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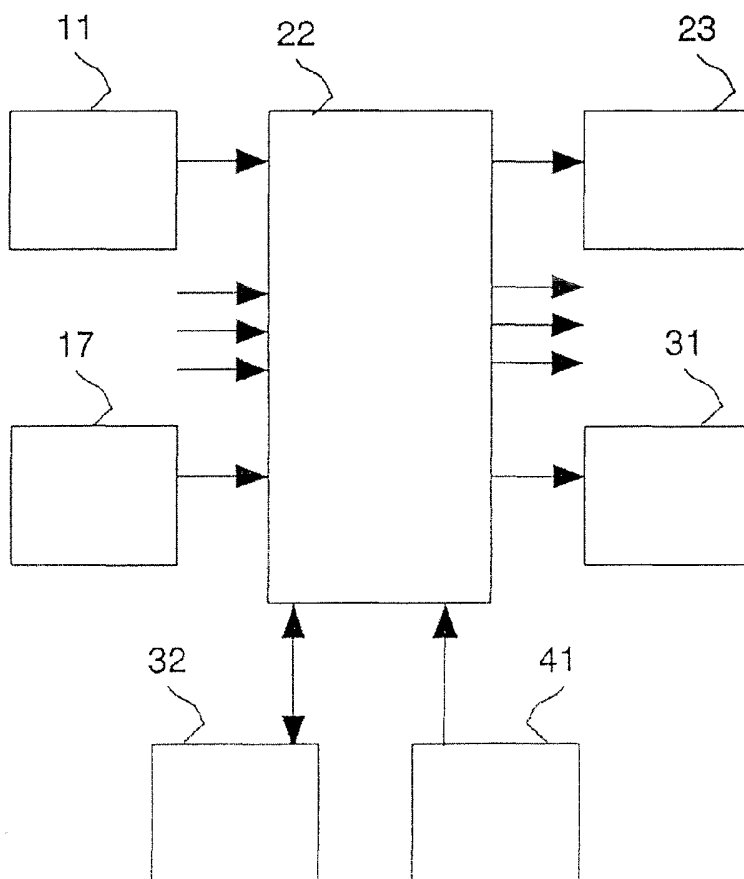
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[Continued on next page]

- (54) Title:** MULTI-CHANNEL AND MULTI-DIMENSIONAL SYSTEM AND METHOD



(57) Abstract: An implanted system for treatment of human diseases by electric stimulation and/or electric blocking of the body tissues, comprising sensor and/or biosensor means for measuring variables in the body, processor means connected to the sensors and biosensors for processing the measured variables and for deciding in real time whether to apply an electric signal to the body tissues, and electrode means implanted at predefined locations and connected to the processor means, for applying the stimulation and/or electric blocking signals to the body tissues. A method for treatment of human diseases using an implanted system by electric stimulation and/or electric blocking of the body tissues, comprising: A. measuring variables in the body using implanted sensor and/or biosensor means ; B. processing the measured variables for deciding in real time whether to apply an electric signal to the body tissues; C. applying the stimulation and/or electric blocking signals to the body tissues.



GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Multi-Channel and Multi-Dimensional System and Method

TECHNICAL FIELD

5 The present invention relates to a system and method for treatment of human diseases by electric stimulation and electric blocking of the body tissues using implanted, modular, multichannel, multisensor, multidimensional, adaptive and programmable structure with multidimensional sensitized electric stimulant microchips (visceral processors).

10

BACKGROUND OF THE INVENTION

Treatment of human diseases by electric stimulation has been reported by researchers, and related patents have been issued.

15 Prior art analog systems have various disadvantages, for example:

1. Blocking of conductivity of the nervous impulses through the vagus nerve is carried out by means of electric stimulation, which is of low efficacy because the procedure is enabled by direct current only.

2. Electric stimulation of the vagus and other nerves (hypoglossus and
20 glossopharyngius) can cause serious side effects, such as paresis of the above with salivation disorders, lingual deviations, pains; cardiac arrest, loss of voice.

Note: In the analog patents, the chip is called "Neurocybernetic prosthesis" (NCP). In the present disclosure, the following name is used:

25 "Multifunctional sensitized implanted microchip".

3. The sensors control the chip's activation/deactivation mode only. In the new system, however, this applies to adjustment of the chip to the body's needs. The algorithm can be selected automatically. Moreover, the new chips are multifunctional.

30 Examples of prior art, the following patents are included herein by reference:

PAT. NO. Title

- 1 6,473,644 Method to enhance cardiac capillary growth in heart failure patients
- 2 5,928,272 Automatic activation of a neurostimulator device using a
5 detection algorithm based on cardiac activity
- 3 5,707,400 Treating refractory hypertension by nerve stimulation
- 4 5,571,150 Treatment of patients in coma by nerve stimulation
- 5 5,540,730 Treatment of motility disorders by nerve stimulation
- 6 5,531,778 Circumneural electrode assembly
- 10 7 5,351,394 Method of making a nerve electrode array
- 8 5,335,657 Therapeutic treatment of sleep disorder by nerve stimulation
- 9 5,330,515 Treatment of pain by vagal afferent stimulation
- 10 5,304,206 Activation techniques for implantable medical device
- 11 5,299,569 Treatment of neuropsychiatric disorders by nerve stimulation
- 15 12 5,269,303 Treatment of dementia by nerve stimulation
- 13 5,263,480 Treatment of eating disorders by nerve stimulation
- 14 5,251,634 Helical nerve electrode
- 15 5,237,991 Implantable medical device with dummy load for pre-implant
testing in sterile package and facilitating electrical lead
20 connection
- 16 5,235,980 Implanted apparatus disabling switching regulator operation to
allow radio frequency signal reception
- 17 5,231,988 Treatment of endocrine disorders by nerve stimulation
- 18 5,222,494 Implantable tissue stimulator output stabilization system
- 25 19 5,215,089 Electrode assembly for nerve stimulation
- 20 5,215,086 Therapeutic treatment of migraine symptoms by stimulation
- 21 5,205,285 Voice suppression of vagal stimulation
- 22 5,188,104 Treatment of eating disorders by nerve stimulation
- 23 5,186,170 Simultaneous radio frequency and magnetic field
30 microprocessor reset circuit
- 24 5,179,950 Implanted apparatus having micro processor controlled current
and voltage sources with reduced voltage levels when not
providing stimulation

25 5,154,172 Constant current sources with programmable voltage source

26 4,979,511 Strain relief tether for implantable electrode

Other prior art patents include:

US Patent 5,700,282, Zabara: Heart rhythm stabilization using a
5 neurocybernetic prosthesis

US Patent 5,540,734, Zabara: Cranial nerve stimulation treatment using
neurocybernetic prosthesis.

The present inventor has been granted patents in the Russian Federation:

RU (11) 2102090

10 RU (11) 2108121

RU (II) 2108817

A PCT application has been filed by the present inventor,
International Application No.: PCT/RU 01/00126 filed on 27 March 2001
and claiming priority from a prior application filed on 29 March 2000.

15

SUMMARY OF THE INVENTION

The present invention relates to an implanted system for the treatment of
human diseases by electric stimulation and electric blocking of the body
20 tissues (optional), and a method of operation of the system. The system and
method use implanted modular, multichannel, multisensor, multidimensional,
adaptive and programmable structure with multidimensional sensitized
electric stimulant microchips (visceral processors).

A summary of the main inventive issues:

25 1 Hardware, structure of system and its component parts

1.1 System: modular, multichannel, multisensor, multidimensional,
adaptive, programmable

1.2 Microchips - processor means

1.3 Sensors

30 1.4 Biosensors

1.5 Universal sensors

1.6 Electrodes

1.7 Wireless electrodes - Golden needle (TM)

- 1.8 Autonomous power source
- 1.9 Contacts, or indirect body measurements using adaptive techniques
- 2 Method of operation of the system, software, algorithms
- 3 Method of treatment using the new system:
 - 5 3.1 Treatment matrix. For each disease a matrix of:
 - system structure
 - method of operation of the system
 - locations in the body for sensors, electrodes
 - 3.2 Inverse treatment matrix. For a specific structure and implantation:
 - 10 List of all the diseases that are concurrently being treated (or can be treated, if diagnosed in the patient)
- 4 Clinical results, practical experience using the new system and method are presented. The method has been kept secret, and the system is hidden inside the patient's body.
- 15 According to one aspect of the invention, it allows affecting [controlling] the functional activity of the systems and/or specific organs of the body by electric stimulation and/or blocking (with alternate and direct current respectively) thereof.

The affected systems and organs of the body include, for example:

 - 20 the nervous structure of the sympathetic nervous system or the parasympathetic system or the sympathetic nervous system and parasympathetic system and hypoglossal (sinocarotid collector of the Vegetative Nervous System - SCVNS), the central nervous system, as well as neurons of the organ and/or cutaneous nerves and/or depressor nerves.
- 25 In a preferred embodiment, a nervous band or group is formed, comprising all, or the majority of, the nerve branches innervating the carotid glome (glomus caroticum). The carotid glome is found in the area where the common carotid artery splits into the internal and external carotid arteries. The above nervous band or group is formed using surgical tools.
- 30 According to another aspect of the invention, the system includes automatic adjustment of the microchip's channels to optimal algorithms of the software to electrically impact organs and tissues. This becomes possible due to sensitization via multidimensional biosensors

and sensors, to adapt the system to different conditions of various media of the body: fluids, gases dissolved in them, hormones versus electric and mechanical activity (including the murmurs) of the organs and structures of different systems of the body.

- 5 Thus the microchip can adapt, in real time, to changing conditions of the human body.

Furthermore, the system enables to directly and simultaneously control functions of several body organs or systems per different algorithms and to concurrently treat several diseases in one patient.

- 10 Moreover, the system allows for multi-purpose, modular use: chips of each generation can be used for treatment of various diseases. The only requirement to achieve that is to adequately select sensors, biosensors, electrodes and software's algorithms.

- A multidimensional sensitization of the chips' coating (artificial skin-type with artificial multi-function sensor and biosensor receptors located on all the surfaces of the chip's shell and its electrodes). Both sensors, biosensors intended to measure one parameter of the body's homeostasis and those to monitor various parameters (for example: contents of substances, gases, analysis of electric and mechanical activity of the organs, etc.) can be located on each of the above-mentioned chip's parts.

This allows the chip simultaneously monitor functional activity of several systems of the body (nervous, cardiovascular, digestive, endocrine, urinary systems, etc.) and to finely adapt to the body's needs.

- Multi-channel feature (for Chip 4 and more advanced versions), enabling to separately program all the parameters of outgoing pulses of the stimulation current, simulation modes (electric stimulation, blocking) (turning the chip on and off) in each of the channels. Linear, synchronized non-calibrated adjustment of each of the chip's channels to the optimal working algorithm while selecting the latter.

- 30 Multi-purpose use and multi-function feature of each channel (electric blocking, electric stimulation, etc.). A combination of channels can form an analog of a natural neuron net.

Novel cordless/wireless devices, such as electrodes connected to the mother chip via electromagnetic waves (for the Golden Needle(TM) type and others) in the multi-channel chips (Chip 6).

Up to 100 channels or more can be used with one chip, each channel
5 capable of independent operation, each channel can treat a specific disease. Microscopic size of several chips (less than 1 mm) involving state-of-the art microelectronic technologies.

Microchips' sensitization: this feature is enabled due to a large number of microscopic biosensors and sensors located on all the surfaces of the
10 microchips (similarly to the receptors on the human skin).

Microchips' implantation methods and their outlines: the chips are implanted using low-trauma surgeries (endoscopic procedures, etc.), as well as stereoscopic surgeries ("Golden Needle" chip and other similar versions). The microchip's shell is implanted into the subcutaneous fat in the patient's
15 body, usually in the thorax. The electrodes are connected to various structures of the nervous and other systems of the body. The biosensors and sensors are connected to the relevant organs and systems.

The chip's adjustment to the optimal therapeutic plan is performed after the surgery, using the conventional diagnostic examination methods and a special
20 external device to obtain a maximal therapeutic effect on an individual basis.

Additional properties of the microchips and technologies:

1. Rules of connecting the electrodes to nervous structures: to the nerves, spinal cord, vegetative collectors (sinocarotid area), to neurons and nervous
25 ganglia of the organs. The chip can be connected both to all of the above-mentioned structures together and separately to each other of them, depending on therapeutic tasks and objectives; from the right or left side only, or from both right and left side.

2. Biosensors – sensors

30 Each electrode and chip's shell can carry sensors and biosensors of various purposes, as well as these of one same purpose (for example, to measure blood oxygen level).

The number of sensors and biosensors may vary, for example between one and 16, according to the specific application.

Differences from the PCT application for Chip 3, PCT/RU 01/00126 include, among others, biosensors intended only to measure blood oxygen level, respiration rate and heart rate, but also other biosensors, as well as sensors of all types.

3. Mechanism of impact on the nervous structures: electric blocking with direct current (as in the patent - stimulation of the vagus in asthmatic patients), or electric stimulation with alternate current, or electric stimulation and blocking in different combinations, or all the above-mentioned used either together or separately.

4. Autonomous programming, controlling, power-supplying via a radio channel of each of the microchip's channels: setting activation and deactivation time, algorithms to amend the current's outgoing pulses in a dependence on signals from the biosensors, sensors of different types, separate setting of sensitivity thresholds for each of the biosensors.

Novel means and method enable to amend the chips' algorithms both by means of external reprogramming and by the microchip itself (Chip 5, Chip 6)

5. A possibility to impact all the nervous structures simultaneously, as well as separately: using both electric blocking and stimulation in different combinations and sequences.

6. Modes and software algorithms for each of the microchip's channels can be set as follows:

- a) using an external computer-assisted unit.
- b) using biosensors depending on their working algorithms.
- c) manually by the physician or the patient themselves.

7. Object-oriented technique of imputing the algorithms: (for example, "to enhance the intestine's peristalsis") with their automatic performance by the microchip.

8. A possibility to power the chip directly from kinetic energy of the patient's body: (see for example, Fig. 25B and the related disclosure), this allowing to increase the chips' useful life and reliability.

9. An option to locate the microchip's CPU both in an implanted device and an external one: on the patient's chest (attached to the patient's clothes in a form of a pin).
10. A possibility to telemetrically control and monitor the chip's operation and its properties.
11. Radio frequency performance devices without electrodes: implanted electrodes connected to the mother microchip (Chip 6) or only one of them, as well as sensors, biosensors (several or one in number). See detailed description, for example with reference to Figs. 12, 13 and relating to the Wireless electrodes - Golden needle (TM) below.
12. Multidimensional sensors enabling monitoring of various media of the body: contents of fluids, gases, hormones, electric, mechanical activity of organs and systems. Chip's activation indicator for the patient. Chip-assisted direct monitoring of the human nervous system's condition is carried out by analyzing electric activity of the nerves and brain.
13. Concepts of impacting organs and systems by the microchips: enhancing or suppressing the function of a specific organ or system, or its adjustment according to a priori set reference (adjustment to the patient's individual activity and needs).
14. Basic multifunctional algorithm with specific types of its implementation for each disease.
15. Each embodiment may include pairs of antipode diseases: for example: hypertension, hypotension.
16. The chip can be connected, for example, to any part of the sympathetic trunks, vagus nerves, spinal cord. Other locations are detailed in the present disclosure, see for example the disclosure below with reference to Figs. 27 to 48.
17. The chip can be coated with Shungite, a mineral offering improved performance for implanted devices.
18. Using a learn mode, the system can initially use both sensors/biosensors and indirect sensors, whereas at a future stage it converts to using only the indirect sensors. This achieves reliable operation for prolonged time periods.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example, with reference to
5 the accompanying drawings:

- Fig. 1 - System structure
- Fig. 2 - Block diagram of microchip No. 1
- Fig. 3 - Structure of microchip No. 1
- Fig. 4 - Block diagram of microchip No. 2
- 10 Fig. 5 - Structure of microchip No. 2
- Fig. 6 - Block diagram of microchip No. 3
- Fig. 7 - Structure of microchip No. 3
- Fig. 8 - Block diagram of microchip No. 4
- Fig. 9 - Structure of microchip No. 4
- 15 Fig. 10 - Block diagram of microchip No. 5
- Fig. 11 - Structure of microchip No. 5
- Fig. 12 - Block diagram of microchip No. 6
- Fig. 13 - Structure of microchip No. 6
- Fig. 14 - Structure of sensors No. 8,9,10,16
- 20 Fig. 15 - Structure of sensors No. 11,13
- Fig. 16 - Structure of sensors No. 12,15
- Fig. 17 - Structure of sensor No. 14
- Fig. 18 - Typical signals from sensors (codes)
- Fig. 19 - Structure of biosensor (Type A)
- 25 Fig. 20 - Structure of biosensor (Type B)
- Fig. 21 - Typical signals from biosensors (codes)
- Fig. 21B - Results of 24 hour sensors monitoring in a patient
- Fig. 22 - Structure of universal sensor
- Fig. 23 - Structure of electrode (Type A)
- 30 Fig. 24 - Structure of electrode (Type B)
- Fig. 25 - Structure of electrode (Type C)
- Fig. 25B - Structure and location of implanted power source
- Fig. 25C - Structure of an external monitoring device

- Fig. 26 - Method of operation - flow chart
- Fig. 27 - Preferred implantation location in the SCVNS
- Fig. 27B - Detail of Preferred implantation location in the SCVNS
- Figs. 28 to 48 - Preferred implantation locations
- 5 Figs. 49 to 52 - Illustration of research methodology and results
- Figs. 53 to 57 - Illustration of surgical procedure
- Figs. 58 to 67 - Roentgen of patient with implanted system
- Fig. 68 - Structure of universal biosensor
- Fig. 69 - Structure of book-type bipolar electrode
- 10 Fig. 70 - Structure of book-type multi-channel electrode
- Fig. 71 - Structure of book-type 2-8 polar or more electrode
- Fig. 72 - Structure of spiral electrode
- Fig. 73 - Structure of plate-like electrode
- Fig. 74 - Structure of wire gauze electrode
- 15 Fig. 75 - Structure of coaxial electrode
- Fig. 76 - Structure of Golden Needle (TM) electrode

DETAILED DESCRIPTION OF THE INVENTION

- 20 The principles and operation of the new system and method for treatment of human diseases by electric stimulation and electric blocking of the body tissues using an implanted programmable system may be better understood by way of example, with reference to the drawings and the accompanying description.
- 25 The description further includes the following tables.
- List of Tables
- Table 1 - System structure and therapeutic applications
- Table 2 - Sensors data
- Table 3 - Biosensors data
- 30 Table 4 - Method of operation/algorithm for epilepsy
- Table 5 - Method of operation/algorithm for asthma
- Table 6 - Method of sensors/biosensors activation
- Table 7 - Treatment strategy: System structure and implant locations

Table 8 - Electric stimulation parameters (A)

Table 9 - Electric stimulation parameters (B)

Table 10 - Experiments performed for each disease, in animals and humans

Table 11 - Results of obesity treatment

5 Table 12 - Statistics for obesity treatment

Table 13 - Results of asthma treatment

Table 14 - Asthma surgery data

Table 15 - Epilepsy clinical examples

Table 16 - Epilepsy surgery data

10 Table 17 - Examples of gastric and duodenal ulcer treatment

Table 18 - Clinical examples of dementia treatment

Table 19 - Clinical examples of treatment of obliterating vascular diseases

Table 20 - Conditions in a healthy patient that may be treated.

Novel features in the new system and method include, for example, a
15 new approach to treatment of diseases using microchips from the existing
conventional methods:

1. Enabling to directly and simultaneously control functions of several
body organs or systems per different algorithms and to treat at a time
several diseases in one patient.
- 20 2. Automatic adjustment of the microchip's channels to optimal algorithms
of the software to electrically impact organs and tissues. This becomes
possible due to sensitization via multidimensional biosensors and sensors
guaranteeing adaptation to different conditions of various media of the
body: fluids, gases dissolved in them, hormones versus electric and
25 mechanical activity (including the murmurs) of the organs and structures of
different systems of the body. Thus the microchip can adapt very precisely
to a changing condition of the human body in a real-time mode.
3. Controlling functional activity of the systems and specific organs of
the body not only by electric stimulation of nervous structures of the
30 parasympathetic nervous system, but also by means of electric stimulation
and blocking (with alternate and direct current) of structures of the
sympathetic and parasympathetic nervous systems, as well as of the central

nervous system (spinal cord), in different combinations, depending on a specific disease and the patient's condition.

Conceptual differences of the new chips from the existing similar devices

1. Multi-purpose use: chips of each generation can be used for treatment of various diseases. The only requirement to achieve that is to adequately select sensors, biosensors, electrodes and software's algorithms.
2. Multidimensional sensitization of the chips' coating (artificial skin-type with artificial multi-function sensor and biosensor receptors located on all the surfaces of the chip's shell and its electrodes). Both sensors, biosensors intended to measure one parameter of the body's homeostasis and those to monitor various parameters (for example: contents of substances, gases, analysis of electric and mechanical activity of the organs, etc.) can be located on each of the above-mentioned chip's parts. This allows the chip simultaneously monitor functional activity of several systems of the body (nervous, cardiovascular, digestive, endocrine, urinary systems, etc.) and to finely adapt to the body's needs (absolute novelty).
3. Multi-channel feature (for Chip 4 and more advanced versions), enabling to separately program all the parameters of outgoing pulses of the stimulation current, simulation modes (electric stimulation, blocking) (turning the chip on and off) in each of the channels. Linear, synchronized non-calibrated adjustment of each of the chip's channels to the optimal working algorithm while selecting the latter.
4. Multi-purpose use and multi-function feature of each channel (electric blocking, electric stimulation, etc.). A combination of channels can form an analog of a natural neuron net.
5. Availability of cordless performance devices, such as electrodes connected to the mother chip via electromagnetic waves ("Golden Needle"-type and others) in the multi-channel chips (Chip 6) (absolute novelty).
6. Microscopic size of several chips (less than 1 mm) involving state-of-the art microelectronic technologies.

7. An option to power the microchips directly from the human body's kinetic energy allowing to increase the chips' useful life and reliability.

General data on multi-organ microchip processors

1. Main components of the microchip: a CPU (microcomputer or micro-controller), multi-purpose electrodes with biosensors, sensors, an external programming and power-supplying unit connected to the computer.
2. Microchips' sensitization: this feature is enabled due to a large number of microscopic biosensors and sensors located on all the surfaces of the microchips (similarly to the receptors on the human skin).
3. Microchips' implantation methods and their outlines: the chips are implanted using low-trauma surgeries (endoscopic procedures, etc.), as well as stereoscopic surgeries ("Golden Needle" chip and other similar versions). The microchip's shell is implanted into the subcutaneous fat in the patient's body, usually in the thorax. The electrodes are connected to various structures of the nervous and other systems of the body. The biosensors and sensors are connected to the relevant organs and systems.

The chip's adjustment to the optimal therapeutic plan is performed after the surgery, using the conventional diagnostic examination methods and a special external device to obtain a maximal therapeutic effect on an individual basis.

1. Rules of connecting the electrodes to nervous structures: to the nerves, spinal cord, vegetative collectors (sinocarotid area), to neurons and nervous ganglia of the organs. The chip can be connected both to all of the above-mentioned structures together and separately to each other of them, depending on therapeutic tasks and objectives; from the right or left side only, or from both right and left side.

2. Biosensors – sensors

Each electrode and the chip's shell, can carry sensors and biosensors of various purposes, as well as these of one same purpose (for example, to measure blood oxygen level).

Differences from prior art and International Application PCT/RU 01/00126 include, among others, biosensors intended only to measure blood oxygen level, respiration rate and heart rate, but also other biosensors, as well as sensors of all types.

- 5 3. Mechanism of impact on the nervous structures: electric blocking with direct current (as in the patent stimulation of the vagus in asthmatic patients), or electric stimulation with alternate current, or electric stimulation and blocking in different combinations, or all the above-mentioned used either together or separately.
- 10 4. Autonomous programming, controlling, power-supplying via a radio channel of each of the microchip's channels: setting activation and deactivation time, algorithms to amend the current's outgoing pulses in a dependence on signals from the biosensors, sensors of different types, separate setting of sensitivity thresholds for each of the biosensors.
- 15 The novel structure and operation of the system allows to amend the chips' algorithms, both by means of external reprogramming and by the microchip itself (Chip 5, Chip 6).
5. A possibility to simultaneously affect a plurality of the nervous structures, as well as each one separately, using both electric blocking and/or stimulation, in various combinations and sequences.
- 20 6. Modes of operation and software algorithms for each of the microchip's channels can be set as follows: a) using an external computer-assisted unit; b) using biosensors depending on their working algorithms; c) manually by the physician or the patient themselves
- 25 7. Object-oriented technique of imputing the algorithms (for example, "to enhance the intestine's peristalsis") with their automatic performance by the microchip.
8. Means for powering the chip directly from kinetic energy of the patient's body (for example, see Fig. 25B - Structure and location of
30 implanted power source).

9. An option to locate the microchip's CPU in an implanted device or an external one, on the patient's chest (attached to the patient's clothes in the form of a pin).
10. A possibility to control and monitor the chip's operation and its properties by remote control (telemetry), see details below.
11. Radio frequency performance devices without electrodes - implanted electrodes connected to the mother microchip (Chip 6) or only one of them, as well as sensors, biosensors (one or several at once).
12. Multidimensional sensors enabling monitoring of various media of the body: contents of fluids, gases, hormones, electric, mechanical activity of organs and systems. Chip's activation indicator for the patient. Chip-assisted direct monitoring of the human nervous system's condition carried out by analyzing electric activity of the nerves and brain.
13. Means for affecting organs and body systems by the microchips: enhancing or suppressing the function of a specific organ or system, or its normalization per a preset reference (adjustment to the patient's individual activity and needs).
14. Basic multifunctional algorithm with specific types of its implementation for each disease.
15. Each embodiment includes pairs of antipode diseases, for example: hypertension, hypotension.
16. The chip can be connected to any part of the sympathetic trunks, vagus nerves, spinal cord.

25

1 Hardware, structure of system and its component parts

1.1 System: modular, multichannel, multisensor, multidimensional, adaptive, programmable

The system is detailed with reference to Fig. 1, and includes:
a plurality of sensors 11, used to measure variables in the patient's body,
and connected to a microchip 22 to transfer the results of the
above measurements for processing.
It may also include a plurality of biosensors 17 are used to measure

in the patient's body, and also are connected to electrodes 23, 31 which are used to activate and/or block nerves in the body.

A manual activation and control means 32 is used to manually activate the device and/or read measurements values inside the patient's body.

5 The system further includes power supply means 41.

See Table 1 - System structure and therapeutic applications.

1.2 Microchips

The chips' parts are preferably made of silicone, titanium, gold (999 purity
10 degree), platinum, stainless steel. Throughout the present disclosure, the term "Chip" or "Microchip" is used to designate a digital processor which may include a central processing unit CPU, memory and input/output channels.

Working principle and algorithm - Chip 1

See Fig. 2 - Block diagram of microchip No. 1 and Fig. 3 - Structure of
15 microchip No. 1

Unit 2 has two communication channels with Unit 3 enabled by electromagnetic

waves. The first directly connects Unit 2, via Units 3,7 with the Electrode 8 thus making it possible to stimulate the nerve with impulses from Unit 2 when
20 a breakdown of the chip occurs. The second channel transmits power to Units 3,4,5,6,7,9. Unit 7 is an impulse generator having preset, unchangeable through Units 2,3, parameters of outgoing impulses.

Unit 7 operates periodically this function being supported by the Timer 5 and by the Sensor located on the Chip's Shell 4 or the Sensor 9 from outside
25 the shell. The Timer 6 sets the duration of stimulation sessions or duration of pauses between sessions. The Sensor controls only one parameter: duration of intervals between sessions or session duration.

Working Algorithm of Chip 1:

A change of the stimulation mode (stimulation session frequency or session
30 duration) depends on the sensor's signal value (that, in its turn, depends on a particular time period of the day and the patient's activity); the signal is received by Unit 5 which either increases or reduces the algorithm (of increase or reduction), depending on the algorithm input in the chip's

design at the manufacturing stage; its purpose is to solve any specific problem when different ailments are treated.

Examples of the Chip's Operation

5 Example 1

A heart rate meter (HRM) or a respiration rate meter (RRM) or an Arterial Pressure Meter (APM) or a muscular electric activity gage (MEAG) are used as a sensor. At day time the values of HRM, RRM, APM, MEAG are higher than at night.

- 10 These values also increase when the patient's physical activity becomes more intensive. This automatically, via the sensor, changes stimulation sessions frequency or session duration depending on the algorithm (increasing or reducing the frequency or the duration) input into Chip 1 and individually adapted for treatment of a specific ailment.

15

Example 2

- A gage of the brain's paroxysmal activity ("peak-wave"-type complex) is used as a sensor in the epileptic patient. During or before an epileptic seizure, these complexes grow in number, which increases the signal transmitted from
20 the Sensor 9 to Unit 5. This makes sessions of the sinocarotid nerve's stimulation more frequent thus preventing the seizure or quickly stopping it.

Novelty, Invention Standard

- Adaptation of the stimulation mode to individual physical activity of the
25 patient's body or to a symptoms severity degree of any specific ailment.

Working principle and algorithm - Chip 2

See Fig. 4 - Block diagram of microchip No. 2, and Fig. 5 - Structure of microchip No. 2

- Unit 2 has two communication channels with Unit 4 enabled by
30 electromagnetic

waves. The first directly connects Unit 2, via Units 4, 7 with the Electrode 8 thus making it possible to stimulate the nerve with impulses from Unit 2 when a breakdown of the chip occurs. The second channel transmits power to Units

3, 5, 6, 7, 9, 11, 12 via Unit 4 and charges power Unit 10 via Unit 4 and Unit 7.

Unit 7 is an impulse generator having preset, unchangeable through Units 2, 4, parameters of outgoing impulses. Unit 7 operates periodically this function being supported by the Timer 6, Timer control unit 5 and the Sensors located on the Chip's Shell 3, 9 from outside the shell 11, 12.

The Timer 6 sets the duration of stimulation sessions and duration of pauses between sessions. One Sensor controls the session duration, while the other is in charge of frequency of the sessions (i.e., duration of intervals between sessions).

Working Algorithm of Chip 2:

A change of the stimulation mode (stimulation session frequency and session duration) depends on the sensor's signal value (that, in its turn, depends on a particular time period of the day, the patient's activity, and severity of symptoms of the disease);

Frequency of the simulation sessions depends on the value of the first sensor's signal delivered to Unit 5 (which either increases or reduces the required algorithm depending on the built-in chip structure - increase or reduction designed to solve a particular problem), while the simulation sessions duration depending on the value of the first sensor's signal (which either increases or reduces the required algorithm depending on the built-in chip structure - increase or reduction designed to solve a particular treatment problem).

25 2 Examples of the Chip's 2 Operation

Example 1

A heart rate meter (HRM) is used as the first sensor, and a respiration rate meter (RRM) is used as the second sensor. At day time the values of HRM, and RRM are higher than at night. These values also increase as the patient's physical activity becomes more intensive and the disease symptoms deteriorate. This automatically, via the appropriate sensor, changes stimulation sessions frequency and duration depending on the algorithm

(increasing or reducing the frequency and the duration) input into Chip 2 and individually adapted for treatment of a specific ailment.

Example 2

- 5 A heart rate meter (HRM) is used as the first sensor, and a respiration rate meter (RRM) is used as the second sensor in the asthmatic patient. At the onset of dyspnea seizure, the patient develops a higher HRM and RRM, which increases the signal transmitted from the Sensors to Unit 5.

This results in higher frequency of the sinocarotid nerve's stimulation sessions and a reflex dilatation of bronchi thus stopping the seizure.

Differences between Chip 1 and Chip 2

The differences include, for example:

1. Chip 2 is equipped with a stand-alone power supply unit (which is
15 inavailable in Chip 1)
2. Chip 2 has two sensors (Chip 1 has only one sensor)
3. In Chip 2, each sensor is in charge of one of the two stimulation mode parameters using the timer - sessions frequency or duration (the sensor in Chip 1 controls only one of these parameters), which allows to increase the
20 accuracy of chip adaptation to specific needs of the patient.

Novelty, Invention Standard

Accurate adaptation of the stimulation mode to individual physical activity of the patient's body or to a symptoms severity degree of any specific ailment.

- 25 Working principle and algorithm - Chip 3

See Fig. 6 - Block diagram of microchip No. 3, and Fig. 7 - Structure of microchip No. 3

Function and communications of Unit 2

1. Unit 2 records the chip operation algorithms described below to Unit 7 by
30 means of electromagnetic waves and Unit 4.
2. Unit 2 enables programming of the following parameters of Unit 7 using Unit 4:

- a) All outgoing pulses parameters, chip ON and OFF time.
- b) ON and OFF time of internal singaling unit 5 or external singaling unit 8 to inform the patient on the start or end of the simulation session.
- c) parameters of analog-digital converter 6, and - via Unit 6 parameters of biological sensors 3, 9 in the chip housing, in electrode 12, and in the contacts of electrode 9.
- d) Unit 11 parameters - using Units 4 and 7.
- 3. Unit 2 via Unit 4, Unit 7 charges Unit 11 and allows to control its state.
- 4. Unit 2 via Unit 4, Unit 7 is directly connected with Electrode 12 via one of the two channels available in Units 2, 4, thus making it possible to transmit nerve simulation pulses when a breakdown of chip or discharge of Unit 11 power supply unit occur.

