emotions. When the new scientific dogma was just in its infancy, Goethe caught wind of it and reacted violently, even as one who stands watch in the night. Goethe was well aware of the new scientific trend and its implications. The reduction of nature to forces and mechanisms was utterly revolting to Goethe. Now, Tesla found a notable compatriot in his experience. For in Tesla we see the quest for communion with nature, one based on the faith that mind, sensation, consciousness, and ordained structure form the world-foundations. The sense-validating Qualitative Theme again appears in Nikola Tesla. Armed with this foundation, he was able to filter and qualify every other new study with which he was presented. In addition, he was irresistibly drawn into the study of electricity, the "new magick". He had taken a technical position in Budapest. Several new intuitions had seized him. Tesla was sure that he could devise an engine, which was turned, not by contact-currents, but by magnetic field actions alone. The answer, tantalizing and near, seemed elusive. His only dream was to have a laboratory facility of his own. The excessive labors and mental exertions nearly drove him to the brink of madness. He was, for as time, seized with strange maladies and sensitivities which physicians could not address. Reichenbach accurately describes these symptoms, characteristic of extreme sensitives. The emergence of these rare sensitivities affects such persons for the remainder of their lives. Tesla found that his senses were amplified beyond reason. He was terribly frightened at first, nervous exhaustion permeating his frail being. Eventually learning to manage these

rare faculties, he again resumed his life. But the visions, which began in his youth, were now more vivid and solid than ever before. When they came, unbidden, he could literally touch and walk around them. Now also, he was equal to receiving them. He was waiting for the revelation by which his alternating current motor would appear. It was late afternoon, and Tesla became entranced with the sight of a glorious sunset. In it, he beheld a great vortex, whirling eternally in the sun and driving across the earth with its infinite power. Completely absorbed in this glory, he became catatonic and irresponsive. His mind and body buzzing with the power of the vision, he suddenly blurted out, "see my motor here." They shook him, believing he had lost his mind completely. Rigid and resisting all of their efforts, he would not move until the vision subsided. Throughout the long hours of that night he shared with his friends the great sight he had beheld. Moving to Strassburg, he was employed as an engineer in a telephone subsidiary of the Continental Edison Company. He called them "magnetic vortex motors". Their whirling magnetic fields baffled electrical engineers. There were no connections between the rotors and stators, no sparking, lousy brushes. The motion was smooth and efficient. The vision in material form. Tesla immigrated to America with a full portfolio of plans. America would be the place where his dreams would find fulfillment. In this respect, as well as others, he remained the wonder of all his technical assistants. He worked for Thomas Edison in New Jersey for a very short time period until securing a laboratory and financial supporters of his own. In his first independent venture he developed arc lamps and lighting systems. When his financial supporters betrayed his trust, they left him bankrupt overnight. They drew him out of the ditch, but not before he demanded his own laboratory, a machine shop, and a sizable personal percentage "up front". The result was our present day electrical distribution system. Tesla did not invent alternating current. Tesla reinvented alternating current in the form of Polyphase Current. His Polyphase System was a novel means for blending three identical alternating currents together simultaneously, but "out of step". The idea was similar to having three pistons on a crankshaft rather than one. Formally, no one could make an alternating current motor turn at all simply because no net motion could be derived from a current which just "shuttled" to and fro. Polyphase applied a continuous series of separate "pushes" to rotors. Polyphase made it also possible to send electrical power to very great distances with little loss. Alternating electrical currents vibrated in the line. In efforts to discover a more efficient kind of Polyphase, Tesla explored higher frequency alternating currents. Higher frequency Polyphase was found by Tesla to perform with far greater efficacy than the common sixty-cycle variety, which we still use. He fully intended on implementing these special generators in the system, which his patron and friend, George Westinghouse, had proliferated. The business arrangement rendered Tesla fabulously wealthy at a young age. Tesla extended his generator frequencies in multiples of sixty until reaching some thirty thousand cycles per second. They were copied and modified by several other subsequent inventors including Alexanderson. High frequency current phenomena were new and exceedingly curious. A line of experimental research was conducted in order to evaluate new safe and possibly more efficient ways for transmitting power along long elevated lines. Tesla stated that the transmission of such safe currents across very long power line distances in the future would be a certainty, seeing their wonderful new qualities. Tesla found that high frequency currents were harmless when contacted by the human body. Discharges from these generators traversed the outer surface of materials, never penetrating matter with depth. He also observed their very curious and beautiful spark effects.

