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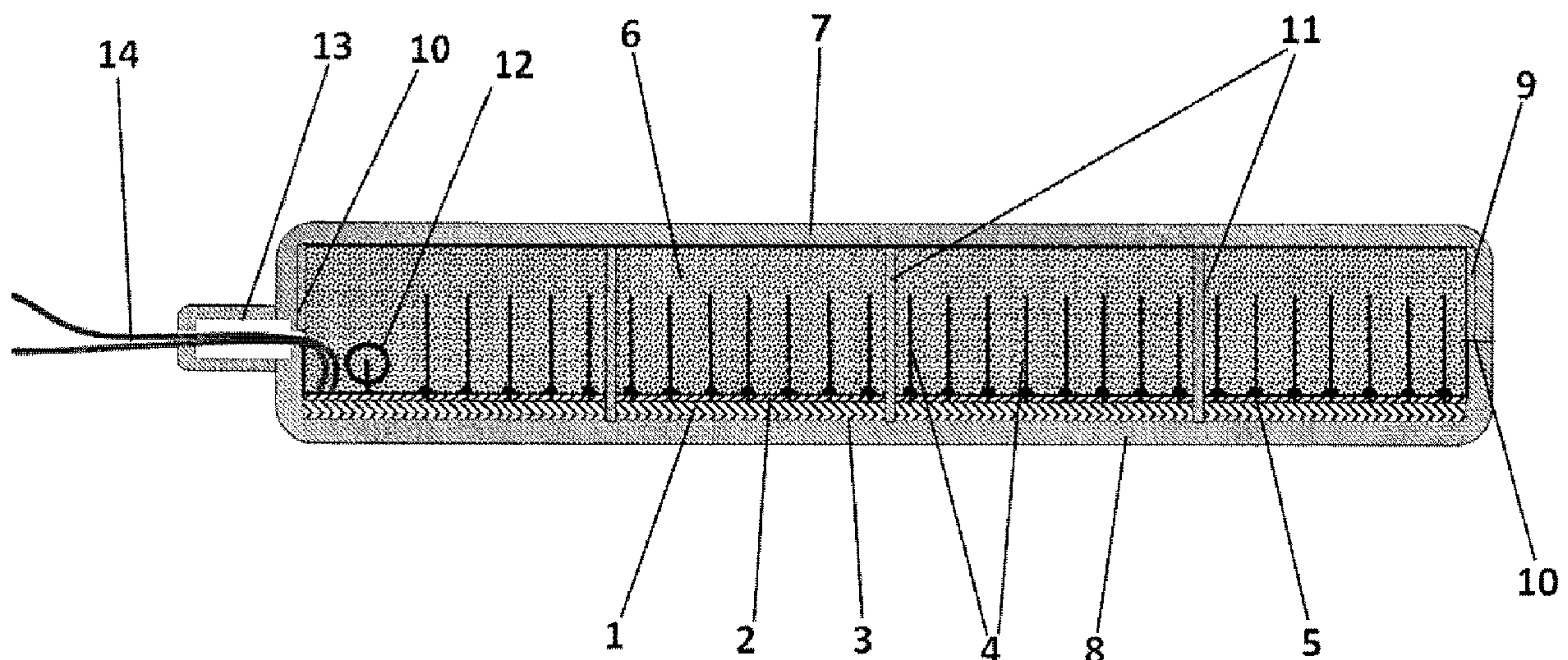
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(54) **Titre : SYSTEME ET METHODE D'AUGMENTATION DE LA LONGUEUR DES TELOMERES**

(54) **Title: SYSTEM AND METHOD FOR INCREASING THE LENGTH OF TELOMERES**



(57) **Abrégé/Abstract:**

A method and system for stimulating the catalytic activity of telomerase and extend the length of telomeres, by generating wide and uniformly distributed spectrum of electromagnetic frequencies and ultrasound vibrations that induce electromagnetic and vibrational resonance in chromosomes and telomeres, and electromagnetic resonance in DNA. A number of sharp conductive pins mounted on the surface of a board, excited by sharp and short electric pulses, create complex electrostatic fields that excite a mass of piezoelectric crystal grains, having a wide and uniform distribution of size, filling the space between pins. A multi-band electromagnetic oscillator for DNA resonance is also disclosed. Other embodiments are presented, with a plurality of telomeric resonators embedded in blankets, pads, panels or chair seats, along with flat coils generating magnetic earth frequencies, infrared and far infrared LEDs, grounding sheets and negative air ionizers, and the apparatus driving all these devices.

ABSTRACT

A method and system for stimulating the catalytic activity of telomerase and extend the length of telomeres, by generating wide and uniformly distributed spectrum of electromagnetic frequencies and ultrasound vibrations that induce electromagnetic and vibrational resonance in chromosomes and telomeres, and electromagnetic resonance in DNA. A number of sharp conductive pins mounted on the surface of a board, excited by sharp and short electric pulses, create complex electrostatic fields that excite a mass of piezoelectric crystal grains, having a wide and uniform distribution of size, filling the space between pins. A multi-band electromagnetic oscillator for DNA resonance is also disclosed. Other embodiments are presented, with a plurality of telomeric resonators embedded in blankets, pads, panels or chair seats, along with flat coils generating magnetic earth frequencies, infrared and far infrared LEDs, grounding sheets and negative air ionizers, and the apparatus driving all these devices.

SYSTEM AND METHOD FOR INCREASING THE LENGTH OF TELOMERES

[0001] FIELD OF INVENTION

[0002] This invention relates generally to the field of medical therapeutic, health, wellness and longevity technologies, bio-physics, bio-electromagnetics, bio-resonance, anti-aging and life extension and more particularly, to a method, device and system effective in the stimulation and elongation of the telomeres and stimulation of the catalytic activity of telomerase, and in slowing, stopping and reversing the aging process of living things in general and humans in particular, and alleviate number of age related diseases associated with aging and the shortening of the telomeres.

[0003] BACKGROUND OF INVENTION

[0004] Telomeres are repeat protein-DNA complexes forming a protective cap at the ends of linear and X chromosomes. The normal cell division results in a progressive shortening of the telomere length. After a certain degree of shortening, the cells lose the ability to divide and replicate, leading to cell senescence and death.

[0005] A growing body of evidence has demonstrated the length of the telomeres is the source and the basis of the “biological clock”, as they shorten with age.

[0006] The length of the telomeres is determined in part and cumulates the influence of genetic and epigenetic factors, sex hormones, the reactive oxidative stress, the inflammatory reactions, the environmental stressors, and also internal and external stress factors, including intrinsic and extrinsic factors acting both at the level of the whole organism and the level of a singular cell. The influence of all these factors is independent of the chronological age.

[0007] The length of the telomeres shortens with each cell division and correlates inversely with age.

[0008] One of the key biomarker of the biological age is the telomere length of the somatic cells. A minimum length of telomeres reaching a critical level, triggers a cell cycle arrest or senescence of the cell and death.

[0009] The telomeric DNA and the accompanied proteins maintain a “capped” structure called also a “functional telomere” and protect the end of the chromosome from illegitimate recombination and fusion with another telomere or DNA end.

[0010] The shortening of the telomeres that happen on each cell division was shown to occur both in vitro and in vivo, where the age reflects the total and cumulative effect of cell divisions – the biological clock. This phenomenon was demonstrated in human fibroblasts, hematopoietic stem cells, leukocytes, keratinocytes, epithelial and endothelial cells.

[0011] It is largely accepted that telomere length reflects two aspects:

1. - a biological indicator of the replication history of the cell, and
2. - as a factor determining the replicative capacity of normal somatic cells

[0012] One of the mechanisms described to produce and increase telomere elongation is facilitated by telomerase, a ribonucleic protein enzyme that can synthesize new telomere G-rich strands using its own telomere sequence-specific RNA template. Telomerase catalytic activity requires the association of two subunits: RNA (TER) and telomerase reverse transcriptase (TERT).

[0013] Telomere length results from a dynamic balance between elongation and shortening of the chromosome ends. The mean telomere length within cells is a direct function of the level of telomerase activity.

[0014] However, telomere length and telomerase activity do not always tightly correlate in somatic cells, like activated lymphocytes or the senescence of hematopoietic stem cells.

[0015] The human telomere length extend in a limited range of 10-20 Kb, dependent on tissue type. In vitro studies revealed that with every cell division, 40-200 bp are lost until they reach a critical length of 4-5 Kb - the Hayflick’s limit, although this level varies between cell types and individuals.

[0016] Other studies demonstrated the direct relation between the shortening of the telomeres and various diseases.

[0017] For example, the shortening of the leukocyte's telomeres has been shown in several large studies to predict cardiovascular morbidity and mortality, including myocardial infarction, congestive heart failure, and death, and also associations with risk factors for coronary artery disease.

[0018] The immune system also, is highly sensitive to shortening of telomeres. Its ability depends tightly on cell renewal and clonal expansion of T- and B-cell populations. Cells of the immune system are unique among normal somatic cells as they can up-regulate telomerase, the telomere extending enzyme, and limit telomere attrition in the process of cell proliferation undergoing in activated cells. Immuno-senescence is characterized by a special remodeling of the immune system induced by antigen exposure and oxidative stress. In ageing, the immune system adaptive immunity deteriorates because of a progressive decline of the T and B cells and decrease of absolute numbers of T and B lymphocytes.

[0019] It is commonly understood and accepted in the art, that finding ways to extend the length and elongation of the telomeres, and to stimulate the catalytic activity of telomerase, has a direct positive impact on the perceived age and the health and wellness of the body. Ultimately, extending the length of the telomeres will extend the life span of animals in general and humans in particular.

[0020] BACKGROUND OF PRIOR ART

[0021] There are several ways found in the art, for extending the length of the telomeres, stimulating the production and catalytic activity of the telomerase, or indirectly rejuvenating and influencing the length and condition of telomeres.

[0022] US patent application no US 20110077727 A1 describes an electromagnetic device, composed of two insulating foam pads that have between them a copper screen covered with crushed quartz or sapphire crystals, and the copper screen connected to an activated

Tesla coil. This device generates a field radiation between 54 and 78 Gigahertz, immersing the body in DNA resonant frequencies of 54 and 78 GHz. These frequencies, are recognized in some studies to be the resonance frequency of human DNA. As a result, increase telomere length in normal white blood cells is achieved, and the device can be used to increase the reproductive capacity of the cells and delay the cellular senescence.

[0023] There are a number of limitations with the device described above. First, a Tesla coil is an inductive device, and it inherently limits the generation of very high frequencies and very high harmonics. The field intensity of the frequencies and harmonics generated by a Tesla coil, drops exponentially and dramatically with higher frequencies over 1 GHz, and it is almost non-existent, or non-measurable at the 54 and 78 GHz. As a result, the efficiency of generating these DNA frequencies, is very low. Therefore the efficiency of stimulating the telomeres is very low.

[0024] Secondly, the output voltage of the device is 20,000 to 50,000 volts, which is very high voltage that can be very dangerous for the patient in different situations, like if the users spill accidentally a drink over the device-mattress.

[0025] The US7988613 B2 patent describes a method and apparatus for generating electromagnetic fields for healing. A wire coil is driven by DC pulses of frequencies around 9.6 Hz, generating a relatively low intensity pulsed magnetic field with the same frequency. The device exposes the body to very-weak, pulsed DC electromagnetic fields particularly around 9.6 Hz that have been shown to promote deep sleep while greatly enhancing levels of naturally derived ATP. The device can treat physical and mental disorders, and among others, age-related cognitive and motor deficits.

[0026] The US20040230224A1 and US20070149901 A1 patents describe a device that generates therapeutic pulsed magnetic fields. The device can be used for pain control or tissue trauma.

[0027] While these devices provide good support for tissue regeneration and rejuvenation, they don't have an efficient and effective anti-aging effect. Also, they don't act directly on the catalytic activity of telomerase or the elongation of the telomeres.

[0028] Patent WO 2002094374 A2 describes the use of electromagnetic or mechanical vibration, having a vibrational frequency proper to a determinate organism or to a determinate illness to be treated, or to produce beneficial effects in living organisms.

[0029] The patent RO 122764 B1 describes a device that generates ultra-weak bio-photons that interact with the ergo-informational field of the body, having an ergo homeopathic and bio-resonant effect. The effect can be rejuvenating and regenerating for the body. The main problem with this device is that the bio-photonic emission cannot be designed to clearly interact with the chromosomes and the telomeres and the device doesn't have a clear or effective anti-aging effect.

[0030] While the above discussed patents provide therapeutic, healing and regenerating effects on living things, they are not efficient or effective to address the problem of aging. The main limitation of the approaches described in the above patents, is that the methods target the symptoms of aging, but not the root cause of the aging phenomenon. As a result, they do not have effective effects on slowing down, stopping or reversing the shortening of the telomeres which is the biological clock of humans and mammals.

[0031] Other methods known in the art for elongating the telomeres use the enhancing hTERT expression in the cell and by increasing the processivity of telomerase in the cells.

[0032] For example Patent WO 2006066247 A2 describes a method of telomere elongation by transiently enhancing the hTERT expression, by using endogenous or exogenous methods like creating hypoxic conditions. Other options presented are regulating, activating or modulating one or more genes that are responsible and are associated with telomerase processivity.

[0033] Patent WO 2004099385 A2 describes how to affect the telomere elongation by fusing a polypeptide having telomerase catalytic activity, with a telomere binding polypeptide, comprising the catalytic protein subunit of telomerase reverse transcriptase (hTERT).

[0034] Patent CA 2745376 A1 describes the use of certain antioxidants for increasing telomerase activity in healthy and stressed cells using antioxidants that modulate gene activity and/or proteins which influence, regulate, and/or control telomerase activity, the maintenance of the telomere unit and associated components, or directly the telomere

length. The technique is based on modulating or influencing the lifespan of cells, tissues, organs, and organisms, by modulating the activity of the gene maintenance process in order to influence the length and/or structural integrity of the telomere in living cells. Examples of the antioxidants proposed include natural and synthetic antioxidants, such as plant antioxidant and polyphenol compounds derived from coffee cherry, tea, berry, and so forth, including but not limited to caffeic acid, chlorogenic acid, ferulic acid, quinic acid, proanthocyanidins, ubiquinone and idebenone.

[0035] Patents US 20110236483 A1 and US 20110237653 A1 describe microscopic medical payload delivery devices that act as a transport vector to deliver a variety of cellular ribonucleic acid molecules to the cells in the body. When reaching the destination, the medical payload delivery devices insert their payload of cellular ribonucleic acid molecules into the target cells. By delivering cellular ribonucleic acid molecules into specific cells, the gene expression is capable of being modulated, and telomere synthesis is enhanced.

[0036] A similar method is described in the US 20090142408 A1 patent. The human telomerase or its catalytic subunit hTERT is delivered to the cells by a biodegradable nanoparticle carrier, thus treating more generic problems of human aging.

[0037] These methods described above have limitations, like requiring very advanced equipment and relatively high skilled medical or scientific personnel to operate them effectively. Also, the methods can be applied only in a lab environment, require visits to specialized clinic or labs, are very expensive and are difficult to apply to the general public.

[0038] Other methods for enhancing the telomere elongation are using a variety of compounds, formulations, and dietary supplements. Some dietary supplements support an increased life span by enhancing metabolic function, activating anti-aging genes, and encouraging the production of new cells with longer telomeres (patent US 20120251500 A1), maintaining the telomeres on new stem cells as well as existing cells (patent US 20130115195 A1).

[0039] Some other natural or synthetic products influence the lengthening telomeres by inducing the production of telomerase (patent WO 2012106692 A1), or by promoting

expression or enhanced expression of a sirtuin (SIRT-1) gene or protein (patent US 20130072574 A1), or inhibitory effect on telomere shortening (patent US 20060078633 A1).

[0040] Other main limitations of these approaches to anti-aging, is that they are based on biochemistry, involving the users to get a biochemical substance or agent in their bodies, which may have other side effects.

[0041] Yet another main limitation of some of these patents, is that the proposed methods tackle the support and maintenance of the body (like the oxidative stress), and the support functions of the telomeres, but not directly the telomeres and the “biological clock”.

[0042] BRIEF DESCRIPTION OF THE INVENTION

[0043] There is a continuous need for a method and a system that can use the bio-effects of the electromagnetic fields and mechanical vibrations in a more efficient way, non-chemical and non-invasive, user friendly, with a holistic approach, for increasing the telomere length, stimulating the production and catalytic activity of telomerase, and increasing the reproductive capacity of the cells, and to slow, stop and reverse the biological aging process, and extend the life span of mammals in general and humans in particular.

[0044] Such device should be able to generate a uniformly distributed electromagnetic DNA spectrum of resonance in a better and much more efficient way. Also it should be able to generate electromagnetic and mechanical resonance at the chromosomal and telomere level too, which is even more important than the DNA resonance.

[0045] Such device or system should be able also to provide physiological and metabolic support against the other stress factors that have a direct impact on the telomere shortening.

[0046] And such device should be light and easy for transportation, very safe in operation, and easy, simple and user friendly to operate, by the user himself.

[0047] The present invention overcomes all the limitations described above in the current state of the art section and it fulfills the needs described above, and other needs.

[0048] A new and novel method and system is described in this invention, for using electromagnetic and mechanical oscillations, designed with the purpose of increasing the length of the telomeres, stimulating the catalytic activity and production of telomerase, that is also capable to slow, stop and reverse the shortening of telomeres and as a result, the biological clock of the mammals in general and humans in particular.

[0049] Instead of using biochemical agents to stimulate the production of telomerase and increase the length of the telomeres, the present patent uses the catalytic effects of electromagnetic and mechanical vibrations, tuned specifically to resonate with the chromosomes, the telomeres and the DNA, thus stimulating and increasing the catalytic activity and production of the telomerase and the rejuvenation and increase of the length of telomeres.

[0050] These objectives are accomplished in the instant method and system, and also the telomeric resonator device, which is the main component of this invention. This device generates a novel and complex radial and longitudinal electrostatic fields, and a wide and uniformly distributed band of electromagnetic spectrum and ultrasound spectrum of frequencies.

[0051] The complex electrostatic fields serve mainly as an excitation mechanism for a mass of crushed piezoelectric crystal grains of different sizes that are part of the telomeric resonator. The crystal grains have a uniform distribution of size, from the tiniest to the largest. Upon each excitation, the crystals generate a wide and uniformly distributed band of electromagnetic spectrum, and a wide band of uniformly distributed ultrasound vibrations.

[0052] The complex electrostatic fields created inside of the telomeric resonator get combined with the wide band of electromagnetic spectrum generated by the crystals, and also with the electromagnetic frequencies created by a wide band oscillator that is part of the same device. This complex combination of electromagnetic spectrum of frequencies get also combined with the wide band of ultrasound vibrations generated by the crystal grains. All these fields, frequencies and vibrations, are designed and tuned for resonance with the chromosomes and the telomeres.

[0053] As a result of this novel resonance, the induced effect is rejuvenation of the chromosomes and the telomeres, increased catalytic activity of the telomerase, all resulting in the increase elongation of the telomeres, and a general effect of slowing, stopping and even reversing the aging process of shortening of the telomeres which is the biological clock of the body.