Function and communications of Unit 3:

- 1. Unit 3 i.e., biological sensors 3 on the chip housing and on the housing of electrode 12, - transmits pulses to Unit 7 from Unit 6 (whose parameters depend on the functional state of the body systems controlled) by affecting the chip outgoing pulses parameters depending its working algorithm which was input from Unit 2 via Unit 4.

Function and communications of Unit 9 - biological sensors of the functional state of the nerve

- 1. The signal depending on the intensity of nerve electric activity is fed to Unit 7 from the Unit 9 biological sensors via Unit 6, and changes the chip outgoing pulses parameters according to algorithms algorithm which was input into Unit 7 from Unit 2.
- 2. Signal generated by Unit 9 biological sensors is fed to Power Supply Unit 11 via Unit 10 to charge Unit 11.

Function and communications of Unit 11 - the stand-alone chip power supply unit:

- 1. Unit 11 provides power supply to Units 3,4, 5, 6, 7, 9, 10.
- 2. Unit 11 is charged by Unit 9 via Unit 10 and by Unit 2 via Units 4 and 7.

Function and communications of Unit 5 and Unit 8

Unit 5 built-in ON/OFF indicator for patient, Unit 8 - similar internal indicator, - both Units are connected via the Unit 7 output with Electrode 12

Working Algorithm of Chip 3

- 5 1. Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration by increasing or reducing signals of biological sensors (Units 3, 9).

Novelty, Invention Standard

- 1) Biological sensors are located directly on the chip and electrode housing.
10 2) The majority of chip units are connected with its radiofrequency communication component, which enables a direct control and adaptability thereof by means of the external programming unit.
3) Stimulation sessions and intervals of determining the nerve electric activity proceed in succession and not concurrently.

15

- 4) The chip operation modes are programmed by external programming unit (setup of simulation thresholds, working algorithms, etc.).
5) Power battery of the stand-alone power unit may be charged by the following sources: external programming unit, bioelectric activity of
20 nerve, Means for powering the chip directly from kinetic energy of the patient's body (for example, see Fig. 25B - Structure and location of implanted power source).

Furthermore, power supply to the chip can be provided by electromagnetic waves transmitted from the external programming unit.

- 25 6) To add reliability, onset of seizure or deterioration of other ailment symptoms are identified according to a set of parameters.
7) Indicator informs the patients, when the stimulation device starts and finishes working.

30 Examples of the Chip's 3 Operation

Example 1

Chip 3 was implanted into subcutaneous fat in the infraclavicular region of the astmatic patient, with the electrode connected to sinocarotid nerve (SCN). Chip ON indicator was implanted beside the chip (oscillator). The onset of seizure was associated with a reduced content of oxygen and hormones

in the patient blood, and a higher electric activity of SCN. These changes were registered by the biological sensors. Afterwards, the sensors activated the chip for 10 minutes, according to its working algorithm, and the patient was prompted accordingly by the indicator.

Output pulses parameters were changed depending on the chip working algorithm, and the biosensors signals value.

Sinocarotid nerve's stimulation results in reflex dilatation of bronchi thus stopping the seizure. Oxygen content in the patient blood was increased with the SCN electric activity reduced. In response to these changes, the biological sensors disengaged the chip via Unit 7. The patient felt it, because the indicating oscillator stopped working. While stopping the seizure, the power supply unit was charged from the nerve.

20 Working principle and algorithm - Chip 4

See Fig. 8 - Block diagram of microchip No. 4, and Fig. 9 - Structure of microchip No. 4

Function and communications of Unit 2

1. Unit 2 records the chip and chip channels operation algorithms, as described below, to Unit 8 by means of electromagnetic waves and Unit 4.

2. Unit 2 enables programming of the following parameters of Unit 8 using Unit 4:

- a) All outgoing pulses parameters of all channels.
- b) ON and OFF time of each channel, ON and OFF time of internal singaling unit 5 or external singaling unit 6 to inform the patient on the start or end of the simulation session via a certain channel.

c) Parameters of biosensors 13 and sensors 12, 15 in the housing of the chip and electrodes - via Unit 7.

3. Unit 2 charges Unit 14 via Unit 4 and Unit 8 and allows to control its state.

4. Unit 2 is directly connected with all electrodes in the chip channels via Unit 4, and Unit 8, thus making it possible to transmit nerve simulation pulses when a breakdown of chip or discharge of Unit 14 power supply unit occur.

Function and communications of Unit 8

1. Unit 8 is in charge of creating non-connected channels to transmit output pulses to the electrodes connected to various organs and of controlling these channels according to the algorithms which were input to the memory unit 3 connected thereto.

2. Unit 8 is connected to sensors and biosensors via their signals analysis unit 7. Unit 7 chooses those signals of sensors and biosensors which are capable of changing the operation of Unit 8 and the channels controlled thereby according to the algorithm.

Sensors and biosensors are positioned both in the chip and internal electrodes housing and in special electrodes.

Function and communications of Unit 14

1. Unit 14 is connected to all chip units, sensors, and biosensors, and supplies power thereto.

2. Unit 14 is connected to Unit 2 via Unit 4, and Unit 8, and can be chargeable via these Units.

Function and communications of Unit 5 and Unit 6

Unit 5 and Unit 6 - i.e., chip ON/OFF indicators, are connected to Unit 8, which, in its turn, further connects them to all chip channels.

Working Algorithm of Chip 4

1. Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of the Units 12, 13, 15 sensors and biological sensors.

2. Changing of the sequence and combination of activated chip channels depending on the current state of stimulated organs and tissues, as determined by sensors, biosensors, and algorithm stored in Memory Unit

3. Novelty, Invention Standard

5 1. Multichannel design

2. Biosensors design

3. An optimal automatic selection of organs and tissues stimulation parameters using biological sensors, sensors and chip memory algorithms.

4. A parallel control of several organs.

10

Example of the Chip's 4 Operation

A patient suffers from digestive and biliary disorders caused by gastric ulcer and dyskinesia of bile duct. Chip 3 was implanted into subcutaneous fat in the infraclavicular region. Gastric juice pH sensor is videolaparoscopically
15 stitched to the stomach with the first channel electrode connected to sympathetic nerves of the stomach.

Gallbladder bile sensor is stitched to the gallbladder wall with the chip second channel electrode connected to the gallbladder muscular wall. Chip is programmed so that sympathetic nerves of the stomach be stimulated every
20 three hours to reduce the higher gastric juice pH, which is one of the reasons of the gastric ulcer. Gastric juice pH sensor is programmed so that nerve stimulation be stopped as soon as gastric juice pH is reduced to 6. The channel connected to the gallbladder is programmed so that gallbladder contractions be induced during breakfast, lunch and dinner, which results in
25 bile inflow to the duodenum and improves digestion.

Sensor stitched to the gallbladder is programmed so that the second channel responsible for stimulating gallbladder contractions be disconnected as soon as gallbladder is emptied. This creates conditions to facilitate healing of gastric ulcer and better digestion by means of programmed emptying of
30 malfunctioning bile ducts.

Working principle and algorithm - Chip 5

See Fig. 10 - Block diagram of microchip No. 5, and Fig. 11 - Structure of microchip No. 5

The function and communications of Units 2, 4, 19, 7, 9, and 18 are similar to those of Chip 4.

- 5 The function and communications of Units 5, 9, 12, 15 and Units (electrodes) 10, 11, 12, 13, 14, 15, 16, 17 include, for example:

5 controls the order of connecting to channels ?, ?, ? of the electrodes depending on the algorithm and biosensors' signal values. Each channel is equipped with two additional channels (Units 10-17), whose output pulses can have the same or opposite sign. Paired electrodes are designed to stimulate similar structures on the right and left sides (such as vagus nerves).

- 10 Channels stimulation parameters are programmed individually per each channel using Unit 2.

15

Working Algorithm of Chip 5

1. Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of sensors and biological sensors.
- 20 2. Changing of sequence and combination of activated chip channels depending on the biosensors' signals values.

Novelty, Invention Standard (Chip 5)

1. A parallel control of several organs using various stimulation programs to resume their functions.
- 25 2. Biosensors design, concurrent monitoring of the state of several body organs and systems.
3. Use of at least two isolated channels to control each organ or system in order to provide a concurrent effect on several nerve centers and optimize the results of treatment.

30

Example of the Chip's 5 Operation (visceral brain)

A patient suffers from a number of severe ailments:

1. Frequent attacks of angina pectoris.
2. Hormone-caused diabetes mellitus of II degree.
3. Obliterating atherosclerosis of lower extremities of II - III degree.

Chip 5 was implanted to treat angina pectoris and other ailments. The first electrode of channel "A" was connected to the right sinocarotid nerve, the second electrode being connected to the left one. Sinocarotid nerve's stimulation results in reflex dilatation of coronaria and stopping attacks of angina pectoris.

A sensor of oxygen content in tissues and a heart rate meter were used to select optimal programs of nerve stimulation.

The first electrode of the second channel "B" was connected to the right vagus nerve to treat diabetes mellitus. A biological sensor of sugar content in blood was implanted to provide an automatic chip adjustment to the optimal stimulation program.

A special-purpose electrode was implanted in peridural space of the thoracic part of the spinal cord and connected to the second electrode of the channel "B" to treat obliterating atherosclerosis of lower extremities and angina pectoris.

Blood flow meter was implanted to femur.

The chip was programmed so that the said structures stimulation sessions result in a pronounced clinical effect, such as lower incidence of angina pectoris attacks, normal sugar level in blood, and better blood circulation in lower extremities.

Working principle and algorithm - Chip 6

See Fig. 12 - Block diagram of microchip No. 6, and Fig. 13 - Structure of microchip No. 6

Chip 6 comprises three basic components:

The chip itself (Unit 1), which contains a sophisticated system of sensors and biosensors; a programming and communication unit (Unit 2) connected to the chip by means of electromagnetic waves; and various electrodes with the most important ones connected to the chip by means of electromagnetic waves (Gold Needle 1 (Unit 13), Gold Needle 2 (Unit 17)).

The Chip can also be connected to conventional electrodes (Unit 24). Numerous isolated channels (up to 100 or more), whose current parameters and activation modes can be programmed by Unit 10, allow to solve most complicated body functions control problems. Electrodes Gold Needle have address codes thus enabling an independent operation of channels. This is provided by encoding Unit 10 in the chip, and decoding Unit in Gold Needle. No isolated connections with either channel are provided in Gold Needle 1.

Radio frequency performance devices without electrodes: implanted electrodes connected to the mother microchip (Chip 6) or only one of them, as well as sensors, biosensors (one or more units).

Memory unit of Electrode 17 may contain a bank of address codes.

Function and communications of Units 2, 3, 5, 4, 11, 6, 7, 8, 24, 15, 22, 16, 23, 20, 21 are basically similar to those of Chip 4. These are described in the summary table.

15

Working Algorithms of Chip 6

1. Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of sensors and biological sensors.
- 20 2. Changing of sequence and combination of activated chip channels depending on the current state of stimulated organs and tissues, as determined by biosensors.

Novelty, Invention Standard (Chip 6)

- 25 1. Wireless implantable families of secondary microelectrodes with individual programming of operation modes and parent chip connection by means of electromagnetic waves.
2. Biosensors design.
3. Monitoring of body systems and functions by means of various biological sensors.
- 30 4. Concurrent stimulation of over 100 nerves, organs, and muscles using various programs with a parallel monitoring of the results.

Example of the Chip's 6 Operation, using a Gold Needle(TM)

A patient suffers from the following ailments:

1. paraplegia caused by spine fracture; and
- 5 2. atony of urinary bladder and enuresis;
3. left crus ulcer caused by
4. angiotrophoneurosis as a complication of the above fracture.

Chip 6 was implanted into subcutaneous fat in the infraclavicular region under local anesthesia.

- 10 To prevent muscular atrophy, a microelectrode such as the Golden Needle (TM)

(Unit 17 in the chip diagram) was implanted by micropuncturing tissues of a motor point of each muscle with stereoscopic device using a nuclear magnetic resonance method. Joint motion sensors were applied on knee joints via
15 subcutaneous fat to control stimulation-induced motions of lower extremities.

Chip was programmed to perform a 15 minutes long stimulation session of the above muscles three times a day in a certain sequence (each muscle, via a separate chip channel, according to a special program), which would induce
20 flexing and straightening of the knee joint.

To treat atony of urinary bladder, golden needles were implanted into its muscular walls. Chip was programmed to maintain a moderate tension of urinary

bladder, and to induce its emptying as soon as it is filled, and the patient
25 so desires, by stimulating its muscles.

To treat angiotrophoneurosis and crus ulcer, a special-purpose electrode was implanted into peridura space of the spinal cord. Chip was programmed to perform three 20 minutes long spinal cord stimulation sessions per day, which would improve blood flow in the lower extremities resulting in the healing of
30 ulcer.

A local blood flow meter was implanted in the crus area to enable an automatic selection of the optimal spinal cord stimulation program by the chip, which would improve blood circulation in lower extremities.

Novel Features of the Chips

- 5 Differences of the 1-6 Generation Implant Chips from prior art Implanted Neurostimulants and Microchips include, among others:
 1. Multi-Purpose Applicability: Chips of each generation can be used for treatment of different ailments (for each specific case the parameters are individually set: type of sensor, electrode, stimulation program).
 - 10 2. A complete system approach including state-of-the-art biosensors and sensors, supporting an automatic adaptation of the chips to individual characteristics of the patient's body.
 3. A multi-channel feature (for chips of the 4th and other advanced generations only) enabling to directly and simultaneously control functions of various organs and systems of the body per different programs thus
 15 creating unique possibilities to develop unprecedented novel technologies of treatment of human diseases.
 4. Small and extra-small sizes of certain chips and their electrodes.
 - 20 5. New solutions for chip power supply from the human body's kinetic energy guaranteeing the chips' durability.
 6. Increased contents of the precious metals in the electrodes.
 7. Using the algorithms developed on a basis of new theoretical knowledge to operate the chips.

25

SHUNGITE ROCK

The chip may be coated with Shungite, to achieve improved performance.

Shungite rock - new type of carbon raw material
 Joint stock company "NPK Carbon-Shungite" is presently excavating a
 30 deposit

of shungite rock - the one and only in the world - Zazhoginskoye deposit. Zazhoginskoye deposit is situated in Zaonezhski peninsular (Medvezhjegorski region, Karelia, Russia). Scheme showing localities Shungite rock in its

composition, structure and properties presents a unique formation. By its structure it is an original natural composite material: a homogeneous distribution of highly dispersed crystalline silicate particles in amorphous carbon matrix. Carbon in shungite is highly active in oxidation-reduction reactions. Thanks to exceptionally well-developed contact between the active carbon and silicates heating of shungite rock triggers fast reduction of silica to metal silicon and silicon carbide.

Composite Shungite radio shielding materials can reduce electromagnetic energy in the range over 100MHz and up to 100dB or more. They have certain ecological advantages over metal materials because they do not distort the Earth magnetic field. Shungite conductive materials may be used as heaters of low specific power, ecologically, fire- and scolding-safe, can be used for making of heated floors and other elements in houses. Shungite rock possesses sorption, catalytic and bactericidal properties. In the present invention, Shungite can be used in sensors, biosensors and electrodes, as detailed elsewhere in the present disclosure.

1.3 Sensors

Oxygen content in blood can be determined by an optoelectric method (similar to pulse oximetry), or using a new magnetoelectric or potentiometric technology.

The following drawings detail the structure of sensors usable with the new system:

Fig. 14 - Structure of sensors No. 8,9,10,16

Fig. 15 - Structure of sensors No. 11,13

Fig. 16 - Structure of sensors No. 12,15

Fig. 17 - Structure of sensor No. 14

Fig. 18 - Typical signals from sensors (codes)

Table 2 illustrates sensors data.

The number of sensors may vary between one and 16 for example, or as required by the specific application.

Shungite can be used in sensors, for improved performance.

1.4 Biosensors

Figs. 19 and 20 detail the Structure of a biosensor (Type A and B, respectively).

- 5 Design of one type of the biosensors in chip's electrode wire.
Index of the conventional symbols in Figs. 19, 20 :

1 - silicon shell acting as a membrane

2 - silicon micro-pores

3 - metal cores of the wires

- 10 4 - shell coated with indicator substances of the biosensors' receptors.

The number of biosensors may vary between one and 16 for example, or as required by the specific application.

Shungite can be used in biosensors, for improved performance.

Fig. 21 details typical signals from biosensors (codes).

- 15 Table 3 illustrates Biosensors data

Fig. 68 details the structure of an universal biosensor.

Connection: To any structures of the body.

Design: Any shape, such as for the other electrodes, and size.

The Location of contacts, sensors and/or biosensors may be devised with a

- 20 method implemented in a computer software.

Fig. 21B illustrates, by way of example, results of 24 hour monitoring in a patient (a fragment). In this example:

Code 1 - (3 hours 08 minutes) from Sensor No. 10

Code 2 - (3 hours 20 minutes) from Sensor No. 10

- 25 Code 1 - (3 hours 05 minutes) from Sensor No. 9

Code 2 - (3 hours 20 minutes) from Sensor No. 9

Code 1 - (3 hours 03 minutes) from Sensor No. 16

Code 2 - (3 hours 19 minutes) from Sensor No. 16

Code 1 - (3 hours 15 minutes) from Biosensor No. 17

- 30 Code 2 - (3 hours 22 minutes) from Biosensor No. 17

Note:

Asphyxia attack duration - 20 minutes (3 hours to 3 hours 20 minutes)

Chip on (stimulation mode) - at hours 08 minutes

Chip off - at 3 hours 20 minutes

Explanations and Remarks:

1. In the figure's left part there are fragments of the diagrams reflecting
5 changes in the homeostatic parameters of the patient (these have been
obtained using an external non-implanted display equipped with sensors and
biosensors). In the right part of the figure there are code pulses generated
by the chip as a reaction to an asphyxia attack occurring in the patient.
Time of code sending is shown in the above- mentioned diagrams with small
10 crosses.
2. Each sensor / biosensor detects changes in the relevant homeostatic
parameters in a real-time mode, while the chip generates different code
signals identifying the most significant of the parametric changes that have
occurred.
- 15 3. Each code signal is generated in accordance with the data provided by a
specific sensor / biosensor, and it contains the four following data sets of
code pulses:
 - A) 1st set - code signal No. from a specific sensor / biosensor. For
example, there are three pulses in the first set. This means that Code No. 3
20 has been sent by this given sensor / biosensor.
 - B) 2nd set of pulses - a conventional No. of the sensor / biosensor for
identification of the latter. Amount of pulses in this set corresponds to
the sensor's / biosensor's number. For example, there are 17 pulses in
the set. This shows that the code belongs to the tissue oxygen biosensor
25 numbered 17 in the general list of sensors / biosensors.
 - C) 3rd set of pulses - time of the day when the code has been generated.
For example, the set containing three pulses means that the code was sent at
3 a.m.
 - D) 4th set of pulses - minutes of the relevant hour when the code has been
30 generated. For example, the sent contains 20 pulses. This has to be
interpreted as follows: the code was sent at the 20th minute of the
relevant hour.

4. The code signals in certain chips do not include the time parameter, due to the fact that external non- implanted displays are used, and they perform this function.

5. A purely code method is not the only tool that may be used as a data carrier in the chip's code signals.

6. Attack on and attack off in the diagrams are to be interpreted as an asphyxia attack onset and end respectively.

1.5 Universal sensors

Universal Biosensor

10 Design and Working Principle

Using a special program of the chip, the sensors (all together or separately), biosensors (all together or separately), dot-shape electrodes (also located throughout the entire surface of the electrode - universal biosensor) can be activated on a selected zone of the electrode's surface
15 (the entire surface or a specific part of it).

Method of operation

For example, Program No. 1:

1. The arterial pressure sensors are activated only the electrode's end.
- 20 2. The biosensors of all types (except for the oxygen biosensors), are activated in the electrode's middle part, while the oxygen biosensors are activated in the electrode's $\frac{3}{4}$ part.
3. The electrode's contacts are set into operation only at the beginning of the electrode on its anterior- superior surface.
- 25 To enable computer-aided control of the location of activated sensors, biosensors, contacts of the electrode, the latter is designed to have from 2 up to 100 cores supporting its function control.
4. such cores can be seen in Figure 1.

The electrode-universal biosensor can vary in shape: it can be cylindrical
30 (A), spherical (B), flat (C).

Thus, using the specially developed software, it is possible to change the location of activated sensors, biosensors, contacts, according to the needs, and, therefore, this design of the universal biosensor can replace an

innumerable variety of usual electrodes of a fixed, unchangeable design and location of the above-listed elements. The universal biosensor-electrode is in fact an electrode with computer-aided control of localization of the sensors, biosensors, contacts.

5 Figure 1

Index of symbols:

• - Sensor

+ - Biosensor

? - Electrode

10

Novelty:

1. Sensors and biosensors of all types + electric contacts are located are spread on the entire surface.

15 2. Selective programmed activation of the components listed above by means of a computer command.

3. Three different forms, namely: cylindrical, spherical, flat

1.6 Electrodes

Figs. 23, 24 and 25 illustrate structure of an electrode (Type A, B, C respectively), compatible with the chips in the present system.

20 Further electrodes compatible with the chips are detailed in Figs. 69-77:

Fig. 69 - Structure of book-type bipolar electrode.

To nerves and muscles. Silicone coating, metal contacts.

Fig. 70 - Structure of book-type multi-channel electrode (@Zebra[™]).

To nerves, blood vessels, various organs.

25 Silicone coating, "petals" of any size, contacts from inside (metal/silicone).

Fig. 71 - Structure of book-type 2-8 polar or more electrode.

To nerves, blood vessels, various organs.

Silicone coating, length of the "book's" leafs is unlimited.

30 Contacts from inside or outside.

Fig. 72 - Structure of spiral electrode.

To nerves, blood vessels, various organs.

Contacts can be located in any selected spot.

Fig. 73 - Structure of plate-like electrode.

5 To nerves, blood vessels, various organs.

An elastic band used as the electrode's base allows to fit the latter to various uneven surfaces. The contacts are from the inside.

Fig. 74 - Structure of wire gauze electrode.

To various organs.

10 Any size, the contacts are made of metal, Schungite or other materials.

Fig. 75 - Structure of coaxial electrode.

To the spinal cord, to various organs, to nerves.

Two or more contacts (of gold, platinum, etc.)

Diameter, length are unlimited.

15 1.7 Wireless electrodes - Golden needle (TM)

Golden needle(tm) and Chip No. 6

See Fig. 76, Structure of Golden Needle (TM) electrode. This electrode may connect to nerves, blood vessels and/or various organs.

The electrode is connected with the chip by means of electromagnetic waves.

20 Chip No. 6 has an advanced structure, which allows to connect to it all types of electrodes, including the Golden needle.

There are at present two basic types of Golden needle (GN) electrodes:

1. GN type 1 - this is a tiny electrode, shaped as a needle of a length of about 6 mm. It may be made of gold or is gold plated.

25 It is activated by wireless, for example using radio signals transmitted from the processor means which controls it, such as Chip No. 5 or 6.

The stimulation type is controlled through the radio signals. The electrode may not include its own power source, in which case it may be powered through RF from the processor means.

30 In a minimal configuration, the GN does not include autonomous facilities or capabilities.

GN can be used for the treatment of various diseases. There is no need for wires to connect it to the processor.

GN may be implanted using endoscopic surgery. For use in the Carotid collector there is no need for artery peeling and for the artery to grasp the tissue there - the GN pricks the artery wall. The artery wall contains plenty of thin nerve fibres, thus the GN touches them.

5 To prevent puncture of the artery itself, after the initial penetration of the artery wall, the GN tip bifurcates or contains means for its splitting and opening like a safety pin. Then the GN tip is not sharp anymore, and the danger of puncturing the artery is eliminated.

2. GN type 2 - this is a small chip or device, that may be shaped as a coin
10 or a flat cylinder, having a diameter of about 1 to 2 cm . It may have certain processing capabilities and also includes a tiny electrode, about 0.5 - 3 cm long.

Preferably the electrode is needle-shaped and made of gold or gold coated. This type of GN may contain the electrode itself, sensor means, a wireless
15 receiver, a digital memory and an encoder. It may also include a wireless transmitter. The wireless link may be implemented in RF. The sensor means may be installed on the outside of the GN cover. The GN may be used in the treatment of one disease or of several diseases concurrently.

20

Method of operation

The processor means may activate several GN devices concurrently, using wireless with a different coding and/or a different frequency for each. The information from the sensor means in each GN device is transferred
25 through the wireless link to the processor. Messages regarding the required stimulation are sent from the processor to each GN device.

Chip No. 6 can concurrently communicate with more than one hundred GN devices, to treat one disease or several diseases concurrently.

30

1.8 Autonomous power source

In one embodiment, electric energy is generated from the body's internal organs movement. Fig. 25B illustrates the structure and implantation method for the power source.

- 5 The power supply includes a flexible piezoelectric element (1), that may be shaped as a cable or electrode, and coated with a biologically inert material. The element (1) is implanted as illustrated, under the diaphragm's cupola (4), from the right side, endoscopically, and is connected to the chip (3).
- 10 Mechanical up/down novements of the diaphragm, occuring during the patient's normal breathing process, will cause periodic deflections in the piezoelectric element (1). An electric voltage is generated in element (1), due to the piezoelectric effect in the transducer. The chip (3) may include
- 15 a voltage rectifier (2), to transform the AC voltage to DC. Optionally, unit (2) may also include digitizer means, to allow the system to use the element (1) as a sensor, to measure the breathing characteristics.
- The system chip may implement a method (algorithm) to also monitor the
- 20 patient's breathing and to respond in a preprogrammed manner to changes therein.

Advantages:

- a. Reliable, uninterrupted electric power for the system, based on the
- 25 patient's respiration. The shift of the diaphragm's cupola during breathing may reach about 4 to 8 cm.
- b. The above structure and method of operation allows the patient to control the system's operation, by intentionally changing the breathing characteristics such as the rate or depth thereof.
- 30 A brief description of the implanted chip's piezoelectric power source charged from the human body kinetic energy
- Brief description of the microchip's power source

Its design is outlined in Figure 25B

Legend:

- (1) -A flexible piezoelectric element (electrode-like) coated with a biologically inert material. This element is implanted under the diaphragm's cupola (4), from the right side, endoscopically, and it is connected to the chip (3). The chip comprises an AC/DC transducer (2).

Power Source's Working Mechanism

Mechanical movements of the diaphragm (up and down) occurring at the patient's breathing cause periodic deflections in the piezoelectric element (1), according to the respiration rate. As a result of mechanical motions, the piezoelectric element generates electric pulses which are transmitted to the above-mentioned unit (2), and they are transformed into direct current necessary to power the microchip.

Advantages of the power source described above:

- 1- Reliable uninterrupted electric powering of the chip resulting from the patient's respiration (Note: A shift of the diaphragm's cupola at breathing, during an inhalation-exhalation cycle, can reach 4-8 cm).
- 2- It allows the patient to control the microchip's electric powering and, as a result, to increase or to reduce the microchip's effect by means of a voluntary control of the breathing depth by the patient.

See Fig. 25B - structure and location of implanted power source.

Fig. 25C details the Structure of an external monitoring device

The medical instrument may use an External Non-Implanted Display - Programmer - Charging Device. The sensors and biosensors representing micro-and macro-indicating devices of different, located both on the patient's body surface and directly introduced into its tissues, organs, systems (for example, arterial pressure meter introduced into the femoral artery) collect data on functioning of the body's systems.

These data are transmitted to the unit analyzing conditions of the body's systems, organs, tissues (No. 3 on the Diagram). The unit separately analyzes functioning of each of the systems studied enabling both fragmentary and permanent real-time monitoring of the body's systems, organs, tissues.

The medical treatment method, in order to control functioning of the implanted Stimulator and to set its optimal mode, further including the step where the patient is connected (for the period varying between 1 and several days) to a portable external non-implantable monitor collecting and analyzing data on the Electric Stimulator's work, as well as data on a functional condition of the body's systems, organs, and tissues, while this said monitor comprises a unit analyzing functional conditions of the body's systems, organs, and tissues, connected to the sensor means, and this unit is also connected to the monitor's unit of radio-frequency communication with the Electric Stimulator's external radio-frequency communication unit which, in its turn, is connected to a computer via a radio-frequency channel, as well as to the autonomous power supply unit, the latter also being connected to all the above- listed units of the monitor.

The medical treatment method may include the step, performed using the Electric Stimulator's software, of distinguishing between the changes in functional activity of the body's systems, and/or organs, and/or tissues typical of an onset of a disease (symptoms) and the changes in functional activity of the body's systems, and/or organs, and/or tissues, that are not related to symptoms of a disease, but typically occur in the patient's body, while the Electric Stimulator's "learning" of this process is aided by the non- implanted display.

1.9 Contacts, or indirect body measurements using adaptive techniques

Initially, after the implantation of the system, the sensors and biosensors are used to measure the body variables; with time, however, these means are disabled because of the body's inherent characteristics. Other means have been devised to prolong the operation of the system - "Contacts" , together with an adaptive operation of the microcontroller "Chip" :

The contacts measure body variables such as electrical resistance, response to ultrasonic waves and/or response to radio frequency electromagnetic waves. These variables are then compared in the Chip with the readouts from the sensors and biosensors.

Using adaptive algorithms as known in the art, the Chip in time learns the body characteristics as conveyed in the "Contacts" data. That is, a cross-correlation function is compiled, between the sensor and biosensor data on one hand, and the Contacts data on the other hand.

- 5 In a subsequent stage, when the sensors and biosensors are disabled, the system can still function using the Contacts, whose data reliably replaces the sensor and biosensor data. Thus, indirect measurements using Contacts replace direct body measurements using the sensors and biosensors.

Location on the chip - Sensitive elements of Contacts, sensors and
10 biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode.

Working principle, MEV - Measurement of electric values, pertaining to organs' function Pz - Piezo-effect. Type of signal received: Code signal and/or Analog signal Membrane's structure, receptor, substance, - Silicon
15 membrane or other biologically inert porous material - Special substance or electronic component. Range of values measured, Disease-dependent Size range of sensitive elements: Micrometers to millimeters.

The medical instrument may further include means for stimulation and/or electric blocking of the body tissues, comprising
20 sensor means for measuring variables in the body, processor means connected to the sensors and biosensors for processing the measured variables and for deciding in real time whether to apply an electric signal to the body tissues, and electrode means implanted at predefined locations and connected to the processor means, for applying the
25 stimulation and/or electric blocking signals to the body tissues.

The medical instrument may further include, in addition to analyzing functional activity of the body's systems, and/or organs, and/or tissues, as well as controlling and analyzing operation and functioning of the implanted Stimulator, the monitor also supports programming or
30 reprogramming of the Electric Stimulator (by means of a computer connected thereto via the radio-frequency communication unit).

The medical instrument according may further include means for running a long-term monitoring of functional activity of the

body's systems, organs, tissues, and operation of the Electric Stimulator, while duration of the monitoring may vary between several minutes and several months.

2 Method of operation of the system, software, algorithms

5 Most commonly, chips operate according to a pre-set program or are manually

activated by patients. Chip operation pattern depends of the frequency, duration, and regularity of asphyxial seizures, and availability of reproducible changes of respiration and heart parameters during or before
10 seizures capable of ensuring an efficient operation of biological sensors.

In patients having chip 2 implanted, the biological sensor was used approximately in 35-40% of cases. With chips 3 and higher, sensors were applied in 100% of cases.

Three approaches are used concurrently to provide a reliable prevention of
15 seizures: chip programming to automatic activation before seizure; determining the onset of seizures based on the frequency of respiration and systole. Sensors capable of detecting rales may also be used.

3 Method of treatment using the new system

20 The chip's shell is implanted into the subcutaneous fat of the thorax (1-5-generation chips), and the electrodes are connected to the nerves through incisions or punctures.

The biosensor-containing electrodes are implanted in the head tissues (the epilepsy cases) or other parts of the body.

25 Biosensors and sensors are located in the electrode and in chip casing. The latter is implanted to the right or left of the sternal muscle which allows its biosensors and sensors to detect respiratory murmurs or systole. Biosensors-equipped electrode may be positioned in various parts of the body depending on location of the nerve it is connected to. Electrode sensors and
30 biosensors make measurements directly in tissues.

Diseases list

Examples of diseases that may be treated using the present invention are listed in Tables 7, 8 and 9 , with relevant details pertaining to their treatment.

5 Examples of diseases are also disclosed with reference to Figs. 28 - 48.

Other diseases that may be treated using the present invention may include, among others:

1. Insomnia.
2. Hypersonmia.
- 10 3. Apnea.
4. Narcolepsy.
5. Sudden cardiac arrest at sleep.
6. Paresis of the vocal cords.
7. Nervous anorexia.
- 15 8. Obesity.
9. Bulimia.
10. Gastric and duodenal ulcer.
11. Chronic gastroenterocolitis.
12. Refluxesophagitis.
- 20 13. Gastrointestinal dyskinesia.
14. Commissural disease.
15. Crohn's disease .
16. Hirschsprung's disease - megacolon.
17. Rectal prolapse.
- 25 18. Chronic duodenal ileus.
19. Bauhin's valve failure.
20. Doloichosigmoid.
21. Chronic intestinal obstruction (commissural disease, megacolon, chronic
- 30 mes nterial circulation insufficiency, metacolon, doloichosigmoid, cardiac ach lasia.
22. Schizophrenia with schizophrenic affective disorders and delirium.
23. Anxiety and depression.