Chapter 4 : NIKOLA TESLA PATENTS | The Tesla Science Foundation

Nikola Tesla was one of the greatest inventors of this century. Below you will find the most complete set of Tesla's Patents available to date. This list includes the US Patents, but also the UK and Canadian patents.

During the Yugoslav Wars , several of the buildings were severely damaged by fire. They were restored and reopened in He had three sisters, Milka, Angelina and Marica, and an older brother named Dane, who was killed in a horse riding accident when Tesla was aged five. Nikola completed primary school, followed by middle school. Shortly after he arrived, he contracted cholera , was bedridden for nine months and was near death multiple times. Tesla said that this contact with nature made him stronger, both physically and mentally. During his first year, Tesla never missed a lecture, earned the highest grades possible, passed nine exams [25] [24] nearly twice as many as required [33] , started a Serb cultural club, [24] and even received a letter of commendation from the dean of the technical faculty to his father, which stated, "Your son is a star of first rank. At the end of his second year, Tesla lost his scholarship and became addicted to gambling. Tesla said that he "conquered [his] passion then and there," but later in the U. When examination time came, Tesla was unprepared and asked for an extension to study, but was denied. He did not receive grades for the last semester of the third year and he never graduated from the university. He spent his spare time playing cards with local men on the streets. On 17 April , Milutin Tesla died at the age of 60 after contracting an unspecified illness. He arrived too late to enroll at Charles-Ferdinand University ; he had never studied Greek, a required subject; and he was illiterate in Czech , another required subject. Tesla did, however, attend lectures in philosophy at the university as an auditor but he did not receive grades for the courses. Upon arrival, Tesla realized that the company, then under construction, was not functional, so he worked as a draftsman in the Central Telegraph Office instead. Within a few months, the Budapest Telephone Exchange became functional, and Tesla was allocated the chief electrician position. There he gained a great deal of practical experience in electrical engineering. Management took notice of his advanced knowledge in engineering and physics and soon had him designing and building improved versions of generating dynamos and motors. After Tesla told them he had been up all night fixing the Oregon Edison commented to Batchelor that "this is a damned good man. It may have been over a bonus he did not receive, either for redesigning generators or for the arc lighting system that was shelved. Serrell, the same attorney used by Edison, to obtain help with submitting the patents. After the utility was up and running in , they decided that the manufacturing side of the business was too competitive and opted to simply run an electric utility. Later in life Tesla would recount that part of as a time of hardship, writing "My high education in various branches of science, mechanics and literature seemed to me like a mockery". The two men were experienced in setting up companies and promoting inventions and patents for financial gain. In , Tesla developed an induction motor that ran on alternating current AC , a power system format that was rapidly expanding in Europe and the United States because of its advantages in long-distance, high-voltage transmission. The motor used polyphase current, which generated a rotating magnetic field to turn the motor a principle that Tesla claimed to have conceived in He found it a frustrating period because of conflicts with the other Westinghouse engineers over how best to implement AC power. They ended up using a DC traction motor instead. There was even a " War of Currents " propaganda campaign going on with Edison Electric trying to claim their direct current system was better and safer than the Westinghouse alternating current system. The near collapse of Barings Bank in London triggered the financial panic of , causing investors to call in their loans to W. The new lenders demanded that Westinghouse cut back on what looked like excessive spending on acquisition of other companies, research, and patents, including the per motor royalty in the Tesla contract. Tesla coil Main article: In repeating, and then expanding on, these experiments, Tesla tried powering a Ruhmkorff coil with a high speed alternator he had been developing as part of an improved arc lighting system but found that the high frequency current overheated the iron core and melted the insulation between the primary and secondary windings in the coil. To fix this problem Tesla came up with his Tesla coil with an air gap instead of insulating material between the primary and secondary windings and an iron core that could be moved to different positions in or out of the coil. After , Tesla