[0054] The anti-aging system comprises a plurality of such devices – the telomeric resonators described above - all of them being part of a user-friendly anti-aging device, like an anti-aging blanket or duvet, a sleeping bag, a panel, a mat or a pad, or chair or chair cover; any of these embodiments is controlled and driven by a main controller apparatus, responsible to generate all the electric signals required by each component of the system.

[0055] Part of and included in the anti-aging blanket or duvet, sleeping bag, panel, mat, pad or chair, there are a plurality of far-infrared LEDs, a plurality of flat and flexible coils excited with earth frequencies between 0.1Hz to 45 Hz, a grounding sheet that the user sleeps or rests on. Also, there are a number of negative air ionizers placed around the blanket. All these components, except the passive ones, are controlled by a main controlling apparatus.

[0056] It is accepted from previous research, studies and patents, that the resonant frequency domain of the human DNA is between 50 GHz to 80 GHz. Immersing the cells of human – or a mammalian - and implicitly the chromosomes, the telomeres and the genetic material, in an electromagnetic field with such frequencies, has beneficial anti-aging effects. This band of frequencies create electromagnetic resonance at the DNA level, thus the micro currents and fields having a catalytic and resetting effect on the DNA, the telomeres, and implicitly an anti-aging effect at the macro level of the body.

[0057] What is really important, is to generate not just a particular frequency or a narrow band of frequencies, but a wide and uniform spectrum of frequencies, having a uniform intensity across the spectrum, covering not only the band of DNA resonance, but also the specific bands of the chromosomes and telomeres.

[0058] The chromosomes of a cell have a very similar shape with a tuning fork. They are natural resonators, both, from an electromagnetic perspective and a mechanical-vibrational perspective. The telomeres being positioned at the end of the chromosome arms, are the

ones that have the largest amplitude during the oscillations of the chromosomes, both from an electromagnetic and mechanical-vibrational perspective. The shape of a chromosome provides a great electromagnetic resonant circuit, and the perfect mechanical vibrational resonant shape.

[0059] The vibrations and oscillations of the chromosomes – and indirectly the telomeres, both electromagnetic and mechanical-vibrational, has the effect of a micro-massage, stimulating the catalytic activity of the telomerase, increase production of telomerase, and the rejuvenation of the chromosomes in general and the telomeres in particular.

[0060] The typical human chromosome length is from 1×10^{-6} meters to 20×10^{-6} meters, with a median average of about 7×10^{-6} m. From an electromagnetic perspective, the shape of the chromosomes make them also a perfect resonant circuit or antenna.

[0061] The longitudinal resonant frequency is based on the fact that the length of a telomere is half the wavelength of the electromagnetic resonant frequency, or multiple half-lengths for higher harmonics.

[0062] Knowing the speed of electromagnetic waves in water-based solution, like the intracellular medium, to be about 225×10^6 m/s, and the longitudinal length of the chromosomes to be between 5 to 9×10^{-6} m – which is the longitudinal half-wave length, then we get the electromagnetic resonant frequency of the chromosomes to be between 12 to 22 THz, with a Gaussian median value at around 16 THz (16×10^{12} Hz).

[0063] This corresponds to the frequency band of the very far infrared light. This is confirmed and it does correspond with the thermal emission of the human temperature, or the color temperature of a black box device heated at about 36°Celsius, the natural temperature of the humans.

[0064] Now if we look at the transversal resonance, the X shape of the chromosomes make a base parallel LC circuit, or a more complex series of multi-parallel LC circuits. There are two base circuits, back-to-back, connected to the median point, each one formed by the two arms of the chromosomes on the same side. The resonant electromagnetic frequency of each open loop, or parallel LC circuit can be derived from the geometry of the chromosome, and it overlaps with the DNA resonant spectrum, in the tens of GHz band.

[0065] The X chromosome is also a perfect tuning fork from a mechanical-vibrational perspective. The two opposing arms of both sides of the chromosomes act as the arms of a tuning fork, vibrating in the same plan, but in a transversal axis, when facing the chromosome from the front.

[0066] Having the speed of sound in a saline serum, like the intracellular medium, to be about 1550 to 1680 m/s, and the half of the resonant wave-length being equal to the distance between the arms of the chromosome, at an average of $2 \text{ to } 3 \times 10^{-6} \text{ m}$, the resonant frequency for mechanical vibration of the chromosomes, is in a range of about 100 MHz to 1000 MHz with a Gaussian median value at about 300 MHz.

[0067] Thus, bringing the chromosomes at electromagnetic and mechanical-vibrational resonance for a period of times, induces the maxim rejuvenation effect, resulting in the increase of telomerase catalytic activity and increase in telomerase production, and the increase in the telomere length, thus having an effective and direct and strong anti-aging effect.

[0068] Previous devices that are known in the art, cannot generate a relatively large and uniformly distributed spectrum of electromagnetic and mechanical-vibrational frequencies required for the resonance of the chromosomes, telomeres and the DNA.

[0069] BRIEF DESCRIPTION OF DRAWINGS

[0070] The structure, operation and advantages of the presently presented embodiments of this invention will become further apparent upon consideration of the following description, taken in conjunction with the accompanying drawings, wherein:

[0071] FIG. 1 is a side cross-section view through the telomeric resonator, showing the interior components and the structure of the device.

[0072] FIG. 2 is a top view if the PCB board described in FIG. 1.

[0073] FIG. 3 is schematic illustration of another embodiment of the PCB board presented in FIG. 1.

[0074] FIG. 4 is a schematic illustration of top view of a small section of the PCB 1. It is a functional drawing, showing the interaction of the electrical fields between the pins 4 described in FIG. 1.

[0075] FIG. 5 is a schematic illustration of the cross section of a small area of the telomeric resonator presented in FIG. 1. It is a functional drawing explaining the fields interaction between the components, and the generation of electromagnetic and ultrasound waves.

[0076] FIG. 6 is a schematic illustration of the layer 3 of the PCB 1.

[0077] FIG. 7 is a schematic illustration of another embodiment of the layer 3 of the PCB 1.

[0078] FIG. 8 is a schematic illustration of another embodiment of the layer 3 of the PCB 1.

[0079] FIG. 9 is a schematic representation of all the components of the anti-aging system presented in this invention

[0080] FIG. 10 is a schematic representation of another embodiment of the anti-aging system presented in this invention.

[0081] FIG. 11 is a schematic representation of another embodiment of the anti-aging system presented in this invention.

[0082] FIG. 12 is a schematic representation of another embodiment of the anti-aging system presented in this invention.

[0083] FIG. 13 is a schematic representation of another embodiment of the anti-aging system presented in this invention, designed mostly for pets.

[0084] FIG. 14 is a block diagram of the components of the main controller apparatus 42.

[0085] FIG. 15 is a block diagram of the components of the signal generation board 54.

[0086] FIG. 16 is a schematic of the electric signal that drives the telomeric resonator presented in FIG. 1.

[0087] FIG. 17 is a cross-section view of the printed circuit board and the pins presented also in FIG. 1.

[0088] DETAILED DESCRIPTION OF THE INVENTION

[0089] The core device described in this patent is called generically the telomeric resonator, because the main and key purpose is to bring the telomeres of the chromosomes to electromagnetic and vibrational resonance.

[0090] The structure of the telomeric resonator is shown in FIG. 1.

[0091] The telomeric resonator is composed of a board 1 made of an insulation material, most preferably a printed circuit board (PCB), having two or more layers. In this embodiment, the PCB 1 has two layers, the top layer and circuit 2, and the bottom layer and circuit 3. The electrical circuit making the top layer 2 of the PCB, forms a certain circuit and connect a plurality of metallic or conductive pins 4 in a certain pattern, as being described in the FIG. 2 and FIG. 3. The top layer 2 of the PCB 1 is made usually from copper, preferable plated with silver or gold. The pins 4 are soldered or welded on the surface of the PCB 2 by solder 5, on the same side of the circuit 2, which is the top layer of the PCB 1. The printed circuit board 1 is presented in more detail on FIG. 17, having two layer circuits on both sides, the top layer circuit 2, the bottom layer circuit 3, and a plurality of conductive pins 4, soldered or welded on the surface of the top layer circuit 2, with solder 5.

[0092] The bottom layer 3 or the PCB 1, forms another electrical circuit, as being described in FIG. 5, or the other alternative embodiments described in FIG. 6 and FIG. 7. The layer and circuit 3 of the PCB 1 forms a series of modified Lakhovsky wide-band oscillant circuits, which upon activation generate a large spectrum of electromagnetic frequencies, with the magnetic component polarized perpendicular to the surface of the support PCB 1. The layer 3 of the PCB 1 is made usually of copper, and it should be preferable coated or electroplated with silver or gold for a better electrical response at high frequencies.

[0093] The pins 4 are metallic or made from other composite and electrically conductive material, like conductive ceramics, and they have very sharp top tips. The best implementation is to have the pins made of stainless steel or brass, and have them coated or electroplated with silver or gold for the minimum resistance at high frequencies. The pins are

interconnected as in FIG. 2 or FIG. 3, in such a way that each pin having one type of polarity is surrounded by pins having the opposite polarity. The sharpness at the end of the pins 4 create a local electric field with a very high intensity, mostly on the vertical coordinate. On the horizontal plan, parallel with the PCB 1, the two presented layouts of the pins also create the highest possible radial electric field between the pins 4.

[0094] The pins are surrounded with quality crushed piezoelectric crystals 6, like natural or cultured electronic grade quartz, berlinite, topaz, tourmaline, barium titanate, sodium potassium niobate, bismuth ferrite or other natural or synthetic piezoelectric crystals. The size of the crystal grains have a large variety of dimensions, generally varying between crystal powder, having sizes of a few micrometers, and going to large crystal grain or crystal nuggets of several millimeters diameter. The upper range of grain sizes, depends also by the size of the PCB, the size and distance between the pins 4, and the size of the enclosure, the larger the enclosure, the larger the bigger grain sizes. The size distribution of the crystal grains is uniform. That is, for all the crystal grains that go inside of a telomeric resonator, the number of crystal grains having the same size, is relatively equal with the amount of crystal grains having any other size.

[0095] The top layer and circuit 2 of the PCB 1, and the bottom layer and circuit 3 of the PCB 1, are connected electrically to the resistor 12, and to the two electrical wires 14 that feed the telomeric resonator with the driving electrical signal.

[0096] All the components described up to this point are housed in a tight enclosure or case, made of two components, the bottom part of the case 8 and the top part of the case 7.

[0097] The enclosure of the telomeric resonator, is best made of an electrical insulation material like PVC, ABS, polycarbonate, glass, reinforced fiberglass, resins, or other suitable electrical insulation material that is evident for those skilled in the art.

[0098] The bottom part of the box 8 has side walls 9 going up to the total interior height of the box, for easy and tighter holding the components inside and for an easier assembly.

[0099] Also, the bottom part 8 of the enclosure is equipped with the small studs 11, which have the role to stiffen and increase the mechanical resistance of the enclosure. The length of the studs 11 is such a way that when the bottom part 8 of the enclosure is assembled with

the top part 7, the two of them assemble properly, and the studs 11 just touch the top part 7 of the enclosure.

[0100] The enclosure is equipped with elastic or pressure-activated click hooks 10, located between the walls 9 and the top part 7 of the enclosure. Once assembled and pressed against each other, the hooks 10 would click and lock-in tight the two parts 7 and 8 of the enclosure.

[0101] Also, the two components of the enclosure 7 and 8, have a small housing 13 at one side of the box, designed to house the exit of the wires 14 and to prevent them for disconnecting from the PCB 1 when pulled strongly from the outside. The housing 13 is designed with curved channels for the wires 14, in such a way that when the wires 14 are pulled away from the enclosure, the curved channels of the wires oppose the exterior mechanical stress, without putting any mechanical stress on the electrical connections of the wires 14 with the PCB 1, typically a soldered connection having way less mechanical resistance than the wires themselves being curved-channeled in the housing 13.

[0102] Before the two components 7 and 8 of the enclosure are assembled and locked-in together by the side hooks, a thin layer of sealer, like silicone or glue is applied on the edges of the bottom part 8, or the inner edges of the top part 7, more exactly on the side walls 9. This will ensure that upon the assembly of all the internal components of the telomeric resonator, the sealer will seal the interior of the enclosure to protect the components inside the telomeric resonator against moisture, liquids, dust, or other foreign substance that could affect the well-functioning of the telomeric resonator.

[0103] FIG. 2 presents a top view of the PCB board 1 that was presented also in FIG. 1. The top side of the PCB is presented, with the electrical circuit and layer 2, and the pins 4, soldered on the same face of the PCB, with solder 5. The two polarities of the circuit 2 connect the pins 4 in such a way, that each individual pin is surrounded by the other pins having opposite polarity, at the closest proximity. The two wires 14 feeding the whole assembly, are connected and soldered on the PCB 1, at the input of the circuit 2. The resistor 12 connects in parallel to the input of the circuit 2.

[0104] In this embodiment, the pins soldered on each branch of the circuit 2 having the same polarity, are interposed with branches of the circuit 2 having opposed polarity. Also the pins of one polarity are aligned parallel on both sides of the circuit branches with opposing polarity, but with an offset, in such a way that each pin of one polarity is approximately surrounded at the closest proximity, with pins of opposing polarity. The layout of the pins is a square or rhombic.

[0105] FIG. 3 represents an alternative embodiment of the layout of the pins 4 on the PCB 1, and the connecting circuit 2. The main layout unit of the pins 4 is a hexagon, where there is a pin at each corner of the hexagon, connected in such a way by the circuit 2, that when the pins are electrically excited, each pin of one polarity is surrounded by the three closest proximity pins having opposite polarity.

[0106] It is clear for those skilled in the art, that other possible alternative embodiments are possible, without departing from the scope and spirit of this invention.

[0107] FIG. 4 presents in more detail the layout presented in FIG. 3 and specifically the electric field interaction between the pins 4, and the other components of the telomeric resonator, from a top view of the PCB 1 board.

[0108] FIG. 4 explains the electric field pattern, from the top view of the PCB 1, created by one of the embodiments explained above in FIG. 3.

[0109] The two electrical conduits feeding the telomeric resonator, Conduit 1 and 2, have alternate pulsed polarities. Let's take a point in time where conduit 1 is polarized "+" and Conduit 2 is polarized "-". The branches of Conduit 1, are B, D and F, are all polarized "+", and all the pins soldered on these branches B1, B2, B3, D1, D2, D3, D4, F1, F2 and F3 are polarized "+" as well.

[0110] The branches of conduit 2 are all polarized "-", Branches A, C, and E, and the pins solders on these branches, A1, A2, A3, A4, C1, C2, C3, E1, E2, E3 and E4, are all polarized "-" (minus) as well.

[0111] Let's take one particular pin, for example C2 and analyze what happens there. In this example the conduit 2 feeding the telomeric resonator is shortly polarized with "-"(minus), therefore, the conduit C is polarized "-", and all the pins on conduit C, including C2 is

polarized “-“. Around pin C2, there is an electrical field, surrounding the C2 pin radially, and upwards. In this example we will analyze what happens with the radial electrical field, from a top view of the PCB 1. The G vectors pointing radially from C2 represent the line of force of the electrical field created around the C2 pin.

[0112] The pins in the most proximity to C2, are pins B2, D2 and D3, all polarized with the “+” in this point in time, that is the opposite polarity of the pin C2. The opposite polarity of the most proximity pins surrounding pin C2 will increase the intensity of the electrical field around C2 to the maximum level, available by this configuration. The radial component of the electrical field surrounding C2, shown in FIG. 4 by the electrical lines of force G, and the lines of equal field intensity H, is quasy-circular, and for a given excitation voltage feeding the two conduits of the telomeric resonator, such a pattern creates the highest possible intensity of the radial component of the electric field around the pins 4.

[0113] One of the features of the design presented in this invention, is to create a maximum intensity of the radial component of the electrical field surrounding each pin, while getting the maximum effect as a whole, for the entire board PCB 1. This is achieved by choosing a layout of the pins and energizing electrically the pins in such a way, that each pin polarized by one polarity, has the surrounding pins in the closest proximity being polarized with the opposite polarity.

[0114] It is clear for those skilled in the art, that this pattern of the electrical field, and the maximization of the intensity of the radial electrical field of each pin, is repeated for the pins having the opposite polarity, and for every pin of this device, except the pins at the edge of the device, where the symmetry is broken.

[0115] Also, this effect is the same for other embodiments, like the one explained in FIG. 2, or other similar embodiments or changes that are not described here, but should be understood by those skilled in the art, without departing from the scope and the teachings of this invention.

[0116] The enclosure of the telomeric resonator, and all the space on the top of the PCB 1 and the space between the pins 4, is filled with crushed piezoelectric crystals, like quartz, or any other good quality crushed piezoelectric crystal grains. Therefore, all the pins 4 are all

surrounded by the grains of different sizes of the crushed piezoelectric crystals. The size of the grains of crushed crystals is between $0.1\mu\text{m}$ and 0.1 m , preferable between $1\mu\text{m}$ and 0.02m and most preferable between $10\mu\text{m}$ and 1 cm . The mix of crushed crystals have a uniform distribution of all the sizes of grains, from the smallest to the largest.

[0117] FIG. 5 represent a small view of a vertical section of the telomeric resonator. The PCB 1, has the upper layer 2 that feeds electrically the pins 4 soldered on the layer 2 with the soldering 5. The bottom layer 3 of the PCB 1 sits tightly on the bottom 8 of the enclosure. The top tips of the pins 4 have a very sharp ending 14. The pins are surrounded by the grains of crushed piezoelectric crystal grains 6, like crushed quartz. The top part of the enclosure 7 is at some distance from the tip 14 of the pins 4.

[0118] For a better example, in FIG. 5, only three pins are represented. As explained above, one pin 4 is always polarized with the opposite polarity of the closest proximity surrounding pins. In this figure, the center pin is polarized with the opposite polarity of the pins on the sides. For this reason, the electric field G created between the pins, is radial from the axis of the pins 4.

[0119] The grains of crushed quartz 6 that are located between the pins 4 are stimulated by the short spikes of the radial electric field between the pins, as shown in FIG. 16. The short spike of the electrical field G excites every grain of piezoelectric crystal with a short impulse and it electrically energizes each crystal grain. The piezoelectric crystal grains 6 have a high Q factor, which is the capacity of the crystal to continue amortized oscillations, after the exciting impulse have been removed. Each grain of crystal will continue to self-oscillate until the oscillation are fully and naturally amortized. During this oscillation process, each grain of crystal will generate an electromagnetic wave and a mechanical vibration, having the frequency depending of, mostly, by the size of the crystal grain, and also by the piezoelectric properties of the crystal.

[0120] Since the grains of the crushed piezoelectric crystals 6 filling the telomeric resonator have a large and uniform distribution of sizes, the resulting mix of frequencies will cover an ultra-wide band of electromagnetic frequencies and mechanical-vibrational spectrum of

frequencies. The size range of crystal grains are chosen in such way, so the frequency range covers the resonant frequency range of the chromosomes, the telomeres and the DNA.