24. Borderline personality disorder.
25. Cortical dementia - Alzheimer's disease.
26. Pick's disease.
27. Subcortical dementia - supranuclear palsy (paralysis).
- 5 28. Huntington's chorea.
29. Parkinson's disease.
30. Multiinfarction dementia .
31. Involuntary movements.
32. Stammering .
- 10 33. Epilepsy .
34. Priapism .
35. Infantile cerebral paralysis .
36. Paralyzes of different etiology .
37. Syringomyelia .
- 15 38. Progressing myodystrophy and other forms of dystrophy.
39. Chronic and acute hyperthermia.
40. Atrophy of the optic nerve.
41. Chronic periodic pains (angina pectoris, phantom pains, neuritis,
nerve root syndromes .
- 20 42. Terminalstage pains .
43. Migraine .
44. Cancer .
45. Hypertension
46. Hypotension .
- 25 47. Vegetovascular dystony.
48. Diabetes.
49. hypoglycemia .
50. diabetes insipidus .
51. hypothyrosis..hyperthyrosis
- 30 52. adrenal cortex insufficiency .
53. male and female infertility .
54. impotence.
55. adrenal cortex hyperfunction, .

- 56. dysmenorrhea.
- 57. Zollinger-Ellison syndrome .
- 58. Dyskinesia of the biliferous tracts.
- 59. Chronic hepatitis.
- 5 60. Chronic cholecystopancreatitis.
- 61. Cirrhosis.
- 62. Osteoporosis.
- 63. Periostitis, osteosclerosis of different types,
- 64. Hyperostosis .
- 10 65. Chronic osteomyelitis
- 66. Flaccidly consolidating fractures.
- 67. Rickets.
- 68. Perthes disease
- 69. anemia.
- 15 70. agranulocytosis.
- 71. leucosis.
- 72. Immunodeficiency
- 73. trauma-related paralyses.
- 74. myodystrophy.
- 20 75. myopathy.
- 76. Bodybuilding
- 77. Hydronephrosis.
- 78. Chronic pyelonephritis.
- 79. Chronic glomerulonephritis.
- 25 80. Urinary bladder atony.
- 81. Chronic cystitis.
- 82. Psoriasis.
- 83. Neurodermite.
- 84. Eczema.
- 30 85. Alopecia.
- 86. Hyperkeratosis.
- 87. Skin atrophy.
- 88. Angiotrophoneurosis.

89. Drug addiction.
90. Alcoholism.
91. Obliterating atherosclerosis and endarteritis.
92. Ischemic heart disease and angina pectoris.
- 5 93. Cardiac arrhythmia.
94. Raynaud's disease.
95. Buerger's disease.
96. Chronic thrombophlebitis - supranuclear palsy (paralysis).
97. Postthrombophlebitic syndrome.
- 10 The treatment method for the various diseases is detailed in the present disclosure, with reference to the drawings and the tables herein.

The implant operation method

- 15 The system implantation operations are performed under anesthesia. The microchips are more frequently implanted by means of an endoscopic procedure, i.e., not through incisions, but rather through punctures in the soft tissues.

- 3.1 Treatment matrix. For each disease a matrix of: system structure method
- 20 of operation of the system locations in the body for sensors, electrodes

Epilepsy Treatment Method

See Table 4 - Method of operation/algorithm for epilepsy

1. The chip can detect when an attack begins according to the typical changes in the EEG.
- 25 2. The chip detects the attack immediately, at its onset, according to presence of the typical changes in the EEG.
3. The chip can permanently monitor the EEG, both before and during an attack.
4. As per our experience, the chips control the following types of epilepsy:
- 30 - Grand mal epilepsy,
- Petit mal epilepsy
- Absence epilepsy
- Atonic epilepsy.

5. If the patient has no "Aura", and the chip has not detected the first signs of an approaching epileptic attack (which occurs in 10-15% of the cases), the chip will be automatically activated anyway, when the attack has
5 started. In addition to this, the patient him or herself can signal that the chip is to be activated once he or she has felt that the attack is about to begin, because the loss of consciousness does not always develop suddenly.

6. The chip stimulates the sinocarotid nerve.

7. The chip's impact on the nerve at severe and mild attacks differs in its
10 duration: the stronger is the attack, the longer is the duration. The impact duration is determined according to the period of presence of the typical changes in the EEG.

8. The chip remains active until the EEG has become normal, or until other signs of the attack have disappeared completely.

15 9. The chips are supplied with power batteries that support their operation during 2-5 years. The batteries can be replaced by means of a minor surgical procedure or, alternatively, they can be recharged via electromagnetic waves from a special device.

10. The chip's activity never causes a loss of consciousness in the
20 patient, although it is made operative through the reticular formation. The chip's impact is usually not accompanied by negative side effects.

11. The present invention may require further modifications when used in the following cases:

a. If the patient suffers from cancer of any type - additional research
25 may be necessary.

b. If the patient suffers from chronic purulent diseases (due to a risk of the chip's rejection);

c. If the patient works in an area with strong electromagnetic radiation (high-voltage lines service, powerful radio-systems antennas, work
30 with electric arc welding equipment).

Asthma Treatment Method

See Table 5 - Method of operation/algorithm for asthma

The periods when an asthma spasm begins and ends are detected, according to the oxygen contents in the patient's tissues.

- 5 Time required to stop the spasms The table we sent you earlier contains data on the time required to fully stop the asphyxia attack whose beginning and end are detected with a biosensor.

However, the clinical signs of the attack onset become evident 10-15 minutes later than this is detected with the biosensor. Therefore, the patient feels

- 10 that the chip's effect is very fast (it takes only a few minutes).

In most cases the attack is stopped at its very onset, that is why the patients do not even suspect that they have suffered one.

Reduction of the daily intake of antiasthmatic preparations:

For Chips 1 and 2 - up to a 2-fold reduction, or possibly more

- 15 For Chips 3 and 4 - up to a 3-fold reduction, or possibly more

For Chip 5 - up to a 5-6-fold reduction, or possibly more

For Chips 6 - up to a 4-fold reduction, or possibly more

Note:

- 20 There have been recorded cases when the preparations' use could be fully suspended, and a many-year remission of the disease was achieved without any medications, the treatment having involved the chips (3,4,5,6-generation) only.

- 25 Angina pectoris treatment

In angina pectoris patients the chip stimulates the sinocarotid nerve thus causing a reflex dilatation of the coronary arteries. In obesity patients the chip affects the vagus nerve suppressing the gastric juice secretion, and, as a result, the appetite is reduced.

- 30 In diabetes patients, a sugar level drop is achieved by means of stimulating the vagus nerve that innervates the pancreatic gland cells.

See also:

Table 6 - Method of sensors/biosensors activation

Table 7 - Treatment strategy: System structure and implant locations

Table 8 - Electric stimulation parameters (A)

5 Table 9 - Electric stimulation parameters (B)

Notes:

1. Specific values of sensors and biosensors-generated signals, as assigned to each of the codes, are determined separately per each patient.

10 2. The number of codes is unlimited.

Legend:

CC - patient develops characteristic changes of the parameter caused by this symptom of ailment (CC1, CC2, etc.).

SI/SA - signal inavailable/ signal available.

15 N - parameter is within the norm, given the state of the specific patient.

SI - signal inavailable

3.2 Inverse treatment matrix. For a specific structure and implantation:

20 List of all the diseases that are concurrently being treated (or can be treated, if diagnosed in the patient)

The affected systems and organs of the body include, for example: the nervous structure of the sympathetic nervous system or the parasympathetic system or the sympathetic nervous system and parasympathetic system and hypoglossal (sinocarotid collector of the Vegetative Nervous System - SCVNS), the central nervous system, as well as neurons of the organ and/or cutaneous nerves and/or depressor nerves.

In a preferred embodiment, a nervous band or group is formed, comprising all, or the majority of, the nerve branches innervating the carotid glome (glomus caroticum).

30 The carotid glome is found in the area where the common carotid artery splits into the internal and external carotid arteries. See, for example:

Fig. 27 - Preferred implantation location in the SCVNS

An active chip electrode is connected to the nerves of sinocarotid reflexogenic zone diverging from carotid glomerulus (glomus caroticum). Chip is normally connected to either one of these nerves (left or right). The technology is equally efficient in left and right nerves. Chip connection
5 to both nerves is slightly more efficient. Chips 4 and 6 are connected to a single nerve of asthmatic patients, since these are equipped with a lot of electrodes. The remaining electrodes are designed to use chips to treat other ailments.

Fig. 27B - Detail of Preferred implantation location in the SCVNS.

- 10 To activate the above nervous group, an electrode is placed onto the abovedetailed location and is mechanically secured there, for example using a silicone coat. The electrode is connected to the microchip of the system, and may be used to activate the above nerve group when necessary. The above nervous band or group is formed using surgical tools.
- 15 Electrode is connected to sinocarotid nerve of asthmatic patients in the area of bifurcation of common carotid artery into internal and external carotid arteries. Actually, this is not sinocarotid nerve itself, but a number of nervous branches which descend to glomus caroticus from simpatico nerves, vagus, and hypoglossal nerve and follow along the internal
20 posterior wall of common carotid artery bifurcation. These nerves are surgically separated from the carotid artery as a cord, in the zone of internal posterior wall of the adventitia area (external tunic of carotid artery). This formation is called a sinocarotid nerve. Moreover, electrode may be connected to the middle, upper or lower third of sympathetic nerve in the
25 neck, or to the middle, upper or lower third of sympathetic nerve in the thoracic section of sympathetic trunk. Electrode is connected to the nerve externally: its contacts located on the L-book are slipped over the nerve, with the silicon rubber L-book stitched above the contacts to fix those.
- 30 Cholinergic effect is prevented by using special-purpose nerve electric stimulation programs.

Fig. 29 - Preferred implantation location - AD

Diseases:

- 5 -Hypertension of all types (angina pectoris, phantom pains, neuritis, nerve root syndromes [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Hypotension [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Vegetovascular dystony [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 10 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
- 15 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
- 7B - depressor, inhibiting nerves

Sensors:

- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 20 10 - respiration rate sensor
- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)
- 25

Biosensors:

- 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 30 22 - microchip with sensors, biosensors and electrodes

23-31 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

33 - external chip controller, additional

Organs:

5 50 - kidneys

51 - adrenal glands

Fig. 30 - Preferred implantation location - Alcoholism & Drug addiction

Diseases:

- Drug addiction [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

10 - Alcoholism [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

1 - right sympathetic trunk

2 - left sympathetic trunk

3 - right vagus nerve

15 4 - left vagus nerve

6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System

7A - cutaneous nerve

7B - depressor nerve

Sensors:

20 8 - arterial pressure sensor

9 - heart rate sensor

10 - respiration rate sensor

11 - body temperature sensor

13 - local blood circulation sensor

25 14 - sensor of electric activity of the organs and nervous centers

16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)

Biosensors:

17 - tissue oxygen biosensor

30 18 - blood glucose biosensor

19 - blood hormones biosensor

20 - alcohol biosensor

21 - narcotic substances biosensor

- 22 - microchip with sensors, biosensors and electrodes
- 23-30 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 5 33 - external chip controller, additional

Fig. 31 - Preferred implantation location - Derma

Diseases:

- Psoriasis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 10 - Neurodermite [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Eczema [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Alopecia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Hyperkeratosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Skin atrophy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 15 - Angiotrophoneurosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 3 - right vagus nerve
- 20 4 - left vagus nerve
- 5 - spinal cord
- 7A - cutaneous nerve

Sensors:

- 8 - arterial pressure sensor
- 25 9 - heart rate sensor
- 10 - respiration rate sensor
- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 30 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)

Biosensors:

17 - tissue oxygen biosensor

18 - blood glucose biosensor

22 - microchip with sensors, biosensors and electrodes

5 23-27 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

33 - external chip controller, additional

Organs:

61- skin

10*

Fig. 32 - Preferred implantation location - Endocrine

Diseases:

Diabetes [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

hypoglycemia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

15 diabetes insipidus [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

hypothyrosis, [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6] hyperthyrosis

adrenal cortex insufficiency [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

male and female infertility [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

impotence [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

20 adrenal cortex hyperfunction, [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

dysmenorrhea [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Zollinger-Ellison syndrome [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

1 - right sympathetic trunk

25 2 - left sympathetic trunk

3 - right vagus nerve

4 - left vagus nerve

5 - spinal cord

6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System

30 Sensors:

8 - arterial pressure sensor

9 - heart rate sensor

10 - respiration rate sensor

11 - body temperature sensor

13 - local blood circulation sensor

14 - sensor of electric activity of the organs and nervous centers

16 - sensor of mechanical activity and murmurs of the organs (intestine,

5 heart, lungs, muscles, etc.)

Biosensors:

17 - tissue oxygen biosensor

18 - blood glucose biosensor

19 - blood hormones biosensor

10 22 - microchip with sensors, biosensors and electrodes

23-31 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

33 - external chip controller, additional

Organs:

15 35 - parathyroid gland

42 - pancreas

50 - kidney

51 - adrenal glands

56 - prostate

20 57 - seminal vesicles

58 - ovaries

59 - testicles

63 - uterus

25 Fig. 33 - Preferred implantation location - Gastrointestinal 1

Diseases:

Nervous anorexia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Obesity [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Bulimia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

30 Gastric ulcer [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Chronic gastroenterocolitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Reflux-esophagitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Gastrointestinal dyskinesia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 5 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord

Sensors:

- 8 - arterial pressure sensor
- 10 9 - heart rate sensor
- 10 - respiration rate sensor
- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous structures
- 15 15 - gastric acidity sensor
- 16 - sensor of mechanical activity and murmurs of the organs

Biosensors:

- 17 - oxygen biosensor
- 18 - glucose biosensor
- 20 19 - alcohol biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 23 - electrodes connected to the nervous structures

Organs:

- 39 - stomach
- 25

Fig. 34 - Preferred implantation location - Gastrointestinal 2

Diseases:

- Nervous anorexia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Obesity [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 30 Bulimia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Gastric and duodenal ulcer [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Chronic gastroenterocolitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Commissural disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- Crohn's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Hirschsprung's disease = megacolon [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Rectal prolapse [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
5 Chronic duodenal ileus [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Bauhin's valve failure [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Doloichosigmoid [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Gastrointestinal dyskinesia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Reflux-esophagitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
10 Chronic intestinal obstruction (commissural disease, megacolon, chronic mesenterial circulation insufficiency, metacolon, doloichosigmoid, cardiac achalasia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
Nervous structures:
1 - right sympathetic trunk
15 2 - left sympathetic trunk
3 - right vagus nerve
4 - left vagus nerve
5 - spinal cord
6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
20 7 - neurons of the organ (stomach)
Sensors:
8 - arterial pressure sensor
9 - heart rate sensor
10 - respiration rate sensor
25 11 - body temperature sensor
13 - local blood circulation sensor
14 - sensor of electric activity of the organs and nervous structures
15 - gastric acidity sensor
16 - sensor of mechanical activity and murmurs of the organs (intestine,
30 heart, lungs, muscles, etc.)
Biosensors:
17 - oxygen biosensor

- 18 - glucose biosensor
- 19 - blood hormones biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 23-31 - electrodes connected to the nervous structures
- 5 32 - external radio frequency communications unit
- 33 - external chip controller, additional
- Organs:
- 39 - stomach
- 40 - liver
- 10 41 - gall bladder
- 43 - small intestine
- 44 - large intestine
- 45 - blind gut
- 46 - sigmoid colon
- 15 47 - rectum
- 48 - rectal sphincter
- 60 - sphincter of the gullet

Fig. 35 - Preferred implantation location - Hemo

- 20 Diseases:
- anemia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- agranulocytosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- leucosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Immunodeficiency
- 25 Nervous structures:
- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 3 - right vagus nerve
- 4 - left vagus nerve
- 30 Sensors:
- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor

- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine,
- 5 heart, lungs, muscles, etc.)

Biosensors:

- 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 10 22 - microchip with sensors, biosensors and electrodes
- 23-30 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 15 36 - thymus gland
- 37 - chest bone
- 38 - bones of the limbs, pelvis
- 44 - large intestine
- 49 - spleen

20

Fig. 36 - Preferred implantation location - Hepat 1

Diseases:

Dyskinesia of the biliferous tracts (...) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

25 Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 3 - right vagus nerve
- 4 - left vagus nerve
- 30 5 - spinal cord
- 7 - neurons of the organ (gall bladder)

Sensors:

- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 5 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)
- 10 Biosensors:
 - 17 - tissue oxygen biosensor
 - 18 - blood glucose biosensor
 - 19 - blood hormones biosensor
 - 22 - microchip with sensors, biosensors and electrodes
- 15 23-30 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 33 - external chip controller, additional
- Organs:
 - 40 - liver
 - 20 41 - gall bladder
 - 42 - pancreas
 - 62 - common bile duct

Fig. 37 - Preferred implantation location - Hepat 2

25 Diseases:

- Chronic hepatitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Chronic cholecystopancreatitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Cirrhosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 30 Nervous structures:
 - 1 - right sympathetic trunk
 - 2 - left sympathetic trunk
 - 3 - right vagus nerve

- 4 - left vagus nerve
- 5 - spinal cord
- 7 - neurons of the organ (liver)
- Sensors:
- 5 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 10 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)
- Biosensors:
- 17 - tissue oxygen biosensor
- 15 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 23-28 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 20 33 - external chip controller, additional
- Organs:
- 40 - liver
- 41 - gall bladder
- 42 - pancreas
- 25 62 - common bile duct

Fig. 38 - Preferred implantation location - Muscles 1

Diseases:

- trauma-related paralyses [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 30 - myodystrophy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- myopathy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 5 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
- 7 - neurons of the organ - muscles

Sensors:

- 10 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 11 - body temperature sensor
- 12 - Angular shift sensor (for the limbs)
- 15 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles)

Biosensors:

- 20 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 31 - electrodes connected to the nervous structures
- 25 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 53 - muscles

- 30 Fig. 39 - Preferred implantation location - Muscles 2
- Bodybuilding

Nervous structures:

7 - neurons of the organ - muscles

Sensors:

8 - arterial pressure sensor

5 9 - heart rate sensor

10 - respiration rate sensor

11 - body temperature sensor

12 - Angular shift sensor (for the limbs)

13 - local blood circulation sensor

10 14 - sensor of electric activity of the organs and nervous centers

16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles)

Biosensors:

17 - tissue oxygen biosensor

15 18 - blood glucose biosensor

19 - blood hormones biosensor

22 - microchip with sensors, biosensors and electrodes

31 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

20 33 - external chip controller, additional

Organs:

53 - muscles

Fig. 40 - Preferred implantation location - Neuropsychiatric

25 Diseases:

- Schizophrenia with schizophrenic affective disorders and delirium [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

-Anxiety and depression [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- Borderline personality disorder [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

30

- Cortical dementia - Alzheimer's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- Pick's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- Subcortical dementia - supranuclear palsy - (paralysis) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Huntington's chorea [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Parkinson's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - 5 - Multi-infarction dementia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Involuntary movements [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Stammering [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Epilepsy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Priapism [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - 10 - Infantile cerebral paralysis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Paralyzes of different etiology [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Syringomyelia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - 15 - Progressing myodystrophy and other forms of dystrophy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Chronic and acute hyperthermia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
 - Atrophy of the optic nerve [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip
 - 20 6]
- Nervous structures:
- 1 - right sympathetic trunk
 - 2 - left sympathetic trunk
 - 3 - right vagus nerve
 - 25 4 - left vagus nerve
 - 5 - spinal cord
 - 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
- Sensors:
- 8 - arterial pressure sensor
 - 30 9 - heart rate sensor
 - 10 - respiration rate sensor
 - 11 - body temperature sensor
 - 12 - sensor of angular transpositions

13 - local blood circulation sensor

14 - sensor of electric activity of the organs and nervous centers

16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)

5 Biosensors:

17 - tissue oxygen biosensor

18 - blood glucose biosensor

19 - blood hormones biosensor

22 - microchip with sensors, biosensors and electrodes

10 23-31 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

33 - external chip controller, additional

Organs:

53 - muscles

15

Fig. 41 - Preferred implantation location - Osis

Diseases:

Osteoporosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Periostitis, osteosclerosis of different types,

20 Hyperostosis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Chronic osteomyelitis

Flaccidly consolidating fractures [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Rickets [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

25 Perthes disease

Nervous structures:

1 - right sympathetic trunk

2 - left sympathetic trunk

3 - right vagus nerve

30 4 - left vagus nerve

5 - spinal cord

7 - neurons of the organ (muscles)

Sensors:

- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 5 11 - body temperature sensor
- 12 - sensor of angular transpositions
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine,
- 10 heart, lungs, muscles)

Biosensors:

- 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 15 22 - microchip with sensors, biosensors and electrodes
- 23-31 - electrodes connected to the nervous structures, bones and muscles
- 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 20 35 - parathyroid gland
- 38 - bones of the limbs, pelvis
- 53 - muscles

Fig. 42 - Preferred implantation location - Pain

25 Diseases:

- Chronic periodic pains (angina pectoris, phantom pains, neuritis, nerve root syndromes [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Terminal-stage pains [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Migraine [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 30 -Cancer [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk

3 - right vagus nerve

4 - left vagus nerve

5 - spinal cord

Sensors:

5 8 - arterial pressure sensor

9 - heart rate sensor

10 - respiration rate sensor

11 - body temperature sensor

14 - sensor of electric activity of the organs and nervous centers

10 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)

Biosensors:

17 - tissue oxygen biosensor

18 - blood glucose biosensor

15 19 - blood hormones biosensor

22 - microchip with sensors, biosensors and electrodes

23-27 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

33 - external chip controller, additional

20

Fig. 43 - Preferred implantation location - Ren 1

Diseases:

-Hydronephrosis (...)[Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Urinary bladder atony (15) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

25 -Chronic pyelonephritis (...) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Chronic glomerulonephritis (...) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Chronic cystitis (...) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Note: The framed diseases, structures, sensors, biosensors are to be

30 disregarded as irrelevant.

Nervous structures:

1 - right sympathetic trunk

2 - left sympathetic trunk

- 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
 - sinocarotid collector
- 5 - neurons of the organ
- Sensors:
 - 6 - arterial pressure sensor (1)
 - 7 - heart rate sensor (2)
 - 8 - respiration rate sensor (3)
 - 10 9 - body temperature sensor (4)
 - sensor of angular transpositions (5)
 - 10 - local blood circulation sensor (6)
 - 11 - sensor of electric activity of the organs and nervous centers (7)
 - gastric (juice) acidity sensor (8)
 - 15 12 - sensor of mechanical activity and murmurs of the organs (9)
- Biosensors:
 - 13 - tissue oxygen biosensor (1)
 - 14 - blood glucose biosensor (2)
 - 15 - blood hormones biosensor (3)
 - 20 - alcohol biosensor (4)
 - narcotic substances biosensors (5)
 - 16 - microchip with sensors, biosensors and electrodes
 - 17-21 - electrodes connected to the nervous structures 1, 2,3,4,5
 - 22 - external radio frequency communications unit
 - 25 23 - external chip controller, additional
- Organs:
 - heart
 - thyroid gland
 - thymus gland
 - 30 - chest bone
 - bones of the limbs, pelvis
 - stomach

- liver
- gall bladder
- pancreas
- small intestine
- 5 - large intestine
- blind gut
- sigmoid colon
- rectum
- rectal sphincter
- 10 - spleen
- kidneys
- adrenal glands
- urinary bladder
- muscles
- 15 - arteries
- veins
- prostate
- seminal vesicle
- ovaries
- 20 - testicles

Fig. 44 - Preferred implantation location - Ren 2

Diseases:

Urinary bladder atony [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- 25 Chronic cystitis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 3 - right vagus nerve
- 30 4 - left vagus nerve
- 5 - spinal cord
- 7 - neurons of the organ (vesicle)

Sensors:

- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 5 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs

Biosensors:

- 10 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 23-27 - electrodes connected to the nervous structures
- 15 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 50 - kidneys
- 52 - urinary bladder
- 20

Fig. 45 - Preferred implantation location - Respiration 1

Diseases:

- Insomnia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Hypersonmia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 25 Narcolepsy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Sudden cardiac arrest at sleep [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 30 2 - left sympathetic trunk
- 3 - right vagus nerve
- 4 - left vagus nerve

5 - spinal cord

6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System

Sensors:

5 8 - arterial pressure sensor

9 - heart rate sensor

10 - respiration rate sensor

11 - body temperature sensor

13 - local blood circulation sensor

10 14 - sensor of electric activity of the organs and nervous centers

16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles)

Biosensors:

17 - tissue oxygen biosensor

15 18 - blood glucose biosensor

19 - blood hormones biosensor

22 - microchip with sensors, biosensors and electrodes

23-31 - electrodes connected to the nervous structures

32 - external radio frequency communications unit

20 33 - external chip controller, additional

Fig. 46 - Preferred implantation location - Respiration 2

Diseases:

Paresis of the vocal cords (27) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5,

25 Chip 6]

Nervous structures:

1 - right sympathetic trunk

2 - left sympathetic trunk

3 - right vagus nerve

30 4 - left vagus nerve

5 - spinal cord

Sensors:

- 8 - arterial pressure sensor (1)
- 9 - heart rate sensor (2)
- 10 - respiration rate sensor (3)
- 5 11 - body temperature sensor (4)
- 13 - local blood circulation sensor (6)
- 14 - sensor of electric activity of the organs and nervous centers (7)
- 16 - sensor of mechanical activity and murmurs of the organs (heart, lungs, muscles) (9)
- 10 Biosensors:
 - 17 - tissue oxygen biosensor (1)
 - 18 - blood glucose biosensor (2)
 - 19 - blood hormones biosensor (3)
 - 22 - microchip with sensors, biosensors and electrodes
 - 15 23-27 - electrodes connected to the nervous structures 1, 2,3,4,5,8
 - 32 - external radio frequency communications unit
 - 33 - external chip controller, additional

Fig. 47 - Preferred implantation location - Sleep 1

20 Diseases:

- Insomnia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Hypersonmia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Apnea [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Narcolepsy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 25 Sudden cardiac arrest at sleep [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 2 - left sympathetic trunk
- 30 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
- 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System

- 7 - neurons of the organ (the heart)
- Sensors:
- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 5 10 - respiration rate sensor
- 11 - body temperature sensor
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine,
- 10 heart, lungs, muscles)
- K14, K15 - sensor of electric activity of the brain (EEG) + electrode.
- Biosensors:
- 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 15 19 - blood hormones biosensor
- 22 - microchip with sensors, biosensors and electrodes
- 23-31 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 33 - external chip controller, additional
- 20 Organs:
- 34 - Heart
- Fig. 48 - Preferred implantation location - Sleep 2
- Diseases:
- 25 Insomnia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Hypersonmia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Apnea [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Narcolepsy [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Sudden cardiac arrest at sleep [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip
- 30 6]
- Nervous structures:
- 1 - right sympathetic trunk
- 2 - left sympathetic trunk

- 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
- 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
- 5 Sensors:
 - 8 - arterial pressure sensor
 - 9 - heart rate sensor
 - 10 - respiration rate sensor
 - 11 - body temperature sensor
- 10 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous structures
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles)
- Biosensors:
 - 15 17 - tissue oxygen biosensor
 - 18 - blood glucose biosensor
 - 19 - blood hormones biosensor
 - 22 - microchip with sensors, biosensors and electrodes
 - 23 - electrodes connected to the nervous structures
- 20 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Fig. 49 - Preferred implantation location - Vessels

Diseases:

- 25 - Obliterating atherosclerosis and endarteritis [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Ischemic heart disease and angina pectoris [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Cardiac arrhythmia [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- 30 - Raynaud's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Buerger's disease [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]
- Chronic thrombophlebitis - supranuclear palsy - (paralysis) [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

- Postthrombophlebitic syndrome [Chip 1, Chip 2, Chip 3, Chip 4, Chip 5, Chip 6]

Nervous structures:

- 1 - right sympathetic trunk
- 5 2 - left sympathetic trunk
- 3 - right vagus nerve
- 4 - left vagus nerve
- 5 - spinal cord
- 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
- 10 7 - neurons of the organ (heart)

Sensors:

- 8 - arterial pressure sensor
- 9 - heart rate sensor
- 10 - respiration rate sensor
- 15 11 - body temperature sensor
- 12 - sensor of angular transpositions
- 13 - local blood circulation sensor
- 14 - sensor of electric activity of the organs and nervous centers
- 16 - sensor of mechanical activity and murmurs of the organs (intestine, heart, lungs, muscles, etc.)
- 20

Biosensors:

- 17 - tissue oxygen biosensor
- 18 - blood glucose biosensor
- 19 - blood hormones biosensor
- 25 22 - microchip with sensors, biosensors and electrodes
- 23-31 - electrodes connected to the nervous structures
- 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 30 34 - Heart
- 53 - muscles

Fig. 25B - Preferred implantation location - Autonomous power supply

The structure of the power supply is detailed above. The flexible piezoelectric element (1) is implanted as illustrated, under the

5 diaphragm's cupola (4), from the right side, endoscopically, and is connected to the chip (3).

4 Clinical results, practical experience using the new system and method.

The method has been kept secret, and the system is hidden inside the patient's body.

10 Table 10 - Experiments performed for each disease, in animals and humans
Obesity - Experimental research

Following are the electric stimulation current parameters: frequency: 10-45 hertz, pulse duration: 0.01-0.1 millisecond, amplitude: 15 microampere, voltage: up to 0.5 volt. Programmed electric stimulation sessions were
15 performed on a daily basis, the duration of one session being set at 10 minutes and the frequency of sessions was every four hours. All the animals' weight was monitored on a weekly basis. A half of the animals (13) comprised a control group. After the operation they were placed in a cage without the radio frequency unit.

20

Results of the Experiments

After the operation, there were 9 surviving rats in the main group, 10 rats remained in the control group.

In the control group a steady growth weight of at least 5% per month was
25 observed among the animals after the operation. (Figure 53).
Figure 53. Note: *- reliable value dynamics ($? < 0,05$)

In the main group subjected to periodical programmed electric stimulations of the stomach, no weight increase was recorded in any animal. (Figure 54).
Figure 54. Note: *- reliable value dynamics ($? < 0,05$)

30 On the contrary, 7 rats developed a progressing weight loss of at least 10-15% per month. Two rats died after 4 and 5 weeks respectively after the experiment commencement, and the cause of their death probably was

inanimation, since the weight loss in them reached 18-25% from the initial value.

After 10 weeks the stimulations were stopped in the main group, that resulted in the surviving rats in a weight growth rehabilitation within 7 to 8 weeks.

Conclusions:

1. The stomach's functional activity can be controlled by means of periodical electric stimulations of the gastric nerves with current of the above-mentioned parameters.
 2. Repeated electric stimulations of the nerves of the stomach can cause a stable weight loss in rats.
 3. Suspension of electric stimulations of the stomach in the chronic-condition experiment resulted in the weight growth rehabilitation in the rats with stomach-implanted microchips.
 4. The method based on periodical electric stimulation of the stomach nerves can be applied to treatment of obese patients being a low-traumatic and more physiological technique, as compared to the conventional surgical procedures.
- Analysis of Results of the First Experimental Application of the New Obesity Treatment Technology to Clinical Practice

Description of uses of the Technology

In a test that has been performed, Microchips have been implanted to 5 obese patients, using 3rd-, 4th- and 5th-generation chips and video-endoscopic surgical techniques to implant them.

The results are presented in Table 11 below.

Conclusions

- Periodical electric stimulation of the stomach's nerves by means of the microchips programmed to detect and monitor the stomach's functional activity and to inhibit the latter using the electric stimulation of the

above-mentioned nerves, enables a steady predictable weight loss of up to 3 kg per month or more in obese patients.