experimented with transmitting power by inductive and capacitive coupling using high AC voltages generated with his Tesla coil. In St. Louis, Missouri, the Franklin Institute in Philadelphia, Pennsylvania and the National Electric Light Association, Tesla told onlookers that he was sure a system like his could eventually conduct "intelligible signals or perhaps even power to any distance without the use of wires" by conducting it through the Earth. Steam would be forced into the oscillator and rush out through a series of ports, pushing a piston up and down that was attached to an armature. The magnetic armature vibrated up and down at high speed, producing an alternating magnetic field. This induced alternating electric current in the wire coils located adjacent. Westinghouse Electric won the bid to light the Exposition with alternating current and it was a key event in the history of AC power, as the company demonstrated to the American public the safety, reliability, and efficiency of a fully integrated alternating current system. Within the room were suspended two hard-rubber plates covered with tin foil. These were about fifteen feet apart, and served as terminals of the wires leading from the transformers. When the current was turned on, the lamps or tubes, which had no wires connected to them, but lay on a table between the suspended plates, or which might be held in the hand in almost any part of the room, were made luminous. These were the same experiments and the same apparatus shown by Tesla in London about two years previous, "where they produced so much wonder and astonishment". Over several years, there had been a series of proposals and open competitions on how best to use power generated by the falls. Among the systems proposed by several US and European companies were two-phase and three-phase AC, high-voltage DC, and compressed air. Adams pumped Tesla for information about the current state of all the competing systems. Tesla advised Adams that a two-phased system would be the most reliable, and that there was a Westinghouse system to light incandescent bulbs using two-phase alternating current. At the same time, a further contract was awarded to General Electric to build the AC distribution system. Alfred Brown signed on, bringing along patents developed under Peck and Brown. What can I say? X-ray experimentation X-ray of a hand, taken by Tesla Starting in , Tesla began investigating what he referred to as radiant energy of "invisible" kinds after he had noticed damaged film in his laboratory in previous experiments [] later identified as "Roentgen rays" or " X-Rays ". His early experiments were with Crookes tubes , a cold cathode electrical discharge tube. The only thing captured in the image was the metal locking screw on the camera lens. In his research, Tesla devised several experimental setups to produce X-rays. Tesla held that, with his circuits, the "instrument will In his many notes on the early investigation of this phenomenon, he attributed the skin damage to various causes. He believed early on that damage to the skin was not caused by the Roentgen rays, but by the ozone generated in contact with the skin, and to a lesser extent, by nitrous acid. Tesla incorrectly believed that X-rays were longitudinal waves, such as those produced in waves in plasmas. These plasma waves can occur in force-free magnetic fields. Tesla said he could feel a sharp stinging pain where it entered his body, and again at the place where it passed out. In comparing these particles with the bits of metal projected by his "electric gun," Tesla said, "The particles in the beam of force It was an expansion of his idea of using coils to transmit power that he had been demonstrating in wireless lighting. He saw this as not only a way to transmit large amounts of power around the world but also, as he had pointed out in his earlier lectures, a way to transmit worldwide communications. At the time Tesla was formulating his ideas, there was no feasible way to wirelessly transmit communication signals over long distances, let alone large amounts of power. Tesla had studied radio waves early on, and came to the conclusion that part of existing study on them, by Hertz, was incorrect.

Chapter 5 : The Complete Nikola Tesla U.S. Patent Collection - Title Order

Patent # , (item # 53) includes a Correction Patent # 11, (item # 89) is a reissued patent for # , (item #88) Patent # 1,, (item #) includes a Correction.