[0121] The signal used to drive the telomeric resonators is represented in FIG. 16. The signal is composed of very short pulses of alternating polarity, with the ideal pulse being as close as possible to a Dirac impulse. The repeating frequency of the pulses is between 100 Hz and 1 GHz, preferable between 1 KHz and 500 KHz, and most preferable between 10 KHz and 100 KHz. The voltage of the signal can be between 0.1v to 50Kv, preferable between 1V and 1KV, and the most preferable between 10V and 200V. The duration of each pulse is between 0.01 nanoseconds to 1 millisecond, preferable between 0.1 nanosecond to 100 nanoseconds, and the most preferable between 1 nanosecond to 10 nanoseconds.

[0122] A good comparing example of the basic generation of an electromagnetic wave and a mechanical vibration from each grain of piezoelectric crystal that happens inside of the telomeric resonator, is the mechanical poking of a crystal glass. After the poking, the glass will continue to vibrate and generate an amortized sound, for a period of time. The tone of the sound is determined by the size or the dimensions of the crystal glass – the smaller the glass, the higher the pitch (or the frequency). The tone is also dependent of the mechanical properties of material the glass is made of.

[0123] In a similar mode, in this invention, the equivalent poking of each grain of piezoelectric crystal, is made electrically, by the very short electrical impulse, as being described in FIG. 16, being applied to the pins 4 of the telomeric resonator device. Because of the specific arrangement of the pins 4 described by this current invention, the radial electrical field G created between them have the maximum possible intensity, as a whole, taking the surface of the whole PCB board 1. This short pulse of electric field will energize electrically each grain of crystal. After the disappearance of the field, the crystals will continue to oscillate, each one on its own frequency, until the oscillations amortize naturally. The best results are achieved by using high quality natural or cultured piezoelectric quartz or other piezoelectric crystal, with good Q factor, higher than 10^5 , preferable higher than 1×10^6 and most preferable higher than 3×10^6 . The crystal grains must have good piezoelectric properties, and have the grain sizes of a wide and uniform variety of sizes, between 10 nm

and 0.001 nm, preferably between 2 cm and 0.001 mm, and most preferable between 1 cm and 0.01 mm.

[0124] The excitation of all the crystal grains inside the telomeric resonator, with the very short electric pulses, has a result that all the crystals 6 will start to self-oscillate, both electrically and mechanically, each one on its own resonant frequency. The oscillation will decay in time, with each oscillation, and after a period of time, they will stop. The sum of all the oscillations, makes the ultra-wide band of frequencies generated by each telomeric oscillator. Because the size of the crystal grains is relatively uniform distributed in the whole mass of crushed crystals 6 filling the telomeric resonator, the result is that the spectrum of the frequencies generated is relatively uniformly distributed across the ultra-wide electromagnetic band generated by each telomeric resonator. In a similar way, the spectrum of mechanical vibrations generated by the whole mass of crushed crystals filling the telomeric resonator, is relatively uniformly distributed across the ultra-wide band of ultrasound vibrations generated by each telomeric resonator. Because the orientation of each crystal grains is random inside of the telomeric resonator, the sum of all electromagnetic oscillation will be relatively evenly distributed in all directions.

[0125] The spectrum of uniform intensity electromagnetic frequencies generated by the telomeric resonator, mostly by the mass or crushed crystals, is between 100 KHz to 10 GHz, preferable between 1 MHz to 1000 MHz, and most preferable between 100 MHz to 1000 MHz, depending mostly by the size range of the crystal grains, and the piezoelectric properties of the used crystal.

[0126] The layers 2 and 3 of the PCB1 act as a reflector for the electromagnetic waves generated by each crystal grain in particular, and by the whole mass of crystals inside the telomeric resonator in general, thus increasing the intensity of the electromagnetic waves generated in the directions of the pins 4, which is the active side of the telomeric resonator, facing the user in any of the embodiments presented in FIG. 9, 10, 11, 12 and 13.

[0127] The pins 4 are made from a conductive material, like most metals, stainless steel, brass, titanium, or a conductive composite, preferable coated or electroplated with silver or gold. The outer tips – (the top tips) 14 of the pins 4 are very sharp. When each pin is

energized electrically with the short electrical impulse, the very sharp point 14 at the tip of each pin 4, creates a very high intensity of the electrical field in the area surrounding the sharp tip 14, much higher than the intensity of the electrical potential G applied between the pins. The local lines of electrical field vectors E generated by the sharp tips 14 are exemplified in FIG. 5. Unlike the electrical field G generated between the pins 4, which is predominantly radial, the electrical field E generated at the tips 14 of the pins, is predominantly longitudinal, mostly along the direction of the pins.

[0128] Because of the sharpness of the tip 14 of the pins 4, the local intensity of the electric field in this area E is much higher than the intensity of the radial electrical field G between the pins - a well-known effect in the electrical science. If the tips 14 of the pins 4 are sharp enough, a localized Corona effect will happen in the close proximity area of the sharp tip 14 of each pin 4. That is a very strong local electric field E, surrounding the tip 14 of the pins 4, as being described in FIG. 5.

[0129] For this reason, the crystal grains 6 located in this area E, around the tip 14 of each of the pins 4, are stimulated even stronger than the crystal grains located between the pins. The principle of electrical poking effect on the crystals is the same in this area E, but with much higher energy and efficiency around the sharp tips 14 of the pins 4, than the effect in the G area, between the pins 4.

The very high intensity of the electrical field around the tips 14 diminishes after a certain radius from the tip 14 of the pins. However, the effect of higher intensity of electrical field around a sharp tip, is a better way to amplify the overall efficiency of production of a wide range of electromagnetic and ultrasound waves. It means that, indirectly, a lower voltage can drive the telomeric resonator, making the whole device and system much efficient, much safer for the usage, and using less energy.

[0130] The electromagnetic waves 15 generated by the piezoelectric oscillation of the crystals 6 are shown in FIG. 5. The ultrasound vibration generated by the piezoelectric oscillation of the crystals are marked as 16 in the same FIG. 5.

[0131] Another key benefit of using the corona effect of amplifying the electrical field at the sharp tip 14 of the pins 4, and subsequently, amplifying the generation of the ultra-wide

band of electromagnetic and ultrasound waves, is the fact that the voltage of the pulses required to drive the telomeric resonator, is much smaller. A much smaller voltage means higher safety for the users of this device and the avoidance of electrocution hazard, or electric shocks, and it means also lower energy to drive the device.

[0132] The layer 3 of the PCB 1 has imprinted a flat concentric set of Lakhovsky coils, that generate a second spectrum of electromagnetic frequencies, having a uniform distribution of intensity on the whole range of the spectrum, tuned on the DNA resonance spectrum of frequencies, that is between 50 GHz to 80 GHz for humans, or about 30 GHz to 70 GHz for animals, or about 10 GHz to 50 GHz for plants. The DNA has piezoelectric properties, so activating the DNA with its resonant frequencies has a resetting, rejuvenating and anti-aging effect. This second spectrum of electromagnetic frequencies 15 generated by the layer 3 of the PCB, combine with the first electromagnetic spectrum of frequencies generated by the mass of crushed crystals 6. Together, they are generating an ultra-wide band and spectrum of frequencies, between 100 to 1000 MHz for the resonance of the chromosomes and the telomeres, and the 50 to 80 GHz spectrum for human DNA resonance, or 30 GHz to 70 GHz for animals, or about 10 GHz to 50 GHz for plants.

[0133] Adding to this, the device generates a wide spectrum of uniform intensity ultrasound vibrations, just right for this biological application, necessary for the mechanical-vibrational resonance of the chromosomes and the telomeres. Depending of the size of the device and the chosen sizes of the crystal grains, the spectrum of ultrasound frequencies generated, are between 100 KHz to 10 GHz, preferable between 1 MHz to 1000 MHz, and most preferable between 100 MHz to 1000 MHz.

[0134] The layer 3 of the PCB 1 is designed with a flat set of coils that makes a derived Lakhovsky wide-band resonator. A modified Lakhovsky resonator is represented in FIG. 6, with the difference that the arms of each coil are rectangular instead of circular, for a better utilization of the surface of the layer 3.

[0135] The coils 3 are made of the conduit pattern designed on the surface of the PCB 1, usually made of copper or other highly conductive material, and it can be coated or electroplated with a top layer of silver or gold for a better conductivity at higher frequencies.

[0136] An alternative embodiment for the layer 3 of the PCB 1 and a better and improved design for the multi-band resonator, is proposed in FIG. 7.

[0137] The bottom surface 3 of the PCB 1 forms a pattern of half-loops 18, as they are represented in FIG. 7. Each full-round coil is sectioned in two arc segments, like 18 and 19. The ends of each complementary half of coil 18 is coupled with the other half of the coil 19, with capacitance 20 and 21 formed at the ends of the half coils. The main half-coils 18 and 19 that are fed with the driving signal, are coupled both inductively and capacitively with the next inner half coils, which have a different resonant frequency.

[0138] The pattern and the phenomenon repeats with the next inner pair of half coils, in such a way that the whole set of flat concentric coils oscillate on a large spectrum of frequencies.

[0139] Compared with the classic Lakhovsky coil, the current design moves the whole band of frequencies higher than the classic Lakhovsky design, by multiplying the band of frequencies.

[0140] Another alternative embodiment for the layer 3 of the PCB 1 is shown in FIG. 8.

[0141] Each concentric circle or closed loop is divided in three arcs at about 120° from each other, forming three arc segments, like one of the outer arc segments 23. The next inner loop is divided the same in three parts, but with a circular offset of 60° from the outer loop. The three one-third coils are coupled together at the ends by the capacitance 21 formed between the ends. The outside one-third loops 22 and 23 are coupled inductively and capacitively with the inner one-third loops, and so on. When stimulated with very short pulses at the two inputs the whole oscillator generates a wide spectrum of frequencies, with relative uniform intensity distribution in the range of this spectrum, that is in the high, human DNA resonance spectrum of 50 GHz to 80 GHz, or about 30 GHz to 70 GHz for animals, or about 10 GHz to 50 GHz for plants.

[0142] It is very clear for someone skilled in the art, that more embodiments of this design are possible, where each loop is divided in four, or five, or a plurality of arc segments, with the arc segments of the next inner loop having a circular offset from the outside loop, with an angle such that the gap of the two endings of two inner arc segments is positioned on the

middle of the outer arc segment. Such embodiments would maintain the teachings of the original design concepts and embodiments presented in this invention.

[0143] It is very clear for someone skilled in the art, that other embodiments are possible but not represented here, it is possible to put a plurality of such designs, or a mix of a plurality of such design, without departing from the principles and spirit of the current invention.

[0144] Also in other embodiments, it is possible to have a plurality of layers 3 stack on the top of each other, each one having one or more of such designs, and still maintain the principle and spirit of the current invention.

[0145] Such embodiments maintain the current principles of functioning and the design described by this invention, and they should be understood by those skilled in the art that various changes may be made and equivalents substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiments disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

[0146] In FIG. 5, we can see the electromagnetic spectrum of waves 17 that are generated by the multiband oscillator of layer 3, of the PCB 1. This spectrum 17 combines together with the wide electromagnetic spectrum of waves 15 generated by the piezoelectric crystal grains 6. Additionally, the electric signal that feeds the telomeric resonator, has very sharp fronts, both rising and trailing, and therefore, this signal is very rich in high frequency harmonics, that add up to the overall ultra-wide band of electromagnetic spectrum generated by the other components of the telomeric resonator.

[0147] All the ultra-wide spectrum of electromagnetic frequencies have the effect of inducing electromagnetic bio-resonance at the chromosomes, telomeres and the DNA level, having a rejuvenation effect on the body in general, and on the chromosomes and the

telomeres in particular, stimulating the catalytic activity of telomerase, and generating a strong overall anti-aging effect.

[0148] Also, the wide spectrum of ultrasound waves 16 (FIG. 5) induce mechanical-vibrational resonance on the chromosomes and the telomeres, again, having a strong rejuvenation on the chromosomes and the telomeres, stimulating the catalytic activity of telomerase, extending the length of the telomeres, and a strong overall rejuvenation and anti-aging effect.

[0149] The telomeric resonators described above, must be used at a relative close proximity to the body of the person or animal using them.

[0150] The device and the system proposed by this invention, utilize a plurality of telomeric resonators as described above, imbedded in a user friendly format device, like the anti-aging blanket or duvet device and embodiment presented in FIG. 9.

[0151] The rejuvenation and anti-aging outcome of induced bio-resonance on the chromosomes and telomeres, has the maximum effect during sleep time, at night time, when the body goes through the maximum regenerative process. Also, the effect is somehow effective too, at rest times or nap times.

[0152] A plurality of telomeric resonators 27 are embedded in the blanket or duvet device 30, that is part of the overall anti-aging system presented in this invention. The blanket or duvet 30 is used by the users during the sleep time or rest time, being covered with it. All the telomeric resonators 27 are connected together in parallel with the very flexible conductors 31, which is part of a multi-line conductor cable, going into the junction box 38. The embedded telomeric resonators 27 are set-up inside the blanket 30 in such a way that the all of them face the same direction, facing one side of the blanket 30, which is the active side, used by the user. The active face of the telomeric resonators is the one with the pins, and the cover 7 of the enclosure.

[0153] When the electric signal generated by the controller apparatus 42 gets applied to all telomeric resonators that are embedded and part of the blanket 30, the body of the users gets immersed in a bath of ultra-wide spectrum of ultrasound and electromagnetic waves,

tuned to resonate with the chromosomes and the telomeres of the cells, thus generating the telomere rejuvenation, stimulating the catalytic activity of telomerase, stimulating the elongation of the telomeres, and slowing down, stopping and reversing the biological clock of the body.

[0154] The blanket 30 has also embedded a plurality of printed circuit boards 28, each one having a plurality of infrared and far infrared LEDs, that together, generate an electromagnetic spectrum between 600 nm to 2000 nm, preferable between 700 nm to 1800 nm, and most preferable between 800 nm to 1500 nm, which is the resonant electromagnetic spectrum of the chromosomes.

[0155] The physical distance of the arms of the telomeres, and the geometrical shape and dimensions make the resonant electromagnetic frequencies of the telomeres, to be in the infrared to far infrared spectrum, more precisely between 600 nm to 2000 nm, preferable between 700 nm to 1800 nm, and most preferable between 800 nm to 1500 nm.

[0156] Each board 28 can be manufactured the best way as a printed circuit board PCB, with one or more surface-mounted LEDs, soldered on one side only of the support PCB which is the active side of the boards 28. Each LED mounted on the board 28 covers a specific infrared or far infrared spectrum. All the LEDs installed on one board 28 generate a cumulative spectrum from far infrared to infrared, or most preferable between 800nm to 1500 nm. This infrared to far infrared electromagnetic spectrum generated by the LEDs of the boards 28, adds up with the ultra-wide electromagnetic spectrum generated by the telomeric resonators, supporting and improving the overall anti-aging performance of the system as a whole.

[0157] The LEDs on boards 28 are driven with pulsed width modulation (PWM) electrical signals, to allow a maximum instantaneous release of energy, without overheating or over-soliciting the LEDs. The total cumulated power of the LEDs on all the boards 28 included in a blanket 30, is chosen in such a way, so the user can feel a weak thermal effect when the LEDs are excited with the maximum power. This depends on the total number of LED boards 28 included in the blanket 30, which depends on size of the blanket. The cumulated infrared to far-infrared power generated by all the LEDs in a blanket is between 0.1W to 1000W,

preferably between 1W to 300W, and most preferable between 10W to 100W.

[0158] The LED boards 28 are installed in such a way inside of the blanket 30, that the LEDs are facing the user, when the anti-aging system and the blanket 30 is used. Also, the boards 28 are connected together with very flexible cables, with the common pair or conductors 33 exiting the blanket 30, and connecting to the junction box 38.

[0159] The infrared and far infrared emission from the boards 28 will pass the fabric layers of the blanket or duvet 30, and the clothing of the user, or the fur of an animal, with little attenuation. Even though some of the emission gets absorbed, most of the therapeutic and anti-aging effect gets delivered to the body of the user or animal.

[0160] The anti-aging blanket device 30 is also equipped and embedded with a plurality of flat “pancake” and very flexible coils 29, distributed evenly on the inner surface of the blanket 30. The coils 29 are connected together by very flexible conductors, in such way that this is un-noticed by the user. The output collection cable 32, feeding all the coils 29, comes together with the cable 31 and cable 33 in the junction box 38.

[0161] The flat flexible coils 29 have the role to generate a combination of pulsed magnetic fields with low and very low frequencies, called earth frequencies, and also with modulated magnetic pulses having different level of modulation. The magnetic waves generated by the coils 29 are in the low to very low spectrum of the electromagnetic frequencies, covering the same spectrum as the earth frequencies, between 0.1 Hz and 45 Hz, preferable between 1 Hz and 30 Hz, and most preferable between 1 Hz and 15 Hz.

[0162] The magnetic earth frequencies when applied therapeutically to users, have long being proved to bring good results in micro-circulation, improving the cell metabolism and the generation of ATP and in general they speed up the regenerating process.

[0163] In this invention, the role of the earth frequencies magnetic waves generated by the coils 29, is to have a catalytic and support role, to support the rejuvenation process of the body and specifically, the rejuvenation and elongation of the telomeres.

[0164] One another device that is also part of the anti-aging system presented in this invention, is a conductive fabric sheet 36 that has embedded conductive wire mesh. The conductive sheet 36 is connected to an output wire 37, which in turn, is connected to the

junction box 38. From the junction box 38, the conductive sheet 36 is connected electrically to an electrical “ground” or “earthing”, having an electric potential of zero compared to the earth. The power supply cable of the controller device 42, is connected to a wall power outlet, having a ground electrode. This ground connector is used by the controller device 42, to connect electrically the grounding fabric sheet 36, to the electrical ground.

[0165] The whole system can be used during the relaxing periods of time during a day, but most preferably and being the most effective is during the sleep at night time, because this is when the body goes through the most regenerative period of the day.

[0166] The user lays down on the conductive fabric sheet 36, while resting or sleeping, and the blanket or duvet 30 covering her. The conductive sheet 36 has the role to keep the body electrically grounded, at the macro level, from oscillating electrically with all the electromagnetic fields generated by the telomeric resonators, while allowing these electromagnetic frequencies to do their therapeutic and anti-aging work at the cellular and subcellular level, mostly at the chromosomes, telomeres and DNA level.

[0167] The junction box 38, collects all the different cables embedded in the anti-aging blanket 30. From the junction box 38, one multi-conduit cable 34 has a connector 35 at the end, which connects into the driving anti-aging apparatus 42.

The driving apparatus 42 generates all the electrical signals required by each and every component of the blanket 30, that is all the telomeric resonators 27, the infrared and far infrared LED boards 28, and the flat coils 29. All these signals are driven through the cable 34 to the junction box 38, located very close to the blanket and the conductive sheet. The main controlling apparatus 42 provides also the grounding connection to the conductive fabric sheet 36.

[0168] Also, the controller device 42 controls by wire or wirelessly a plurality of negative air ionizers 44, located in the same room or proximity with the user. The negative air ionizers 44 are preferably powered independently, but they are controlled centrally, wired or preferably wirelessly from the controlling apparatus 42. Their role is to support the rejuvenation and anti-aging effect of the telomeric resonators, by providing negative ionized air having anti-

oxidant effect, reducing the oxidative stress, and calming and relaxing effect for the nervous system.