Chip's Working Algorithms:

- 5 PES - programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2).
UES - urgent electric stimulation that starts upon detecting (by means of the sensors and biosensors) of a change in the gastric juice acidity level and gastric peristalsis enhancement in order to inhibit stomach functions.
- 10 Table 12 - Statistics for obesity treatment, details Mean Data on the 5 Patients from Table 11 above.
Figs. 55 to 59 - Illustration of surgical procedure
Figs. 60 to 69 - Roentgen of patient with implanted system
Table 13 - Results of asthma treatment
- 15 Table 14 - Asthma surgery data
Table 15 - Epilepsy clinical examples
Table 16 - Epilepsy surgery data
Table 17 - Examples of gastric and duodenal ulcer treatment
Table 18 - Clinical examples of dementia treatment
- 20 Table 19 - Clinical examples of treatment of obliterating vascular diseases
Table 20 - List of conditions of the healthy person's body that can be affected with the present invention
General Numbering for drawings
Nervous structures:
- 25 1 - right sympathetic trunk
2 - left sympathetic trunk
3 - right vagus nerve
4 - left vagus nerve
5 - spinal cord
- 30 6 - SCVNS: Sinocarotid collector of the Vegetative Nervous System
7 - neurons of the organ (the heart)
7A - cutaneous nerve
7B - depressor nerve

Sensors:

- 8 - Arterial pressure meter
- 9 - Heart rate meter
- 5 10 - Respiration rate meter
- 11 - Temperature gage
- 12 - Angular shift sensor (for the limbs)
- 13 - Local blood flow sensor
- 14 - Sensor of electric activity of the organs, nervous centers
- 10 15 - Gastric juice acidity sensor
- 16 - Murmur sensor (heart, lungs, intestine)

Biosensors:

- 17 - Biosensor of oxygen contents in the tissues
- 18 - Biosensor of sugar contents in the blood
- 15 19 - Biosensor of hormone contents in the blood
- 20 - Biosensor of alcohol contents in the blood
- 21 - Biosensor of narcotic substances contents in the blood
- 22 - microchip with sensors, biosensors and electrodes
- 23-31 - electrodes connected to the nervous structures 1, 2,3,4,5,6,7,8
- 20 32 - external radio frequency communications unit
- 33 - external chip controller, additional

Organs:

- 34 - heart
- 35 - parathyroid gland
- 25 36 - thymus gland
- 37 - chest bone
- 38 - bones of the
limbs, pelvis
- 39 -stomach
- 30 40 - liver
- 41 - gall bladder
- 42 - pancreas
- 43 - small intestine

- 44 - large intestine
- 45 - blind gut
- 46 - sigmoid colon
- 47 - rectum
- 5 48 - rectal sphincter
- 49 - spleen
- 50 - kidneys
- 51 - adrenal glands
- 52 - urinary bladder
- 10 53 - muscles
- 54 - arteries
- 55 - veins
- 56 - prostate
- 57 - seminal vesicle
- 15 58 - ovaries
- 59 - testicles
- 60 - sphincter of the gullet
- 61 - skin
- 62 - common bile duct.

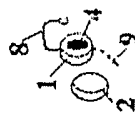
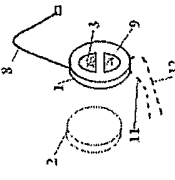
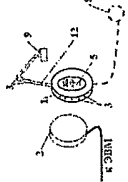
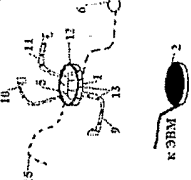
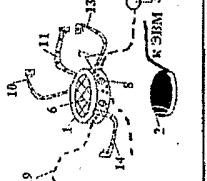
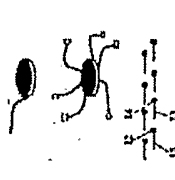
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Following are the tables.

The above detailed description includes but several embodiments of the present invention. Various other embodiments are possible and may be devised by a person skilled in the art upon reading the present disclosure.

25

Table 1 – System structure and therapeutic applications

?	Property	Chip 1	Chip 2	Chip 3	Chip 4 «Multi-Organ Processor»	Chip 5 «Visceral Brain»	Chip 6 «Golden Needle» or «Multi- electrode Wireless Chip»
1	General View						
2	No. of organs or systems of the body that can be directly impacted at a time	One	One	One	Up to three	More than three	All the systems and organs of the body can be impacted
3	No. Of channels through which the body's organs and systems are impacted	One	One	One	Up to three	Up to eight	> 100
4	Option to program each channel of the microchip using electromagnetic waves	No	No	Yes	Yes	Yes	Yes
5	Power Supply Type	Radio-frequency only, from an external power unit	Radio-frequency power source and a built-in autonomous power supply unit	Radio-frequency power source and a built-in autonomous power supply unit	Radio-frequency power source and a built-in autonomous power supply unit	Radio-frequency power source and a built-in autonomous power supply unit, and from the human body's kinetic energy	Radio-frequency power source and a built-in autonomous power supply unit, and from the human body's kinetic energy
6	Type of the chip's sensing device	Sensors	Sensors	Biosensors	Sensors, biosensors	Sensors, biosensors	Sensors, biosensors
7	Which of the SENSORS (gages) listed below can be used together with the chip for treatment of the ailments specified in Box 15 of this Table (entry No. is shown between the parenthesis)						

8	LIST OF SENSORS									
	1. Arterial pressure meter								+(7)	+(7)
	2. Heart rate meter	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)
	3. Respiration rate meter	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)
	4. Temperature gage								+(17)	+(17)
	5. Angular shift sensor (for the limbs)									+(9, 10)
	6. Local blood flow sensor								+(17)	+(17)
	7. Sensor of electric activity of the organs, nervous centers	+(1-29)	+(1-29)	+(1-29)	+(1-29)	+(1-29)	+(1-29)	+(1-29)	+(1-29)	+(1-29)
	8. Gastric juice acidity sensor								+(5, 8)	+(5, 8)
9	9. Murmur sensor (heart, lungs, intestine)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)	+(1, 2, 29)
	Which of the SENSORS (gages) listed below can be used together with the chip for treatment of the ailments specified in Box 15 of this Table (entry No. is shown between the parenthesis)									
	LIST OF BIOSENSORS									
	1. Biosensor of oxygen contents in the tissues							+(1, 17)	+(1, 17)	+(1, 17)
	2. Biosensor of sugar contents in the blood							+(6)	+(6)	+(6)
	3. Biosensor of hormone contents in the blood							+(13, 14, 26)	+(13, 14, 26)	+(13, 14, 26)
	4. Biosensor of alcohol contents in the blood							+(23)	+(23)	+(23)
	5. Biosensor of narcotic substances contents in the blood							+(24)	+(24)	+(24)
	Parameters of the body monitored by the chip's sensors and biosensors	Electric and mechanical activity of the	Electric and mechanical activity of the	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,	Electric activity of the organs, nervous centers,

	organs, electric activity of the nervous centers only	organs, electric activity of the nervous centers only	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media	contents of substances in the tissues (hormones, etc.), contents of gases dissolved in liquid media
10	No. of organs or systems of the body simultaneously monitored by the chip's sensors and biosensors	One	One	Two	Three	More than three	Monitoring most of the systems of the body is possible	
11	Chip's implantation method. Average duration of the patient's hospitalization.	Video endosurgical implantation methods. Hospitalization duration does not exceed one day.	Video endosurgical implantation methods. Hospitalization duration does not exceed one day.	Video endosurgical implantation methods. Hospitalization duration does not exceed one day.	Video endosurgical implantation methods. Hospitalization duration does not exceed one day.	Video endosurgical implantation methods. Hospitalization duration does not exceed one day.	Video endosurgical implantation methods, and non-invasive stereoscopic techniques, controlled by MRI, etc. Hospitalization duration from: between several hours up to one day.	
12	Advantages of the chip in comparison with other existing devices	Low cost. High efficacy. No replacement is required.	Low cost. High efficacy. No replacement is required.	Relatively low cost, yet varied application possibilities	Multi-channel feature	Multi-channel feature	Unique multi-channel feature and large number of biosensors, wireless microelectrodes, «Golden Needles».	
13	Disadvantages of the chip in comparison with other existing devices	No built-in autonomous power source	No programmed modes	High cost, complex expensive adjustment equipment	High cost, complex expensive adjustment equipment	High cost, complex expensive adjustment equipment	High cost, complex expensive adjustment equipment	
14	Approximate price, in USD	500-1000	1500-2000	3000-5000	7000-10000	10000-20000	>20000	

CHIP'S MATERIALS

[illegible]

[illegible]

Table 2 - Description of sensors

Parameters of Sensors	Sensor Name		
	1	2	3
	Arterial pressure sensor	Heart rate sensor	Respiration rate sensor
Location on the chip	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.
Shape, type	S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External
Working principle	MEV - Measurement of electric values, pertaining to organs' function Pz - Piezo-effect	Pz - Piezo-effect MEV - Measurement of electric values, pertaining to organs' function	Pz - Piezo-effect MEV - Measurement of electric values,

			pertaining to organs' function
Number of sensitive elements per 1 cm²	Any number	Any number	Any number
Type of signal received	Code signal Analog signal	Code signal Analog signal	Code signal Analog signal
Membrane's structure, receptor, substance	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component
Range of values measured	Disease-dependent	Disease-dependent	Disease-dependent
Size range of sensitive elements	Micrometers millimeters	Micrometers millimeters	Micrometers millimeters

Parameters of Sensors	Sensor Name	
	4	5
	Body temperature sensor	Angular transposition sensor
Location on the chip	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.
		Local blood flow sensor
		A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of

Shape, type	S – Spiral- or crystal-shape element OT – Other-type element Bl – “Blot”-shape sensitive element D – “Dot”-shape sensitive element Int – Intra-organ Ext – External	S – Spiral- or crystal-shape element OT – Other-type element Bl – “Blot”-shape sensitive element D – “Dot”-shape sensitive element Int – Intra-organ Ext – External	organs and blood vessels. S – Spiral- or crystal-shape element OT – Other-type element Bl – “Blot”-shape sensitive element D – “Dot”-shape sensitive element Int – Intra-organ Ext – External
Working principle	ThE – Thermoelement	Pz – Piezo-effect R – resistometry	O, R – Optical effect, resistometry ThE – Thermoelement
Number of sensitive elements per 1 cm ²	Any number	Any number	Any number
Type of signal received	Code signal Analog signal	Code signal Analog signal	Code signal Analog signal
Membrane's structure, receptor, substance	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component
Range of values measured	Disease-dependent	Disease-dependent	Disease-dependent
Size range of sensitive elements	Micrometers millimeters	Micrometers millimeters	Micrometers millimeters

Parameters of Sensors	Sensor Name		
	7	8	9
	Sensor of electric activity of organs and nervous centers	Acidity (gastric juice) sensor	Sensor of mechanical activity, murmurs and wheezing of organs (intestine, heart, lungs, muscles, etc.)
Location on the chip	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.
Shape, type	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External
Working principle	MEV - Measurement of electric	ECh - Electrochemical	Pz - Piezo-effect

	values, pertaining to organs' function		O, R – Optical effect,
Number of sensitive elements per 1 sm²	Any number	Any number	Any number
Type of signal received	Code signal Analog signal	Code signal Analog signal	Code signal Analog signal
Membrane's structure, receptor, substance	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component
Range of values measured	Disease-dependent	Disease-dependent	Disease-dependent
Size range of sensitive elements	Micrometers millimeters	Micrometers millimeters	Micrometers millimeters

Table 3 - Description of biosensors

Parameters of biosensors	Biosensor Name		
	1	2	3
	Tissue oxygen biosensor	Blood glucose biosensor	Blood and tissue hormones biosensor
Location on the chip	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.
Shape, type	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element Bl - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External
Working principle	O, R - Optical effect, resistometry Pz - Piezo-effect	O, R - Optical effect, resistometry MEV - Measurement of electric values, pertaining to organs' function	O, R - Optical effect, resistometry Pz - Piezo-effect
sensitive elements per 1 cm²	Any number	Any number	Any number
Type of signal received	Code signal Analog signal	Code signal Analog signal	Code signal Analog signal
Membrane's	- Silicon membrane or other	- Silicon membrane or other	- Silicon membrane or other

structure, receptor, substance	biologically inert porous material – Special substance or electronic component	biologically inert porous material – Special substance or electronic component	biologically inert porous material – Special substance or electronic component
Range of values measured	Disease-dependent	Disease-dependent	Disease-dependent
Size range of sensitive elements	Micrometers millimeters	Micrometers millimeters	

Parameters of biosensors	Biosensor Name	
	4	5
	Blood and tissue alcohol biosensor	Narcotic substances biosensor
Location on the chip	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.	A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode. B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels.
Shape, type	S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External	S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External
Working principle	MEV - Measurement of electric values, pertaining to organs' function ECh - Electrochemical	ECh - Electrochemical

sensitive elements per 1 cm^2	Any number	Any number
Type of signal received	Code signal Analog signal	Code signal Analog signal
Membrane's structure, receptor, substance	– Silicon membrane or other biologically inert porous material – Special substance or electronic component	– Silicon membrane or other biologically inert porous material – Special substance or electronic component
Range of values measured	Disease-dependent	Disease-dependent
Size range of sensitive elements	Micrometers millimeters	Micrometers millimeters

Table 4 (epilepsy)

Example of Algorithm

Arbitrary number of sensors, biosensors (according to the numbering system used in our summary table)	Numbers of sensors and biosensors-generated code signals (see Table 3) in charge of ON command	Numbers of sensors and biosensors-generated code signals (see Table 3) in charge of OFF command
Numbers of sensors		
1	2,4	1,3
2	2,4	1,3
3	2,4	1,3
4	2,4	1,3
5	2,4	1,3
6	2,4	1,3
7	2,4 (EEG)	1,3
8	-	-
9	2,4	1,3
Numbers of biosensors		
1	2,4	1,3
2	-	-
3	-	-
4	-	-
5	-	-

Table 5 - asthma

Example of Algorithm

Arbitrary number of sensors, biosensors (according to the numbering system used in the summary table)	Numbers of sensors and biosensors-generated code signals (see Table 3) in charge of ON command	Numbers of sensors and biosensors-generated code signals (see Table 3) in charge of OFF command
Numbers of sensors		
1	2,4	1,3
2	2,4	1,3
3	2,4	1,3
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	2,4	1,3
Numbers of biosensors		
1	2,4	1,3
2	-	-
3	2,4	1,3
4	-	-
5	-	-

Table 6

Method of sensors/biosensors activation

No	Name of sensors, biosensors, and chip program codes	Numbers and meaning of sensors and biosensors-generated code signals (a possible appearance of these signals is shown in Figure 1)				
		Patient is asleep, no seizure or other symptoms of ailment	Patient is asleep, onset of seizure or other symptoms of ailment	Patient is awake, no seizure or other symptoms of ailment	Patient is awake, onset of seizure or other symptoms of ailment	"X" state, such as walking
		Code 1	Code 2	Code 3	Code 4	Code ...
	SENSORS					
1	Arterial pressure (1) (AP)	N	CC1	N	CC2	CC3
2	Heart beat rate (2) (HBR)	N	CC1	N	CC2	CC3
3	Respiratory rate (3) (RR)	N	CC1	N	CC2	CC3
4	Temperature (4) (t°C)	N	CC1	N	CC2	CC3
5	Angular displacement (5)	SI	CC1	N	CC2	CC3
6	Local circulation (6)	N	CC1	N	CC2	CC3
7	Electric activity of organs (7)	N	CC1	N	CC2	CC3
8	pH (8)	N	CC1	N	CC2	CC3
9	Mechanical activity of organs (9)	N	CC1	N	CC2	CC3
	BIOSENSORS					
10	Oxygen (1) (pO ₂)	N	CC1	N	CC2	CC3
11	Glucose (2)	N	CC1	N	CC2	CC3
12	Hormones (3)	N	CC1	N	CC2	CC3
13	Alcohol (4)	SI/SA	CC1	N	CC2	CC3
14	Narcotics (5)	SI/SA	CC1	N	CC2	CC3
15	Chip program codes (built-in)	Chip OFF	Chip ON	Chip OFF	Chip ON	Chip OFF/ Chip ON

Notes:

- Specific values of sensors and biosensors-generated signals, as assigned to each of the codes, are determined separately per each patient.

SI - signal unavailable

Table 7
Treatment of diseases using the microchips (Table of Diseases)

N	Diseases and syndromes	Sensors	Biosensors	Chip	Electrode	Nerves best mode (exact anatomic definition and location)	Nerves second best (exact anatomic definition and location)
1	Asthma	8, 9, 10, 11, 12, 13, 14, 16	17, 18	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T11)
2	Epilepsy	8, 9, 10, 11, 12, 13, 14, 16	17, 18, 19, 20	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)
3	Parkinson's disease	8, 9, 10, 11, 12, 13, 14, 16	17, 18	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)
4	Alzheimer's disease	8, 9, 10, 11, 12, 13, 14, 16	17, 18	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)

							(over the bifurcation spot of the common carotid artery)	superior third of the neck, at the level C2-C3)
5	Gastric ulcer	8-16, 15	17, 18, 19	1-6	1-9		VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)	TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11) TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4)
6	Diabetes	8, 9, 10, 11, 12, 13, 14, 16	17, 18, 19	1-6	1-9		VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)	TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11) TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4)
7	Hypertension	8, 9, 10, 11, 12, 13, 14, 16	17, 18	1-6	1-9		DPND-Depressor nerve, right (over the aortic arch or in the middle third of the neck) DPNS-Depressor nerve, left (over the aortic arch or in the middle third of the neck)	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)
8	Obesity	8-16, 15	17, 18	1-6	1-9		VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)	TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11) TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4)
9	Infantile cerebral	8, 9, 10, 11, 12,	17	1-6	1-9		SP-Spinal cord (at the level T10-T-12)	Nerve collector of the organ(Muscles)

	paralysis	13, 14, 16	17	1-6	1-9	Nerve collector of the organ(Muscles)	Nerve collector of the organ(Muscles)
10	Posttraumatic paralysis	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	SP-Spinal cord (at the level T10-T-12) Nerve collector of the organ(Muscles)	Nerve collector of the organ(Muscles)
11	Hirschsprung's disease	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11) TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4)	Nerve collector of the organ(colon)
12	Mental diseases	8, 9, 10, 11, 12, 13, 14, 16	17, 18	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)
13	Adrenal cortex failure	8, 9, 10, 11, 12, 13, 14, 16	17, 18, 19	1-6	1-9	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)	Nerve collector of the organ
14	Hypothyroidism	8, 9, 10, 11, 12, 13, 14, 16	17, 19	1-6	1-9	TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3) TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4)	VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD- Vagus nerve, right (in the superior third of the neck, at the level C2-C3)

15	Urinary bladder atony	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	Nerve collector of the organ (v.bladder)	SP-Spinal cord (at the level T10-T-12)
16	Pain syndromes of different genesis	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	SP-Spinal cord (at the level T10-T-12)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)
17	Obliterating vascular diseases of the limbs	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	SP-Spinal cord (at the level T10-T-12)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)
18	Constipation	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	TSCD-Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)	VD- Vagus nerve, right (in the superior third of the neck, at the level C2-C3) VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3)
19	Progressing myodystrophy	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	SP-Spinal cord (at the level T10-T-12) Nerve collector of the organ(Muscles)	Nerve collector of the organ(Muscles)
20	Angiotrophic neurosis	8, 9, 10, 11, 12, 13, 14, 16	17	1-6	1-9	SP-Spinal cord (at the level T10-T-12)	Nerve collector of the organ(Muscles)
21	Syringomyelia	8-14, 16	17	1-6	1-9	TSTD- Sympathetic trunk,	3-TSCD-Sympathetic trunk,

	elia						thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T11)	cervical, right (in the superior third of the neck, at the level C2-C3) 4-TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)
22	Anxiety, neurosis, depression	8-14, 16	17	1-6	1-9		SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	3-TSCD-Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) 4-TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)
23	Alcoholism	8-14, 16, 9, 10, 11	17, 18, 20, 21	1-6	1-9		DPND-Depressor nerve, right (over the aortic arch or in the middle third of the neck) DPNS-Depressor nerve, left (over the aortic arch or in the middle third of the neck)	VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3), Nerve collector of the organ(skin)
24	Drug addiction	8-14, 16, 9, 10, 11	17, 18, 20, 21	1-6	1-9		Nerve collector of the organ(skin)	Nerve collector of the organ(skin)
25	Impotence	8-14, 16, 13	17, 18	1-6	1-9		SP-Spinal cord (at the level T10-T-12)	Nerve collector of the organ (genitals)
26	Cardiac arrhythmia	8-14, 16, 9, 10, 11	17	1-6	1-9		SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	Nerve collector of the organ (cor), VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the

									superior third of the neck, at the level C2-C3)
27	Paresis of the vocal cords	8-14, 16, 9, 10, 11	17	1-6	1-9		VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3) VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3)	3-TSCD-Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) 4-TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)	
28	Osteoporosis	8-14, 16	17	1-6	1-9		Nerve collector of the organ (parathyroid gland, muscles)	Nerve collector of the organ(Muscles)	
29	Angina pectoris	8-14, 16, 9, 10, 11	17	1-6	1-9		SKD- Sinocarotid collector, right (over the bifurcation spot of the common,carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	SP-Spinal cord (at the level T10-T-12)	
30	Apnea, snoring, hypersomnia	8-14, 16, 9, 10, 11	17	1-6	1-9		TSCD-Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)	SP-Spinal cord (at the level T10-T-12)	
31	Chronic gastroenterocolitis	8-16, 15	17, 18	1-6	1-9		VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3) VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)	

32	Ailments, associated with a malfunction of the rectum sphincters	8-14, 16	17	1-6	1-9	Nerve collector of the organ(rectum)	Nerve collector of the organ(rectum)
33	Male and female infertility	8-14, 16	17, 19	1-6	1-9	Nerve collector of the organ (genitals)	Nerve collector of the organ(genitals)
34	Stammering	8-14, 16	17	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	3-TSCD-Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) 4-TSCS-Left sympathetic trunk (Left upper cervical third part between C2 - C3)
35	Insomnia	8-14, 16	17	1-6	1-9	SKD- Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) SKS-Sinocarotid collector, left (over the bifurcation spot of the common carotid artery)	VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3) VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3)
36	Bulimia	8-16, 15	17, 18, 19	1-6	1-9	VD-Vagus nerve, right (in the superior third of the neck, at the level C2-C3) VS- Vagus nerve, left (in the superior third of the neck, at the level C2-C3)	TSTD- Sympathetic trunk, thoracic, right (in the superior third, at the level T2-T4) TSTS- Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T-11)
37	Reflux-esophagitis	8-16, 15	17, 18	1-6	1-9	VD-Vagus nerve, right (in the superior third of the neck, at the	TSTD- Sympathetic trunk, thoracic, right (in the superior

Table 8 - Electric stimulation current parameters for different diseases

Electric current parameters for stimulation of nervous structures							
No.	Names of the disease from our patents in alphabetical order (in Russian / Russian)	General range			Best-mode value		
		F	D	A	F	D	A
1	Agranulocytosis	1-300 Hz	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
2	Alcoholism	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.7-0.8 MS	0.81-1.0 V
3	Angiotrophoneur osis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.4-0.6 V
4	Anemia (all types are to be listed))	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
5	Apnea	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	225-300 HZ	0.7-0.8 MS	0.81-1.0 V
6	Cardiac arrhythmia, Ischemic heart disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
7	Urinary bladder atony	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.7-0.8 MS	0.81-1.0 V
8	Atrophy of he optic nerve	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
9	Skin atrophy	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
10	Sardiac achalasia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
11	Coagulation disorders	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
12	Buerger's disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
13	Hirschsprung's disease – megacolon	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V
14	Crohn's disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0.1-0.29 MS 0.3-0.49 MS, 0.5-0.69 MS 0.7-0.8 MS	0.02-0.4 V 0.4-0.6 V 0.61-0.8 V 0.81-1.0 V
15	Parkinson's disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
16	Pick's disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
17	Raynaud's	1-300	0.1-0.8	0.2-1.0	76-150	0.3-0.49 MS	0.4-0.6

	disease	HZ	Ms	V	HZ		V
18	Alzheimer's disease						
19	Asthma	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
20	Bulimia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
21	Vegetovascular dystony	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
22	Sudden cardiac arrest at sleep	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
23	Rectal prolapse	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ 225-300 HZ	0.1-0.29 MS	0.02-0.4 V
24	Flaccidly consolidating fractures	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.02-0.4 V
25	Hyperkeratosis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
26	Hyperostosis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.5-0.69 MS	0.4-0.6 V
27	Hypersomnia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
28	Hypertension (list all types)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
29	Adrenal cortex hyperfunction	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
30	Hypoglycemia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.3-0.49 MS	0.4-0.6 V
31	Hypothyrosis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.5-0.69 MS	0.61-0.8 V
32	Hypotension	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.5-0.69 MS	0.61-0.8 V
33	Adrenal cortex hypofunction (Addison's disease))	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.7-0.8 MS	0.61-0.8 V
34	Subcortical dementia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
35	Multi-infarction dementia Involuntary movements	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
36	Cortical dementia - Alzheimer's disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
37	Depression						
38	Infantile cerebral paralysis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
39	Dyskinesia of the	1-300	0.1-0.8	0.2-1.0	0-75 HZ	0.1-0.29 MS	0.02-0.4

	biliferous tracts	HZ	Ms	V			V
40	Dysmenorrhea (genital diseases)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
41	Dolichosigmoid,	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
42	Gastrointestinal dyskinesia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
43	Stammering	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V
44	Impotence	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
45	Insomnia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
46	Ischemic heart disease, Angina pectoris	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.02-0.4 V
47	Coprostasia						
48	Leucosis (list all types)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
49	Migraine	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
50	Myodystrophy	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
51	Myopathy	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
52	Male and female infertility	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
53	Narcolepsy	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
54	Drug addiction (list all types)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.5-0.69 MS	0.4-0.6 V
55	Bauhin's valve failure	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	150-225 HZ	0.3-0.49 MS	0.4-0.6 V
56	Adrenal cortex insufficiency	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.5-0.69 MS	0.61-0.8 V
57	Neurodermite	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
58	Nervous anorexia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
59	Diabetes insipidus	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
60	Obliterating atherosclerosis of the limbs' vessels	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
61	Obliterating endarteritis of the lower limbs' vessels	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
62	Alopecia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V

63	Obesity	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
64	Osteoporosis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
65	Trauma-related paralyses	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ 76-150 HZ, 150- 225 HZ, 225-300 HZ	0.1-0.29 MS 0.3-0.49 MS, 0.5- 0.69 MS 0.7-0.8 MS	0.02-0.4 V 0.4- 0.6 V 0.61-0.8 V 0.81- 1.0 V
66	Paralyses of different etiology	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
67	Paresis of the vocal cords	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V
68	Borderline personality disorders	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
69	Priapism	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
70	Progressing myodystrophy	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
71	Psoriasis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.4-0.6 V
72	Cancer (list different localizations and types)						
73	Rickets	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V
74	Reflux- esophagitis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
75	Sarcoma						
76	Diabetes	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.02-0.4 V
77	Syringomyelia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
78	Zollinger-Ellison syndrome	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
79	Commissural disease	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
80	Angina pectoris						
81	Anxiety and depression	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
82	Huntington's chorea	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.61-0.8 V
83	Chronic duodenal ileus	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.3-0.49 MS	0.4-0.6 V
84	Chronic and acute hyperthermia	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V
85	Chronic intestinal	1-300	0.1-0.8	0.2-1.0	76-150	0.3-0.49 MS	0.4-0.6

	obstruction (Commissural disease, Megacolon, Chronic mesenterial circulation insufficiency, Metacolon, Dolichosigmoid, Cardiac achalasia)	HZ	Ms	V	HZ		V
86	Chronic gastroenterocoliti s	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
87	Chronic hepatitis (list each type in detail)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
88	Chronic cholecystitis and cholecystopancre atitis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
89	Chronic cystitis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.5-0.69 MS	0.4-0.6 V
90	Chronic periodic pains (Angina pectoris, Phantom pains, Neuritis, Nerve root syndromes Terminal-stage pains Migraine)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
91	Chronic glomerulonephriti s	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ 76-150 HZ, 150- 225 HZ, 225-300 HZ	0.1-0.29 MS 0.3-0.49 MS, 0.5- 0.69 MS 0.7-0.8 MS	0.02-0.4 V 0.4- 0.6 V 0.61-0.8 V 0.81- 1.0 V
92	Chronic obstructive bronchitis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.3-0.49 MS	0.4-0.6 V
93	Chronic osteomyelitis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
94	Chronic pyelonephritis	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ 76-150 HZ, 150- 225 HZ, 225-300 HZ	0.1-0.29 MS 0.3-0.49 MS, 0.5- 0.69 MS 0.7-0.8 MS	0.02-0.4 V 0.4- 0.6 V 0.61-0.8 V 0.81- 1.0 V

95	Cirrhosis (list all types)	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
96	Schizophrenia with schizophrenic affective disorders and delirium	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	0-75 HZ	0.1-0.29 MS	0.02-0.4 V
97	Eczema	1-300 HZ	0.1-0.8 Ms	0.2-1.0 V	76-150 HZ	0.1-0.29 MS	0.02-0.4 V

Table 9 - Electric stimulation current parameters for different diseases

Electric current parameters for stimulation of nervous structures				
No.	Names of the disease from our patents in alphabetical order (in Russian / Russian)	Optimal range		
		F	D	A
1	Agranulocytosis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
2	Alcoholism	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
3	Angiotrophoneurosis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
4	Anemia (all types are to be listed))	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
5	Apnea	150-225 HZ 225-300 HZ	150-225 HZ 225-300 HZ	150-225 HZ 225-300 HZ
6	Cardiac arrhythmia, Ischemic heart disease	0-75 HZ	0-75 HZ	0-75 HZ
7	Urinary bladder atony	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
8	Atrophy of the optic nerve	0-75 HZ	0-75 HZ	0-75 HZ
9	Skin atrophy	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
10	Cardiac achalasia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
11	Coagulation disorders	0-75 HZ	0-75 HZ	0-75 HZ
12	Buerger's disease	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
13	Hirschsprung's disease – megacolon	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
14	Crohn's disease	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ
15	Parkinson's disease	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
16	Pick's disease	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
17	Raynaud's disease	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
18	Alzheimer's disease			
19	Asthma	0-75 HZ	0-75 HZ	0-75 HZ

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		76-150 HZ	76-150 HZ	76-150 HZ
20	Bulimia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
21	Vegetovascular dystony	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
22	Sudden cardiac arrest at sleep	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
23	Rectal prolapse	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
24	Flaccidly consolidating fractures	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
25	Hyperkeratosis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
26	Hyperostosis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
27	Hypersomnia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
28	Hypertension (list all types)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
29	Adrenal cortex hyperfunction	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
30	Hypoglycemia	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
31	Hypothyrosis	150-225 HZ, 225-300 HZ	150-225 HZ, 225-300 HZ	150-225 HZ, 225-300 HZ
32	Hypotension	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
33	Adrenal cortex hypofunction (Addison's disease))	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
34	Subcortical dementia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
35	Multi-infarction dementia Involuntary movements	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
36	Cortical dementia - Alzheimer's disease	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
37	Depression			
38	Infantile cerebral paralysis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
39	Dyskinesia of the biliferous tracts	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
40	Dysmenorrhea (genital diseases)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
41	Dolichosigmoid,	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
42	Gastrointestinal	0-75 HZ	0-75 HZ	0-75 HZ

	dyskinesia	76-150 HZ	76-150 HZ	76-150 HZ
43	Stammering	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
44	Impotence	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
45	Insomnia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
46	Ischemic heart disease, Angina pectoris	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
47	Coprostasia			
48	Leucosis (list all types)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
49	Migraine	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
50	Myodystrophy	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
51	Myopathy	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
52	Male and female infertility	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
53	Narcolepsy	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
54	Drug addiction (list all types)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
55	Bauhin's valve failure	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
56	Adrenal cortex insufficiency	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
57	Neurodermite	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
58	Nervous anorexia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
59	Diabetes insipidus	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
60	Obliterating atherosclerosis of the limbs' vessels	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
61	Obliterating endarteritis of the lower limbs' vessels	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
62	Alopecia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
63	Obesity	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
64	Osteoporosis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
65	Trauma-related paralyses	0-75 HZ 76-150 HZ,	0-75 HZ 76-150 HZ,	0-75 HZ 76-150 HZ,

		150-225 HZ, 225-300 HZ	150-225 HZ, 225-300 HZ	150-225 HZ, 225-300 HZ
66	Paralyses of different etiology	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
67	Paresis of the vocal cords	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
68	Borderline personality disorders	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
69	Priapism	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
70	Progressing myodystrophy	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
71	Psoriasis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
72	Cancer (list different localizations and types)			
73	Rickets	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
74	Reflux-esophagitis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
75	Sarcoma			
76	Diabetes	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
77	Syringomyelia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
78	Zollinger-Ellison syndrome	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
79	Commissural disease	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
80	Angina pectoris			
81	Anxiety and depression	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
82	Huntington's chorea	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
83	Chronic duodenal ileus	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
84	Chronic and acute hyperthermia	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
85	Chronic intestinal obstruction (Commissural disease, Megacolon, Chronic mesenterial circulation insufficiency, Metacolon, Dolichosigmoid,	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ

	Cardiac achalasia)			
86	Chronic gastroenterocolitis	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ	76-150 HZ, 150-225 HZ
87	Chronic hepatitis (list each type in detail)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
88	Chronic cholecystitis and cholecystopancreatiti s	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
89	Chronic cystitis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
90	Chronic periodic pains (Angina pectoris, Phantom pains, Neuritis, Nerve root syndromes Terminal-stage pains Migraine)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
91	Chronic glomerulonephritis	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ
92	Chronic obstructive bronchitis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
93	Chronic osteomyelitis	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
94	Chronic pyelonephritis	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ	0-75 HZ 76-150 HZ, 150-225 HZ, 225-300 HZ
95	Cirrhosis (list all types)	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
96	Schizophrenia with schizophrenic affective disorders and delirium	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ
97	Eczema	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ	0-75 HZ 76-150 HZ