Application filed August 19, To all whont it may concern. In an application of even date herewith, Serial No. In order that my present invention may be more readily understood I will explain the conditions which are to be observed in order to secure this result. It is a well known mechanical principle that it a spring possessing a sensible inertia be brought under tension, as by being stretched, and then freed, it will perform vibrations which are isoechronous, and as to period, in the main, dependent upon the rigidity of the spring, and ts own inertia or that of the system of which it may form an immediate part. This is known to-be true in all cases where the force which tends to bring the spring or movable system into a given position is proportionate to the displacement. In the construction of my engine above referred to I have followed and applied this principle, that is to say, I employ a cylinder and a piston which in any suitable manner I maintain in reciprocation by steam or gas under pressure. In the case of the engine referred to,the ports are so arranged that the movement of the piston within the cylinder in either direction ceases when the force tending to impel it and the momentum which it has acquired are counterbalanced by the increasing pressure of the steam or compressed air in that end of the cylinder toward which it is moving, and as in its movement the piston has shut oif at a given point, the pressure that impelled itand established the pressure that tends to return it, it is then impelled in the opposite direction, and this action is continued as long as the requisite pressure is applied. The length of the stroke will vary with the pressure, but the rate or period of reciprocation is no more dependent upon the pressure applied to drive the piston, than would be the period of oscillation of a pendulum permanently maintained in vibration, upon the force which periodically impels it, the effectot variations in such force being merely to produce corresponding variations in the length of stroke or amplitude of vibration respectively. In practice I have found that the best results are secured by the employment of an air spring, that is, a body of confined air or gas which is compressed and rarefied by the movements of the piston, and in order to secure a spring of constant rigidity I prefer to employ a separate chamber or cylinder containing air at the normal atmospheric pressure, although it might be at any other pressure, and in which works a plunger connected with or carried by the piston rod. The main reason why no engine heretofore has been capable of producing results of this nature is that it has been customary to connect with the reciprocating parts a heavy fly-wheel or some equivalent rotary system of relatively very great inertia, or in other cases where no rotary system was employed, as in certain reciprocating engines or tools, no regard has been paid to the obtainment of the conditions essential to the end which I have in View, nor would the pressure of such conditions in said devices appear to result in any special advantage. Such an engine as I have described affords a means for accomplishing a result heretofore unattained, the continued production of electric currents of constant period, by imparting the movements of the piston to a core or oscillation to such an extent as to throw itout of isochronism. This condition may be readily secured by properly proportioning the self induction and capacity of the circuit including the generator. Ihave found that even if the theoretical conditions necessary for maintaining a constant period in the engine itself are not exactly maintained, still the engine and generator combined will vibrate at a constant period. For example, if instead of usingin the engine an independent cylinder and plunger, as an air spring of practically constant rigidity, I cause the piston to impinge upon air cushions at the ends of its own cylinder, although the rigidity of such cushions or springs might be considerably affected and Varied by the variations of pressure within the cylinder, still by combining with such an engine a generator which has a period of its own approximately that of the engine, constant vibration may be maintained even through a considerable range of varying pressure, owing to the controlling action of the electro-magnetic system. I have even found that under certain conditions the influence of the electromagnetic system may be made so great as to entirely control the period of the mechanical vibration within wide limits of varying pressure. This is likely to occur in those instances where the power of the engine while fully capable of maintaining a vibration once started, is not sufficient to change its rate. So, for the sake

of illustration, if a pendulum is started in vibration, and a small force applied periodically in the proper direction to maintain it in motion, this force would have no substantial control over the period of the oscillation, unless the inertia of the pendulum be small in comparison to the impelling force, and this would be true no matter through what fraction of the period the force may be applied. In the case under consideration the engine is merely an agent for maintaining the vibration once started, although it will be understood that this does not preclude the performance of useful work which would simply result in a shortening of the stroke. In the attainment of this object I have found it preferable to construct the engine so that it of itself controls the period, but as I have stated before, I may so modify the elements of the combination that the electro-magnetic system may exert a partial or even complete control of the period. In illustration of the manner in which the invention is carried out I now refer to the accompanying drawings. Figure 1 is a central sectional. Inlet ports C O pass through the sides of the cylinder opening at the middle portion thereof and on opposite sides. Exhaust ports D D extend through the walls of the cylinder and are formed with branches that open into the interior of the cylinder on each side of the inlet ports and on opposite sides of the cylinder. The piston B is formed with two circumferential grooves E F which communicate through openings G in the piston with the cylinder on opposite sides of said piston respectively. The piston B is secured to a piston rod H which works in suitable stuffing boxes in the heads of the cylinder A. This rod is prolonged on one side and extends through bearings V in a cylinder I suitably mounted or supported in line with the first, and within which is a disk or plunger J carried by the rod H. The cylinder I is without ports of any kind and is air-tight except as a small leakage may occur through the bearings V, which experience has shown need not be fitted with any very considerable accuracy. The cylinder I is surrounded by a jacket K which leaves an open space or chamber around it. The bearings V in the cylinder I, extend through the jacket K to the outside air and the chamber between the cylinder and jacket is made steam or air-tight as by a suitable packing. The main supply pipe L for steam or compressed air leads into this chamber, and the two pipes that lead to the cylinder A run from the said chamber, oil cups M being conveniently arranged to deliver oil into the said pipes for lubricating the piston. In the particular form of engine shown, the jacket K which contains the cylinder I is provided with a flange N by which it is screwed to the end of the cylinder A. To explain now the operation of the engine described, in the position of the parts shown, or when the piston is at the middle point of its stroke, the plunger J is at the center of the cylinder I and the air on both sides of the same is at the normal pressure of the outside atmosphere. If a source of steam or compressed air be then connected to the inlet ports O O of the cylinder A and a movement be imparted to the piston as by a sudden blow, the latter is caused to reciprocate in a manner well understood. The movements of the piston compress and rarefy the air in the cylinder I at opposite ends of the same alternately. A forward stroke compresses the air ahead of the plunger J which acts as a spring to return it. Similarly on the back stroke the air is compressed on the opposite side of the plunger J and tends to drive it forward. The compressions of the air in the cylinder I and the consequent loss of energy due mainly to the imperfect elasticity of the air, give rise to a very considerable amount of heat. This heat I utilize by conducting the steam or compressed air to the engine cylinder through the chamber formed by the jacket surrounding the air-spring cylinder. In any given engine of this kind the normal pressure will produce a stroke of determined length, and this will be increased or diminished according to the increase of pressure above or the reduction of pressure below the normal. In constructing the apparatus proper allowance is made for a variation in the length of stroke by giving to the confining cylinder I of the air spring properly determined dimensions. The greater the pressure upon the piston, the higher the degree of compression of the air-spring, and the consequent counteracting force upon the plunger. The rate or period of reciprocation of the piston, however, is mainly determined as described above by the rigidity of the air spring and the inertia of the moving system, and any period of oscillation within very wide limits may be secured by properly portioning these factors, as by varying the dimensions of the air chamber which is equivalent to varying the rigidity of the spring, or by adjusting the weight of the moving parts. These conditions are all readily determinable, and an engine constructed as herein described may be made to follow the principle of operation above stated and maintain a perfectly uniform period through very wide limits of pressure. To the piston rod H is secured a conductor or coil of wire D which by the movements of the piston is oscillated in the magnetic field produced by two