[0169] Another alternative embodiment of the current system presented in this invention, is shown in FIG. 10.

In this embodiment, the coils 29 generating the low frequencies magnetic waves, are embedded in the pad 38. The cable 32 drives the electric signals required by the coils 29, back to the junction box 38. The pad 38 is set first on the bed or the sofa or the chair. The pad 38 can be made of a textile fabric like stitched cotton, or other suitable fabric, just like a typical mattress pad.

[0170] The coils 29 are embedded between the fabric layers of the pad 38. The coils are made of very flexible multi-stranded conductors, insulated with a flexible insulation like silicon. Because the conductors are very flexible, and the coils are very flat, preferable in one layer of windings, the users won't notice any discomfort when laying, resting or sleeping on the pad 38.

[0171] On the top of the pad 38, there is a conductive fabric sheet 36, interwoven with a mesh of conductive wire, preferably silver, that keeps the user at the macro-electric potential level, into a static electrically "grounded" position. The conductive sheet 36 has a cable 37 that is connected to the junction box 38. The corresponding conductor inside the cable 34, that takes forward the cable 37, is connected to an electric ground. Usually this is achieved from the power supply cable that feeds the controller apparatus 42, with power from a power outlet that is equipped with a grounding connector.

[0172] Alternatively the conductive fabric sheet 36 can be the top layer and part of the pad 38.

[0173] A plurality of telomeric resonators 27 and infrared and far-infrared LED boards 28, are embedded and placed evenly inside the anti-aging blanket or duvet 30, all facing the user with the active side. The cables 31 and 33 drive the electrical signals required by the telomeric resonators 27 and the LED pads 28, and it is connected to the junction box 38.

[0174] The cable 34 connects the junction box to the driving anti-aging apparatus 42, through a utility connector 35, at the end of the cable 34.

[0175] Just like in the previous embodiment, the controller apparatus 42, controls wirelessly or by wire, a plurality of negative air ionizers 44, located in the same room or proximity with the user. The negative air ionizers are powered directly or independently, but they are controlled centrally from the controlling device 42. They provide negative ionized air having anti-oxidant, calming and relaxing effect. This in turn supports the rejuvenation and anti-aging effect of the telomeric resonators and the bio-resonance effect on the chromosomes, telomeres and the DNA.

[0176] In the embodiment presented on FIG. 10, there is an advantage of embedding the magnetic field generating coils 29, into the under-pad 38. This makes the anti-aging blanket 30 lighter and more flexible. The user will rest or sleep on the top of the conductive sheet 36 that covers the top of the pad 38. The conductive sheet 36 will keep the body of the user electrically steady and still at the zero electric potential of the ground, from an electrical perspective, at a macro level of the body. However, the conductive sheet 36 won't stop at all the wide spectrum of electromagnetic frequencies to do the therapeutic and anti-aging effect at the cellular, chromosomes and telomere level. Also, the conductive fabric sheet 36 has the conductive wires interwoven into the fabric not too dense, in such a way that the sheet 36 will fully allow the low frequencies magnetic waves generated by the coils 29 embedded in the pad 38, to penetrate the sheet 36 without any practical attenuation, and to reach the body of the user, doing its supporting therapeutic effects.

[0177] Another embodiment of the present invention is shown in FIG. 11.

In this embodiment, the telomeric resonators 27 and the infrared and far-infrared LED pads 28 are installed together on a panel 40, with the active faces facing outwards the panel. The panel 40 is installed in the same room with the user, in a closed proximity, facing the user, and it generates the therapeutic, rejuvenation and anti-aging effect of wide spectrum of electromagnetic and ultrasound waves as described above, inducing bio-resonance at the chromosomes, telomeres and the DNA level, and stimulating the catalytic activity of telomerase and the elongation of the telomeres.

[0178] The panel 40 described in FIG. 11 is supported by an adjustable leg and a platform 41, allowing vertical and tilting adjustment.

[0179] A cable 39 with multiple conductors, having a connector at the end, connects the panel 40 to the driving apparatus 42.

[0180] Another cable 34 drives the electrical signal for the electromagnetic pad 38 that generates the earth frequencies, through the junction box 38 and cable 32. Also, the grounding for the conductive fabric sheet 36, is electrically supplied from the driving anti-aging apparatus 42 that is already grounded from the power outlet. This connection is via the cable 34, the junction box 38, and through the cable 37.

[0181] The user of the system presented in this embodiment lays, rests or sleeps on the conductive sheet 36, that is set on the top of the pad 38 generating magnetic earth waves. While doing this, the user has the panel 40 is located in the close proximity of the user, facing the user.

[0182] Like in the previous embodiments, the controlling apparatus 42 presented in FIG. 11 controls wirelessly or by wire, a plurality of negative air ionizers 44 that are located in the close proximity of the user, like in the same room.

[0183] The advantage of this embodiment versus the previous embodiments is that the user can rest or sleep without the need for a blanket, like in a warm or hot environment. Another advantage is that the telomeric resonators 27 that are part of the panel 40 can be driven with higher voltages because they are not closely touching the users – inside of the anti-aging blanket or duvet 30, thus generating a higher intensity of electromagnetic and mechanical-vibrational spectrum of frequencies.

[0184] Another embodiment is presented in FIG. 12. This anti-aging pad 43 is designed to cover a chair, like a home or office chair, or the active components can be embedded in the construction of the chair. The same components presented in the previous embodiments are presented here, in a very similar setup.

[0185] A number of telomeric resonators 27, infrared and far-infrared LED boards 28 and flat flexible coils 29, are embedded in the chair cover 43 or in the construction of the chair itself. The top layer 36 of the chair cover or chair 43, is made of a conductive fabric that is

connected to an electrical ground, provided by one of the conductors that are part of the multi-conductor cable 34. The multi-conductor cable 34 bring all the electrical signals that need to drive the telomeric resonators 27, the infrared and far-infrared LED boards 28 and the flat coils 29. The cable 34 connects through the connector 35 to the driving apparatus 42.

[0186] The conductive fabric sheet 36 that covers the anti-aging chair cover 43 or the chair itself, has cut-up openings in front of the telomeric resonators 27, such that the electromagnetic spectrum of frequencies generated by the telomeric resonators 27 do not get absorbed or attenuated by the conductive mesh that is embedded and part of the conductive sheet 36.

[0187] The infrared and far-infrared emissions generated by the LED boards 28, will get slightly attenuated by the fabric layers of the chair cover 43 and the conductive fabric sheet 36, but most of the emission will pass it and reach the body of the user, even passing through the clothing of the user.

[0188] In a similar way the magnetic waves generated by the flat coils 29 will pass through the fabric layers of the chair cover 43, the conductive fabric sheet 36 and the clothing of the users, without any practical attenuation.

[0189] In FIG. 12, the controlling apparatus 42 controls, wirelessly or by wire, like in the previous embodiments, a plurality of negative air ionizers 44 that are located in the close proximity of the user, like in the same room or office.

[0190] The best way to make the anti-aging chair cover presented in FIG. 12, is from multiple layers of fabric, like cotton or synthetic fabric, stitched together in multiple layers, and holding the active components inside the fabric layers. The active components 27, 28 and 29 can be glued on one of the fabric sheets inside the cover 43, or can be placed in stitched pockets closed with Velcro or zippers. The conductors that feed electrically the active components 27, 28 and 29 are ran between the interior layers of the chair cover, and they are made of very flexible multi-stranded wires, insulated with a flexible insulator like silicon.

[0191] Another embodiment of the present anti-aging system is presented in FIG. 13. The main purpose for this embodiment is to increase the telomere elongation and provide stimulation of the catalytic activity of telomerase, mostly to animals in general and to pets in

particular, but it could be used by humans as well.

[0192] In this embodiment, the mat or pad 38 provides the main housing for the other active components. The pad or mat 38 is best made of textile fabric, like cotton, or synthetic fabric like microfiber. The mat or pad 38 is designed and made in such way to provide comfort to the pets when resting on it.

[0193] The mat 38 has embedded a plurality of telomeric resonators 27, distributed as evenly as possible on the inside surface of the pad 38, all of them facing up with the active face of the device. The telomeric resonators 27 are connected together electrically, and driven with the electrical signals, through one of the multi-conductor cable 34, through the connector 35, by the main controlling apparatus 42.

[0194] The telomeric resonators 27 generate the ultra-wide spectrum of electromagnetic and mechanical-vibrational frequencies that induce bio-resonance at the chromosomes, telomeres and DNA level of the users, animals or pets, stimulating the elongation of the telomeres and the catalytic activity of telomerase.

[0195] The mat 38 has also embedded a plurality of infrared and far-infrared LED boards 28, facing up with the active face, and providing anti-aging support to the body of the users, animals or pets resting on the mat. The boards 28 are connected together and controlled electrically, through one of the cables that are part of the multi-conductor cable 34, through the connector 35. The control is done by the controlling apparatus 42.

[0196] The mat 38 has also embedded a plurality of very flat coils 29 that generate low frequencies magnetic waves, or “earth” frequencies, to provide more metabolic and anti-aging support to the users, animals or pets resting on the mat 38. The coils 29 are connected together and are driven electrically by the main control apparatus 42, through cables that are part of the multi-conductor cable 34, through the connector 35.

[0197] The mat 38 is covered on the top, which is the active face, with a layer 36 made of electrically conductive fabric that has a conductive wire mesh woven within the fabric, preferably made of silver. The conductive fabric layer 36 has a number of cut-up openings 70, just above each of the telomeric resonators 27 that are embedded in the mat 38. The wire mesh that is part of the conductive fabric layer 36, is connected electrically through the

multi-conductor cable 34, to an electrical ground, that is typically provided by the main power supply cord of the controlling apparatus 42. The cut-up openings 70 in the conductive fabric layer 36 has the role of letting the ultra-wide electromagnetic spectrum of frequencies generated by the telomeric resonators 27, to escape and reach the user, un-attenuated and un-diminished, and to provide the full therapeutic and anti-aging effect.

[0198] The infrared and far infrared emissions generated by the boards 28, are insignificantly attenuated by the conductive layer 36, or by the other fabric layers of the mat 38. Similarly, the low frequency magnetic waves, generated by the flat coils 29, are not attenuated practically, by the conductive layer 36, or by the other fabric layers of the mat 38.

[0199] The controlling apparatus 42, controls, wirelessly or by wire, like in the previous embodiments, a plurality of negative air ionizers 44 that are located in the close proximity of the user, like in the same room or office. The negative air ionizers 44 generate a stream of negative air ions that provide anti-oxidant and calming support to the overall system.

[0200] Other embodiments are possible and understood by those skilled in the art, and various changes may be made and equivalents substituted for elements thereof without departing from the scope, the spirit and the teachings of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiments disclosed here as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

[0201] The device 42 is the main controlling apparatus, generating all the electrical signals that drive the anti-aging blanket or duvet 30, the pad or mat 38, the panel 40, or the chair cover or chair 43, devices all presented in FIG. 9, 10, 11, 12 and 13. The main controlling apparatus 42 can drive other possible embodiments that maintain the scope of the invention.

[0202] The controlling apparatus 42 is composed of the following logical blocks, as presented in FIG. 14. The main control processing unit is designed around a microcontroller CPU 45, the real time clock RTC 47, the memory module 48 holding the software and the

data, the serial port 49 used for external communication, sensors 50, an interactive touch screen 51, used for the graphical user interface, a module 52 to process the keys and buttons interfacing with the user, a sound module 53 for generating complementary or sounds, music and alarms, a signal generation board 54 that generates all the signals sent to the anti-aging blanket or duvet 30, the electromagnetic pad or mat 38, the anti-aging panel 40 and/or the anti-aging chair cover 43. The main control processing unit is also composed of a RF communication module 55 that communicates with and controls the negative air ionizers. Also, the control apparatus 42 has a power supply 56 that feeds all of the other modules described above.

[0203] The main diagram of the signal generation board 54 is presented in FIG. 15.

[0204] The signal generation module 54, receives the signal generation commands from the main CPU module 45 (in FIG. 14) through the signal command bus 57. This bus contains signal generation commands in the form of a communication protocol, to control the telomeric resonators 27, the infrared and far infrared modules 28 and the flat electromagnetic coils 29. The signal command bus 57 provides commands for the start and stop of each signal, and other parameters like the polarity, number of pulses on each polarity, pulsed width modulation parameters, frequency of the signals, the modulating frequencies and bursts duration, and other parameters.

[0205] The signal generation module 54 is composed of three main sub-modules: the signal generation module 59 for the telomeric resonators 27, the signal generation module 62 for the infrared and far-infrared LED modules 28, and the signal generation module 65 for the flat electromagnetic coils 29.

[0206] The signal generator module 59 for the telomeric resonators 27 receives the start, stop, enable and the other signal parameters, from the signal command bus 57. In turn, it generates an electric signal that is represented in FIG. 16.

[0207] The signal that drives the telomeric resonators 27, has a frequency between 100 Hz and 1GHz, preferable between 1 KHz and 500 KHz, and most preferable between 10 KHz and 100 KHz. The voltage of the signal can be between 0.1v to 50Kv, preferable between 1V and 1KV, and most preferable between 10V and 200V. The shape of the signal is very short in

duration, and very sharp, with a fast raising and fast trailing fronts. The duration of each pulse is between 0.01 nanoseconds to 1 millisecond, preferable between 0.1 nanosecond to 100 nanoseconds, and the most preferable between 1 nanosecond to 10 nanoseconds.

[0208] The signal is delivered through the output bus 60, and to the fixed connector 68. The output signal of the module 59 is relatively high in voltage, but with relatively small current. The signal is then taken by the connector 35, through the cable 39. The signal generator module 59, for driving the telomeric resonators 27, has a sub-module 61 for detecting if the load made of the network of telomeric resonators 27, has a short circuit, or a local or general interruption of the circuit.

[0209] If the module 61 detects any of these situations, it sends an alert signal back to the main CPU unit 45, through the status bus 58. If such an alert occurs, the status bus 58 will inform the CPU 45 and the controlling apparatus 42 will display this fault on the main touch screen 51.

[0210] The signal generator module 62 for the infrared and far infrared LEDs receives the start, stop, enable/disable and the other signal parameters, from the signal command bus 57. In turn, it generates an electric signal suitable to drive the infrared and far infrared LEDs from the LED boards 28. The signal is pulsed width modulated, based on the parameters received from the command bus 57. This allows for a fine control of the intensity of the infrared and far infrared radiations, and also it allows for more intense but shorter bursts of infrared and far infrared emission from the LED modules 28. The output signal is delivered through the output bus 63, and to the fixed connector 68. The signal is then taken by the connector 35, through the cable 39, feeding the LED boards 28 that are embedded in the anti-aging blanket or duvet 30, the pad or mat 38, the anti-aging panel device 40, or the anti-aging chair cover 43. The signal generator module 62 for the infrared and far infrared LEDs, has a sub-module 64 for detecting if the load made of the network of infrared and far infrared LED boards 28, has a short circuit, or an interruption of the circuit.

[0211] If the module 62 detects any of these situations, it sends back an alert signal, through the status bus 58. If such an alert occurs, the status bus 58 will inform the CPU 45 and the apparatus 42 will display this fault on the main screen 51.

[0212] The signal generation module 65 for the flat electromagnetic coils 29, receives the start, stop, enable/disable and the other signal parameters, from the signal command bus 57. In turn, it generates an electric signal having earth frequencies that will drive the coils 29. The frequency of the signal is between 0.1Hz and 45Hz, corresponding with the earth frequencies generated naturally by the earth. The signal can be pulsed width modulated, or analog, based on the parameters received from the command bus 57. It can have single or double polarity, or mixed polarity. The pulses can be grouped together in bursts, and modulated in any specific way. This allows for a fine control of the wave frequency, intensity and other parameters of the magnetic field and magnetic waves generated by the coils 29.

[0213] The output signal is delivered through the output bus 66, and to the fixed connectors 68 and 69. The output signal can have the earth frequencies between 0.1 Hz and 45 Hz, preferable between 1 Hz and 30 Hz, and most preferable between 1 Hz and 15 Hz, like the Shuman frequency of 7.84 Hz, or the earth frequency of 9.6 Hz. The signal is then taken through the connectors, through the cable 39, or the cables 39 and 34, and then it feeds the flat flexible coils 29 embedded in the blanket or duvet 30, the pad or mat 38, or the chair cover 43. The signal generator module 65 for the electromagnetic coils, has a sub-module 67 for detecting if the load made of the network of coils 29 has a short circuit, or an interruption of the circuit.

[0214] If the module 67 detects any of these situations, it sends back an alert signal, through the status bus 58. If such an alert occurs, the status bus 58 will inform the CPU 45 and the apparatus 42 will display this fault on the main screen 51.

[0215] The controlling apparatus 42 is capable to run and drive each and all of the devices attached, like the blanket or duvet 30, the conductive sheet 36, the pad or mat 38, or the chair cover 43, the negative air ionizers 44, and also control all of the component devices that are part of the blanket or duvet 30, the pad or mat 38, or the chair cover 43, like the telomeric resonators 27, the infrared and far-infrared LED boards 28, and the flat and flexible coils 29.

[0216] Prior to using the system and the apparatus, the user will configure the apparatus 42 by entering a number of parameters, like the wake-up time, the start and stop time of the telomeric resonators 27, the start and stop time of the infrared emission, the start and stop time of the magnetic earth frequencies, and the start and stop time of the negative air ionizers.

[0217] Also, other parameters may be entered during the configuration phase, like the intensity of each function, the level of modulation, the driving frequencies, and other parameters.

[0218] When the user goes to rest or sleep, he or she will push the “START” button of the apparatus 42. This action will initiate the apparatus 42 to run the sequence of activation of each device and component, based on the configuration preferences introduced by the user at the initial configuration time. The apparatus 42 can start and stop one set of devices, or some of them or all of them, at the same time, or in sequence, or in overlapped sequences, depending of the preferences of the user, or the prescribed sequence of activation, from a specialist.

[0219] All sequences of activation will stop when the user wakes up, since this information is known by the apparatus 42. Alternatively the user can stop all the sequences of activation, upon pressing the ‘STOP’ button of the apparatus 42.

[0220] The apparatus 42 can receive and upload custom sequences, designed and prescribed for example by specialists. Such custom programs can be customized for different situations, like the age and condition of the user, or other possible affections. They can be sent on-line, like by email, or downloaded over internet, and it could be uploaded into the apparatus 42, using the serial communication port of the apparatus.

[0221] A number of other features are built and programmed in the functionality of the controlling apparatus 42, like security mechanisms, privileges and access levels, fault and alarm annunciation, history logging, networking with other measurement and diagnostic devices and integration with other systems.

[0222] THE BEST MODE FOR CARRYING OUT THE INVENTION

[0223] The best way to make the PCB 1 of the telomeric resonator 4 (FIG. 1 or FIG. 17) is from a multi-layered printed circuit board (PCB). Both, layer 2 and layer 3 are made from electrolytic copper, electroplated or coated with silver or gold.

[0224] The pins 4 (FIG. 1) are made of stainless steel, or brass, plated with silver or gold. The pins 4 are soldered on the layer 2 of the PCB with normal solder.