Table 10 - Experiments performed for each disease

No	Diseases and syndromes	Experiments Y/N Amount: A-Animal H-Human
1	Asthma	A-126, H-372
2	Epilepsy	A-38, H-48
3	Parkinson's disease	A-4, H-0
4	Alzheimer's disease	A-6, H-0
5	Gastric ulcer	A-26, H-12
6	Diabetes	A-22, H-9
7	Hypertony	A-20, H-9
8	Obesity	A-30, H-12
9	Infantile cerebral paralysis	A-0, H-0
10	Posttraumatic paralysis	A-0, H-0
11	Hirschsprung's disease	A-0, H-0
12	Mental diseases	A-32, H-9
13	Adrenal cortex failure	A-18, H-2
14	Hypothyrosis	A-32, H-0
15	Urinary bladder atony	A-0, H-0
16	Pain syndromes of different genesis	A-6, H-14
17	Obliterating vascular diseases of the limbs	A-0, H-9
18	Constipation	A-0, H-1
19	Progressing myodystrophy	A-0, H-0
20	Angiotrophoneurosis	A-0, H-1
21	Syringomyelia	A-0, H-0
22	Anxiety, neurosis, depression	A-32, H-18
23	Alcoholism	A-0, H-0
24	Drug addiction	A-0, H-0
25	Impotence	A-0, H-1
26	Cardiac arrhythmia	A-0, H-3
27	Paresis of the vocal cords	A-0, H-0
28	Osteoporosis	A-0, H-2
29	Angina pectoris	A-30, H-13
30	Apnea, snoring, hypersomnia	A-0, H-2
31	Chronic	A-0, H-2

	gastroenterocolitis	
32	Ailments, associated with a malfunction of the rectum sphincters	A-0, H-0
33	Male and female infertility	A-0, H-0
34	Stammering	A-0, H-1
35	Insomnia	A-0, H-2
36	Bulimia	A-0, H-2
37	Reflux-esophagitis	A-0, H-3
	Total	A-422, H-547

Table 11. Results of Obesity Treatment

Clinical History, Treatment Results	1	2	3
Age, sex (m, f)	56 M	42 F	45 M
Diagnosis of the Main Disease	Ob-A-2	Ob-B-2	Ob-B-2
Complication of the Main Disease	arthrosis of the lower limbs' joints, Myocardial dystrophy, hypercholesterolemia, CVI	RI - 1 respiratory insufficiency	RI -2 Respiratory insufficiency, Spondylarthrosis
Diagnosis of Associated Ailments	Asthma intrinsic, Ischemic heart disease	Ht, Asthma intrinsic, Icenko-Cushing syndrome	Asthma intrinsic, Icenko-Cushing syndrome
Duration of the Main Disease	15 years	7 years	9 years
Date and Type of Surgery	chip implantation, endoscopic chip implantation., 6 Feb. 2002	chip implantation, endoscopic chip implantation., 18 Dec. 2001	chip implantation, endoscopic chip implantation, 11 Nov.2001
Implanted Chip Type, Size (cm),	Chip 3, 5 cm	Chip 4, 4 cm,	Chip 3, 5 cm
Implanted Sensors	-Arterial pressure meter -Heart rate meter -Respiration rate meter -Temperature gage -Local blood flow sensor -Sensor of electric activity of the organs, nervous centers -Gastric juice acidity sensor -Murmur sensor (heart, lungs, intestine)	-Arterial pressure meter -Heart rate meter -Respiration rate meter -Temperature gage -Local blood flow sensor -Sensor of electric activity of the organs, nervous centers -Gastric juice acidity sensor -Murmur sensor (heart, lungs, intestine)	-Arterial pressure meter -Heart rate meter -Respiration rate meter -Temperature gage -Local blood flow sensor -Sensor of electric activity of the organs, nervous centers -Gastric juice acidity sensor -Murmur sensor (heart, lungs, intestine)

Implanted Biosensors	-Biosensor of oxygen contents in the tissues -Biosensor of sugar contents in the blood -Biosensor of hormone contents in the blood	-Biosensor of oxygen contents in the tissues -Biosensor of sugar contents in the blood -Biosensor of hormone contents in the blood	-Biosensor of oxygen contents in the tissues -Biosensor of sugar contents in the blood -Biosensor of hormone contents in the blood
Power Source Description	RF power source	RF power source	RF power source
Name of the nerve the chip has been connected to	Vagus nerve	Sympathetic trunk, thoracic part Vagus nerve	Sympathetic trunk, thoracic part
Chip's Working Algorithm	Programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2).	Programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2). Urgent electric stimulation that starts upon detecting (by means of the sensors and biosensors) of a change in the gastric juice acidity level and gastric peristalsis enhancement in order to inhibit stomach functions.	Programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2).
Treatment methods used before the operation and their efficacy	diet therapy (No effect) medicinal therapy (No effect)	diet therapy (No effect)	diet therapy (No effect)
Clinical History of the main disease and associated ailments before the operation / ... months after the			

operation	82/70.5/72 (after 9 months - 10 kg weight loss)	92/89/87 (after 11 months 5 kg weight loss)	88/85/79 (after 12 months 9 kg weight loss)
Body weight: Before the operation/ one month later/ 3 months later/ ... months later (kg)			
Body Mass Index (BMI): Before the operation/ one month later/ 3 months later/ ... months later (kg/m ²)	32/28/28.5	36/34/32	33/32/29
Complications resulting from the operation, side effects of the method	Anorexia, developed 1 week after chip activation	-	-
Average hospitalization duration during a 1- year-period (days) before the operation / during the post- operation period	25/20	32/28	30/14
Reduction of daily intake of medicines (X-times) ... months after the operation (drug therapy of associated ailments)	9 months later - 42% reduction	11 months later - 55% reduction	12 months later - 42% reduction
Clinical condition of associated ailments resulting from chip-	I	I	I

assisted treatment			
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Clinical History, Treatment Results	4	5
Age, sex (m, f)	28 M	54 M
Diagnosis of the Main Disease	Ob-B-2	Ob-B-2
Complication of the Main Disease	Respiratory insufficiency, Hyperchlorhydria	RI-1 Respiratory insufficiency, Myocardial dystrophy, Apnea
Diagnosis of Associated Ailments	Asthma intrinsic, Icenko-Cushing syndrome	Asthma intrinsic, Icenko-Cushing syndrome
Duration of the Main Disease	6 years	11 years
Date and Type of Surgery	chip implantation, endoscopic chip implantation., 3 Feb. 2002	chip implantation, 8May 2002
Implanted Chip Type, Size (cm),	Chip 5, 5 cm	Chip 4, 5 cm
Implanted Sensors	<ul style="list-style-type: none"> -Arterial pressure meter -Heart rate meter -Respiration rate meter -Temperature gage -Local blood flow sensor -Sensor of electric activity of the organs, nervous centers -Gastric juice acidity sensor -Murmur sensor (heart, lungs, intestine)	<ul style="list-style-type: none"> -Arterial pressure meter -Heart rate meter -Respiration rate meter -Temperature gage -Local blood flow sensor -Sensor of electric activity of the organs, nervous centers -Gastric juice acidity sensor -Murmur sensor (heart, lungs, intestine)
Implanted Biosensors	<ul style="list-style-type: none"> -Biosensor of oxygen contents in the tissues -Biosensor of sugar contents in 	<ul style="list-style-type: none"> -Biosensor of oxygen contents in the tissues -Biosensor of sugar contents in

	the blood -Biosensor of hormone contents in the blood	the blood -Biosensor of hormone contents in the blood
Power Source Description	Built-in power source of the chip + RF power source	Built-in power source of the chip + RF power source
Name of the nerve the chip has been connected to	Vagus nerve Sympathetic trunk, thoracic part	Vagus nerve
Chip's Working Algorithm	Programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2). Urgent electric stimulation that starts upon detecting (by means of the sensors and biosensors) of a change in the gastric juice acidity level and gastric peristalsis enhancement in order to inhibit stomach functions.	Programmed periodical electric stimulation, or non-programmed electric stimulation per schedule entered (Chip 1, Chip 2). Urgent electric stimulation that starts upon detecting (by means of the sensors and biosensors) of a change in the gastric juice acidity level and gastric peristalsis enhancement in order to inhibit stomach functions.
Treatment methods used before the operation and their efficacy	diet therapy (No effect)	diet therapy (No effect)
Clinical History of the main disease and associated ailments before the operation / ... months after the operation		
Body weight: Before the operation/	90/86/83 (after 9 months – 7 kg weight	102/95/94 (after 6 months – 8 kg weight

one month later/ 3 months later/ ... months later (kg)	loss)	loss)
Body Mass Index (BMI): Before the operation/ one month later/ 3 months later ... months later (kg/m ²)	35/33/32	37/35/33
Complications resulting from the operation, side effects of the method	-	-
Average hospitalization duration during a 1-year-period (days) before the operation / during the post-operation period	41/20	26/19
Reduction of daily intake of medicines (X-times) ... months after the operation (drug therapy of associated ailments)	9 months later - 43% reduction	6 months later - 38% reduction
Clinical condition of associated ailments resulting from chip-assisted treatment	I	I
Conclusion: Fast weight loss in 1 patient (20 %);		

Slow weight loss in 5 patients (80 %)

Table 12 - Statistics for obesity treatment

Clinical History and Treatment Results	Mean Value
Age	45
Sex	3 men, 2 women
Duration of the Main Disease (years)	9,6
Body weight: Before the operation/ one month later/ 3 months later/6-12 months later (kg)	90,8/85,1/83
Body Mass Index (BMI): Before the operation/ one month later/ 3 months later/ 6-12 months later (kg/m ²)	34,6/32,4/30,9
Average hospitalization duration during a 1-year- period before the operation / during the post- operation period (days)	30,8/20,2

Table 13. Asthma Clinical Examples

Patient No 5 (MA)	Patient No 4 (PHA)	Patient No 3 (LGN)	Patient No 2 (STV)	Patient No 1 (KMP)	Age & Sex
34 M	68 F	42 F	46 F	55 M	
1. Euphylline (tablets) 2. Berotek (inhalation)	1. Euphylline (tablets) 2. Berotek (inhalation) 3. theophedrine (tablets)	1. Euphylline (tablets) – 2. Berotek (inhalation) 3. theophedrine (tablets)	1. Euphylline (tablets) 2. Berotek (inhalation)	1. Euphylline (tablets) 2. Berotek (inhalation)	תרופות ומינון של ברונכודילטורים במשאף או בכדור לפני הניתוח
1. Becotide (inhalation)	1. Prednisolone (tablets) 2. Becotide (inhalation)	1. Prednisolone (tablets)	1. Polcartolon (tablets)	1. Polcartolon (tablets) 2. Becotide (inhalation)	תרופות ומינון של אנטיאינפלמטוריים במשאף או בכדור לפני הניתוח
1. Euphylline (tablets) – suspended 2. Berotek (inhalation) – 86% reduction (the patient uses the preparation not more than once a month)	1. Euphylline (tablets) – reduction 50% 2. Berotek (inhalation) – reduction 67% 3. theophedrine (tablets) reduction 50% –	1. Euphylline (tablets) – suspended 2. Berotek (inhalation) – 80% reduction 3. theophedrine (tablets) – 50% reduction	1. Euphylline (tablets) – 50% reduction 2. Berotek (inhalation) – 75% reduction	1. Euphylline (tablets) – 67% reduction 2. Berotek (inhalation) – 84% reduction	תרופות ומינון של ברונכודילטורים במשאף או בכדור אחרי הניתוח
1. Becotide (inhalation) – suspended after the operation	1. Prednisolone (tablets) – 67% reduction 2. Becotide (inhalation) – 75% reduction	1. Prednisolone (tablets) – 84% reduction	1. Polcartolon (tablets) – 50% reduction	1. Polcartolon (tablets) – 55% reduction 2. Becotide (inhalation) – 75% reduction	תרופות ומינון של אנטיאינפלמטוריים במשאף או בכדור אחרי הניתוח
Intrinsic asthma, severe condition, hormone- dependent form.	Intrinsic asthma, severe condition, hormone- dependent form. Complications: 1 st , 2 nd –	Intrinsic asthma, severe condition, hormone- dependent form.	Intrinsic asthma, severe condition, hormone- dependent form.	Intrinsic asthma, severe condition, hormone- dependent form. Complications: 1 st – degree	אבחנת המחלה הראשית

	degree respiratory insufficiency 1-2 ct.			respiratory insufficiency.	מחלות כרוניות נוספות
Chronic obstructive bronchitis.	Chronic obstructive bronchitis.	Pulmonary emphyzema, 3-rd degree obesity.	Chronic obstructive bronchitis, uterine fibroid tumor.	2 nd -stage hypertension, chronic obstructive bronchitis.	
					תרופות נוספות שנוטל
15 years	26 years	30 years	18 years	15 years	משך הזמן שחולה באסטמה
before the operation / 3 years after the operation a) mean frequency of attacks: 7/1-0. Asphyxia attacks occur very seldom (once a month), and the patient only suffers from a mild dyspnea, disappearing on its own without medications. b) mean duration of attacks (minutes): 19/6 c) Mean remission duration (days): 42/300	before the operation / 2,5 years after the operation a) mean frequency of attacks: 9/3 b) mean duration of attacks (minutes): 20/7 c) Mean remission duration (days): 29/65	before the operation / 6 years after the operation a) mean frequency of attacks: 10/2 b) mean duration of attacks (minutes): 20/5 c) Mean remission duration (days): 21/69	before the operation / 3 years after the operation a) mean frequency of attacks: 8/2 b) mean duration of attacks (minutes): 18/5 c) Mean remission duration (days): 31/106	before the operation / 4 years after the operation a) mean frequency of attacks: 6/1 b) mean duration of attacks (minutes): 15/5 c) Mean remission duration (days): 28/94	תדירות התקפים לפני ואחרי הציפ
					תדירות אשפוזים לפני ואחרי הניתוח
					ספירומטריה לפני

הניתוח:	האם נעשתה לפני הניתוח בדקה על ידי מרחיב סימפונות - מה היו התוצאות באחרי שיפור לאחר הספירומטריה	תאריך הניתוח
FVC FEV1 FVC/FEV1 PEFR FEF 50	פסירומטריה אחרי הניתוח: FVC FEV1 FVC/FEV1 PEFR FEF 50	June 15, 1998
FVC: 57/61 FEV1: 41/42 FVC/FEV1 BEF: 44/45 FEF50: 49/50	a) bronchi dilatation test results (0,2 mg Berotek inhalation): before the operation: FEV1 increase by 10% 6years after the operation FEV1 increase by 16 % b) bronchi constriction test results (0,22 mg/ml histamine inhalation): before the operation: FEV1 decrease by 14 % 3 years after the operation: FEV1 decrease by 8 %	April 16, 1999
FVC: 58/62 FEV1: 44/44 FVC/FEV1 BEF: 45/46 FEF50: 42/45	a) bronchi dilatation test results (0,2 mg Berotek inhalation): before the operation: FEV1 increase by 12 % 6years after the operation FEV1 increase by 16 % b) bronchi constriction test results (0,22 mg/ml histamine inhalation): before the operation: FEV1 decrease by 11 % 6 years after the operation: FEV1 decrease by 9 %	March 18, 1996
FVC: 47/50 FEV1: 45/48 FVC/FEV1 BEF: 41/43 FEF50: 44/46	a) bronchi dilatation test results (0,2 mg Berotek inhalation): before the operation: FEV1 increase by 8 % 2 after the operation FEV1 increase by 13 % b) bronchi constriction test results (0,22 mg/ml histamine inhalation): before the operation: FEV1 decrease by 14 % 2 years after the operation: FEV1 decrease by 8 %	June 16, 2000
FVC: 56/62 FEV1: 45/59 FVC/FEV1 BEF: 43/50 FEF50: 44/56	a) bronchi dilatation test results (0,2 mg Berotek inhalation): before the operation: FEV1 increase by 15% 6years after the operation FEV1 increase by 18 % b) bronchi constriction test results (0,22 mg/ml histamine inhalation): before the operation: FEV1 decrease by 12 % 3 years after the operation: FEV1 decrease by 8 %	June 15, 1999

To the right sympathetic trunk, in its thoracic part..	thoracic section of the left sympathetic trunk	October 5, 1999	the lumbar section of the right sympathetic trunk.	The right sinocarotid nerve collector.	העצב אליו חובר הציפ
Chip-5, up to 5 cm in diameter, external Radio-frequency power source.	Chip-3, up to 4 cm in diameter, external Radio-frequency power source.	Chip-3, up to 4 cm in diameter, external Radio-frequency power source; Chip-4, up to 7 cm in diameter, external Radio-frequency power source.	Chip-3, up to 4 cm in diameter, external Radio-frequency power source.	Chip-3, up to 4 cm in diameter, external Radio-frequency power source.	נתונים טכניים של הציפ שהושתל: סוג, גודל, תכונות
Sensors: Respiratory rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, tissue oxygen biosensor.	Sensors: Respiratory rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, tissue oxygen biosensor	Sensors: Respiratory rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, stomach murmur sensor, gastric juice acidity sensor, arterial pressure sensor, blood oxygen biosensor	Sensors: Respiratory rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, tissue oxygen biosensor	Sensors: Respiratory rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, arterial pressure sensor, tissue oxygen biosensor	נתונים טכניים של הביוסנסורים: סוג, גודל, תכונות איזה צורת הפעלה לציפ: רצופה על פי צורך או על פי תכנות מראש או שילוב
Start stimulation upon detection of wheezing appearance, respiratory rate acceleration, as well as in an automatic mode, with 5-6-hour intervals for prevention purposes.	start stimulation upon detection of wheezing appearance, respiratory rate acceleration, as well as in an automatic mode, with 3-4-hour intervals	Start stimulation upon detection of wheezing appearance, respiratory rate acceleration, as well as in an automatic mode, with 3-4-hour intervals, in accordance with attack frequency in this specific patient, before the attack	Start stimulation upon detection of wheezing appearance, respiratory rate acceleration, as well as in an automatic mode, with 4-5-hour intervals, in accordance with attack frequency in this specific patient, before the attack	Start stimulation upon detection of wheezing appearance, respiratory rate acceleration, as well as in an automatic mode, with 3-4-hour intervals, in accordance with attack "schedule" and frequency	Chip's operational algorithm

		onset, for prevention purposes. Start stimulation of the nerves of the stomach (nervous collectors) from Chip-4 upon detection of an increase in the gastric peristalsis, gastric juice acidity, as well as before meals, in an automatic mode.	onset, for prevention purposes.	in this specific patient.	
	Mean duration of remission of the chronic bronchitis: Before the operation – 36 days 2 years after the operation – 65 days.	<u>obesity</u> 11 kg weight loss during 3 years.	Duration of remissions of the chronic bronchitis has grown by 2.1 times.	<u>hypertension</u> Mean remission duration: Before the operation – 38 days, After the operation – 122 days. Before the operation the patient was suffering 2-3 hypertension crises per year; after the operation no such crises have been observed.	Clinical history of the associated ailment, tracking the changes resulting from using the chip
A considerable improvement has been observed: almost no asphyxia attacks occur, daily intake of medication reduced by more than 7 times, a	A) Regarding the main disease, a considerable improvement has been observed: frequency of attacks dropped by 3 times at least, daily intake of medication	A) Regarding the main disease, a considerable improvement has been observed: frequency of attacks dropped by 5 times at least, daily intake of medication	A) Regarding the main disease, a considerable improvement has been observed: frequency of attacks dropped by 4 times at least, daily intake of medication	A) Regarding the main disease, a considerable improvement has been observed: frequency of attacks dropped by 6 times at least, daily intake of medication	Conclusion

stable (3-year) remission has been achieved after the operation.	reduced by more than 2 times, a 2-fold increase of the remission duration has been achieved. B) Regarding the associated ailment the remission duration has increased by more than 1.5 times.	reduced by more than 2 times, a minimal 3-fold increase of the remission duration has been achieved. B) Regarding the associated ailment (obesity), the patient lost 11 kg during 3 years.	reduced by more than 3 times, a minimal 3.1-fold increase of the remission duration has been achieved. B) Regarding the associated ailment – chronic bronchitis stabilization, its acute periods reduced by more than 2 times.	reduced by more than 2.3 times, a minimal 3-fold increase of the remission duration has been achieved. B) Regarding the associated ailment (hypertension), the patient has not been suffering from hypertension crises.	:
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Table 14 - Asthma surgery data

2002	54	Chip2 – 42 patients Chip3 – 6 patients Chip4 – 2 patients Chip5 – 2 patients Chip6 – 2 patients	<u>Asthma forms:</u> Extrinsic – 1 Intrinsic – 79 <u>Chip's implantation</u> <u>method:</u> Via conventional surgical accesses – 46 patients; Video-endothoracoscopy – 6 patients; Stereotaxic accesses – 2 patients
1993 - 2002		Total: 324 patients Chip1 – 25 patients Chip2 – 275 patients Chip3 – 10 patients Chip4 – 6 patients Chip5 – 4 patients Chip6 – 4 patients	

Table 15 - Epilepsy clinical examples

Epilepsy Clinical Examples

Patient No 5 (KL)	Patient No 4 (GSA)	Patient No 3 (DV)	Patient No 2 (DNI)	Patient No 1 (KV)	Age & Sex
19 F Generalized idiopathic epilepsy with infrequent tonoclonic seizures.	43 M Generalized idiopathic epilepsy with frequent tonoclonic seizures.	31 M Localized focal idiopathic epilepsy with infrequent tonoclonic seizures; Atonic seizures, absences, petit mal, grand mal.	38 F Generalized idiopathic epilepsy with frequent tonoclonic seizures	28 M Localized partial idiopathic epilepsy	קלסיפיקציה האפילפסיה Partial/generalized Simple/complex
10 years aura / prodrom before seizures: spasm of the left Musculus Gastrocnemius	35 years aura / prodrom before seizures: nausea.	20 years aura / prodrom before seizures: spasm of the right upper eyelid.	30 years aura / prodrom before seizures: none	16 years aura / prodrom before seizures: spasm of the right nodding muscle	משך הזמן שסובל מהמחלה ביטוי קליני של ההתקף האם יש לפני ההתקף Aura/prodrom
EEG results: before the operation - paroxysmal activity in the temporal lobes occurring at rest; after the operation - no paroxysmal activity	EEG results: before the operation - paroxysmal activity in the parietotemporal lobes occurring at rest; after the operation -	results: before the operation - paroxysmal activity in the left temporal lobe occurring both at hyperventilation; after the operation - no	results: before the operation - paroxysmal activity in the parietotemporal lobes occurring both at hyperventilation and	EEG results: before the operation - paroxysmal activity in the left temporal lobe occurring both at hyperventilation and without it; after the	האם סבל מאיבוד הכרה במהלך ההתקף EEG מה אפיונו

detected.	paroxysmal activity in the parietotemporal lobes at hyperventilation only; phytostimulations in the parietotemporal lobes.	paroxysmal activity detected.	without it; after the operation – single “peak-wave”-type complexes in the temporal lobes occurring at hyperventilation only.	operation – single “peak-wave”-type complexes in the left temporal lobe occurring at hyperventilation only.	האם בוצע CT/MRI/PET/SPECT ומה הממצא
CT results: no pathology detected.	CT results: hydrocephalus, arachnoiditis symptoms.	CT results: Chiari's syndrome symptoms.	CT results: no pathology detected.	CT results: no pathology detected.	
before the operation / 1 years after the operation		before the operation / x years after the operation	before the operation / 1 years after the operation	before the operation / 2 years after the operation	האם סבל מכר? משך ודירות
Annual frequency of Status Epilepticus: 1/0	Annual frequency of Status Epilepticus: 2/0	Annual frequency of Status Epilepticus: 1/0	Annual frequency of Status Epilepticus: 2/0	Annual frequency of Status Epilepticus: 3/0	
None	2 nd -stage hypertension	Intrinsic moderate asthma	None	None	מחלות כרוניות נוספות
before the operation / 1 year after the operation	before the operation / 1 year after the operation	before the operation / x years after the operation	before the operation / 1 years after the operation	before the operation / 2 years after the operation	חדירות התקפים לפני ואחרי הציפ
a. mean monthly frequency of seizures: grand mal – 2/0, petit mal – 3/0, absences – 4/0	a. mean monthly frequency of seizures: grand mal – 7/1, petit mal – 10/2	a. mean monthly frequency of seizures: grand mal – 3/0, atonic – 8/2	a. mean monthly frequency of seizures: grand mal – 6/1, petit mal – 8/1	a. mean monthly frequency of seizures: 10/2 – absences, grand mal – up to 2/0.	
b. mean duration of seizures (minutes): 20/0 (grand mal), 7/0 (petit mal)	b. mean duration of seizures (minutes): 19/5 (grand mal), 9/1 (petit mal)	b. mean duration of seizures (minutes): c. Mean remission duration (days): 51/126	b. mean duration of seizures (minutes): 15/0 (grand mal), 8/3 (petit mal)	b. mean duration of seizures (minutes): 2/0.5 – absences, 15/0 – grand mal	

mal), 2/0 (absences) c. Mean remission duration (days): 42/152	c. Mean remission duration (days): 14/58		c. Mean remission duration (days): 20/92	c. Mean remission duration (days): 44/118	תדירות אשפוזים לפני ואחרי הניתוח
before the operation / 1 years after the operation	before the operation / 1 years after the operation	before the operation / x years after the operation	before the operation / 1 years after the operation	before the operation / 2 years after the operation	תרופות ומינון לפני ואחרי הניתוח
1. Diphenylhydantion Sodium – suspended Carbamazepine – suspended 2. Phenobarbital Sodium – 50% reduction 3. Decapine – suspended	1. Diphenylhydantion Sodium – 34% reduction 2. Carbamazepine – 52% reduction 3. Phenobarbital Sodium – 50% reduction 4. Decapine – suspended 5. Lamotrigine – 34% reduction	1. Diphenylhydantion Sodium – 34% reduction 2. Phenobarbital Sodium – no changes	1. Carbamazepine – suspended 2. Phenobarbital Sodium – 50% reduction 3. Decapine – 50% reduction 4. Lamotrigine – 33% reduction	1. Phenobarbital Sodium – suspended 2. Decapine – 50% reduction	
May 4, 2002	June 11, 2001	March 11, 1998	October 6, 2001	May 8, 2000	תאריך הניתוח
To the right sinocarotid nerve collector.	To the right sinocarotid nerve collector.	To the right sinocarotid nerve collector.	To the right sinocarotid nerve collector.	To the right sinocarotid nerve collector.	העצב אליו חברה האלקטרודה
Chip-5, up to 5 cm in diameter, external Radio-frequency power source.	Chip-3, up to 5 cm in diameter, external Radio-frequency power source.	Chip-3, up to 5 cm in diameter, external Radio-frequency power source.	Chip-3, up to 5 cm in diameter, external Radio-frequency power source.	Chip-3, up to 4 cm in diameter, external Radio-frequency power source.	נתונים טכניים של הציפ שהושגת: סוג, גודל, תכונות
Sensors: Respiratory	Sensors: Respiratory	Sensors: Respiratory	Sensors: Respiratory	Sensors: Respiratory	נתונים טכניים של

rate sensor, heart rate sensor, body temperature sensor, electric muscular activity sensor, arterial pressure sensor, tissue oxygen biosensors.	rate sensor, heart rate sensor, body temperature sensor, wheezing sensor, electric muscular activity sensor, arterial pressure sensor, tissue oxygen biosensor	rate sensor, heart rate sensor, body temperature sensor, electric muscular activity sensor, arterial pressure sensor, tissue oxygen biosensor	rate sensor, heart rate sensor, body temperature sensor, electric muscular activity sensor, oxygen biosensor	הביוסנסורים: סוג, גודל, תכונות איזה צורת הפעלה לציפי: רצופה על פי צורך או על פי תכנות מראש או שילוב
Start stimulation upon detection of respiratory rate and pulse acceleration, as well as in an automatic mode, with 3-4-hour intervals, for seizure prevention purposes.	Start stimulation upon detection of respiratory rate and pulse acceleration, muscular spasms, as well as in an automatic mode, with 3-5-hour intervals, for seizure prevention purposes.	Start stimulation upon detection of abrupt respiratory rate and pulse acceleration, as well as in an automatic mode, with 5-8-hour intervals, for seizure prevention purposes.	Start stimulation upon detection of epileptic muscular spasms, respiratory rate and pulse acceleration, as well as in an automatic mode, with 5-8-hour intervals, for seizure prevention purposes.	Chip's operational algorithm
before the operation / 1 year after the operation Mean remission duration (of the hypertension): Before the operation – 26 days, During the year after the operation – 70 days,	before the operation / x year after the operation Mean remission duration: Before the operation – 43 days, 4.5 years after the operation – 106 days, The hormonal drug therapy (Prednisolone)			Clinical history of the associated ailment, tracking the changes resulting from using the chip

<p>a. considerable improvement has been observed: no seizures, daily intake of medications reduced by more than 2 times, a minimal 3-fold increase of the remission duration has been achieved.</p>	<p>a. Regarding the main disease, a considerable improvement has been observed: frequency of seizures dropped by 86%, daily intake of medications reduced by more than 35%, a minimal 3-fold increase of the remission duration has been achieved; <i>Status Epilepticus</i> has disappeared. b. Regarding the associated ailment (hypertension), a minimal 50% increase of the remission duration has taken place.</p>	<p>has been suspended.</p> <p>a. Regarding the main disease, a considerable improvement has been observed: frequency of seizures dropped by 3 times at least, daily intake of medications reduced by more than 34%, a minimal 2-fold increase of the remission duration has been achieved. b. Regarding the associated ailment, a minimal 2-fold increase of the remission duration has taken place, hormonal drug therapy has been suspended.</p>	<p>A considerable improvement has been observed: frequency of seizures dropped by 6 times at least, Status Epilepticus has disappeared, daily intake of medications reduced by more than 1.5 times, a minimal 4-fold increase of the remission duration has been achieved.</p>	<p>A considerable improvement has been observed: frequency of seizures dropped by 5 times at least, daily intake of medications reduced by more than 2 times, a minimal 2-fold increase of the remission duration has been achieved.</p>	<p>Conclusion</p>
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Table 16 - Epilepsy surgery data

Surgery Year	Total no. of operated patients	Name of the chip used	Notes
1998	3	Chip1 – 1 patient Chip 2 – 2 patients	<u>Types of epileptic seizure:</u> Generalized tonicoclonic – 2 patients; Absence – 1 patient
1999	3	Chip2 – 1 patient Chip4 – 2 patients	<u>Types of epileptic seizure:</u> Generalized tonicoclonic – 2 patients; Absence – 1 patient
2000-2002	8	Chip2 – 4 patients Chip3 – 1 patient Chip4 – 1 patient Chip5 – 1 patient Chip6 – 1 patient	<u>Types of epileptic seizure:</u> Generalized tonicoclonic – 4 patients; Atonic – 1 patient; Absence – 2 patients; Mal petit – 1 patient
		Total: 14 patients Chip1 – 1 patient Chip2 – 7patients Chip3 – 1 patient Chip4 – 3 patients Chip5 – 1 patient Chip6 – 1 patient	

Table 17 - Examples of gastric and duodenal ulcer treatment

Clinical examples of gastric and duodenal ulcer treatment using implanted microchips

Medical history, treatment methods, and long-term results	Clinical Examples			
	1	2	3	4
Age, sex (m/f)	44(M)	53(M)	35(M)	38(M)
Duration of the disease (years)	3 years	7 years	10 years	8 years
Diagnosis	Gastric ulcer	Duodenal ulcer	Gastric ulcer	Gastric ulcer
Complications: Penetration into pancreas		PANCR		PANCR
Duodenal stenosis		STENOS		
Associated diseases				
Type of the chip implanted,	Obesity Chip 4	Asthma chip 5	Chip 3	Chronic hepatitis Chip 6
Name of the nerve the chip has been connected to	1. Vagus nerve 2. Sympathetic trunk, thoracic section	1. Vagus nerve	1. Sympathetic trunk, thoracic section	1. Sympathetic trunk, thoracic section 2. Vagus nerve.
Chip's program (programs)	GU-28	GU-15	GU-6	GU-28A
Duration of the surgery (minutes)	95	86	26	38
Complication during and after the operation, including technology-related complications	-	-	-	-
Reduction of daily intake of medicines (X-times) after the operation: (before operation / one	Cymetidine -1,5 Gastrocelline -2,0 Alphogel -SUSP. Omeprazol	Cymetidine -60% Gastrocelline-SUSP. Alphogel -17%	Cymetidine -38% Gastrocelline-SUSP. Alphogel -SUSP.	Cymetidine -50% Gastrocelline-SUSP .Alphogel -29%

year later)	SUSP.	Omeprasol - 57%	Omeprasol - SUSP	Omeprasol SUSP	-
Average annual duration of hospitalization (sick leave), days, One year before the operation / last year	29/14	30/25	24/10	26/2	

Table 18 - Examples of dementia treatment

Clinical Examples of Dementia Treatment Using Implanted Microchips.