magnets B B which may be permanent magnets or energized by coils G O connected with a source of continuous currents E. The movement of the coil D across the lines of force established by the magnets gives rise to alternating currents in the coil. These currents, if the period of mechanical oscillation be constant will be of constant period, and may be utilized for any purpose desired. In the case under consideration it is assumed as a necessary condition that the inertia of the movable element of the generator and the electro-magnetic reaction which it exerts will not be of such character as to materially disturb the action of the engine. In this figure the engine is the same as in Fig. The exterior air spring is however omitted and the air spaces at the ends of the cylinder A relied on for accomplishing the same purpose. As the pressure in these spaces is liable to variations from variations in the steam or gas used in impelling the piston they might affect the period of oscillation, and the conditions are not as stable and certain as in the case of an engine constructed as in Fig. But if the natural period of vibration of the elastic system be made to approximately accord with the average period of the engine such tendencies to variation are very largely overcome and the engine will preserve its period even through a considerable range of variations of pressure. The HIO generator in this case is composed of a magnetic casing F in which a laminated core G secured to the piston rod H is caused to vibrate. The coils C O are connected with a generator of continuous currents E and are wound to produce consequent poles in the core G. Any movement of the latter will therefore shift the lines of force through coils D D and produce currents therein. In the circuit of coils D is shown a condenser H; It need only be said that by the use of a proper condenser the self induction of this circuit may be neutralized. Such a circuit will have a certain natural period of vibration, that is to say that when the electricity therein is disturbed in any way an electrical or electromagnetic vibration of a certain period takes place, and as this depends upon the capacity and self induction, such period may be varied to approximately accord with the period of the engine. Having now described my invention, what I claim is 1. The combination with the piston or equivalent element of an engine which is free to reciprocate under the action thereon of steam or a gas under pressure, of the moving conductor or element of an electric generator in direct mechanical connection therewith. The combination with the piston or equivalent element of an engine which is free to reciprocate under the action of steam or a gas under pressure, of the moving conductor or element of an electric generator in direct mechanical connection therewith, the engine and generator being adapted by their relative adjustment with respect to period to produce currents of constant period, as set forth. The combination with an engine comprising a piston which is free to reciprocate under the action of steam or a gas under pressure, and an electric generator having inducing and induced elements one of which is capable of oscillation in the field of force, the said movable element being carried by the piston rod of the engine, as set forth. The combination with an engine operated by steam or a gas under pressure and having a constant period of reciprocation, of an electric generator, the moving element of which is carried by the reciprocating part of the engine, the generator and its circuit being so related to the engine with respect to the period of electrical vibration as not to disturb the period of the engine, as set forth. The method of producing electric currents of constant period herein described which consists in imparting the oscillations of an engine to the moving element of an electric generator and regulating the period of mechanical oscillation by an adjustment of the reaction of the electric generator, as herein set forth.