[0225] The piezoelectric crystal grains 6 (FIG. 1) are best made of crushed piezoelectric quartz, that can be from natural sources or cultured quartz for the electronics industry. In either case, the quartz should have a Q factor equal or better than 10^6 for best results. The crystal grains should have a wide and uniform variety of sizes, between 0.001 mm and 10 cm, preferably between 0.001 mm and 2 cm, and most preferable between 0.01 mm and 10 mm.

[0226] The two parts, top 7 and bottom 8 of the enclosure of telomeric resonator (FIG. 1) can be best made using a typical plastic injection technology, using plastic materials like polycarbonate (PC) or ABS plastic, or fiber-glass-reinforced ABS.

[0227] The best cables 14 that can be used (FIG. 1) are very flexible, made of thin multi-stranded conductors, insulated with a silicon based insulator, for maximum possible flexibility.

[0228] The telomeric resonator gives the best results when it's excited with a pulsed electric signal of very short and repeating pulses, having fast raising fronts and fast decaying trails, having frequencies between 100 Hz and 1GHz, preferable between 1 KHz and 500KHz, and most preferable between 10KHz and 100KHz. The voltage of the signal can be between 0.1v to 50Kv, preferable between 1V and 1KV, and most preferable between 10V and 200V. The shape of the signal is very short in duration, and very sharp, with a fast raising and fast trailing fronts. The duration of each pulse is between 0.01 nanoseconds to 1 millisecond,

preferable between 0.1 nanosecond to 100 nanoseconds, and the most preferable between 1 nanosecond to 10 nanoseconds.

[0229] The best way to implement the infrared and far infrared LED boards 28 (FIG. 9, 10, 11, 12 and 13) is being manufactured as a printed circuit boards PCB, where one of more surface-mounted LEDs are soldered on one side only, and the limiting resistors also soldered on the same boards. The LEDs are chosen such way the each one would cover a segment of the infrared to far-infrared spectrum of light, and all the LEDs on the board would cover the infrared spectrum of 600 nm to 2000 nm, preferable between 700 nm to 1800 nm, and most preferable between 800 nm to 1500 nm. The best way to drive the boards 28 is with pulsed width modulated electric signals.

[0230] The best way to implement the flat coils 29 (FIG. 9, 10, 11, 12 and 13) is with thin and flexible multi-stranded wires, isolated with silicon or other flexible isolation. The winding can be made preferably in one layer, or more than one if the cable is thin and flexible enough.

[0231] The best way to implement the blanket, quilt or duvet device 30 (FIG. 9, 10, 11, 12 and 13), or the pads 38 (FIG. 10, 11 and 13) or the chair cover 43 (FIG. 12), is by using multilayered textile fabric, like cotton or silk, filled with down, feathers, or a synthetic fiber like microfiber, depending on the desired thickness. The telomeric resonators 27, the infrared and far infrared boards 28, the flat and flexible coils 29 and the cables 31, 32 and 33, can be embedded between the layers of the fabric that make the blanket or duvet 30, the pads 38 or the chair cover 43.

[0232] Alternatively, the fabric of the blanket 30, the pad 38 or the chair cover 43, can have stitched pockets of fabric inside, where the components 27, 28 and 29 can be inserted. The pockets can be secured with stiches, with zippers or with Velcro tape. The blanket or duvet 30 can be inserted in a duvet envelope or duvet cover, such way that the blanket 30 itself does not need to be washed after usage, only the duvet cover.

[0233] Also the best way to implement the connecting cables 31, 32 and 33 (FIG. 9, 10, 11, 12 and 13), is with multi-stranded and flexible conductors, isolated with silicon insulation

other very flexible insulator. The cables are ran between the fabric layers of the blanket 30, the pad 38 or the chair cover 43, preferable in such a way that is not noticeable by the users.

[0234] The best anti-aging results can be obtained when the user rests or sleeps on the conductive sheet 36 and being covered with the blanket 30, that is for the embodiment presented in FIG. 9; or rests or sleeps on the pad 38 and the sheet 36, while being covered with the blanket 30, that is for the embodiment presented in FIG. 10; or resting or sleeping on the pad 38 and the sheet 36 while having in the close proximity the panel 40, that is for the embodiment presented in FIG. 11; or rests on the chair or chair cover 43 presented in FIG. 12, or rests or sleeps on the pad 38, for the embodiment presented in FIG. 13.

[0235] In all of the above situations, the main controller apparatus 42 must be activated or started, and the driven negative air ionizers 44 should be also in the near proximity of the user.

[0236] While the invention has been described with reference to more preferred embodiments, it should be understood by those skilled in the art that various changes may be made and equivalents substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiments disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

CLAIMS

I claim:

1. A telomeric resonator device for generating a wide and uniformly distributed spectrum of electromagnetic frequencies, and a wide and uniformly distributed spectrum of ultrasound vibrations, inducing electromagnetic and vibrational resonance in the chromosomes and telomeres, and electromagnetic resonance in the DNA of living things in general and in humans in particular, supporting anti-aging, extending the length of telomeres and stimulating the catalytic activity of telomerase, comprising:
 - a printed circuit board, with two or more circuit layers;
 - a resistor connected electrically in parallel at the input of the circuits of the printed circuit board;
 - a plurality of metallic or conductive pins with sharp tops, welded or soldered on the top layer of the printed circuit board, in such a way that when the layer circuit with soldered pins is activated, each pin energized with one electric polarity is surrounded by, at the closest proximity, by pins having the opposite polarity;
 - a flat circuit pattern, printed on the other layer or layers of the printed circuit board, making a wide-band electromagnetic oscillator, made of a plurality of concentric arc segments separated by gaps, where each arc segment has an angular offset from the near outer arc segment, equal to half or more of the angle of the arc segment;
 - a quantity of mixed particulate piezoelectric crystals, having a wide and uniform range of grain sizes between 0.001 mm and 100 mm, filling all the space between the conductive pins and covering the sharp tops of the pins;
 - an enclosure made of electric insulation material, hosting inside the printed circuit board with dual or multiple circuit layers, the resistor, the conductive pins with sharp tops, and the mass of particulate piezoelectric crystals, the enclosure having inside a plurality of studs, side click hooks, and a housing compartment for the entrance of the cables;

electric cables connecting the circuits on the printed circuit board, used for driving the device with electric signals.

2. The device of claim 1, wherein the driving electrical signal is composed of short and repeating alternant pulses, having the voltage of the signal higher than 1V, the pulse duration less than 100 nanoseconds, and the repeating frequency higher than 100 Hz.
3. An anti-aging bedding set, comprising:
 - a blanket or duvet made of textile fabric, having inside a plurality of devices of claim 1 embedded and distributed uniformly, all connected to one dedicated electrical driving circuit;
 - a plurality of printed circuit boards, each one having a number of LEDs that generate infrared and far-infrared spectrum of light, all embedded and distributed uniformly inside the blanket or duvet, all connected to a dedicated electrical driving circuit;
 - a plurality of flat and flexible coils, all embedded and distributed uniformly inside the blanket or duvet, all connected to a dedicated electrical driving circuit;
 - a sheet of conductive fabric having woven a mesh of conductive wires connected to a cable that is connected to an electric ground of electrical zero potential.
4. An anti-aging bedding set, comprising:
 - a pad made of textile fabric, having embedded inside a plurality of flat and flexible coils, distributed on the whole inner surface of the pad, and all connected to a dedicated electrical driving circuit;
 - a sheet of conductive fabric covering the top surface of the pad, having woven a mesh of conductive wires connected to a cable that is connected to an electric ground of electrical zero potential;
 - a blanket or duvet, made of textile fabric, having a plurality of devices of claim 1 embedded and distributed uniformly inside and connected to a dedicated electrical driving circuit; and having a plurality of printed circuit boards with infrared and far infrared LEDs, all connected to a dedicated electrical driving circuit;
5. An anti-aging pad made of textile fabric, comprising:

a plurality of devices of claim 1, embedded and distributed uniformly inside the pad, all connected to a dedicated electrical driving circuit;

a plurality of flat and flexible coils, embedded inside the pad, distributed on the whole inner surface of the pad, and connected to a dedicated electrical driving circuit;

a plurality of printed circuit boards with infrared and far infrared LEDs, distributed uniformly on the inner surface of the pad, all connected to a dedicated electrical driving circuit;

a sheet of conductive fabric covering the top surface of the pad, having woven a mesh of conductive wires connected to a cable that is connected to an electric ground of electrical zero potential, and having cut-up openings above the embedded devices of claim 1.

6. An anti-aging stand-up panel, comprising:

a plurality of devices of claim 1, distributed uniformly on the surface of the panel, all connected to one dedicated electrical driving circuit;

a plurality of printed circuit boards, each one having a number of LEDs that generate infrared and far-infrared spectrum of light, all distributed uniformly on the surface of the panel, all connected to a dedicated electrical driving circuit;

a leg with mechanisms for adjusting the height and inclining of the panel.

7. An anti-aging chair or chair cover, comprising:

a plurality of devices of claim 1, embedded and distributed uniformly inside the chair seat and back, or chair cover, all connected to a dedicated electrical driving circuit;

a plurality of flat and flexible coils, embedded inside the chair seat and back, or chair cover, distributed on the whole inner surface of the chair seat and back, or chair cover, and connected to a dedicated electrical driving circuit;

a plurality of printed circuit boards with infrared and far infrared LEDs, distributed uniformly on the inner surface of the chair seat and back, or chair cover, all connected to a dedicated electrical driving circuit;

a sheet of conductive fabric covering the top surface of the chair or chair cover, having

woven a mesh of conductive wires connected to a cable that is connected to an electric ground of electrical zero potential, and having cut-up openings above the embedded devices of claim 1.

- 8.** An apparatus characterized by generating the electrical signals driving the devices of claims 1, 3, 4, 5, 6 and 7, comprising: a power supply, a central processing microcontroller CPU, real-time clock, memory to store the data and the programs, communication ports, sensors, an interactive touch screen, keys and buttons, a sound module with speaker, a signal generation module for generating the signal of claim 2, a signal generation modules for driving the infrared and far-infrared LEDs boards, a signal generation module for driving the flat and flexible coils, and a wireless communication module.
- 9.** The apparatus of claim **8**, wherein the signal generation module drives the flat and flexible coils with an electric spectrum of earth frequencies, between 0.1 Hz and 45 Hz.
- 10.** The apparatus of claim **8**, wherein each signal generation module is capable to detect short circuits, circuit interrupts, or other alarm or fault conditions in the devices of claims 1, 3, 4, 5, 6 and 7, and display them on the main touch-screen.
- 11.** The apparatus of claim **8**, wherein the wireless communication module controls a plurality of negative air ionizers, located in the proximity of the user and the other driven devices.
- 12.** The apparatus of claim **8**, characterized by generating a programmable and configurable sequence of activation, for activating each driving circuit of the device or a group of devices of claims 1, 3, 4, 5, 6 and 7, and the negative air ionizers.
- 13.** An anti-aging system characterized by generating wide and uniformly distributed spectrums of magnetic, electrostatic and electromagnetic frequencies, and a wide and uniformly distributed spectrum of ultrasound vibrations, that induce electromagnetic and vibrational resonance in chromosomes, telomeres and the DNA of living things in general and in humans in particular, supporting anti-aging, extending the length of the telomeres, and stimulating the catalytic activity of telomerase, comprising:

the apparatus of claim 8;

one or more devices of claims 1, 3, 4, 5, 6 and 7;

a plurality of negative air ionizers controlled by the apparatus of claim 8;

a number of cables and junction boxes connecting all these devices and apparatus together;

an electrical ground, providing electrical grounding connection to the apparatus of claim 8, and to the devices of claims 3, 4, 5, 6 and 7;

14. A method for treating a person or animal against the aging process, or age related diseases, for extending the length of the telomeres, stimulating the catalytic activity of telomerase, resetting and rejuvenation of DNA, slowing, stopping and reversing the aging process, and improved health and wellness, comprising the following steps:
 - providing the apparatus of claim 8, and any, or some, or all of the devices of claims 1, 3, 4, 5, 6 and 7;
 - having the person or animal lay down, rest or sleep on the pads or the sheets components of devices of claims 3 or 4, while being covered with the blanket or duvet components of devices of claims 3 or 4;
 - or having the person or animal lay down, rest or sleep on the pads of claim 4 or 5, or on the seat of claim 7, while being in the close proximity of the panel of claim 6;
 - or having the person or animal lay down, rest or sleep on devices of claims 4, 5 or 7;
 - having the person or animal connected to an electrical ground;
 - having the devices of claim 1, or devices of claim 1 that are embedded in the devices of claims 3, 4, 5, 6 and 7, being activated with the signal of claim 2;
 - having the apparatus of claim 8 to run the sequence of activation for each device, or some devices or group of devices of claims 1, 3, 4, 5, 6 and 7;
15. A method for treating a person or animal against the aging process, or age-related diseases, for extending the length of the telomeres, for stimulating the catalytic activity of telomerase, for slowing, stopping and reversing the aging process, and for improved health and wellness, comprising the process of bringing the chromosomes, the

telomeres and the DNA of the treated user or animal, to electromagnetic resonance and vibrational resonance.

16. The method of claim 15, wherein the electromagnetic and vibrational resonance of the chromosomes and the telomeres is achieved by exposing the body of the person or animal to:

- a first spectrum of continuous and uniformly distributed intensity of electromagnetic frequencies, from 100 KHz to 1000 MHz;

- a second spectrum of continuous and uniformly distributed intensity of electromagnetic frequencies from 50 GHz to 80 GHz for humans, or 30 GHz to 70 GHz for animals, or 10 GHz to 50 GHz for plants;

- a third spectrum of continuous and uniformly distributed intensity of infrared and far infrared light, with wavelengths between 600 nm to 2000 nm;

- a forth spectrum of magnetic waves with frequencies between 0.1 Hz and 45 Hz;

- and a fifth spectrum of continuous and uniformly distributed intensity of ultrasound vibrations, having the frequencies between 100 kHz and 1000 MHz.

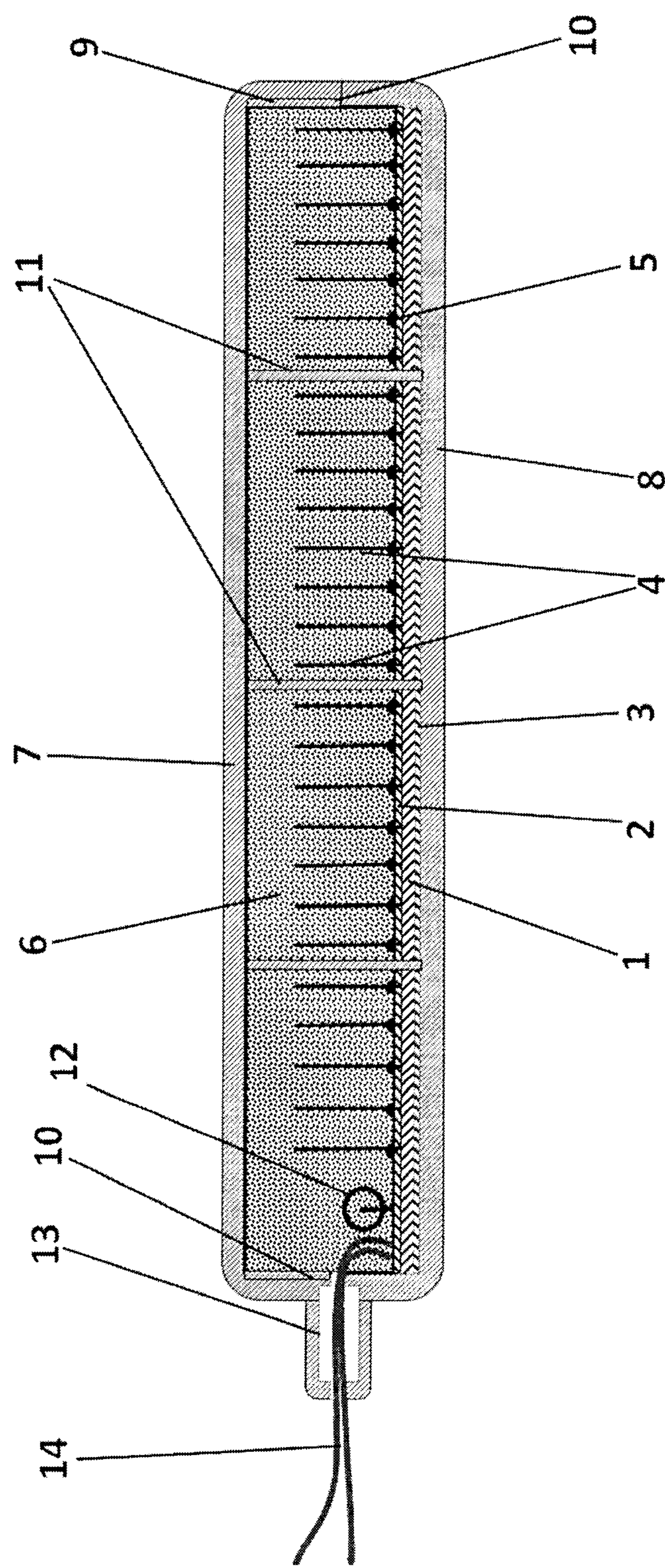


FIG. 1

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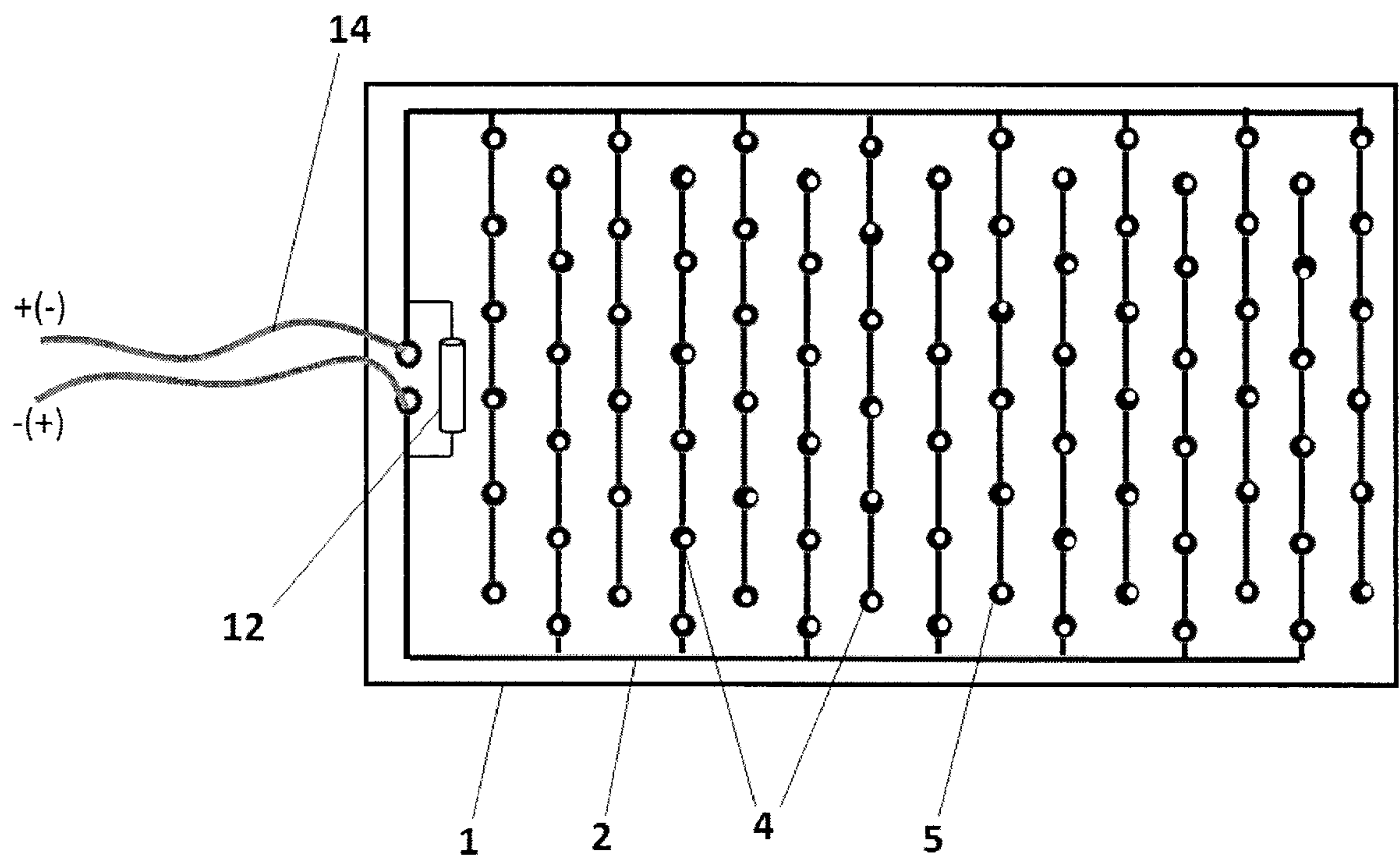