Clinical history, treatment methods and long-term results	Clinical Examples	1	2	3	4
Age, sex (m/f)		45(F)	68(F)	54(M)	50(M)
Duration of the disease (years)		5 years	26 years	21 years	12 years
Diagnosis		Depression Syndrome	Dementia	Dementia	Depression Syndrome
Associated diseases		Asthma	1.Hypertension 2.Epilepsy 3.Chronic Hepatitis	Cirrhosis of the Liver	1. Chronic Hepatitis 2.Schizophrenia
Type of the chip implanted,		CHIP 2	CHIP 4	CHIP 2	CHIP 3
Name of the nerve the chip has been connected to		Sinocarotid Collector	Sinocarotid Collector	Sympathetic Trunk, Cervical section	Vagus Nerve
Chip's program (programs)		DEPR-A	DEM-16	DEM-4	DEPR-12
Duration of the surgery (minutes)		96	118	47	28
Complication during and after the operation, including technology-related complications		-	-	-	-
Reduction of daily intake of medicines (X-times) after the operation: (before operation / one year later) A) Medicine name - Amytriptiline B) Medicine name -		A-Susp. C-2,2	A-2,5 B-2,1	B-1,4	A-3,6 D- Susp.

Haloperidol				
C) Medicine name - Sertraline				
D) Medicine name -- Fluoxetine				
Average annual duration of hospitalization (sick leave), days, One year before the operation / last year	56/32	38/25	25/18	29/0

Clinical history, treatment methods and long-term results	Clinical Examples			
Age, sex (m/f)	5	6	7	
Duration of the disease (years)	42(M)	57(F)	47(F)	
Diagnosis	7 years	18 years	9 years	
Associated diseases	Depression Syndrome Asthma	Depression Syndrome 1. Asthma 2. Schizophrenia	Depression Syndrome Cirrhosis of the Liver	
Type of the chip implanted,	CHIP 2	CHIP 5	CHIP 6	
Name of the nerve the chip has been connected to	Sinocarotid Collector	1. Sinocarotid Collector 2. Vagus Nerve	Vagus Nerve	
Chip's program (programs)	DEPR-15	DEPR-16	DEPR-120	
Duration of the surgery (minutes)	57	132	18	
Complication during and after the operation, including technology-related complications	-	-	-	
Reduction of daily intake of medicines (X-times) after the operation: (before operation / one year later)		A- Susp. D-1,6	A-1,5 C- Susp.	

A) Medicine name - Amytriptiline B) Medicine name - Haloperidol C) Medicine name - Sertraline D) Medicine name - Fluoxetine	34/24	41/0	18/0
Average annual duration of hospitalization (sick leave), days, One year before the operation / last year			

	Clinical Examples		
	5	6	7
	42(M)	57(F)	47(F)
	7 years	18 years	9 years
	Depression Syndrome	Depression Syndrome	Depression Syndrome
	Asthma	1. Asthma 2. Schizophrenia	Cirrhosis of the Liver
	CHIP 2	CHIP 5	CHIP 6
	Sinocarotid Collector	1. Sinocarotid Collector 2. Vagus Nerve	Vagus Nerve
	DEPR-15	DEPR-16	DEPR-120
	57	132	18
	-	-	-
		A- Susp. D-1,6	A-1,5 C- Susp.
	34/24	41/0	18/0

Table 19 - examples of treatment of obliterating vascular diseases

Clinical examples of treatment of obliterating vascular diseases of the lower limbs and pain syndromes with background angina pectoris using implanted microchips

Clinical Examples						
Medical history, treatment methods, and long-term results	1	2	3	4	5	6
Age, sex (m/f)	67-M	59-M	48-M	46-M	37-M	61-M
Duration of the disease (years)	15	5	8	3	2	21
Diagnosis, type of the seizures (in the parenthesis)	Obliterating vascular endarteritis of the lower limbs (degree 3)	Obliterating vascular endarteritis of the lower limbs (degree 2)	END (2B)	Obliterating vascular endarteritis of the lower limbs (degree 2))	END(3)	Obliterating vascular endarteritis of the lower limbs (degree 3)
Associated diseases	Angina pectoris	Asthma Hypertension	Asthma Angina pectoris	Chronicobstructive bronchitis	Chronicobstructive bronchitis	Angina pectoris
Type of the chip Implanted	Chip 4,	Chip 5,	Chip 6,	Chip 4	Chip 4	Chip3
where and how connected	1. Spinal cord 2. Sympathetic trunk, thoracic section	1. Spinal cord 2. Sympathetic trunk, thoracic section	1. Spinal cord	1. Spinal cord 2. Vagus nerve 3. Sympathetic trunk, thoracic section	1. Spinal cord	1. Spinal cord
Chip's program (programs)	AP-SP-STT-2	OBL-SP-STT-18	AP-10	OBL-SP, VN, STT-2	OBL-4	AP-SP-17
Duration of the surgery (minutes)	93	98	116	105	121	45
After how many meters of walking did pain in the <i>musculus gastrocnemius</i> appear? Before operation /3 months after operation (Charcot's syndrome)	25/60	180/500	200/350	160/300	25/100	20/25
Does the chip dull the pain? (+ - Y, - - N)	+	+	+	+	+	+

Average reduction in medications doses 3 months after operation (X-times):	2,3	1,9	1,4	1,5	2,5	1,3
Value of increase of the capillary circulation in the shins (%) (and their temperature in C°) at the chip's activation	15% 2 C°	18% 1,8 C°	20% 2 C°	10% 1,2 C°	22% 1,6 C°	9% 0,9 C°
Average annual duration of hospitalization (sick leave), days, One year before the operation / last year	30/7	32/0	28/10	20/0	35/20	31/30

Table 20 - Conditions in a healthy patient that may be treated

**LIST OF CONDITIONS OF THE HEALTHY PERSON'S BODY THAT CAN BE
CORRECTED WITH THE CHIPS**

No.	Name of Condition (a reference to a relevant code in ISD-10 is provided in the parentheses)	Expected effect from the microchip's application (a reference to the technology No. in the Patent is provided in the parentheses)
1	<u>Skin, subcutaneous fat</u> Excessive development of the subcutaneous fat in different parts of the body (ISD-10 Code:.....)	Shaping, weight loss (liposuction) (Technology No.....)
2	Turgor decrease, skin elasticity loss, wrinkles (ISD-10 Code:.....)	Skin anti-aging effect (Technology No.)
3	Excessive skin dryness or excessive sweating (ISD-10 Code:.....)	Нормализация функций кожи (Technology No.....)
4	<u>Muscular System</u> Flabbiness of the muscles, their tonicity degradation due to hypodynamia, Fitness and body shape deterioration (ISD-10 Code:.....)	Shaping, increase of the muscle mass and strength (Technology No.....)
5	<u>Mammal Glands</u> Small size, underdeveloped glandular tissue Малые размеры, недоразвитие железистой ткани (ISD-10 Code:.....)	Improvement of the shape and function (Technology No.....)

CLAIMS

1. A medical instrument implanted in a patient's body, which uses electrical
5 and/or electromagnetic means of stimulation and/or inhibition (blocking) for
the treatment of various diseases or specific states in a healthy person.
2. The medical instrument according to claim 1, wherein the diseases include
asthma, Agranulocytosis, Anemia, Atrophy of the optic nerve, Skin atrophy,
10 Sardiach achalasia, Coagulation disorders, Buerger's disease, Crohn's
disease, Pick's disease, Raynaud's disease, Vegetovascular dystony, Sudden
cardiac arrest at sleep, Rectal prolapse, Flaccidly consolidating fractures,
Hyperkeratosis, Hyperostosis, Adrenal cortex hyperfunction, Hypoglycemia,
Subcortical dementia, Multi-infarction dementia Involuntary movements,
15 Dyskinesia of the biliferous tracts, Dysmenorrhea (genital diseases),
Dolichosigmoid, Stammering, Impotence, Leucosis, Migraine, Myodystrophy,
Myopathy, Male and female infertility, Narcolepsy, Bauhin's valve failure,
Neurodermite, Obliterating atherosclerosis of the limbs' vessels, Obliterating
endarteritis of the lower limbs' vessels, Alopecia, Paralyzes of different
20 etiology, Paresis of the vocal cords, Progressing myodystrophy, Psoriasis,
Rickets, Zollinger- Ellison syndrome, Commissural disease, Huntington's
chorea, Chronic duodenal ileus, Chronic and acute hyperthermia, Chronic
gastroenterocolitis, Chronic cholecystitis and cholecystopancreatitis, Chronic
cystitis, Chronic glomerulonephritis, Chronic obstructive bronchitis, Chronic
25 osteomyelitis, Chronic pyelonephritis, Cirrhosis, Eczema, Pulmonary
emphysema, Enuresis and/or Duodenal ulcer,
3. The medical instrument according to claim 1, wherein the specific states in
a healthy person include dieting, losing wrinkles, restoring skin flexibility, dry
30 skin, excessive perspiration, increasing the volume and power of muscles,
enlarging or reducing breasts size.
4. The medical instrument according to claim 1, comprising sensor means for
measuring variables inside the body, processor means for processing the

signals and issuing therapeutical signals, and electrodes for applying these signals, all implanted in the patient's body, and wherein the sensor means include one or more of sensors and/or biosensors means.

5 5. The medical instrument according to claim 1, wherein the processor means comprises digital computer means for processing information received from sensor means and for generating stimulation and/or inhibition therapeutical signals responsive to the received information, the therapeutical signals are transferred to electrodes by wire and/or wireless means, wireless means
10 include RF/electromagnetic waves, the number of electrodes may vary between one to several hundred, and an electrode is used to apply a therapeutical signal to a target body tissue or nerve or organ.

15 6. The medical instrument according to claim 1, wherein the characteristics of the applied signal are adjusted to effective values according to the disease or body state to be treated, preset parameters and signals received from the sensor means, these characteristics include the amplitude of the signal, its duration and/or frequency.

20 7. The medical instrument according to claim 1, wherein the electrodes operate concurrently to apply signals to the patient's body, each electrode may convey a separate signal from the processor means, and each signal is devised using a different algorithm, as suitable for a specific disease and a specific target organ.

25 8. The medical instrument according to claim 1, wherein each electrode is be implanted in a different location in the body, to allow a plurality of electrodes to be implanted in various places, according to a patient's disease or physiological situation to be treated.

30 9. The medical instrument according to claim 1, wherein, for purposes of treatment of various diseases in one patient, the electric stimulator's electrodes are simultaneously connected to different tissues, nervous structures, organs directly relating to each specific disease, while a separate

channel or channels of the Electric Stimulator, its separate program or programs, separate non-interrelated algorithm or algorithms are used for treatment of each respective disease in the patient.

5 10. The medical instrument according to claim 1, wherein the algorithms in the processor means are programmed in advance, and/or are updated in real time, the system may learn and adapt itself according to signals from the body, or may receive external programming signals.

10 11. The medical instrument according to claim 1, wherein the activation of the electrodes, under the processor's control, occur in several modes, alternately or as set up:

A. Automatic mode, using a feedback circuit comprising the sensor means, the processor and the electrodes;

15 B. On demand mode from a preset program stored in the processor

C. Manual mode, initiated by patient or the physician.

12. The medical instrument according to claim 1, wherein the information received by the sensor means is transferred to the processor, where it is
20 processed according to the patient's disease or physical state, and the processor selects only the sensors which are relevant in each case.

13. The medical instrument according to claim 1, further including means for providing electrical power to the instrument, including an implanted primary or
25 secondary battery, wherein the secondary battery may be recharged from an external source, connected for example through wires or wireless such as RF waves, and the system may include means for converting the body kinetic energy to electrical energy that may charge the battery.

30 14. The medical instrument according to claim 1, further including one or more additional processors, each implanted in a different place in the body; an optional central processor collects and processes data from the various processors in the body.

15. The medical instrument according to claim 1 or 4, wherein the electrode is implanted to affect systems and organs of the body including the nervous structure of the sympathetic nervous system or the parasympathetic system or the sympathetic nervous system and parasympathetic system and
5 hypoglossal (sinocarotid collector of the Vegetative Nervous System - SCVNS), the central nervous system, as well as neurons of the organ and/or cutaneous nerves and/or depressor nerves.

16. The medical instrument according to claim 15, wherein the electrode is
10 implanted to affect a nervous band or group comprising all, or the majority of, the nerve branches innervating the carotid glome (glomus caroticum).

17. A medical treatment method using an instrument implanted in a patient's body, which uses electrical and/or electromagnetic means of stimulation
15 and/or inhibition for the treatment of various diseases or specific states in a healthy person.

18. The medical treatment method according to claim 17 which, for stimulating and/or inhibiting the functional activity of the body's systems and separate
20 organs and tissues, uses pulse currents of parameters as detailed in the present disclosure.

19. The medical treatment method according to claim 17 which, in order to control functioning of the implanted stimulator and to set its optimal mode,
25 further including the step where the patient is connected (for the period varying between 1 and several days) to a portable external non-implantable monitor collecting and analyzing data on the Electric Stimulator's work, as well as data on a functional condition of the body's systems, organs, and tissues, while this said monitor comprises a unit analyzing functional conditions of the
30 body's systems, organs, and tissues, connected to the sensor means, and this unit is also connected to the monitor's unit of radio-frequency communication with the Electric Stimulator's external radio-frequency communication unit which, in its turn, is connected to a computer via a radio-frequency channel,

as well as to the autonomous power supply unit, the latter also being connected to all the above-detailed units of the monitor.

20. The medical treatment method according to claim 17 further including the
5 step, performed using the Electric Stimulator's software, of distinguishing between the changes in functional activity of the body's systems, and/or organs, and/or tissues typical of an onset of a disease (symptoms) and the changes in functional activity of the body's systems, and/or organs, and/or tissues, that are not related to symptoms of a disease, but typically occur in
10 the patient's body, while the Electric Stimulator's "learning" of this process is aided by a non- implanted display.

21. The medical instrument according to claim 1, further including means for electric stimulation and/or blocking of the body tissues, comprising sensor
15 means for measuring variables in the body, processor means connected to the sensors and biosensors for processing the measured variables and for deciding in real time whether to apply an electric signal to the body tissues, and electrode means implanted at predefined locations and connected to the processor means, for applying the stimulation and/or electric blocking signals
20 to the body tissues.

22. The medical instrument according to claim 1, wherein the sensor means include a plurality of sensors connected to the processor.

25 23. The medical instrument according to claim 1, wherein the biosensor means include a plurality of biosensors connected to the processor.

24. The medical instrument according to claim 1, wherein the Electric Stimulator has its shell, electrode or electrodes coated with a biologically inert
30 material in whose external surfaces the sensor means in the amount of 1 up to several thousands are incorporated and are connected to the electric stimulator's units..

25. The medical instrument according to claim 1, wherein its sensors and biosensors located on the biologically inert coating thereof, contain, as an ingredient of their receptors, the porous conducting mineral Schungite with self-cleaning pores, while the sensors and biosensors are connected to the electric stimulator's units.

26. The medical instrument according to claim 1, wherein at least part of its sensors, biosensors, contacts are not located in the Electric Stimulator's external biologically inert coating, but they function as independent parts of the Electric Stimulator found outside the shell thereof, while being connected with wires, pertaining to the electrode or electrodes, to the Electric Stimulator's units.

27. The medical instrument according to claim 1, wherein the sensors and/or biosensors of different shapes can be used simultaneously, while group of these sensors and/or biosensors, comprising part or all of the sensors and/or biosensors in different locations of the coating of the Electric Stimulator and the electrodes can also vary in accordance with specific requirements.

28. The medical instrument according to claim 1, wherein sensors and/or biosensors are located both on external coating thereof, and inside the electrodes, the shell of the Electric Stimulator, and may include wheezing and murmur sensors.

29. The medical instrument according to claim 1, wherein the sensors and biosensors are also used to control the effect resulting from electric stimulation (either stimulation or inhibition modes) and the degree of this effect, as well as to support the effect(s) during any period of time set, according to the program's algorithm(s) such as to dose electric stimulation sessions.

30. The medical instrument according to claim 1, wherein some or all of its surface, area- or space- limited, hosts both one and several sensors and/or biosensors of various types at a time, while their relation in terms of numbers

and types on each such surface in different spots of the electrode(s) or shell of the Electric Stimulator can vary too, subject to the location of this unit of the device in a specific anatomic part of the patient's body and specific tasks pertaining to measurement of certain relevant homeostatic parameters.

5

31. The medical instrument according to claim 1, wherein the end part of the Electric Stimulator's electrode, intended for treatment of gastric ulcer and implanted in the stomach, contains the following elements on an area of 0.1 cm²: Acidity sensors, Local blood flow sensors, Sensors of the organ's
10 murmurs, Electric activity sensors, preferably in a proportion 1:2:1:1, respectively.

32. The medical instrument according to claim 1, wherein the middle of the same electrode, passing through the tissues of the anterior abdominal wall
15 and subcutaneous fat of the anterior surface of the thorax, contains the following elements on an area of 5 cm²: Oxygen biosensors and Glucose biosensors, in a proportion of about 3:1 .

33. The medical instrument according to claim 1, wherein the shell of the
20 Electric Stimulator, found in the subcutaneous fat of the right subclavian area, hosts the following elements: heart-rate sensors, Respiration rate sensors, Arterial pressure sensors, in a proportion of about 1:2:1.

34. The medical instrument according to claim 1, wherein the implanted
25 means and sensors are shared by one, several or all channels of the Electric Stimulator.

35. The medical instrument according to claim 1, wherein, in order to monitor the body's homeostatic parameters, the Electric Stimulator's sensors and
30 biosensors simultaneously work in the two following modes: the passive mode and the active mode; while in the passive mode they passively perceive electric, mechanical, chemical and other manifestations of functional activity of the body's systems, organs and tissues, in the active mode they sound tissues with pulses and on the strength of the data obtained they monitor the

functional condition of the body's systems, organs, and tissues.

36. The medical instrument according to claim 1, wherein , in order to support the active mode of the sensors and biosensors, the Electric Stimulator
5 comprises unit(s) that generate sounding pulses of the sensors and biosensors, these units being connected to the sensors, biosensors, and other units.

37. The medical instrument according to claim 1, wherein the Electric
10 Stimulator has the following distinct feature: its sensors and/or biosensors are located either in the pores of the external biologically inert coating of the Electric Stimulator, or out of these pores, while the latter can entirely be filled with a sensor and/or a biosensor, or they can be a part their design (receptors, etc.).

15

38. The medical instrument according to claim 1, wherein the sensor means include an Arterial pressure sensor having the following characteristics:
Location on the chip, A - Sensitive elements of sensors and biosensors can
be located both on the chip's coating and under it, as well as at the electrode
20 contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels; Shape, type, S - Spiral- or crystal-shape element OT - Other-type element BI - "Blot"-shape sensitive element D - "Dot"-shape sensitive element Int - Intra-organ Ext - External Working principle, MEV -
25 Measurement of electric values, pertaining to organs' function Pz - Piezo-effect Type of signal received: Code signal and/or Analog signal Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material - Special substance or electronic component Range of values measured, Disease-dependent Size range of sensitive elements, Micrometers
30 millimeters.

39. The medical instrument according to claim 1, wherein the sensor means include a Heart rate meter having the following characteristics:

- Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;
- B - Sensors, biosensors can be implanted into tissues, lumens of organs and
- 5 blood vessels;
- Shape, type, S - Spiral- or crystal-shape element
- OT - Other-type element
- BI - "Blot"-shape sensitive element
- D - "Dot"-shape sensitive element
- 10 Int - Intra-organ
- Ext - External
- Working principle Pz - Piezo-effect
- MEV - Measurement of electric values, pertaining to organs' function
- Type of signal received: Code signal and/or Analog signal
- 15 Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material
- Special substance or electronic component
- Range of values measured, Disease-dependent
- Size range of sensitive elements, Micrometers
- 20 millimeters.

40. The medical instrument according to claim 1, wherein the sensor means include a Respiration rate meter having the following characteristics:
- Location on the chip, A - Sensitive elements of sensors and biosensors can
- 25 be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;
- B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;
- Shape, type, S - Spiral- or crystal-shape element
- 30 OT - Other-type element
- BI - "Blot"-shape sensitive element
- D - "Dot"-shape sensitive element
- Int - Intra-organ
- Ext - External

Working principle, Pz - Piezo-effect

MEV - Measurement of electric values, pertaining to organs' function;

It may perform an integration of breathing noises, the electrical activity of the pulmonar muscles and/or the diaphragm;

- 5 Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

- 10 Size range of sensitive elements, Micrometers
millimeters

41. The medical instrument according to claim 1, wherein the sensor means include a Temperature gage having the following characteristics:

- 15 Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

- 20 Shape, type, S - Spiral- or crystal-shape element

OT - Other-type element

BI - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

Int - Intra-organ

- 25 Ext - External

Working principle ThE - Thermoelement

Type of signal received: Code signal and/or Analog signal
biologically inert porous material

- Special substance or electronic component

- 30 Range of values measured, Disease-dependent
Size range of sensitive elements, Micrometers
millimeters.

42. The medical instrument according to claim 1, wherein the sensor means include an Angular shift sensor (for the limbs) having the following characteristics:

Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

10 OT - Other-type element

BI - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

Int - Intra-organ

Ext - External

15 Working principle Pz - Piezo-effect

R - resistometry

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material

20 - Special substance or electronic component

Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers millimeters.

25 43. The medical instrument according to claim 1, wherein the sensor means include a Local blood flow sensor having the following characteristics:

Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

30 B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

OT - Other-type element

BI - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

Int - Intra-organ

Ext - External

Working principle, O, R - Optical effect, resistometry

5 ThE - Thermoelement

An ultrasonic transducer may be located on the sensor; It may transmit and receive US waves, operating like a sonar;

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other

10 biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers
millimeters.

15

44. The medical instrument according to claim 1, wherein the sensor means include a Sensor of electric activity of the organs, nervous centers, having the following characteristics:

20 B,-12(modes)D-2(modes), for purposes of the technology implementation, in addition to electric stimulation of the nervous system structures, measurement of parameters of electric activity of the same structures, nerves, when no electric stimulation sessions take place, can be carried out using the sensors and biosensors;

25 Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

30 OT - Other-type element

Bl - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

Int - Intra-organ

Ext - External

Working principle, MEV - Measurement of electric values, pertaining to organs' function

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other

5 biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers
millimeters.

10

45. The medical instrument according to claim 1, wherein the sensor means include a Gastric juice acidity sensor.

46. The medical instrument according to claim 1, wherein the sensor means
15 include a Gastric juice acidity sensor wherein (pH) sensors indirectly monitor the stomach's secretion function (and gastric juice acidity), the Electric Stimulator's sensors are implanted into the stomach's exterior wall (the serous membrane), in most cases - into its anterior surface, in the inferior two thirds thereof, and these said sensors probe the stomach's wall, either periodically
20 or constantly, with electric, acoustic, electromagnetic, optic or other signals in order to measure the wall's thickness and to study its properties (disregarding the peristaltic waves), while a ____% increase from the initial value in the stomach's wall thickness, as a result of the secretion function enhancement, is deemed a symptom of the gastric secretion activity enhancement and gastric
25 juice acidity growth, and a ____% decrease in the stomach's wall thickness (that is not caused by the peristalsis) is considered a symptom of diminishing gastric secretion activity, and a decrease of the gastric juice acidity.

47. The medical instrument according to claim 1, wherein Sensitive elements
30 of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

- Shape, type, S - Spiral- or crystal-shape element
 OT - Other-type element
 BI - "Blot"-shape sensitive element
 D - "Dot"-shape sensitive element
- 5 Int - Intra-organ
 Ext - External
 Working principle, Pz - Piezo-effect
 O, R - Optical effect,
 Number of sensitive elements per 1 sm², Any number
- 10 Type of signal received: Code signal and/or Analog signal
 Membrane's structure, receptor, substance, - Silicon membrane or other
 biologically inert porous material
 - Special substance or electronic component
 Range of values measured, Disease-dependent
- 15 Size range of sensitive elements, Micrometers
 millimeters.

48. The medical instrument according to claim 1, wherein the sensor means
 include a Murmurs sensor (heart, lungs, intestine), having the following
 20 characteristics:

- Location on the chip, A - Sensitive elements of sensors and biosensors can
 be located both on the chip's coating and under it, as well as at the electrode
 contacts' endings or any other part of the electrode;
- B - Sensors, biosensors can be implanted into tissues, lumens of organs and
 25 blood vessels.

- Shape, type, S - Spiral- or crystal-shape element
 OT - Other-type element
 BI - "Blot"-shape sensitive element
 D - "Dot"-shape sensitive element
- 30 Int - Intra-organ
 Ext - External
 Working principle, Pz - Piezo-effect
 O, R - Optical effect,
 Number of sensitive elements per 1 sm², Any number

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material

- Special substance or electronic component

5 Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers
millimeters.

49. The medical instrument according to claim 1, wherein the sensor means
10 include a Biosensor of oxygen contents in the tissues, having the following characteristics;

Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

15 B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

OT - Other-type element

BI - "Blot"-shape sensitive element

20 D - "Dot"-shape sensitive element

Int - Intra-organ

Ext - External

Working principle, O, R - Optical effect, resistometry

Pz - Piezo-effect

25 sensitive elements per 1 cm², Any number

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material

- Special substance or electronic component

30 Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers
millimeters.

50. The medical instrument according to claim 1, wherein the sensor means include a Biosensor of sugar contents in the blood having the following characteristics:

Location on the chip, A - Sensitive elements of sensors and biosensors can

5 be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

10 OT - Other-type element

BI - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

Int - Intra-organ

Ext - External

15 Working principle, O, R - Optical effect, resistometry

MEV - Measurement of electric values, pertaining to organs' function

sensitive elements per 1 cm², Any number

Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other

20 biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers

millimeters.

25

51. The medical instrument according to claim 1, wherein the sensor means include a Biosensor of hormone contents in the blood having the following characteristics:

Location on the chip, A - Sensitive elements of sensors and biosensors can

30 be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;

B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;

Shape, type, S - Spiral- or crystal-shape element

- OT - Other-type element
- Bl - "Blot"-shape sensitive element
- D - "Dot"-shape sensitive element
- Int - Intra-organ
- 5 Ext - External
- Working principle, O, R - Optical effect, resistometry
- Pz - Piezo-effect
- sensitive elements per 1 cm², Any number
- Type of signal received: Code signal and/or Analog signal
- 10 Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material
- Special substance or electronic component
- Range of values measured, Disease-dependent
- Size range of sensitive elements, Micrometers
- 15 millimeters

52. The medical instrument according to claim 1, wherein the sensor means include a Biosensor of alcohol contents in the blood, having the following characteristics:

- 20 Location on the chip, A - Sensitive elements of sensors and biosensors can be located both on the chip's coating and under it, as well as at the electrode contacts' endings or any other part of the electrode;
- B - Sensors, biosensors can be implanted into tissues, lumens of organs and blood vessels;
- 25 Shape, type, S - Spiral- or crystal-shape element
- OT - Other-type element
- Bl - "Blot"-shape sensitive element
- D - "Dot"-shape sensitive element
- Int - Intra-organ
- 30 Ext - External
- Working principle MEV - Measurement of electric values, pertaining to organs' function, ECh - Electrochemical sensitive elements per 1 cm², Any number
- Type of signal received: Code signal and/or Analog signal

Membrane's structure, receptor, substance, - Silicon membrane or other biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

- 5 Size range of sensitive elements, Micrometers
millimeters.

53. The medical instrument according to claim 1, wherein the sensor means
10 include a Biosensor of narcotic substances contents in the blood having the
following characteristics:

Location on the chip, A - Sensitive elements of sensors and biosensors can
be located both on the chip's coating and under it, as well as at the electrode
contacts' endings or any other part of the electrode;

- 15 B - Sensors, biosensors can be implanted into tissues, lumens of organs and
blood vessels;

Shape, type, S - Spiral- or crystal-shape element

OT - Other-type element

BI - "Blot"-shape sensitive element

D - "Dot"-shape sensitive element

- 20 Int - Intra-organ

Ext - External

Working principle, ECh -Electrochemical

sensitive elements per 1 cm², Any number

Type of signal received: Code signal and/or Analog signal

- 25 Membrane's structure, receptor, substance, - Silicon membrane or other
biologically inert porous material

- Special substance or electronic component

Range of values measured, Disease-dependent

Size range of sensitive elements, Micrometers

- 30 millimeters.

54. The medical instrument according to claim 1, wherein the sensor means
include a Universal Biosensor, having the following characteristics:

Using a special program of the chip, the sensors (all together or separately), biosensors (all together or separately), dot-shape electrodes (also located throughout the entire surface of the electrode – universal biosensor) can be activated on a selected zone of the electrode's surface (the entire surface or a
5 specific part of it).

55. The medical treatment method according to claim 17 wherein one common sensor can include several sensors and bio-sensors, thus offering improved performance and versatility, and further including the steps of:

10 a. The arterial pressure sensors are activated only the electrode's end;
b. The biosensors of all types (except for the oxygen biosensors), are activated in the electrode's middle part, while the oxygen biosensors are activated in the electrode's part;
c. The electrode's contacts are set into operation only at the beginning of the
15 electrode - on its anterior-superior surface.

56. The medical instrument according to claim 1, wherein, to enable computer-aided control of the location of activated sensors, biosensors, contacts of the electrode, the latter is designed to have from 2 up to 100 cores
20 supporting its function control.

57. The medical instrument according to claim 1, wherein the electrode-universal biosensor can vary in shape: for example it can be cylindrical (A), spherical (B), flat (C).
25

58. The medical treatment method according to claim 17 wherein, using the specially developed software, the method allows to change the location of activated sensors, biosensors, contacts, according to the needs, and, therefore, this design of the universal biosensor can replace an innumerable
30 variety of usual electrodes of a fixed, unchangeable design and location of the above-listed elements; The universal biosensor-electrode is in fact an electrode with computer-aided control of localization of the sensors, biosensors, contacts.

59. The medical instrument according to claim 1, wherein the Electric Stimulator has the surfaces of its shell and of the electrodes made to also host contacts, in addition to sensors and biosensors, which, when implementing algorithms of the Electric Stimulator's program, enable to selectively connect
5 either a certain number of the sensors, biosensors, contacts or all of them together to the Electric Stimulator's units, thus creating a required configuration of the electrode(s), with a specific location and number of sensors, biosensors, this configuration being best adapted to accomplish the preliminarily set specific goals and objectives.

10

60. The medical instrument according to claim 1, further including tiny metallic plates which send electrical signals, preferably at a high rate, towards a body tissue; This enables to measure the electrical resistance of the tissue and its changes responsive to activating signals from the instrument's processor:
15 before, during and after the activation of a therapeutic sequence; this gives an indirect measurement of the patient's body behavior.

61. The medical treatment method according to claim 17 wherein, using electrical measurements, use changes in resistance, which are compared with
20 the readings from the sensor means; The system thus learns the correlation between the sensor means readings and the indirect measurements; when the original sensor means eventually are put out of use because of organic matter deposits thereon, the indirect measurements can still be used to evaluate the body's conditions; the system thus includes a structure with
25 means for learning the patient body's characteristics; a method for learning these characteristics and replacing the original sensor means with indirect sensors has been disclosed.

62. The medical treatment method according to claim 61 wherein using
30 various indirect sensor means, for example ultrasonic measurements inside the body.

63. The medical instrument according to claim 1, wherein the external coating covering the Electric Stimulator's shell, electrode or electrodes, in addition to

the microscopic sensors and biosensors, also contains micro-contacts in the amount of q up to thousands, a part or all of which are connected with wires of the electrode(s) to the Electric Stimulator's units.

- 5 64. The medical instrument according to claim 1, wherein the sensors, biosensors, contacts are not all located in the Electric Stimulator's external biologically inert coating, but they can also function as independent parts of the Electric Stimulator found outside the shell thereof, while being connected with wires of the electrode or electrodes to the Electric Stimulator's units.

10

65. The medical instrument according to claim 1, wherein the contacts of the Electric Stimulator can have different shapes which allows to connect them to both surfaces of the tissues, organs, and their internal structures.

- 15 66. The medical instrument according to claim 1, wherein the the external coating of the Electric Stimulator may host from a few to thousands contacts, while each of the latter can be connected to either one, several or all channels of the Electric Stimulator.

- 20 67. The medical instrument according to claim 1, wherein the contacts of the Electric Stimulator can have different shapes, sizes, locations, while each of the contacts may be connected to both one or a specific group of channels and all the channels together, and wherein The connection can be either algorithm-based or supported by the relevant design solution.

25

68. The medical instrument according to claim 1, wherein the processor means contain all or part of the elements No. 1,2,3,5,6,8,9,10,11,14,15,16,17,18,19 as indicated in Table 1.

- 30 69. The medical instrument according to claim 1, wherein the processor includes means for activating from one electrode up to several hundred electrodes, and wherein Each electrode may receive a different activating signal from the processor, according to a different algorithm, and/or for a different disease; The processor includes means for receiving signals from

one sensor means, and up to several hundreds sensor means units, of one type or of various types.

70. The medical instrument according to claim 1, wherein the processor may
5 compute activating signals for one disease or for a plurality of diseases, up to several hundred diseases concurrently; the required signals are then applied to the patient's organs through the electrodes; the processor also decides, in each case, whether to apply stimulating or inhibiting signals, according to information from the sensor means and/or the clinical findings.