Chapter 6 : Nikola Tesla | Biography, Facts, & Inventions | blog.quintoapp.com

This is your opportunity to immerse yourself in the world and mind of Nikola Tesla and go through all of his patents. Download all of Tesla's inventions and go through the work of the man who electrified the world.

He also developed the three-phase system of electric power transmission. He immigrated to the United States in and sold the patent rights to his system of alternating-current dynamos, transformers, and motors to George Westinghouse. In he invented the Tesla coil, an induction coil widely used in radio technology. Tesla was from a family of Serbian origin. His father was an Orthodox priest; his mother was unschooled but highly intelligent. As he matured, he displayed remarkable imagination and creativity as well as a poetic touch. Training for an engineering career, he attended the Technical University at Graz , Austria , and the University of Prague. At Graz he first saw the Gramme dynamo , which operated as a generator and, when reversed, became an electric motor , and he conceived a way to use alternating current to advantage. Later, at Budapest , he visualized the principle of the rotating magnetic field and developed plans for an induction motor that would become his first step toward the successful utilization of alternating current. In Tesla went to work in Paris for the Continental Edison Company, and, while on assignment to Strassburg in , he constructed, after work hours, his first induction motor. Tesla sailed for America in , arriving in New York with four cents in his pocket, a few of his own poems, and calculations for a flying machine. He first found employment with Thomas Edison , but the two inventors were far apart in background and methods, and their separation was inevitable. Tesla soon established his own laboratory, where his inventive mind could be given free rein. In order to allay fears of alternating currents, Tesla gave exhibitions in his laboratory in which he lit lamps by allowing electricity to flow through his body. He was often invited to lecture at home and abroad. The Tesla coil, which he invented in , is widely used today in radio and television sets and other electronic equipment. The project carried power to Buffalo by In Tesla announced his invention of a teleautomatic boat guided by remote control. When skepticism was voiced, Tesla proved his claims for it before a crowd in Madison Square Garden. In Colorado Springs , Colorado, where he stayed from May until early , Tesla made what he regarded as his most important discoveryâ€”terrestrial stationary waves. By this discovery he proved that Earth could be used as a conductor and made to resonate at a certain electrical frequency. He also lit lamps without wires from a distance of 40 km 25 miles and created man-made lightning, producing flashes measuring 41 metres feet. At one time he was certain he had received signals from another planet in his Colorado laboratory, a claim that was met with derision in some scientific journals. The discharge shown is 6. Tesla claimed he secured the loan by assigning 51 percent of his patent rights of telephony and telegraphy to Morgan. He expected to provide worldwide communication and to furnish facilities for sending pictures, messages, weather warnings, and stock reports. Because of a lack of funds, his ideas remained in his notebooks, which are still examined by enthusiasts for unexploited clues. In he was severely disappointed when a report that he and Edison were to share the Nobel Prize proved erroneous. Tesla was the recipient of the Edison Medal in , the highest honour that the American Institute of Electrical Engineers could bestow. Tesla allowed himself only a few close friends. He was quite impractical in financial matters and an eccentric , driven by compulsions and a progressive germ phobia. But he had a way of intuitively sensing hidden scientific secrets and employing his inventive talent to prove his hypotheses. Tesla was a godsend to reporters who sought sensational copy but a problem to editors who were uncertain how seriously his futuristic prophecies should be regarded. Caustic criticism greeted his speculations concerning communication with other planets, his assertions that he could split the Earth like an apple, and his claim of having invented a death ray capable of destroying 10, airplanes at a distance of km miles. John the Divine for his funeral services, and a flood of messages acknowledged the loss of a great genius.

Chapter 7 : Download all of Nikola Tesla's patents here | Ancient Code

Nikola Tesla was a prolific scientist and during his lifetime he produced many patents for inventions that have truly

changed the world. Learn more Closed today.

Chapter 8 : Nikola Tesla's US Patents, The Complete Collection

Nikola Tesla (), was the discoverer of the alternating current light and power system in use all over the world today. His inventions should have made him a multimillionaire, but he died in relative poverty. He was a true martyr for science and human progress. In , a poor Serbian.

Chapter 9 : Complete Patents Of Nikola Tesla

Be it known that I, NIKOLA TESLA, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Generators, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.