FIG. 2

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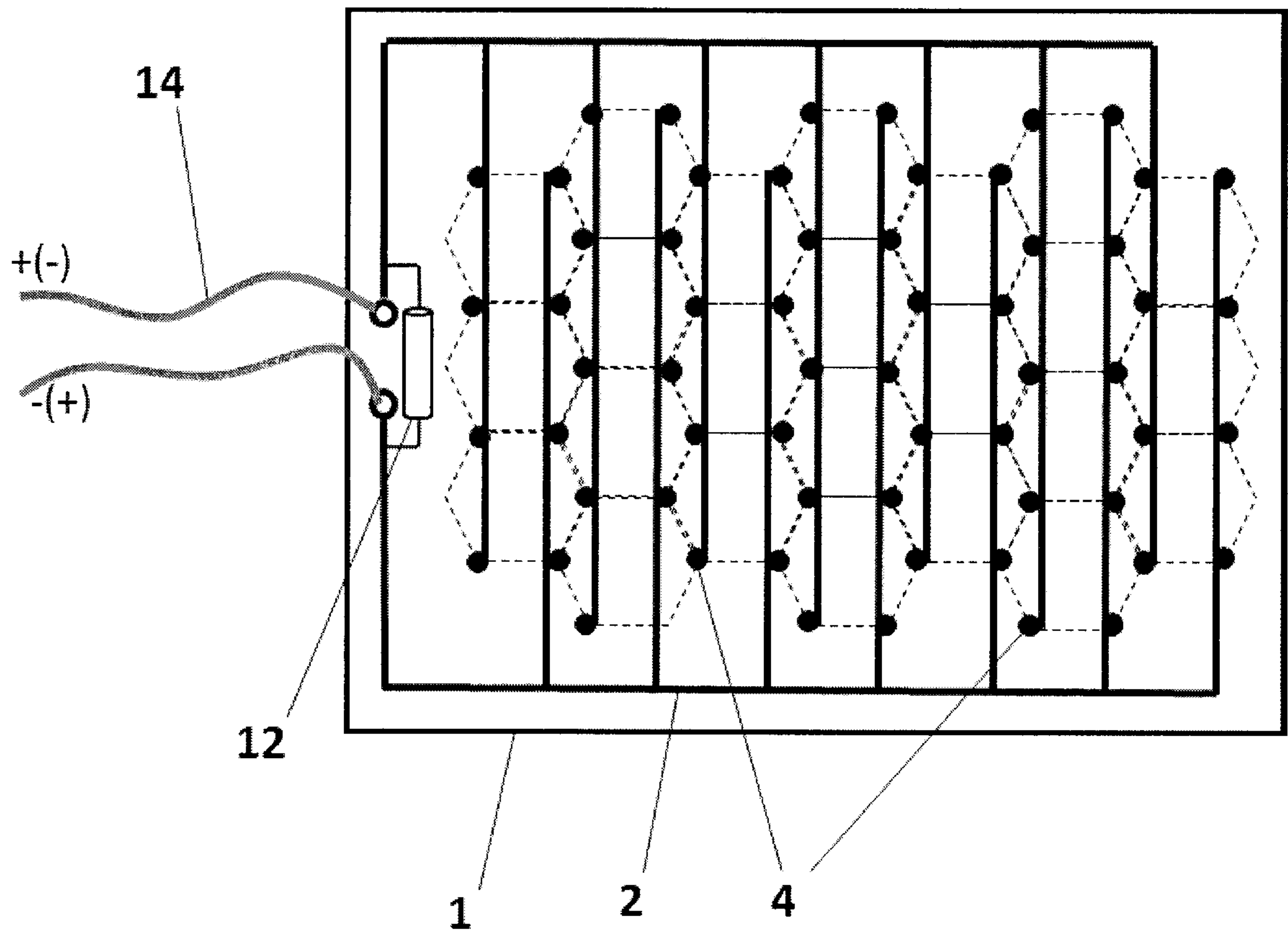


FIG. 3

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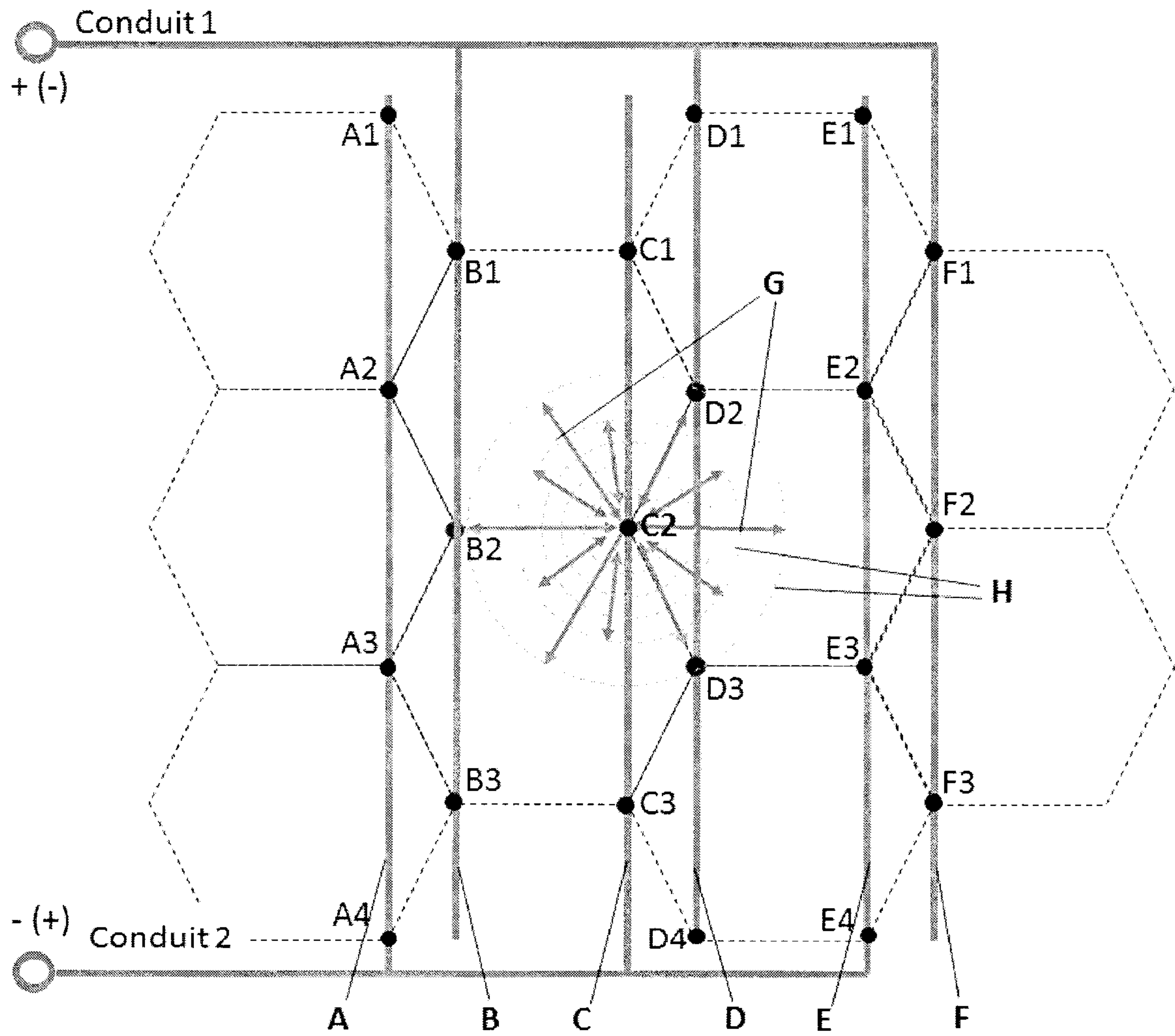


FIG. 4

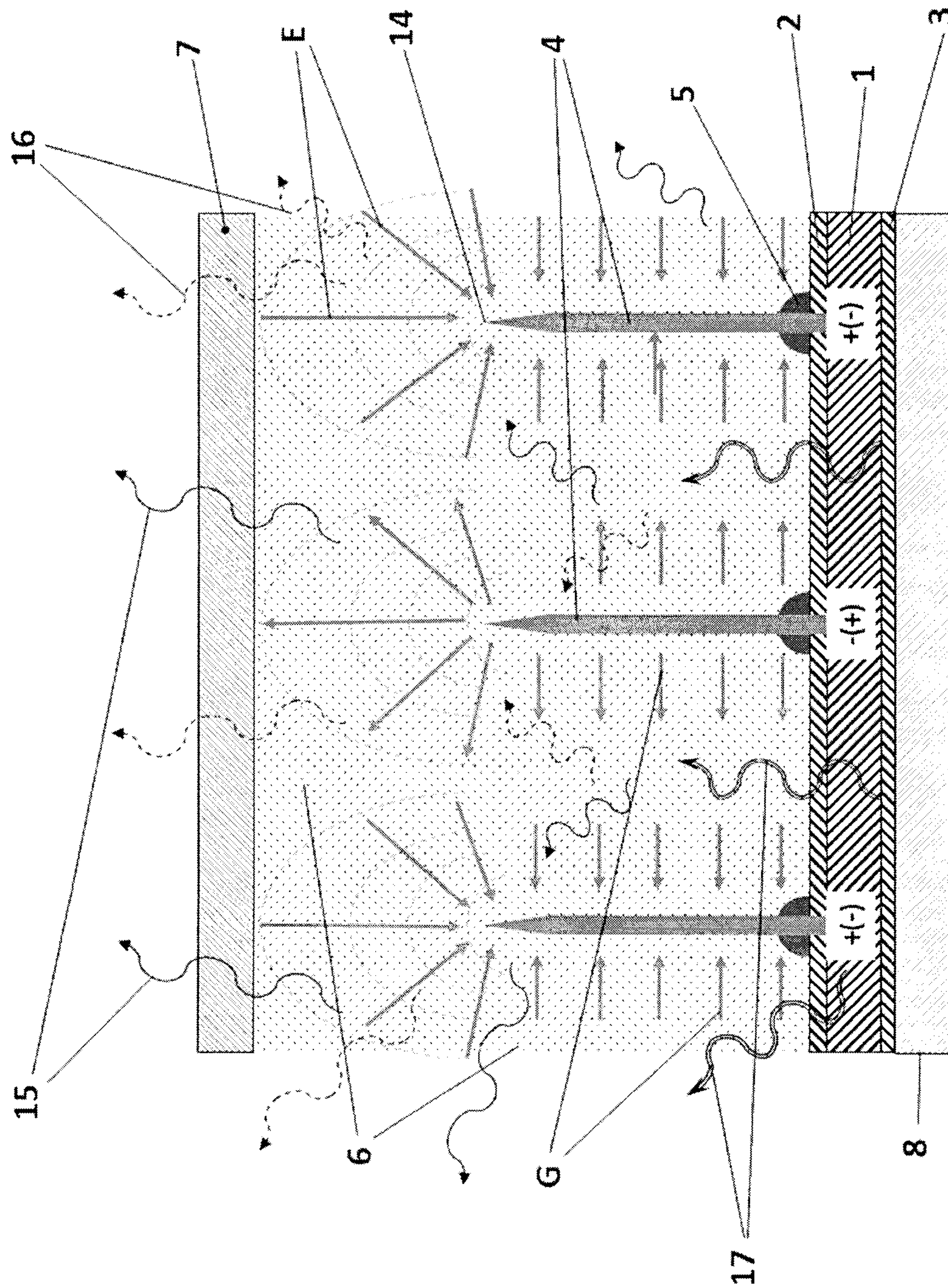


FIG. 5

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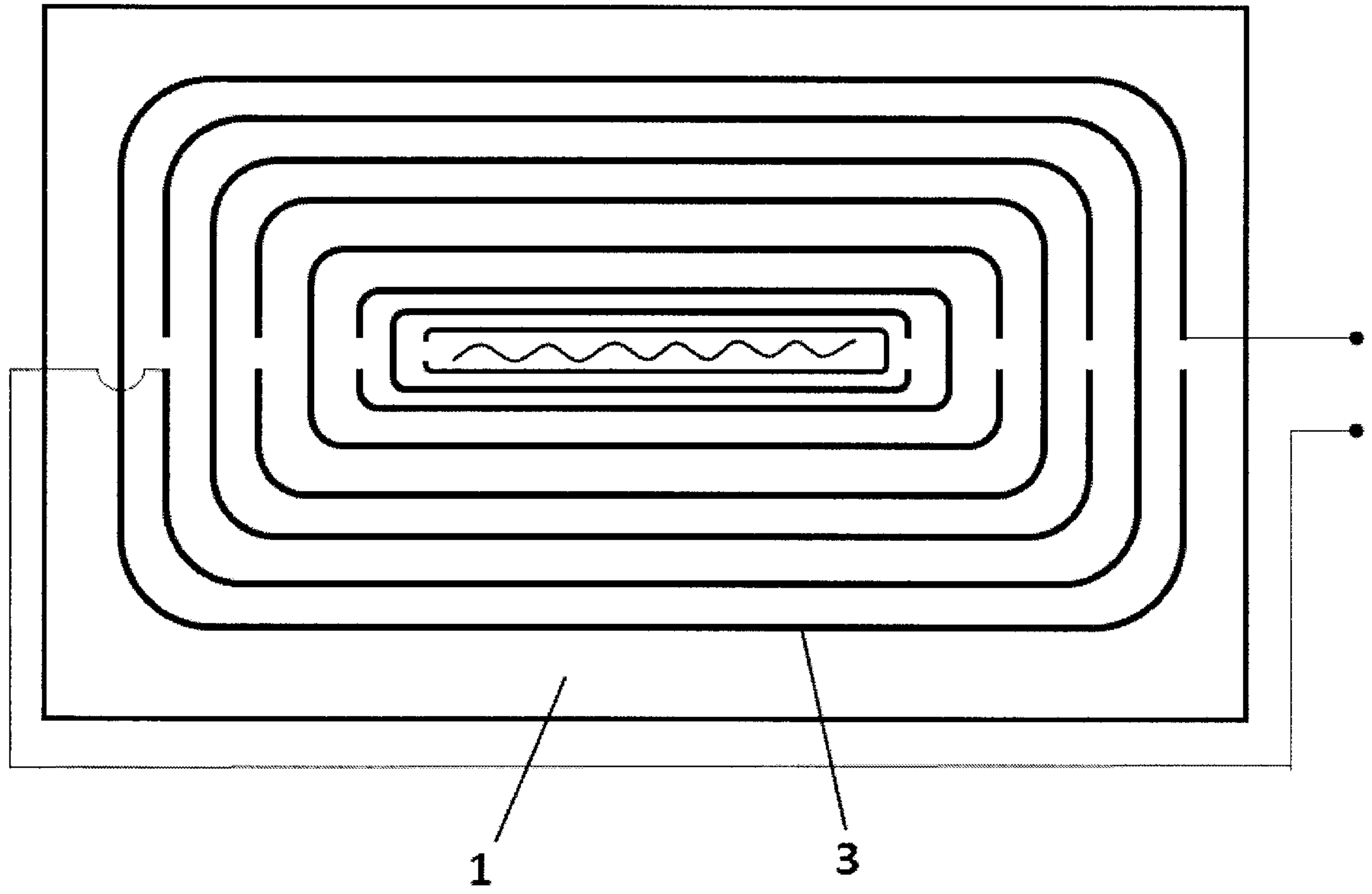