10

71. The medical treatment method according to claim 17, using an implanted system by electric stimulation and/or electric blocking of the body tissues, comprising:

A. measuring variables in the body using implanted sensor and/or biosensor
15 means ;

B. processing the measured variables for deciding in real time whether to apply an electric signal to the body tissues;

C. applying the stimulation and/or electric blocking signals to the body tissues.

20

72. The medical treatment method according to claim 17, further including the step of adapting to conditions in the patient's body and detecting changes thereon, and using the detected changes for deciding whether to apply the stimulation and/or electric blocking signals to the body tissues.

25

73. The medical treatment method according to claim 17, further including the step of simultaneously monitoring functional activity of several systems of the body and to finely adapt to the body's needs.

30 74. The medical instrument according to claim 1; wherein the Electric Stimulator has the feature that it has channels (units generating output pulses or units generating address codes, connected to the relevant electrodes) in the amount of 1 up to thousands, while each of these channels can be controlled with different algorithms of the programs.

75. The medical instrument according to claim 1, wherein the Electric Stimulator's shell contains the unit generating address codes and output pulses for the electrodes, connected to the electromagnetic communication unit of the implanted, enabling a wireless connection between the Electric Stimulator and with the implanted or non-implanted electrodes, while in order to support connection with the electrodes it is possible to use both individual address codes for each electrode and codeless non-address communication.

76. The medical instrument according to claim 1, wherein the Electric Stimulator contains functionally independent and electrically insulated from each other channels varying in their number between 1 to thousands, while each such channel can comprise all the units of the Electric Stimulator, or each of the channels may comprise the units generating output pulses or units generating address codes and output pulses connected to the relevant electrode(s) with or without special address code(s); and mutual coordination between the channels can be supported with the algorithm of the Electric Stimulator's software.

77. The medical instrument according to claim 1, wherein the Electric Stimulator contains an option (a software option) to enable the Electric Stimulator's programming and control functions by means of connecting telecommunications channels, including the Internet, radio channels, satellite communication channels, fiber optics communication channels, cellular telephone channels, etc, to the external radio-frequency communication unit or the internal radio- frequency communication unit of the Electric Stimulator.

78. The medical instrument according to claim 1, wherein the Electric Stimulator contains means for controlling the duration and frequency of electric stimulation sessions can be carried out using the Electric Stimulator's programmable microprocessor (unit(s) generating output pulses and/or the unit generating address codes and output pulses for the electrodes), or using the Electric Stimulator's timer based on the signals sent by the sensors and/or biosensors of different types, while setting up the duration and frequency of

electric stimulation sessions is effected separately, aided by different sensors and biosensors (for example, session duration is controlled with the respiration rate sensors, while the frequency is set up with the heart rate sensor).

5

79. The medical instrument according to claim 1, wherein the Electric Stimulator contains means for activation of the channel(s) of its unit(s) generating output pulses and/or unit generating address codes and output pulses for the electrodes, as well as selection of the program(s) and algorithm(s) for stimulation and/or inhibition of functional activity of the body's organs and tissues can be carried out in the three following modes (using each other separately, or in different combinations between them, the three together simultaneously): first mode, - automatic mode set up in accordance with the type of signals transmitted by the sensors, biosensors to the Electric Stimulator's units, as well as per the input algorithm(s) of the program(s); second mode, - set up regardless of the signals transmitted by the sensors, biosensors, depending on the input algorithm(s) of the program(s) only; third mode, - direct (voluntary) control of the above-mentioned functions and programs of the Electric Stimulator by the patient or doctor using the external radio-frequency communication unit of the Electric Stimulator or the internal radio-frequency communication unit thereof.

80. The medical instrument according to claim 79, wherein the Electric Stimulator contains means that makes it resemble the natural functioning of separate nervous centers and the entire human nervous system, where, in addition to the existing involuntary algorithms and programs, controlling functions of the systems and organs, there is also an option to voluntarily control a number of the body's organs and systems (for example, voluntary regulation of respiration rate, breath depth, etc.)

30

81. The medical treatment method according to claim 17, wherein, using means in the Electric Stimulator that makes it resemble the natural functioning of separate nervous centers and the entire human nervous system, further include the step, in addition to the existing involuntary algorithms and

programs, controlling functions of the systems and organs, there is also an option to voluntarily control a number of the body's organs and systems (for example, voluntary regulation of respiration rate, breath depth, etc.)

5 82. The medical treatment method according to claim 81, wherein the Electric Stimulator and Therapy Method has two following modes of operation, an they can be activated both simultaneously and separately: First Mode - supports regular (preventive) electric stimulation sessions for the prevention of acute symptoms of the disease; Second Mode - supports therapeutic electric
10 stimulation sessions, and it is activated when acute symptoms of the disease (attacks, seizures, etc.) occur; As a result, as it also in the case of the First Mode, functional activity of the body's systems, and/or organs, and/or tissues is stimulated and/or inhibited.

15 83. The medical treatment method according to claim 17, wherein, in order to assess efficiency of the implanted Stimulator, functional activity of the body's systems, and/or organs, and/or tissues is studied before conducting electric stimulation sessions and thereafter using the sensors, biosensors as well as the methods widely used in the common clinical practice , while a detected
20 decrease in the functional activity of the body's systems, and/or organs, and/or tissues is deemed an inhibition symptom, while an enhancement thereof is considered to be a symptom of stimulation of the functional activity of the body's systems, and/or organs, and/or tissues.

25 84. The medical treatment method according to claim 17, wherein stimulation and/or inhibition of functional activity of the body's systems, and/or organs, and/or tissues by means of the Electric Stimulator is carried out in accordance with the natural cyclical rhythm of activity of the above-mentioned structures of the body.

30

85. The medical instrument according to claim 1, wherein the Electric Stimulator has a shell that comprises several separate parts whose amount may vary between several and many units, these said parts being

interconnected by means of electrodes, and/or wires, and/or electromagnetic waves.

86. The medical instrument according to claim 1, wherein the Electric Stimulator or electric stimulators include means that allow the device to be controlled with one or several similar implanted electric stimulators, while all of the these "affiliated" implanted electric stimulators are controlled with one main electric stimulator, that has the same units, but different algorithms.

87. The medical instrument according to claim 1, further including a noncontact communication channel with a receiver outside a patient's body, and wherein the processor further includes means for sending the measured variables to the external receiver.

88. The medical treatment method according to claim 17, wherein a change of the stimulation mode (stimulation session frequency or session duration) depends on the sensor's signal value (that, in its turn, depends on a particular time period of the day and the patient's activity); the signal is received by Unit 5 which either increases or reduces the algorithm (of increase or reduction), depending on the algorithm input in the chip's design at the manufacturing stage; its purpose is to solve any specific problem when different ailments are treated.

89. The medical treatment method according to claim 88, performing an adaptation of the stimulation mode to individual physical activity of the patient's body or to a symptoms severity degree of any specific ailment.

90. The medical treatment method according to claim 17, wherein a change of the stimulation mode (stimulation session frequency and session duration) depend on the sensor's signal value. (that, in its turn, depends on a particular time period of the day, the patient's activity, and severity of symptoms of the disease).

91. The medical treatment method according to claim 17, wherein the frequency of the simulation sessions depends on the value of the first sensor's signal delivered to Unit 5 (which either increases or reduces the required algorithm depending on the built-in chip structure - increase or reduction designed to solve a particular problem), while the simulation sessions duration depending on the value of the first sensor's signal (which either increases or reduces the required algorithm depending on the built-in chip structure - increase or reduction designed to solve a particular treatment problem).
92. The medical treatment method according to claim 17, further including the step of Accurate adaptation of the stimulation mode to individual physical activity of the patient's body or to a symptoms severity degree of any specific ailment.
93. The medical treatment method according to claim 17, further including an increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration by increasing or reducing signals of biological sensors, wherein:
- 1) Biological sensors are located directly on the chip and electrode housing;
 - 2) The majority of chip units are connected with its radiofrequency communication component, which enables a direct control and adaptability thereof by means of the external programming unit;
 - 3) Stimulation sessions and intervals of determining the nerve electric activity proceed in succession and not concurrently;
 - 4) The chip operation modes are programmed by external programming unit (setup of simulation thresholds, working algorithms, etc.);
 - 5) Power battery of the stand-alone power unit is charged by the following two sources: external programming unit, and bioelectric activity of nerve; power supply to the chip can be provided by electromagnetic waves transmitted from the external programming unit;
 - 6) To add reliability, onset of seizure or deterioration of other ailment symptoms are identified according to a set of parameters;
 - 7) Indicator informs the patients, when the stimulation device starts and finishes working.

94. The medical treatment method according to claim 17, further including an increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration by increasing or reducing signals of biological sensors, wherein:

- 1) Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of the Units 12, 13, 15 sensors and biological sensors;
- 2) Changing of the sequence and combination of activated chip channels depending on the current state of stimulated organs and tissues, as determined by sensors, biosensors, and algorithm stored in Memory Unit
- 3) Multichannel design
- 4) Biosensors design
- 5) An optimal automatic selection of organs and tissues stimulation parameters using biological sensors, sensors and chip memory algorithms;
- 6) A parallel control of several organs.

95. The medical treatment method according to claim 17, further including an increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration by increasing or reducing signals of biological sensors, wherein:

- 1) Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of sensors and biological sensors;
- 2) Changing of sequence and combination of activated chip channels depending on the biosensors' signals values;
- 3) A parallel control of several organs using various stimulation programs to resume their functions;
- 4) Biosensors design, concurrent monitoring of the state of several body organs and systems;
- 5) Use of at least two isolated channels to control each organ or system in order to provide a concurrent effect on several nerve centers and

optimize the results of treatment.

96. The medical treatment method according to claim 17, further including an increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration by increasing or reducing signals of biological sensors, wherein:

- 1) Increase or reduction of current, voltage, output pulses duration, and stimulation sessions frequency and duration via each channel depending on an increase or reduction of signals of sensors and biological sensors;
- 2) Changing of sequence and combination of activated chip channels depending on the current state of stimulated organs and tissues, as determined by biosensors;
- 3) Wireless implantable families of secondary microelectrodes with individual programming of operation modes and parent chip connection by means of electromagnetic waves;
- 4) Biosensors design;
- 5) Monitoring of body systems and functions by means of various biological sensors;
- 6) Concurrent stimulation of over 100 nerves, organs, and muscles using various programs with a parallel monitoring of the results.

97. The medical instrument according to claim 1, further including means for its being powered from electromagnetic waves transmitted by the external radio-frequency communication unit to the internal radio-frequency communication unit, and it also can be powered by the autonomous power supply unit capable of automatic recharging from the patient's body kinetic energy.

98. The medical instrument according to claim 1, further including autonomous power supply unit which is charged from the patient's body kinetic energy, for which purpose this said power supply unit is connected with an electrode, via a transducer, to an adaptor converting mechanical motions

of the diaphragmatic muscle occurring during the process of breathing into electric current -A flexible piezoelectric element (electrode-like) coated with a biologically inert material; This element is implanted under the diaphragm's cupola, from the right side, endoscopically, and it is connected to the chip;

5 The chip comprises an AC/DC transducer.

99. The medical instrument according to claim 981, wherein the autonomous power supply unit includes means wherein Mechanical movements of the diaphragm (up and down) occurring at the patient's breathing cause periodic

10 deflections in the piezoelectric element, according to the respiration rate; As a result of mechanical motions, the piezoelectric element generates electric pulses transmitted to the above-mentioned unit, and they are transformed into direct current necessary to power the microchip.

15 100. The medical instrument according to claim 1, wherein its unit or units for generating output pulses, as well as its unit generating address codes are programmable via the external radio frequency communication unit and via the internal radio frequency communication unit (or they are non-programmable while being operated via the above-mentioned communication

20 units).

101. The medical instrument according to claim 1, wherein, to increase the device's safety level, it can be powered from the three following sources: autonomous power unit (battery), and/or kinetic energy of the patient's body

25 and/or by means of electromagnetic waves from the external non-implanted display, and/or remote control unit, while selecting of a source or sources is enabled by the algorithms of the software input into the Electric Stimulator, and/or remote control unit, and/or display.

30 102. The medical instrument according to claim 1, wherein the processor is multifunctional, including means for its operation in one of several predefined modes.

103. The medical treatment method according to claim 17, wherein a normal version of the parameter in question is individually selected for a specific patient, in accordance with the typical anthropometric properties of the latter, as a target level of the correction.

5

104. The medical instrument according to claim 1, wherein it includes means for a therapeutic effect applicable to treatment of diseases, and to correcting functional activity of the body's systems, and/or organs, and/or tissues in healthy persons, using the self-adjusting algorithms that adapt the device to current needs of the body, while these said algorithms can be selected with the remote control unit and/or display.

10

105. The medical instrument according to claim 1, wherein it includes means for enabling the algorithm(s) of its program(s) to be changed in real-time, depending on type of the signals sent by the sensors and/or biosensors, and due to this feature the optimal and most efficient algorithm of the program is selected, this being best adapted to the needs of the patient's body in a specific period of time, to allow Dynamic, self-adjusting algorithms.

15

106. The medical treatment method according to claim 17, wherein in order to increase the Electric Stimulator's reliability and safety for the patient, as well as to make the technology more efficient, selecting stimulating current parameters and stimulation modes is carried out by means of automatic or non-automatic selection from the Electric Stimulator's data base, while the data have previously been collected on an individual basis and classified for various tasks of the stimulation modes and current parameters using the relevant algorithm.

20

107. The medical treatment method according to claim 17, wherein stimulation or inhibition of functional activity of the body's systems, and/or organs, and/or tissues is supported with different programs and algorithms in one patient during day and night time; this mechanism takes into account the fact the body's physiology is substantially different during day and night time, and, therefore, same programs and algorithms cannot be used in both cases.

25

30

108. The medical treatment method according to claim 17, wherein its external radio-frequency communication unit and the internal radio-frequency communication unit enable and support a reciprocal connection between external non-implanted devices and each of the Electric Stimulator's units and/or channels separately, while address codes may be used for this purpose.

109. The medical treatment method according to claim 17, wherein a Therapy Method and Method for Correction of Functional Activity of the Body's Systems, and or Organs, and/or Tissues are used to identify, to detect certain conditions of the body using the sensors and biosensors, one or several indirect parameters may be considered, these parameters being typical of each specific patient; in order to identify these typical indirect properties, functional activity of the body's systems, organs, tissues is repeatedly (twice and up to several times) examined and analyzed when the above-mentioned conditions become pronounced using the display, or applying the methods and equipment widely used in the clinical practice, thus establishing regular changes in the selected homeostatic parameters, which are to be taken into account for purposes of identification of the above-mentioned conditions at a later stage.

110. The medical treatment method according to claim 109, wherein upon development of the hypoglycemic coma in one of the patients, the following repeated regular changes are observed: a drop in the arterial pressure of at least 20 mm of the mercury column, a minimal pulse acceleration of 30 beats per minute, a 30% acceleration of the respiration rate, while these changes typically coincide with a drop in the blood glucose level amounting to 50% deviation from the norm.

111. The medical treatment method according to claim 17, wherein to obtain the maximal therapeutic effect, prior to using the Electric Stimulator, the patient is examined in order to detect typical disease-related phenomena, this being followed by the development of individual programs and algorithms of

the Electric Stimulator aimed at correcting main adverse effects of the disease(s).

112. The medical treatment method according to claim 17, wherein general
5 coordination of interrelated operation of all the channels, and control of functional activity of the body's systems, and/or organs, and/or tissues with stimulation and/or inhibition via the above-mentioned channels, is supported with a separate (main) algorithm (a "visceral conductor") of the program, while
10 this said algorithm can flexibly perform real-time changes thus optimally adapting the Electric Stimulator's channels to current needs of the patient's body.

113. The medical treatment method according to claim 17, wherein the function of algorithms in the software of the unit(s) generating output pulses,
15 or of the unit generating address codes and output pulses for the electrodes is based on identification of code signals sent by sensors and biosensors of various types, while each of these signals reflects a singular specific condition of the patient and or his/her body's systems, and/or organs, and/or tissues (for example, Code 1 sent by Sensor No. 1 identifies the patient's condition during
20 night time, when a spasm of the bronchi is at an onset, and, as a result wheezing in the lung appears, while Code 2 sent by Sensor 1 reflects the patient's condition during night time when no asphyxia attack and spasm of the bronchi occur), and by means of analyzing such codes Electric Stimulator's CPU generates commands to activate and/or deactivate electric
25 stimulation through one or several channels, commands to set the optimal current parameters, stimulation modes, aimed at obtaining physiological effects of the stimulation and/or inhibition of functional activity of the body's systems, and/or organs, and/or tissues (object-oriented functional programming).

30

114. The medical instrument according to claim 1, wherein the electrode means include a plurality of electrodes implanted in several locations in the patient's body.

115. The medical instrument according to claim 1, wherein, for purposes of stimulation and/or inhibition of the functional activity of the body's systems, organs and tissues, electrically non-interconnected implanted electrodes of 0.13 microns up to 15 mm in size in the amount varying between 1 up to
5 thousands are simultaneously used, while these said electrodes are connected to the electromagnetic communication unit in a wireless fashion, via electromagnetic and/or other waves, or they are connected with wires to the unit generating output pulses and/or to the unit generating address codes and output pulses.

10

116. The medical instrument according to claim 1, wherein the implanted or non-implanted electrodes connected to the electromagnetic communication unit of the Electric Stimulator in a wireless fashion, via electromagnetic and/or other waves, contain, in their shell, the electromagnetic communication and
15 power supply unit, the latter being connected, either directly or via the electrode's decoder, to the unit generating output pulses, which in its turn is connected to a contact or contacts of the wireless electrode, while the electrode's memory unit can also be connected to the unit generating output pulses, and the electrode's power supply unit can be connected to all the
20 above-mentioned units of the electrode.

25

117. The medical instrument according to claim 1, wherein its shell can also simultaneously perform the function of an electrode or electrodes in addition to its main function; a "Tablet-shape" electric stimulator can be achieved.

118. The medical instrument according to claim 1, wherein its electrode(s) can also function as the shell thereof, while both electrode(s) and shell may vary in shape (to provide a list of possible shapes here).

30

119. The medical instrument according to claim 1, wherein the shape and contour of the electrode(s) can imitate and precisely fit the relevant shapes and contours of surfaces of the organs, tissues and other anatomic structures of the body into which the electrode(s) is(are) implanted; and before an implantation surgery the electrodes can be custom tailored for each specific

patient, their design being based on the results of the preliminarily conducted examinations (such as CT, ultrasound, MRI), as well as on special algorithms of the programs, allowing to extrapolate the shape and contours of the above-mentioned anatomic structures onto the electrode's (electrodes') design.

5

120. The medical instrument according to claim 1, wherein for purposes of electric stimulation or inhibition of functional activity of the body's systems, organs and tissues, electrodes of different shapes varying in number of current conducting cores (wires) and contacts (channels) are used, while
10 these electrodes are connected, either in a wireless fashion or with wires, to the unit generating output pulses or to the electromagnetic communication unit of the Electric Stimulator.

121. The medical instrument according to claim 1, further including an audio
15 and/or light, and/or vibration, and/or temperature, and/or cutaneous electric indicating device providing the patient with data on conditions of the Electric Stimulator, his/her own body, as well as with other information transmitted by the external and/or internal radio-frequency communications units to the Electric Stimulator, is connected to the unit generating output pulses, and/or to
20 the unit generating address codes and output pulses for the electrodes, and/or to the internal radio-frequency communication unit, and/or to the external radio-frequency communication unit, and/or to an electrode, and/or to electrodes.

25 122. The medical instrument according to claim 1, further including in addition to analyzing functional activity of the body's systems, and/or organs, and/or tissues, as well as controlling and analyzing operation and functioning of the implanted Stimulator, the monitor also supports programming or reprogramming of the Electric Stimulator (by means of a computer connected
30 thereto via the radio-frequency communication unit).

123. The medical instrument according to claim 1, further including means for running a long-term monitoring of functional activity of the body's systems,

organs, tissues, and operation of the Electric Stimulator, while duration of the monitoring may vary between several minutes and several months.

124. The medical instrument according to claim 1, further including External
5 Non-Implanted Display - Programmer - Charging Device and wherein the
sensors and biosensors representing micro- and macro-indicating devices of
different, located both on the patient's body surface and directly introduced
into its tissues, organs, systems (for example, arterial pressure meter
introduced into the femoral artery) collect data on functioning of the body's
10 systems, and wherein these data are transmitted to the unit analyzing
conditions of the body's systems, organs, tissues (No. 3 on the Diagram); The
unit separately analyzes functioning of each of the systems studied enabling
both fragmentary and permanent real-time monitoring of the body's systems,
organs, tissues.

15

125. The medical instrument according to claim 1, wherein the data is
preliminarily analyzed and processed, then transmitted to the unit supporting
radio-frequency communication with the computer, and the latter, as well as a
similar unit in the computer itself send the data directly into the computer
20 where they are processed according to various algorithms of the software.

126. The medical instrument according to claim 1, further including means
transmitting the data both from the Unit No. 3 to the Unit No. 5 and the
computer and backwards, as well as to the display's radio-frequency
25 communication unit (No. 4 on the Diagram) intended to support the
communication between the implanted Stimulator and the external radio-
frequency communication unit thereof, for purposes of receiving the data, via
the latter, on functional activity of the body's systems, organs, tissues
(obtained with the Electric Stimulator's sensors, biosensors; These data are
30 fragmentary and coded.

127. The medical instrument according to claim 1, further including means to
recharge the battery of the Electric Stimulator, and/or to program the latter via
the Unit No. 4.

128. The medical instrument according to claim 1, further including means to allow the Unit No. 6 to be recharged from the battery or from the alternative energy unit (No. 7 on the Diagram); The latter can also power all the above-mentioned units of the display, similarly to the process used in the Electric Stimulator and the remote control unit.

129. The medical instrument according to claim 1, wherein the means for covering the processor (chip) from the outside include a Silicon coating .

130. The medical instrument according to claim 1, wherein the means for covering the processor (chip) from the outside include a Silicon mixed with Shungite.

131. The medical instrument according to claim 1, wherein the means for covering the processor (chip) from the outside include Silicon completely covered on the outside with Shungite.

132. The medical instrument according to claim 1, wherein the electric stimulator include coating means that are external biologically inert coating is made of a silicon compound whose molecular mass varies between a few and a thousand units, while this coating can host sensors, biosensors, contacts connected to the Electric Stimulator's units.

133. The medical instrument according to claim 1, wherein the means for covering the processor (chip) are external biologically inert coating is made of a porous material, while the pores' size varies between a few nanometers and a few micrometers , and the pores themselves are evenly spread all over the entire coating surface with their concentration on one square millimeter.

134. The medical treatment method according to claim 17, wherein, in order to obtain a therapeutic effect, the electrode or electrodes of the Electric Stimulator are implanted into the subcutaneous fat, and/or into nerves (vagus nerve and or sinocarotid), and/or into various organs and/or into blood vessels

and/or into the spinal cord, and/or into bones or into the medullar canal, are connected to different areas of the skin with the Electric Stimulator being implanted, in accordance with specific treatment techniques for each of the diseases.

5

135. The medical treatment method according to claim 17, wherein the electrode is implanted to affect systems and organs of the body including the nervous structure of the sympathetic nervous system or the parasympathetic system or the sympathetic nervous system and parasympathetic system and
10 hypoglossal (sinocarotid collector of the Vegetative Nervous System - SCVNS), the central nervous system, as well as neurons of the organ and/or cutaneous nerves and/or depressor nerves.

15

136. The medical treatment method according to claim 17, wherein the electrode is implanted to affect a nervous band or group comprising all, or the majority of, the nerve branches innervating the carotid glome (glomus caroticum).

20

137. The medical treatment method according to claim 17, wherein the electrode is implanted to affect systems and/or organs of the body as indicated in Tables 1 to 19 of the present disclosure.

25

138. The medical treatment method according to claim 17, wherein the method of treatment by electro-stimulator as applied for treating Asthma, using one or more electrodes as detailed in claim X, wherein the electrodes are implanted in the following locations inside a patient's body:

30

Best mode - right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second best mode - right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T11); while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

5 Sensor of electric activity of the organs nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

10 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

139. The medical treatment method according to claim 17, wherein treatment
15 by electro-stimulator for treating Epilepsy, using one or more electrodes
wherein the electrodes are implanted in the following locations inside a
patient's body:

Best mode - right sinocarotid collector (over the bifurcation spot of the
common carotid artery) and/or left sinocarotid collector (over the bifurcation
20 spot of the common carotid artery) or Second best mode - left Vagus nerve (in
the superior third of the neck, at the level C2-C3) and/or right Vagus nerve (in
the superior third of the neck, at the level C2- C3) while using the following
sensors:

Arterial pressure meter

25 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

30 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues,

Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood

Biosensor of alcohol contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

5 Amplitude of current pulses: 0.02 - 1 V.

140. The medical treatment method according to claim 17, wherein for treating Obesity, wherein the electrodes are implanted in the following locations inside a patient's body:

10 Best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) or Second best mode - left sympathetic trunk, thoracic (in the superior third, at the level T7-T11) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) while using the following sensors:

15 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

20 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Gastric juice acidity sensor

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

25 Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

30 141. The medical treatment method according to claim 17, wherein for treating Hypertension, wherein the electrodes are implanted in the following locations inside a patient's body:

Best mode - Right depressor nerve (over the aortic arch or in the middle third of the neck) and/or left depressor nerve (over the aortic arch or in the middle

third of the neck) or Second best mode - Right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) while using the following sensors:

5 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

10 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

15 Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

20 142. The medical treatment method according to claim 17, wherein for treating Diabetes, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) or Second best mode - Left sympathetic trunk, thoracic (in the superior third, at the level T7-T11) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) while using the following sensors:

Arterial pressure meter

Heart rate meter

30 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

5 Biosensor of hormone contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

10 143. The medical treatment method according to claim 17, wherein for treating Angina Pectoris, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second
15 best mode - Spinal cord (at the level T10-T12) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

20 Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

25 while using the following bio-sensors:

Biosensor of oxygen contents in the tissues and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

30

144. The medical treatment method according to claim 17, wherein for treating Alcoholism, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right depressor nerve, (over the aortic arch or in the middle third of the neck) and/or left depressor nerve (over the

aortic arch or in the middle third of the neck) or Second best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or Nerve collector of the organ(skin) while using the following sensors:

- 5 Arterial pressure meter
- Heart rate meter
- Respiration rate meter
- Temperature gage
- Angular shift sensor (for the limbs)
- 10 Local blood flow sensor
- Sensor of electric activity of the organs, nervous centers
- Murmur sensor (heart, lungs, intestine)
- while using the following bio-sensors:
- Biosensor of oxygen contents in the tissues
- 15 Biosensor of sugar contents in the blood
- Biosensor of alcohol contents in the blood
- Biosensor of narcotic substances contents in the blood and while the electro-stimulation parameters are as follows:
- Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
- 20 Amplitude of current pulses: 0.02 - 1 V.

145. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Drug addiction, using one or more electrodes as detailed in claim X, wherein the electrodes are implanted in the following locations
- 25 inside a patient's body:
 - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-
 - 30 T4) and/or Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) or Left sympathetic trunk (Left upper cervical third part between C2 - C3) and/or right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or Spinal cord and/or right

depressor nerve (over the aortic arch or in the middle third of the neck) and/or left depressor nerve (over the aortic arch or in the middle third of the neck) and/or Nerve collector of the organ while using the following sensors:

Arterial pressure meter

5 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

10 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

15 Biosensor of alcohol contents in the blood

Biosensor of narcotic substances contents in the blood and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

20

146. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Parkinson's disease, using one or more electrodes as detailed in claim X, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or right sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) while using the following sensors:

30 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

5 Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

10

147. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Alzheimer's disease, using one or more electrodes as detailed in claim X, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or right sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) while using the following sensors:

20 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

25 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

30 Biosensor of sugar contents in the blood and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

148. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Gastric ulcer, using one or more electrodes as detailed in claim X, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3), or Second best mode - Left Sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) while using the following sensors:

10 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

15 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Gastric juice acidity sensor

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

20 Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0. 8 Ms,

25 Amplitude of current pulses: 0.02 - 1 V.

149. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Pain syndromes of different genesis, using one or more electrodes, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Spinal cord (at the level T10-T-12) or Second best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

5 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

10 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

150. The method of treatment by electro-stimulator as detailed in claim 17
15 applied for treating Osteoporosis, using one or more electrodes, wherein the
electrodes are implanted in the following locations inside a patient's body:
Best mode - Nerve collector of the organ (parathyroid gland, muscles) or
Second best mode - Nerve collector of the organ (muscles) while using the
following sensors:

20 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

25 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

30 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

151. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Constipation, using one or more electrodes, wherein the electrodes are implanted in the following locations inside a patient's body:

Best mode - Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) or Second best mode - Right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or Left vagus nerve (in the superior third of the neck, at the level C2-C3) while using the following sensors:

10 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

15 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

20 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

152. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Apnea, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body:

Best mode - Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) or Second best mode - Spinal cord (at the level

30 T10-T-12) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

5 while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

10

153. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Insomnia, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second best mode - Right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or left vagus nerve (in the superior third of the neck, at the level C2-C3) while using the following sensors:

20 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

25 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

30 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

154. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Hypersomnia, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sympathetic trunk, cervical (in the superior
5 third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) or Second best mode - Spinal cord (at the level T10-T-12) while using the following sensors:

Arterial pressure meter

Heart rate meter

10 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

15 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0. 8 Ms,

20 Amplitude of current pulses: 0.02 - 1 V.

155. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Obliterating vascular diseases of the limbs, using one or more electrodes as detailed, wherein the electrodes are implanted in the
25 following locations inside a patient's body: Best mode - Spinal cord (at the level T10-T-12) or Second best mode - right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) while using the following sensors:

Arterial pressure meter

30 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

5 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

156. The method of treatment by electro-stimulator as detailed in claim 17
10 applied for treating Urinary bladder atony using one or more electrodes as
detailed, wherein the electrodes are implanted in the following locations inside
a patient's body: Best mode - Nerve collector of the organ (v. bladder) or
Second best mode - Spinal cord (at the level T10-T12) while using the
following sensors:

15 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

20 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

25 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

157. The method of treatment by electro-stimulator as detailed in claim 17
30 applied for treating Ailments associated with a malfunction of the rectum
sphincters, using one or more electrodes as detailed, wherein the electrodes
are implanted in the following locations inside a patient's body: Best mode -
Nerve collector of the organ(rectum) while using the following sensors:
Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

5 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

10 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

15 158. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Bulimia, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or left vagus nerve (in the superior third of the neck, at the level C2-C3) or Second best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) while using the following sensors:

Arterial pressure meter

Heart rate meter

25 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

30 Gastric juice acidity sensor

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

5

159. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Reflux-esophagitis, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or left vagus nerve (in the superior third of the neck, at the level C2-C3) or Second best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T11) while using the following sensors:

15 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

20 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Gastric juice acidity sensor

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

25 Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

30

160. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Infantile cerebral paralysis using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Spinal cord (at the level T10-T12) and

Nerve collector of the organ(Muscles) or Second best mode - Nerve collector of the organ(Muscles) while using the following sensors:

Arterial pressure meter

Heart rate meter

5 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

10 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

15 Amplitude of current pulses: 0.02 - 1 V.

161. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Posttraumatic paralysis using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations
20 inside a patient's body: Best mode - Spinal cord (at the level T10-T-12) and Nerve collector of the organ(Muscles) or Second best mode - Nerve collector of the organ(Muscles) while using the following sensors:

Arterial pressure meter

Heart rate meter

25 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

30 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

162. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Hirschsprung's disease using one or more electrodes as detailed , wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left sympathetic trunk, thoracic (in the superior third, at the level T7-T- 11) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) or Second best mode - Nerve collector of the organ (colon) while using the following sensors:

10 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

15 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

20 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0. 8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

163. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Depression, using one or more electrodes as detailed , wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sinocarotid collector (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector (over the bifurcation spot of the common carotid artery) or Second best mode - right sympathetic trunk, cervical (in the superior third of the neck, at the level C2- C3) and/or left sympathetic trunk (Left upper cervical third part between C2 - C3) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

5 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

10 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

164. The method of treatment by electro-stimulator as detailed in claim 17
15 applied for treating Schizophrenia, using one or more electrodes as detailed,
wherein the electrodes are implanted in the following locations inside a
patient's body: Best mode - Right sinocarotid collector (over the bifurcation
spot of the common carotid artery) and/or left sinocarotid collector (over the
bifurcation spot of the common carotid artery) or Second best mode - right
20 sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left
sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) while
using the following sensors:

Arterial pressure meter

Heart rate meter

25 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

30 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.

165. The method of treatment by electro-stimulator as detailed in claim 17
5 applied for treating Borderline personality disorders using one or more
electrodes as detailed, wherein the electrodes are implanted in the following
locations inside a patient's body: Best mode - Right sinocarotid collector (over
the bifurcation spot of the common carotid artery) and/or left sinocarotid
collector (over the bifurcation spot of the common carotid artery) or Second
10 best mode - right sympathetic trunk, thoracic (in the superior third, at the level
T2-T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level
T7-T11) while using the following sensors:

Arterial pressure meter

Heart rate meter

- 15 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

- 20 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

- 25 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.