FIG. 6

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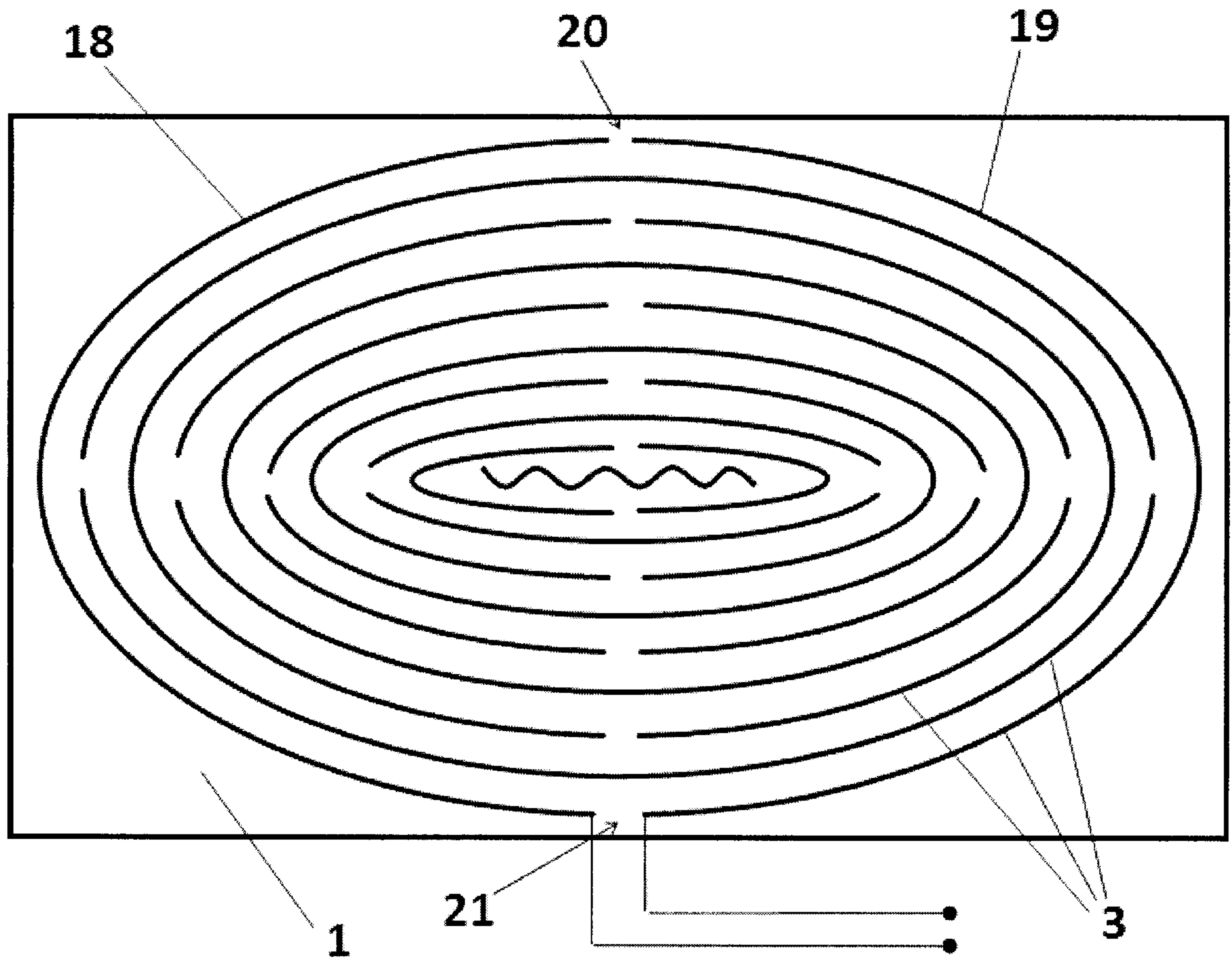


FIG. 7

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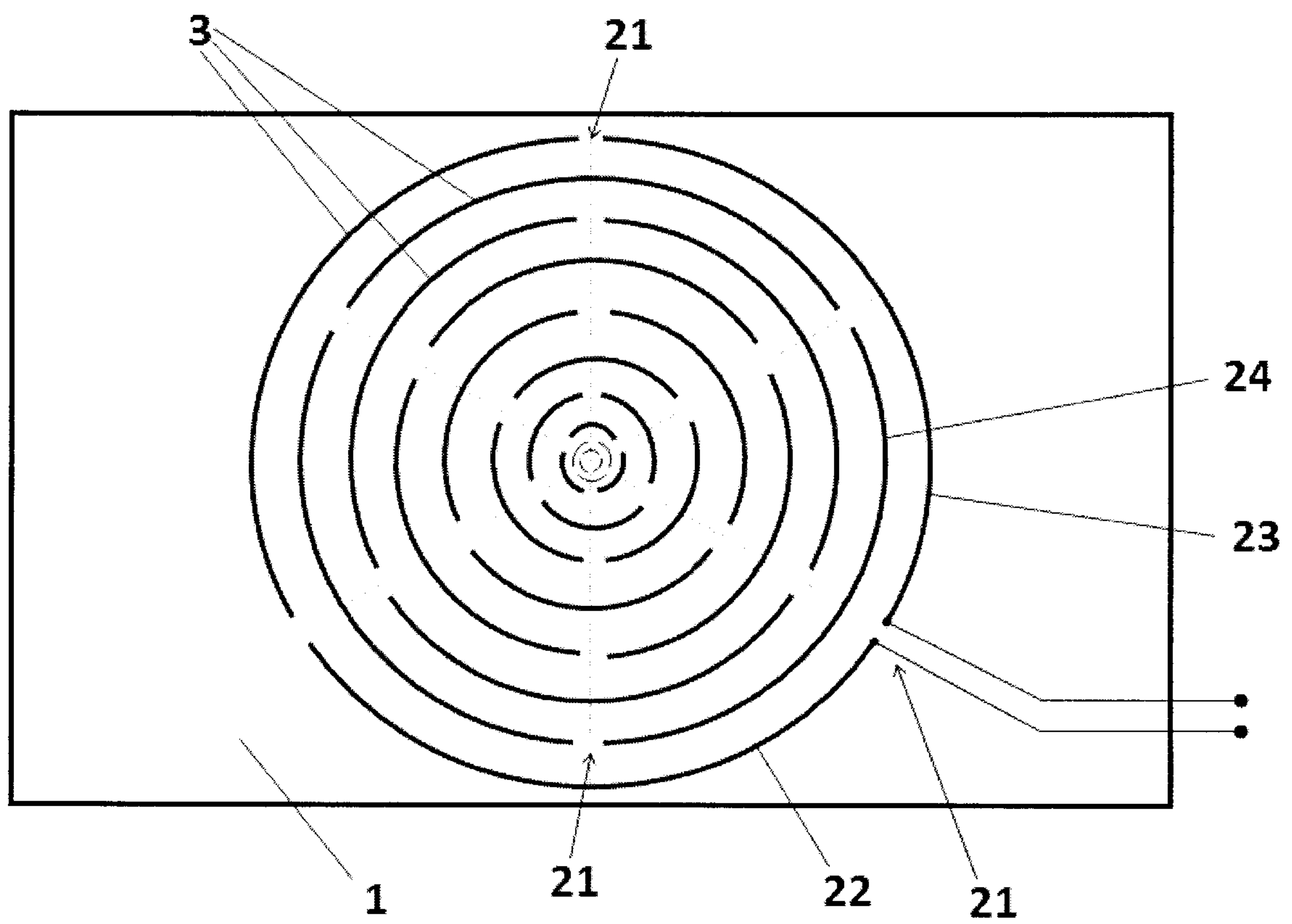


FIG. 8

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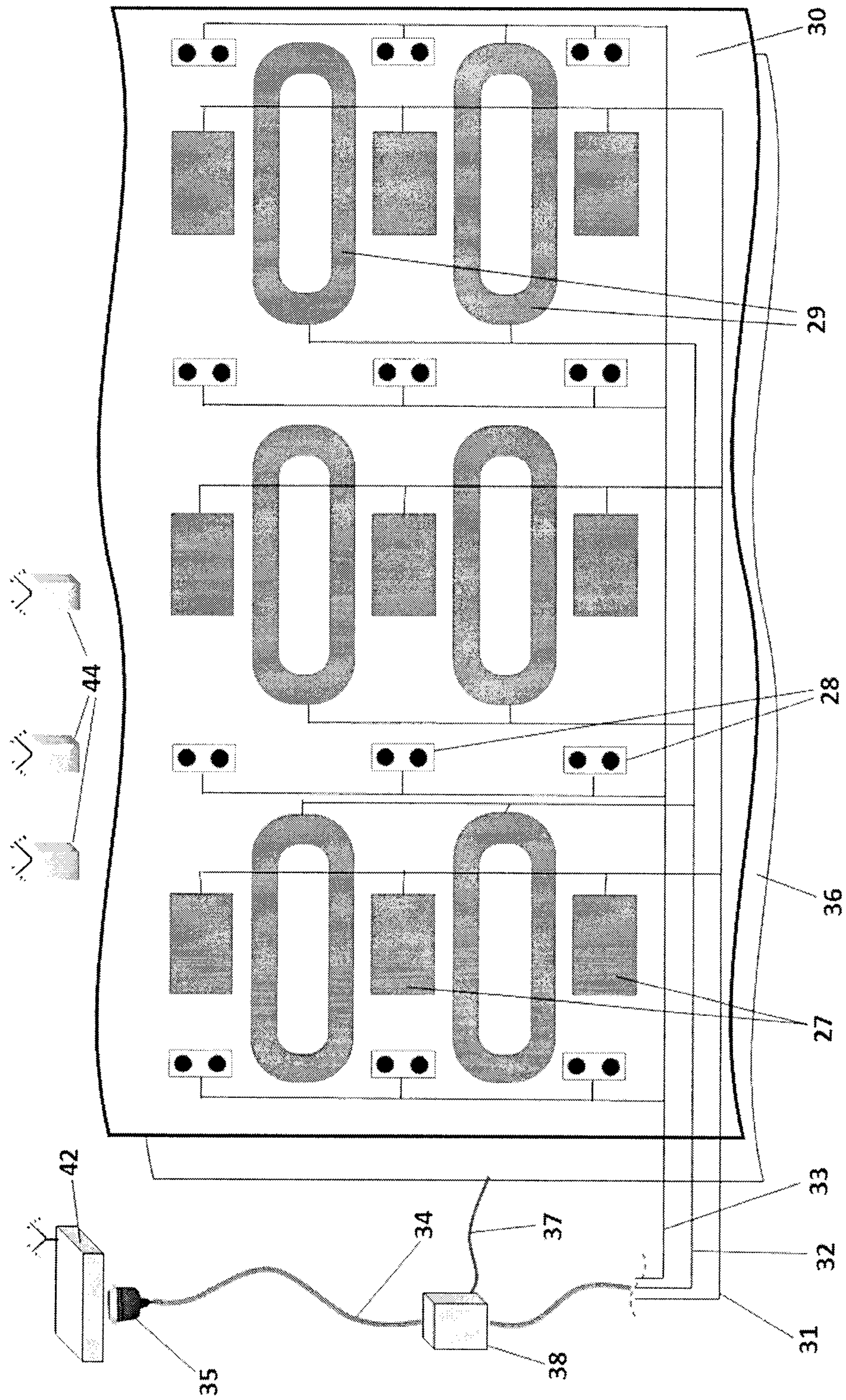


Fig. 9

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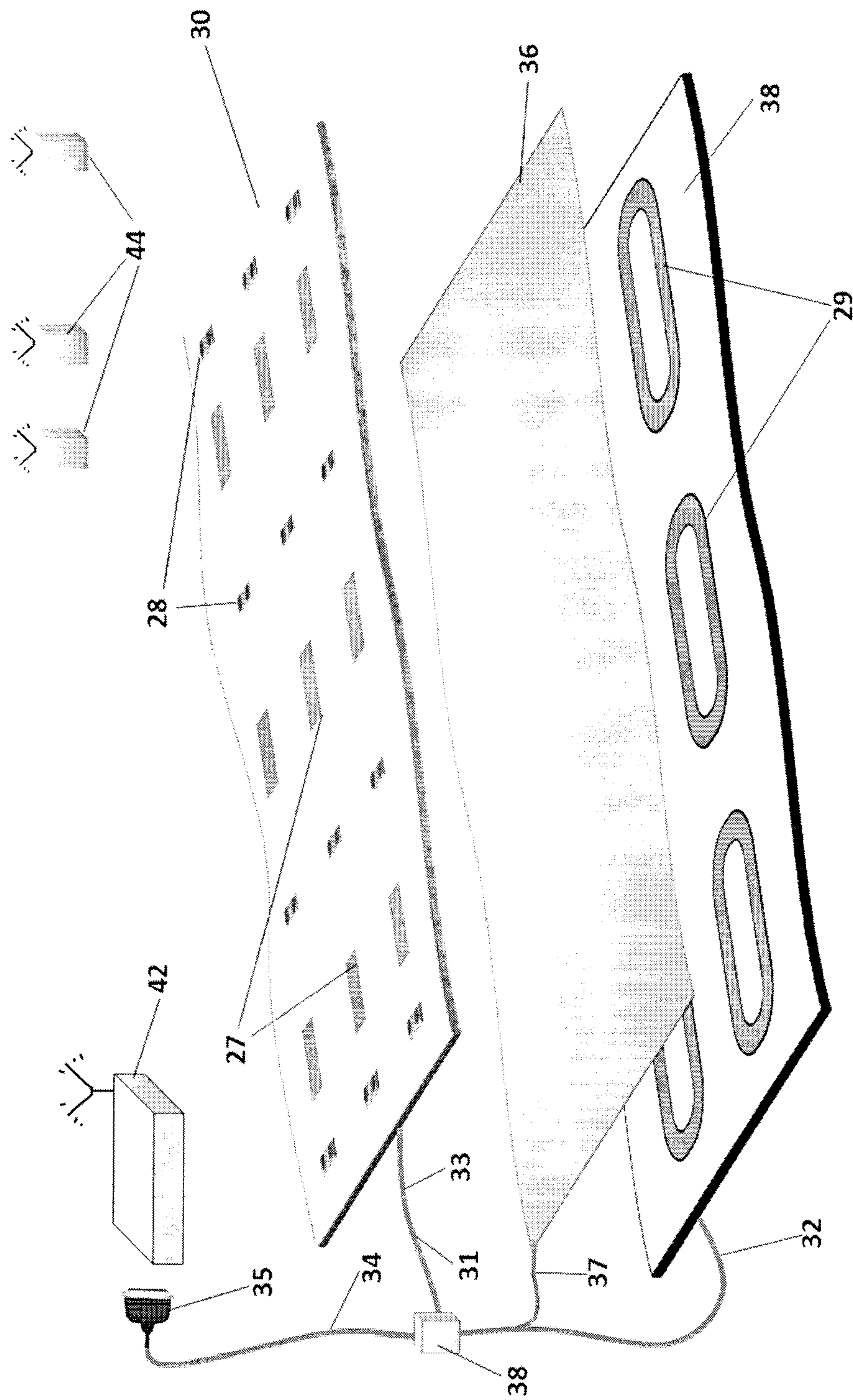


FIG. 10

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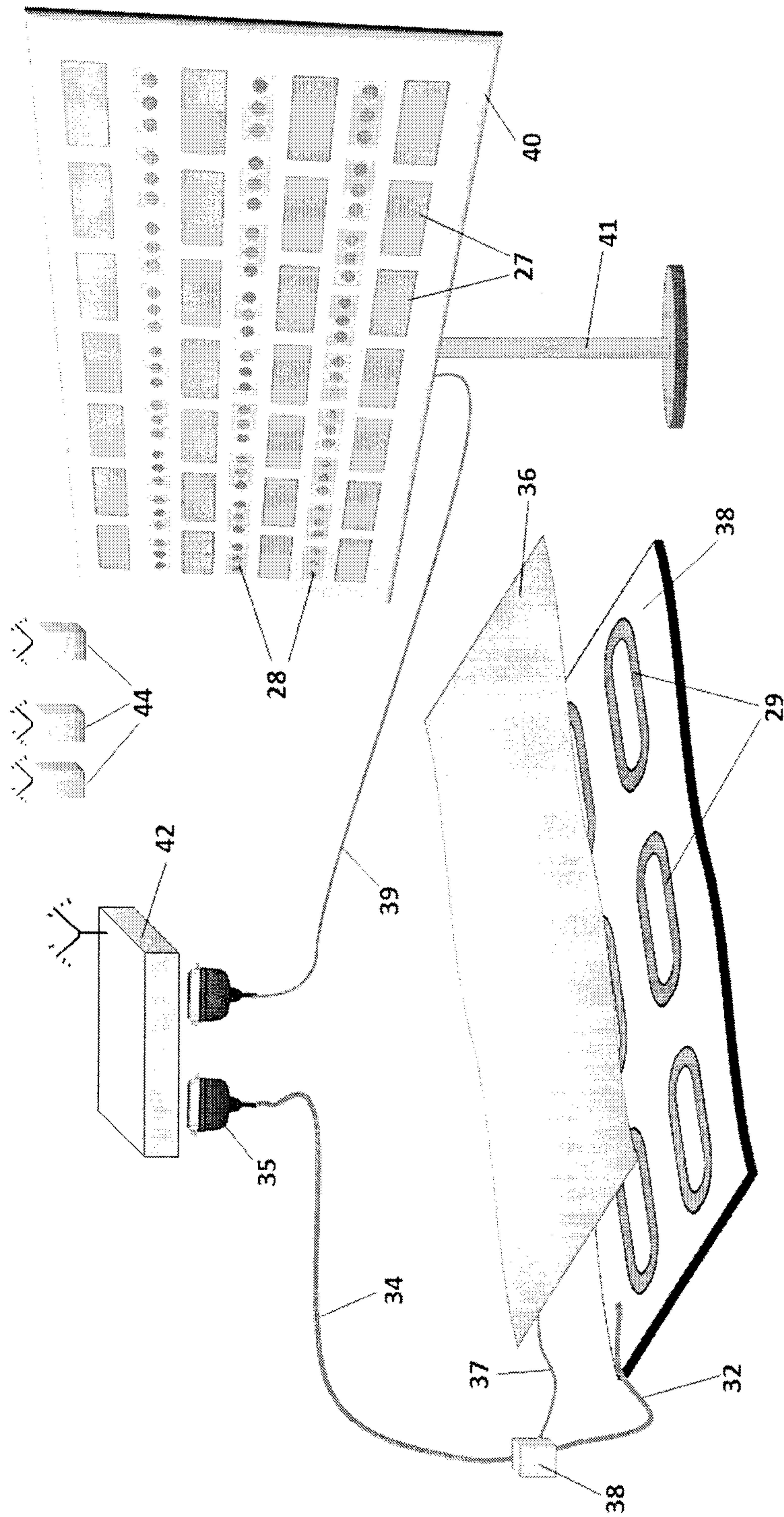


FIG. 11

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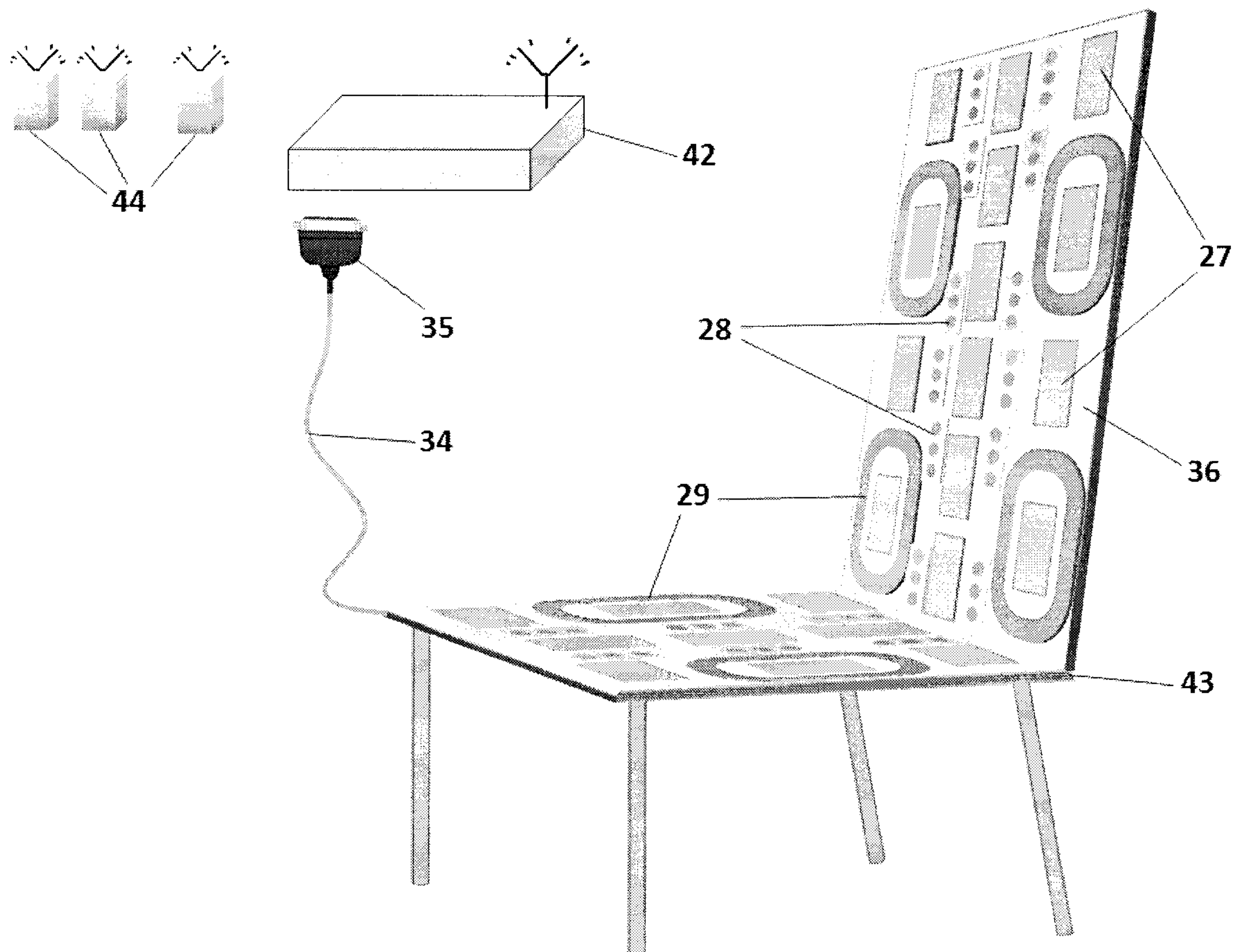


FIG. 12

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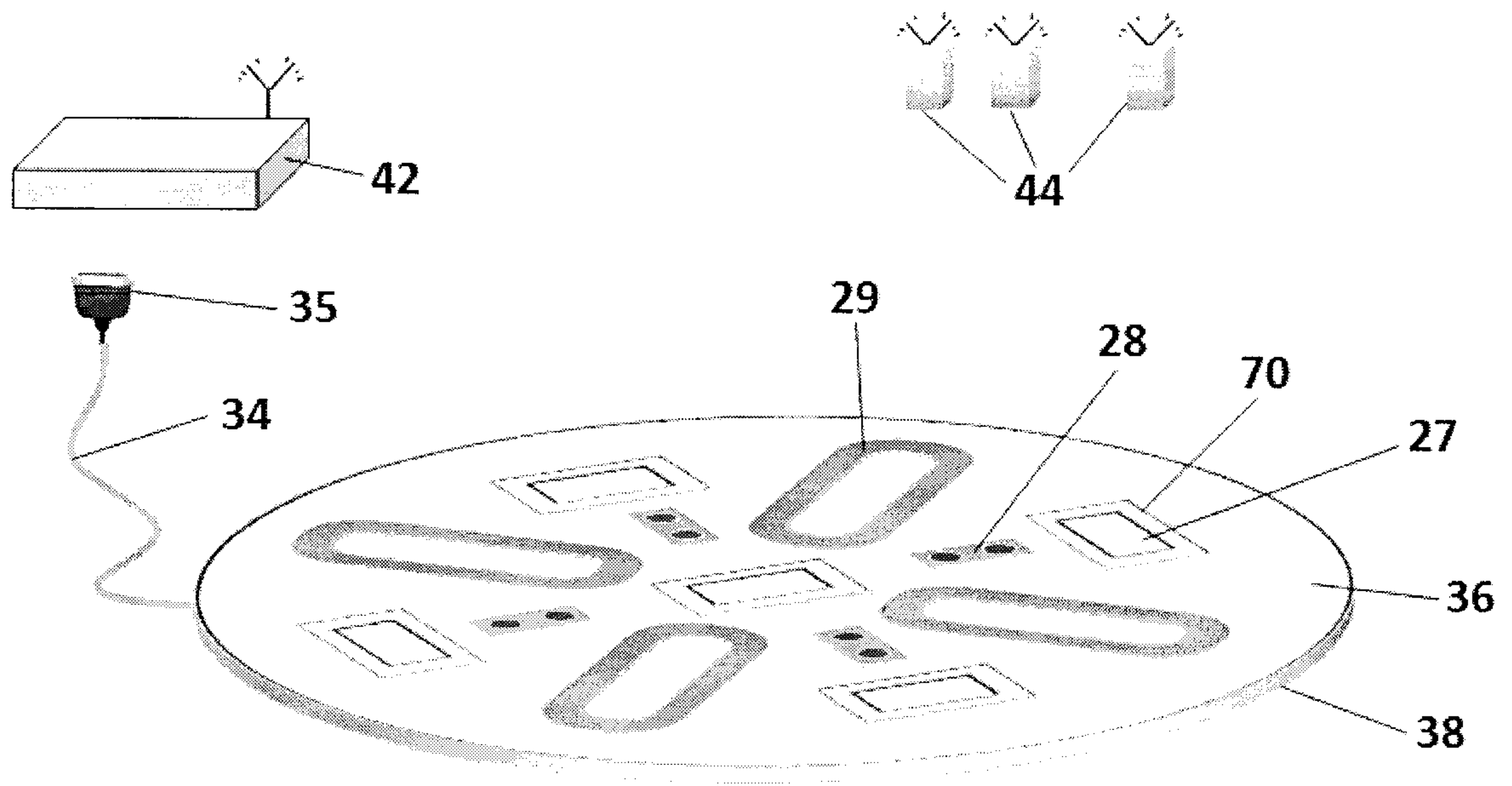


FIG. 13

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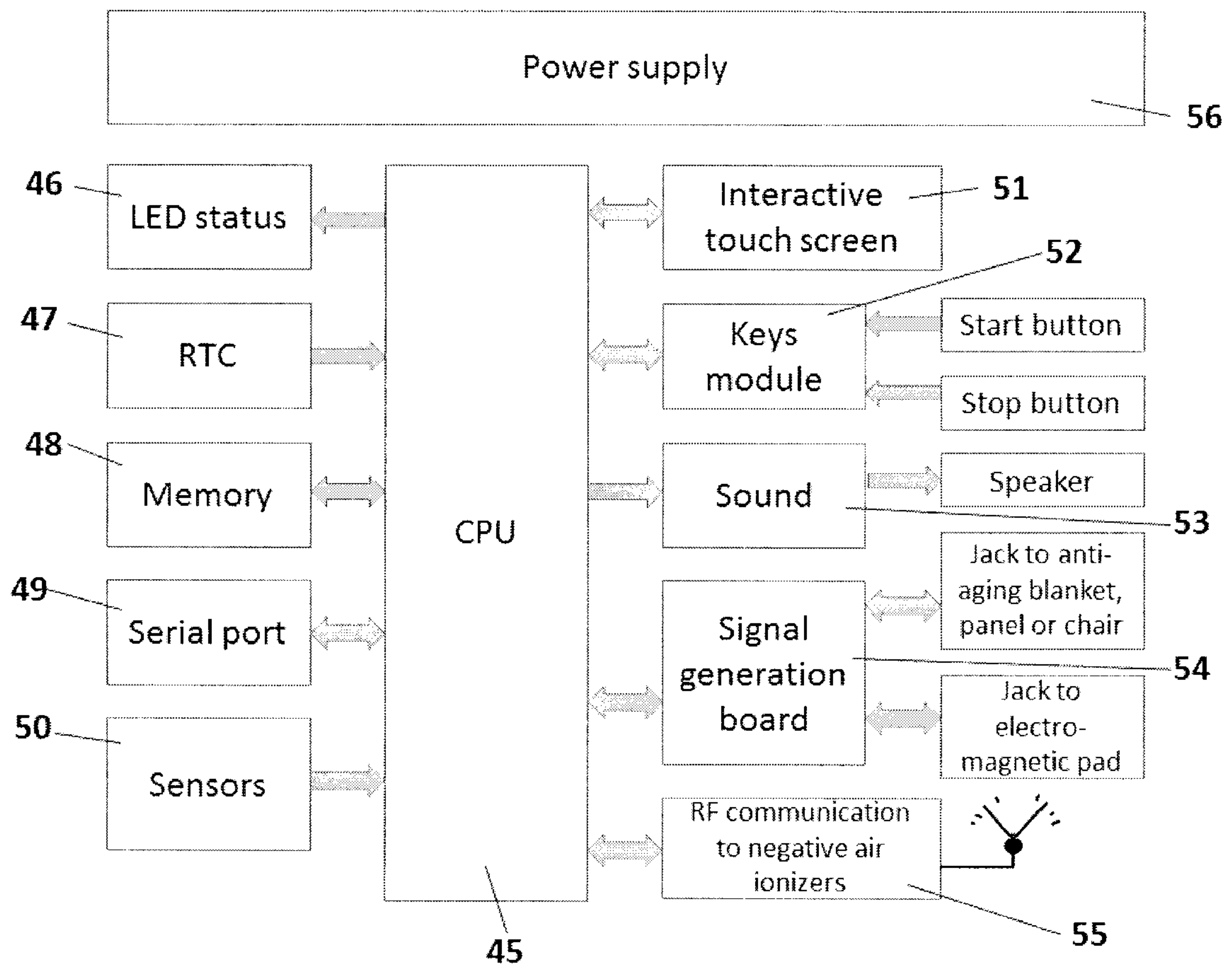


FIG. 14

Sheet 15/16

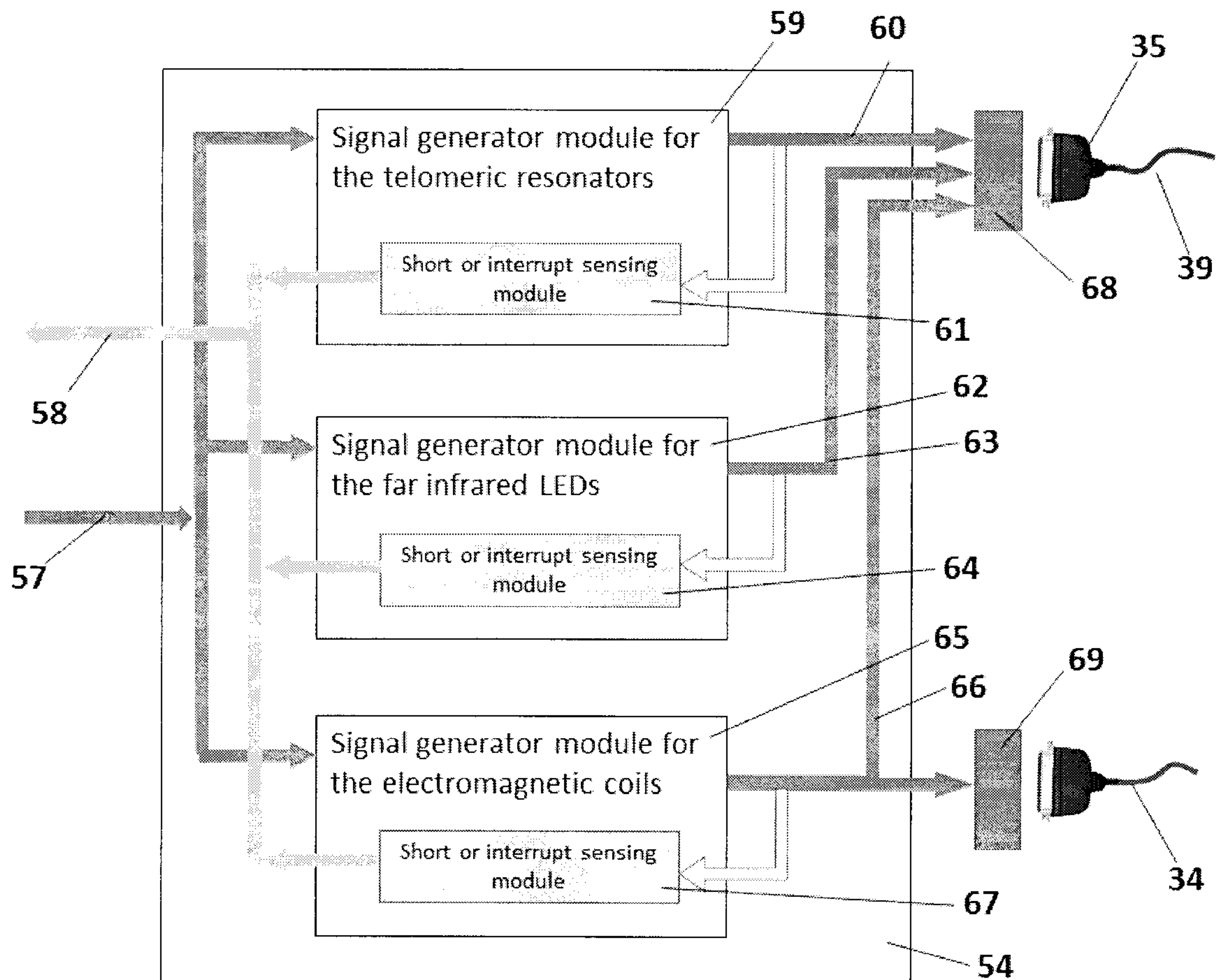


FIG. 15

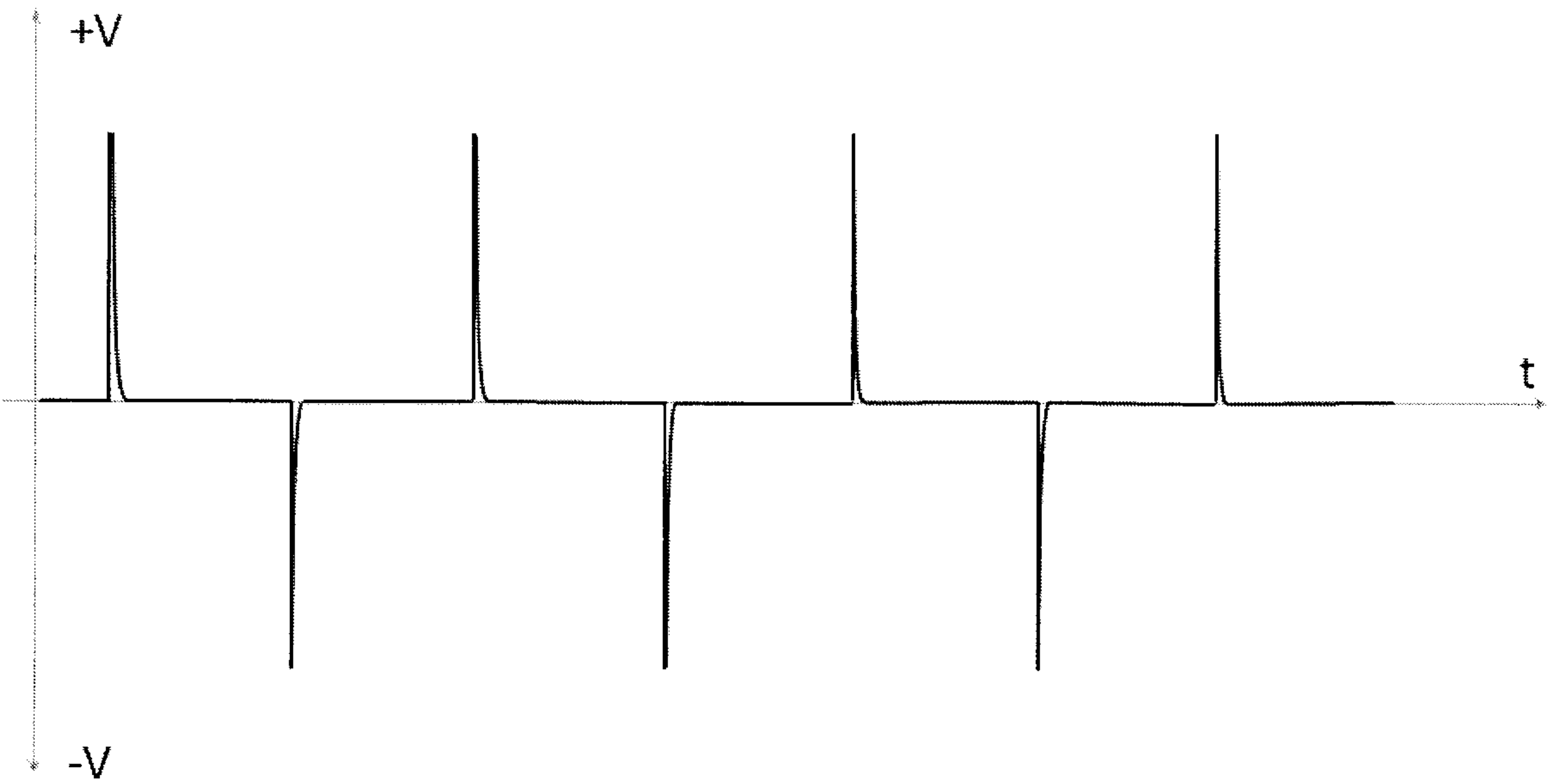


FIG. 16

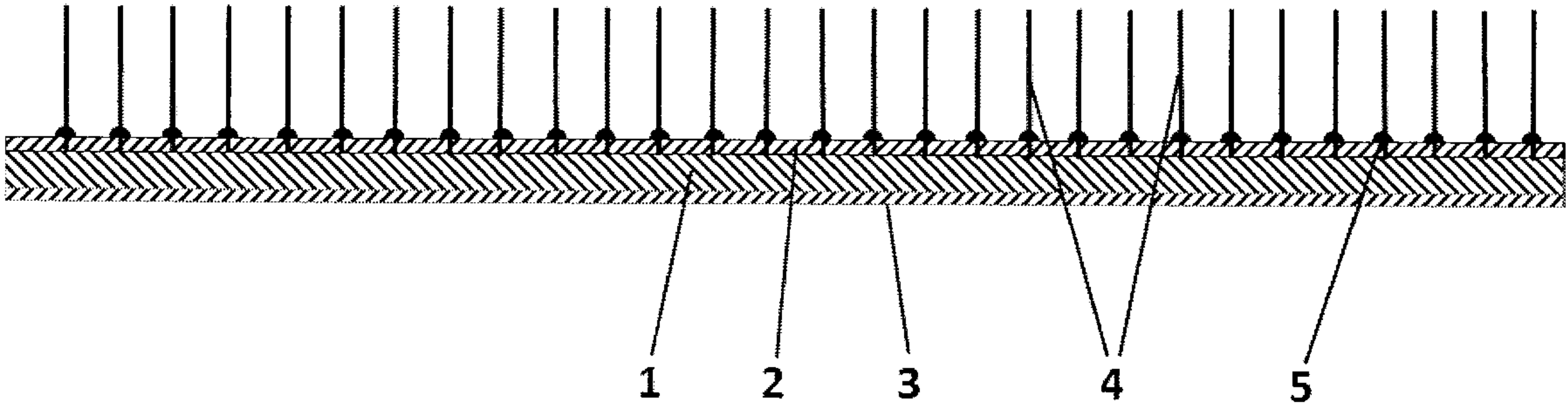


FIG. 17