166. The method of treatment by electro-stimulator as detailed in claim 17
applied for treating Nervous anorexia using one or more electrodes as
30 detailed, wherein the electrodes are implanted in the following locations
inside a patient's body: Best mode - Right sinocarotid collector (over the
bifurcation spot of the common carotid artery) and/or left sinocarotid collector
(over the bifurcation spot of the common carotid artery) or Second best mode
- right sympathetic trunk, thoracic (in the superior third, at the level T2-T4)

and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) while using the following sensors:

Arterial pressure meter

Heart rate meter

5 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

10 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

15 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

167. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Adrenal cortex hypofunction (Addison's disease), using

20 one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2- T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) or Second best mode - Nerve collector of the organ while using the following
25 sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

30 Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood

and while the electro-stimulation parameters are as follows:

- 5 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.

168. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Adrenal cortex insufficiency using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2- T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) or Second best mode - Nerve collector of the organ while using the following sensors:

15 Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

20 Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

25 Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

30

169. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Hypothyrosis using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left sympathetic trunk (Left upper cervical third

part between C2 - C3) and/or right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) or Second best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) while using the following

5 sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

Temperature gage

10 Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

15 Biosensor of oxygen contents in the tissues

Biosensor of hormone contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

20

170. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Progressing myodystrophy, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Spinal cord (at the level T10-T12) and

25 Nerve collector of the organ(Muscles) or Second best mode - Nerve collector of the organ(Muscles) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

30 Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

5 Amplitude of current pulses: 0.02 - 1 V.

171. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Angiotrophone neurosis, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations
10 inside a patient's body: Best mode - Spinal cord (at the level T10-T-12) or Second best mode - Nerve collector of the organ(Muscles) while using the following sensors:

Arterial pressure meter

Heart rate meter

15 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

20 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

25 Amplitude of current pulses: 0.02 - 1 V.

172. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Syringomyelia, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a
30 patient's body: Best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2- T4) and/or left sympathetic trunk, thoracic (in the superior third, at the level T7-T-11) or Second best mode - Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or left

sympathetic trunk (Left upper cervical third part between C2 - C3) while using the following sensors:

Arterial pressure meter

Heart rate meter

5 Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

10 Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

15 Amplitude of current pulses: 0.02 - 1 V.

173. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Impotence, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Nerve collector of the organ(skin) while using the following sensors:

Arterial pressure meter

Heart rate meter

Respiration rate meter

25 Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

30 while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

Biosensor of alcohol contents in the blood

Biosensor of narcotic substances contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

- 5 174. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Paresis of the vocal cords, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Left vagus nerve (in the superior third of the neck, at the level C2-C3) and/or right vagus nerve (in the superior third of the neck, at the level C2-C3) or Second best mode - Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) while using the following sensors:

Arterial pressure meter

- 15 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

- 20 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

- 25 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

175. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Snoring, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) or Second best mode - Spinal cord (at the level T10-T-12) while using the following sensors:
- 30

- Arterial pressure meter
Heart rate meter
Respiration rate meter
Temperature gage
- 5 Angular shift sensor (for the limbs)
Local blood flow sensor
Sensor of electric activity of the organs, nervous centers
Murmur sensor (heart, lungs, intestine)
while using the following bio-sensors:
- 10 Biosensor of oxygen contents in the tissues
and while the electro-stimulation parameters are as follows:
Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.
- 15 176. The method of treatment by electro-stimulator as detailed in claim 17
applied for treating Chronic gastroenterocolitis, using one or more electrodes
as detailed, wherein the electrodes are implanted in the following locations
inside a patient's body: Best mode - Right vagus nerve (in the superior third of
the neck, at the level C2-C3) and/or left vagus nerve (in the superior third of
20 the neck, at the level C2-C3) or Second best mode - Right sympathetic trunk,
thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk,
thoracic (in the superior third, at the level T7-T11) while using the following
sensors:
- Arterial pressure meter
25 Heart rate meter
Respiration rate meter
Temperature gage
Angular shift sensor (for the limbs)
Local blood flow sensor
- 30 Sensor of electric activity of the organs, nervous centers
Murmur sensor (heart, lungs, intestine)
while using the following bio-sensors:
Biosensor of oxygen contents in the tissues
Biosensor of sugar contents in the blood

and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

- 5 177. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Chronic gastroenterocolitis, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Right vagus nerve (in the superior third of the neck, at the level C2-C3) and/or left vagus nerve, left (in the superior third
10 of the neck, at the level C2-C3) or Second best mode - Right sympathetic trunk, thoracic (in the superior third, at the level T2-T4) and/or left sympathetic trunk, thoracic, left (in the superior third, at the level T7-T11) while using the following sensors:

Arterial pressure meter

- 15 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

- 20 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

Biosensor of sugar contents in the blood

- 25 and while the electro-stimulation parameters are as follows:

Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,

Amplitude of current pulses: 0.02 - 1 V.

178. The method of treatment by electro-stimulator as detailed in claim 17
30 applied for treating Stammering, using one or more electrodes as detailed, wherein the electrodes are implanted in the following locations inside a patient's body: Best mode - Sinocarotid collector, right (over the bifurcation spot of the common carotid artery) and/or left sinocarotid collector, left (over the bifurcation spot of the common carotid artery) or Second best mode -

Right sympathetic trunk, cervical (in the superior third of the neck, at the level C2-C3) and/or Left sympathetic trunk (Left upper cervical third part between C2 - C3) while using the following sensors:

Arterial pressure meter

5 Heart rate meter

Respiration rate meter

Temperature gage

Angular shift sensor (for the limbs)

Local blood flow sensor

10 Sensor of electric activity of the organs, nervous centers

Murmur sensor (heart, lungs, intestine)

while using the following bio-sensors:

Biosensor of oxygen contents in the tissues

and while the electro-stimulation parameters are as follows:

15 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.

179. The method of treatment by electro-stimulator as detailed in claim 17 applied for treating Agranulocytosis, Anemia, Atrophy of the optic nerve, Skin atrophy, Scleroderma, Cardiac achalasia, Coagulation disorders, Buerger's disease, Crohn's disease, Pick's disease, Raynaud's disease, Vegetovascular dystonia, Sudden cardiac arrest at sleep, Rectal prolapse, Flaccidly consolidating fractures, Hyperkeratosis, Hyperostosis, Adrenal cortex hyperfunction, Hypoglycemia, Subcortical dementia, Multi-infarction dementia Involuntary movements, Dyskinesia of the biliary tracts, Dysmenorrhea (genital diseases), Dolichosigmoid, Stammering, Impotence, Leucosis, Migraine, Myodystrophy, Myopathy, Male and female infertility, Narcolepsy, Bauhin's valve failure, Neurodermite, Obliterating atherosclerosis of the limbs' vessels, Obliterating endarteritis of the lower limbs' vessels, Alopecia, Paralysis of different etiology, Paresis of the vocal cords, Progressing myodystrophy, Psoriasis, Rickets, Zollinger- Ellison syndrome, Commissural disease, Huntington's chorea, Chronic duodenal ileus, Chronic and acute hyperthermia, Chronic gastroenterocolitis, Chronic cholecystitis and cholecystopancreatitis, Chronic cystitis, Chronic glomerulonephritis, Chronic obstructive bronchitis, Chronic

osteomyelitis, Chronic pyelonephritis, Cirrhosis, Eczema, Pulmonary emphysema, Enuresis and/or Duodenal ulcer, using one or more electrode as detailed, wherein the electrodes are implanted in the following locations inside a patient's body:

- 5 Sinocarotid collector, right (over the bifurcation spot of the common carotid artery)
And/or Sinocarotid collector, left (over the bifurcation spot of the common carotid artery) And/or Sympathetic trunk, thoracic, right (in the superior third, at the level T2- T4)
- 10 And/or Sympathetic trunk, thoracic, left (in the superior third, at the level T7-T- 11) And/or Vagus nerve, left (in the superior third of the neck, at the level C2-C3)
And/or Vagus nerve, right (in the superior third of the neck, at the level C2-C3)
- 15 And/or Sympathetic trunk, cervical, right (in the superior third of the neck, at the level C2-C3) And/or Left sympathetic trunk (Left upper cervical third part between C2 - C3)
And/or Spinal cord (at the level T10-T-12) And/or Nerve collector of the organ(Muscles) And/or Depressor nerve, right (over the aortic arch or in the middle third of the neck) And/or Depressor nerve, left (over the aortic arch or in the middle third of the neck)
- 20 while using the following sensors:
Arterial pressure meter
Heart rate meter
- 25 Respiration rate meter
Temperature gage
Angular shift sensor (for the limbs)
Local blood flow sensor
Sensor of electric activity of the organs, nervous centers
- 30 Gastric juice acidity sensor
Murmur sensor (heart, lungs, intestine)
while using the following bio-sensors:
Biosensor of oxygen contents in the tissues
Biosensor of sugar contents in the blood

Biosensor of hormone contents in the blood

Biosensor of alcohol contents in the blood

Biosensor of narcotic substances contents in the blood

and while the electro-stimulation parameters are as follows:

- 5 Current frequency: 1-300 HZ, Duration of current pulses: 0.1-0.8 Ms,
Amplitude of current pulses: 0.02 - 1 V.

180. The medical treatment method according to claim 17 wherein, in order to increase the safety level of the implanted Stimulator (to prevent one patient
10 from accidental using of non-implanted parts of the Electric Stimulator that belongs to another patient), each Electric Stimulator is assigned a data code (PIN code, similarly to cellular phones), to make sure the Electric Stimulator is used on an individual basis only, while due to this feature it also becomes possible to remotely (for example, via the Internet) replace the Electric
15 Stimulator's software, to monitor and to examine the patient's condition from large distances.

181. The medical treatment method according to claim 17 wherein a PIN-card (like in cellular phones) is either inserted into the Electric Stimulator, or a
20 relevant data code can be saved in the memory unit thereof.

182. The medical treatment method according to claim 17 wherein the codes will also be used for manufacturing accountability purposes which is important in order to prevent other companies from faking the device.

25 183. The medical treatment method according to claim 17 wherein upon occurrence of abnormal functioning of the body's systems, organs, tissues, either as a result of the Electric Stimulator's operation or regardless thereof, endangering the patient's health, the Electric Stimulator's indicating device
30 informs both the patient and medical personnel of such occurrence via the internal and/or external radio-frequency communication units, being specific about a certain side effect that has developed, after which the Electric Stimulator is automatically deactivated, in case this said side effect has developed as a response to any program of the Electric Stimulator; while such

Electric Stimulator's programs identified during the Stimulator's adjustment using the external display, are either removed from the device, or they are replaced with the programs that do not cause side effects.

- 5 184. The medical treatment method according to claim 17 wherein to increase the Electric Stimulator's reliability and safety for the patient, the device has an option, in case of its breakdown, allowing the Electric Stimulator to directly transmit stimulating pulses to the electrode (electrodes) from the external radio-frequency communication unit, via the internal radio-frequency
10 communication unit, for which purpose the latter is connected to the electrode(s) through the backup communication unit.

185. The medical treatment method according to claim 17 wherein its internal radio-frequency communication unit is made selectively sensitive to only those
15 signals sent by the external units and addressed thereto, that have an identification information code belonging to a specific Electric Stimulator (PIN-type code), while the signals which do not contain the above-mentioned code do not affect the Electric Stimulator's operation and cannot control it.

- 20 186. The medical treatment method according to claim 17 wherein its internal radio-frequency communication unit is made selectively sensitive to only those signals sent by the external units and addressed thereto, to enable the information code enables security preventing any unauthorized access to the Electric Stimulator.

- 25 187. The medical treatment method according to claim 17 applied for Correction of Functional Activity of the Body's Systems, and or Organs, and/or Tissues in a healthy person that has the following distinct feature: the optimal mode of impacting the body with the Electric Stimulator (electric current parameters, duration of electric stimulation sessions, etc.) are selected and
30 controlled automatically, and/or by the doctor, and/or by the patient in a real time frame in accordance with the program algorithms input the Electric Stimulator, and subject to an analysis conducted by means of implanted or non-implanted sensor(s) and/or biosensor(s) of one or a set of homeostatic

properties of the body: contents and concentration of substances, gases in the body's tissues and liquid media, and values of electric, mechanical and/or acoustic activity of the organs and tissues; in order to obtain the maximal correcting effect (of stimulation or inhibition), one or several systems, and/or tissues, and/or organs of the body are simultaneously subjected to the electric stimulation through individual channels, electrodes, program algorithms or through one, common program and algorithms.

188. The medical treatment method according to claim 17 applied for a healthy person wherein a principle of long-term ("calendar") programming is used in the Electric Stimulator, and this includes application of the following three types of programs:

First-Type Programs - programming of the Electric Stimulator for the period of 1-30 days, Second-Type Programs - programming of the Electric Stimulator for the period of 1 up to 12 months, in accordance with the signals sent by the sensors and biosensors, or irregardless thereof, Third-Type Programs - programming of the Electric Stimulator for the period of more than 12 months (years).

189. The medical treatment method according to claim 17 applied for a healthy person that have the following distinct features: Electric Stimulator and the electrode(s) thereof can be implanted into different parts of the body, including tissues, organs and/or vessels, while the Electric Stimulator's shell is implanted either into the subcutaneous fat of the right or left subclavian areas, or into the subcutaneous fat of the anterior abdominal wall, in the left hypochondrium, or into the lumbar area, either form the right or left.

190. The medical treatment method according to claim 17 applied for settings of the implanted Stimulator, control and analysis thereof, as well as control and analysis of functional activity of the body's systems, organs and tissues impacted with the Electric Stimulator, may be carried out without the external non-implanted display and it can be based on the existing methods and equipment widely used and radio electronics.

191. The medical instrument according to claim 1, wherein its external radio-frequency communication unit can be connected to the external non-implanted display monitoring conditions of the body's systems, organs, tissues, and the non-implanted or temporarily implanted into the patient's body sensors and biosensors are connected thereto; while the data on the body's systems are transmitted from the display, via the internal radio-frequency communication unit, to the implanted Electric Stimulator's units, being additional to and/or replacing the data, received by these said units from the implanted sensors and biosensors.

192. The medical instrument according to claim 1, further including sensors usable as catheter means without electrode; the received data can be displayed using any display means; A Non-Implanted External Display may be used that, according to Clause B above, has the following distinct feature: it allows to monitor functional activity of the respiratory, digestive, cardiovascular, nervous, immune, urinary and/or temperature control systems, while both the implanted or non-implanted sensors and biosensors of the Display or Electric Stimulator can be used for this purposes.

193. The medical instrument according to claim 1, further including an option that allows additional, both implanted and non-implanted units to be connected thereto.

194. The medical instrument according to claim 1, further including additional non-implanted units which are connected to the Electric Stimulator via the external radio-frequency communication unit and internal radio-frequency communication unit, while the additional implanted units, which are connected to the Electric Stimulator's shell, units or electrodes, such connection being made with electrode(s) or without them, using plug-and-socket units.

195. The medical instrument according to claim 1, wherein each of its main units can be both implanted and non-implanted, while being connected to the remaining units of the Electric Stimulator, found in the shell or electrode(s) thereof via the external radio-frequency communication unit, internal radio-

frequency communication unit (for the non-implanted units), or with an electrode or plug-and socket unit(s) (for the implanted ones).

196. The medical instrument according to claim 1, wherein the processor is
5 programmable, including means for loading a working program therein.

197. The implanted system according to claim 1, further including a noncontact communication channel with a transmitter outside a patient's body, and wherein the processor includes means for applying the stimulation and/or
10 electric blocking signals responsive to signals received program therein from the external transmitter.

198. The implanted system according to claim 1, further including a noncontact communication channel with a transmitter outside a patient's body, and wherein the processor is programmable, including means for loading a
15 working program therein from the external transmitter.

199. The medical instrument according to claim 1, wherein the diseases include Asthma, Insomnia, Hypersonmia, Apnea, Narcolepsy, Sudden cardiac
20 arrest at sleep, Paresis of the vocal cords, Nervous anorexia, Obesity, Bulimia, Gastric and duodenal ulcer, Chronic gastroenterocolitis, Refluxesophagitis, Gastrointestinal dyskinesia, Commissural disease, Crohn's disease , Hirschsprung's disease - megacolon, Rectal prolapse, Chronic duodenal ileus, Bauhin's valve failure, Doloichosigmoid, Chronic intestinal
25 obstruction (commissural disease, megacolon, chronic mesenterial circulation insufficiency, metacolon, doloichosigmoid, cardiac achalasia, Schizophrenia with schizophrenic affective disorders and delirium, Anxiety and depression, Borderline personality disorder, Emphysema Cortical dementia - Alzheimer's disease, Pick's disease, Subcortical dementia - supranuclear palsy
30 (paralysis), Huntington's chorea, Parkinson's disease, Multiinfarction dementia, Involuntary movements, Stammering and/or Epilepsy.

200. The medical instrument according to claim 1, wherein the diseases include Priapism , Infantile cerebral paralysis , Paralysees of different etiology ,

Syringomyelia , Progressing myodystrophy and other forms of dystrophy, Chronic and acute hyperthermia, Atrophy of the optic nerve, Chronic periodic pains (angina pectoris, phantom pains, neuritis, nerve root syndromes , Terminalstage pains , Migraine , Cancer pain, Hypertension, Hypotension ,

5 Vegetovascular dystony, Diabetes, hypoglycemia , diabetes insipidus , hypothyrosis, hyperthyrosis adrenal cortex insufficiency , male and female infertility , impotence, adrenal cortex hyperfunction, , dysmenorrhea, Zollinger-Ellison syndrome , Dyskinesia of the biliferous tracts, Chronic hepatitis, Chronic cholecystopancreatitis, Cirrhosis, Osteoporosis, Periostitis,

10 osteosclerosis of different types, Hyperostosis , Chronic osteomyelitis Flaccidly consolidating fractures and/or Rickets.

201. The medical instrument according to claim 1, wherein the diseases include Perthes disease, anemia, agranulocytosis, leucosis,

15 Immunodeficiency trauma-related paralyzes, myodystrophy, myopathy, Bodybuilding Hydronephrosis, Chronic pyelonephritis, Chronic glomerulonephritis, Urinary bladder atony, Chronic cystitis, Psoriasis, Neurodermite, Eczema, Alopecia, Hyperkeratosis, Skin atrophy, Angiotrophoneurosis, Drug addiction, Alcoholism, Obliterating atherosclerosis

20 and endarteritis, Ischemic heart disease and angina pectoris, Cardiac arrhythmia, Raynaud's disease, Buerger's disease, Chronic thrombophlebitis - supranuclear palsy (paralysis) and/or Postthrombophlebitic syndrome.

202. A medical instrument implanted in a patient's body, comprising sensor

25 means for measuring variables inside the body, processor means for processing the signals and monitoring the patient's health, and transmitter means for transmitting results of the monitoring to a receiver external to the patient's body.

30 203. The medical instrument according to claim 202, further including recording means for storing results of the patient monitoring, and wherein the processor compares the monitoring results with stored previous results and issues a warning or alarm if a undesirable change is detected.

204. The medical instrument according to claim 202, further including receiver means for receiving an external request for information and means in the processor for checking the validity of the request, and means for transmitting the monitoring results to an external receiver upon receiving a legitimate request.

205. The medical instrument according to claim 202, wherein the external receiver further including means for connecting to electronic equipment and/or Internet, for the processing and/or transfer of the monitoring results.

206. The medical instrument according to claim 205, wherein the processor means is programmed to perform a continuous monitoring of the patient and for issuing an alarm in real time if an undesirable change in the sensor's reading is detected.

207. The medical instrument according to claim 205, wherein the processor means is programmed to issue a report of the internal health state of the patient upon receiving a predefined request.

208. The medical instrument according to claim 205, wherein the processor means is programmed to perform a test at predefined time periods such as once per year or once per month, and to transmit the results of the test to an external receiver.

209. The medical treatment method according to claim 17, wherein stimulating and/or inhibiting the functional activity of the nervous structure of the sympathetic nervous system, the parasympathetic system or the sympathetic nervous system and parasympathetic system and hypoglossal (sinocarotid collector of the Vegetative Nervous System - SCVNS), the central nervous system, and/or neurons of the organ and/or cutaneous nerves and/or depressor nerves.

210. The medical treatment method according to claim 17, wherein a nervous band or group is formed, comprising all, or the majority of, the nerve branches innervating the carotid glome (glomus caroticum).

5 211. The medical treatment method according to claim 17, using Contacts, or indirect body measurements and using adaptive techniques for measuring body variables.

10 212. The medical treatment method according to claim 211, wherein during an initial stage after the implantation of the system, the sensors and biosensors are used to measure the body variables, together with the contacts, and wherein the variables from contacts are then compared in the Chip with the readouts from the sensors and biosensors.

15 213. The medical treatment method according to claim 212, wherein the contacts measurements include measuring body variables such as electrical resistance, response to ultrasonic waves and/or response to radio frequency electromagnetic waves.

20 214. The medical treatment method according to claim 212, further including a stage of learning body characteristics as conveyed in the contacts data.

25 215. The medical treatment method according to claim 213, wherein the learning stage comprises the compilation of a cross-correlation function between the sensor and biosensor data on one hand, and the Contacts data on the other hand.

30 216. The medical treatment method according to claim 214, further including a stage of using the contacts data to replace the sensors and/or biosensors data.

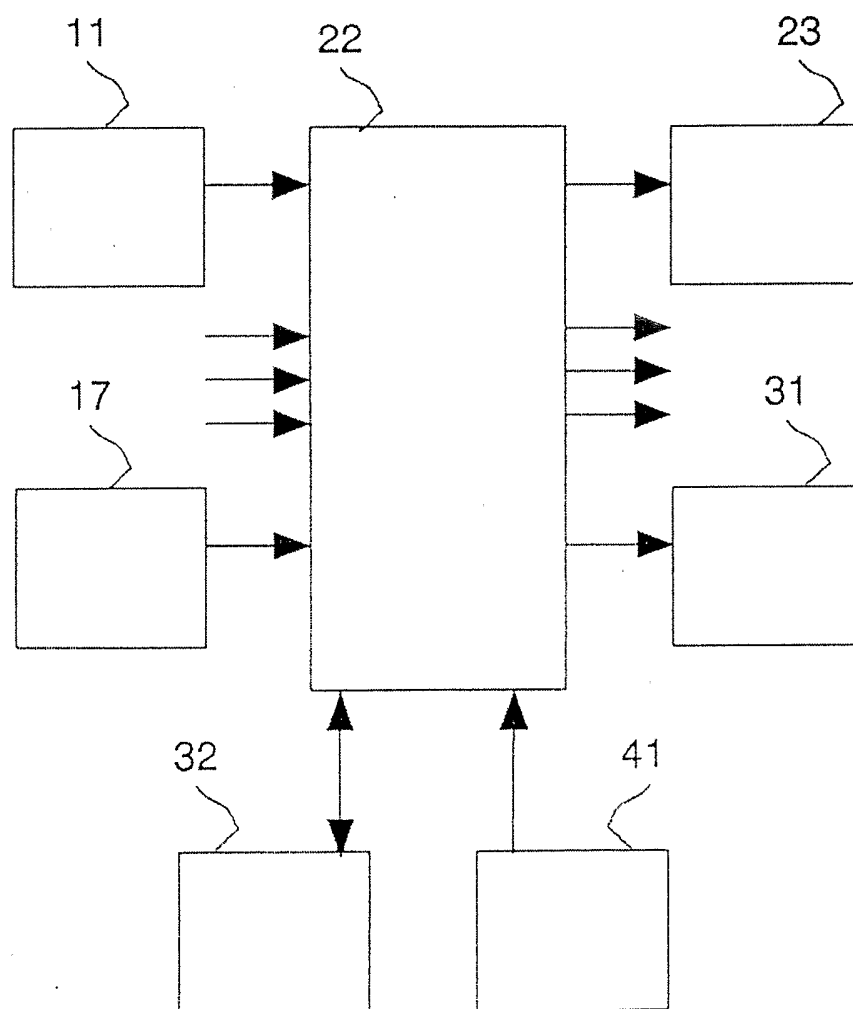


Fig. 1

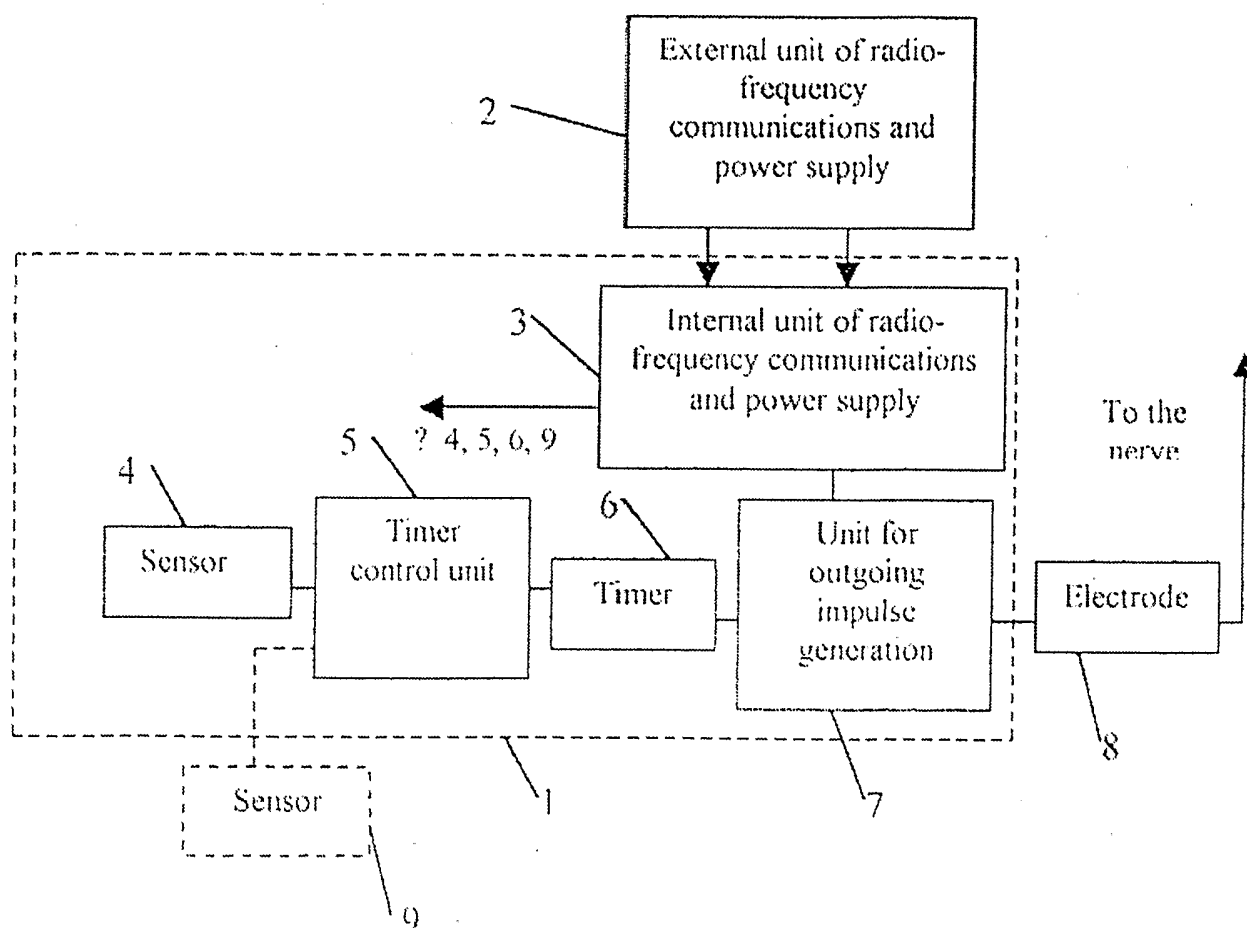


Fig. 2

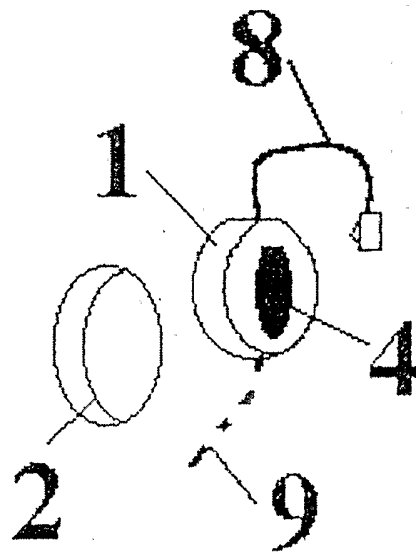


Fig. 3

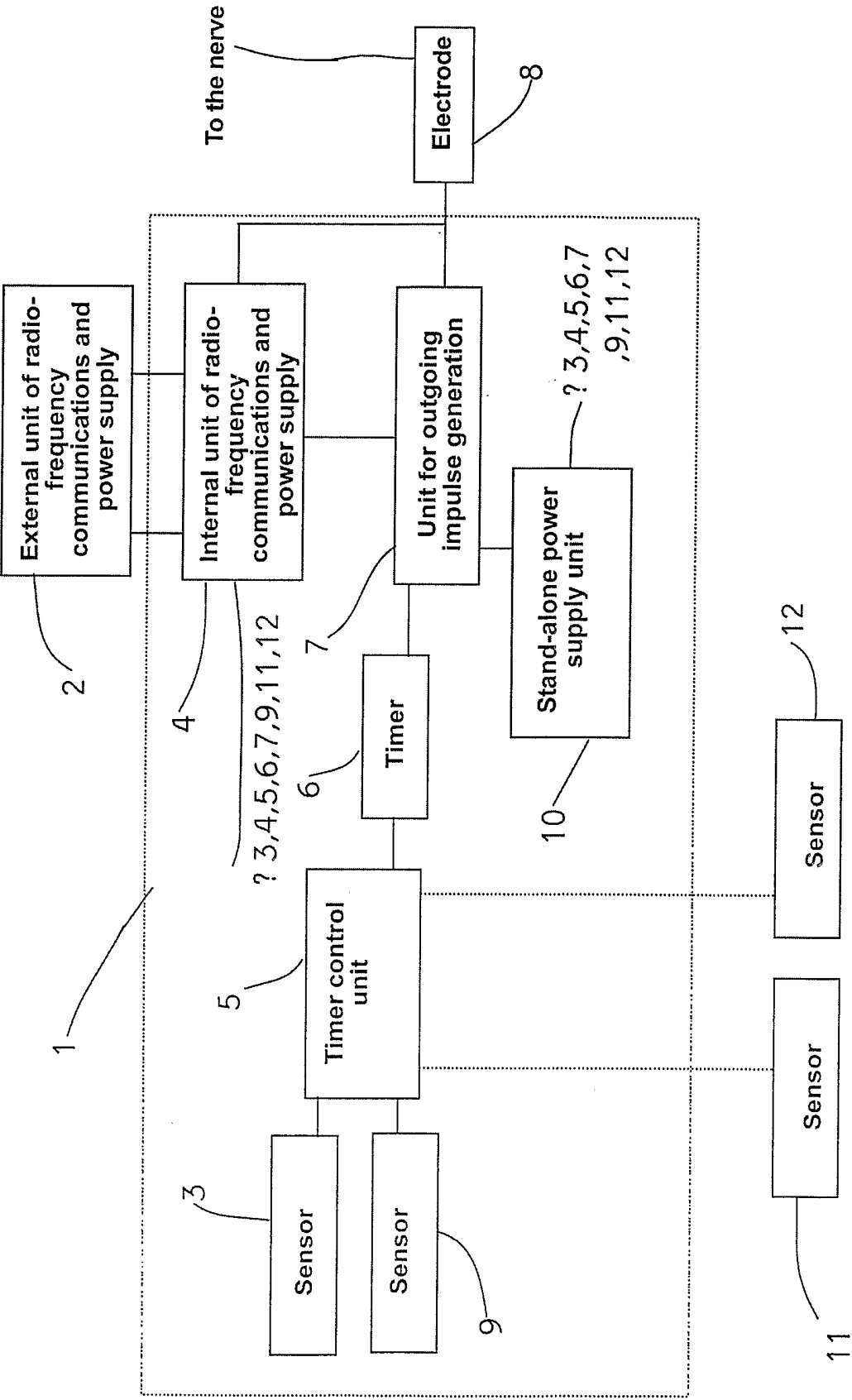


Fig. 4

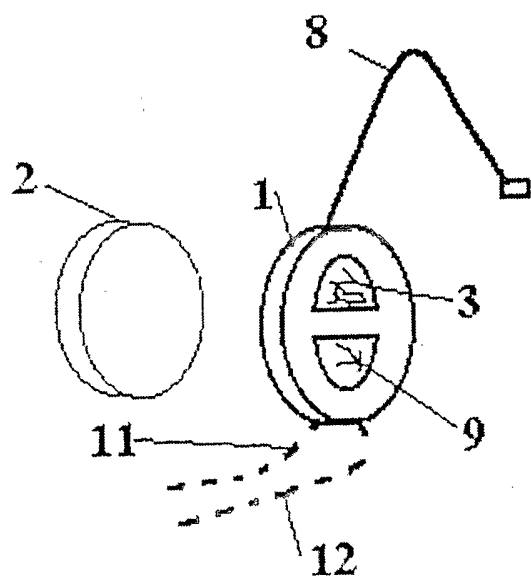


Fig. 5

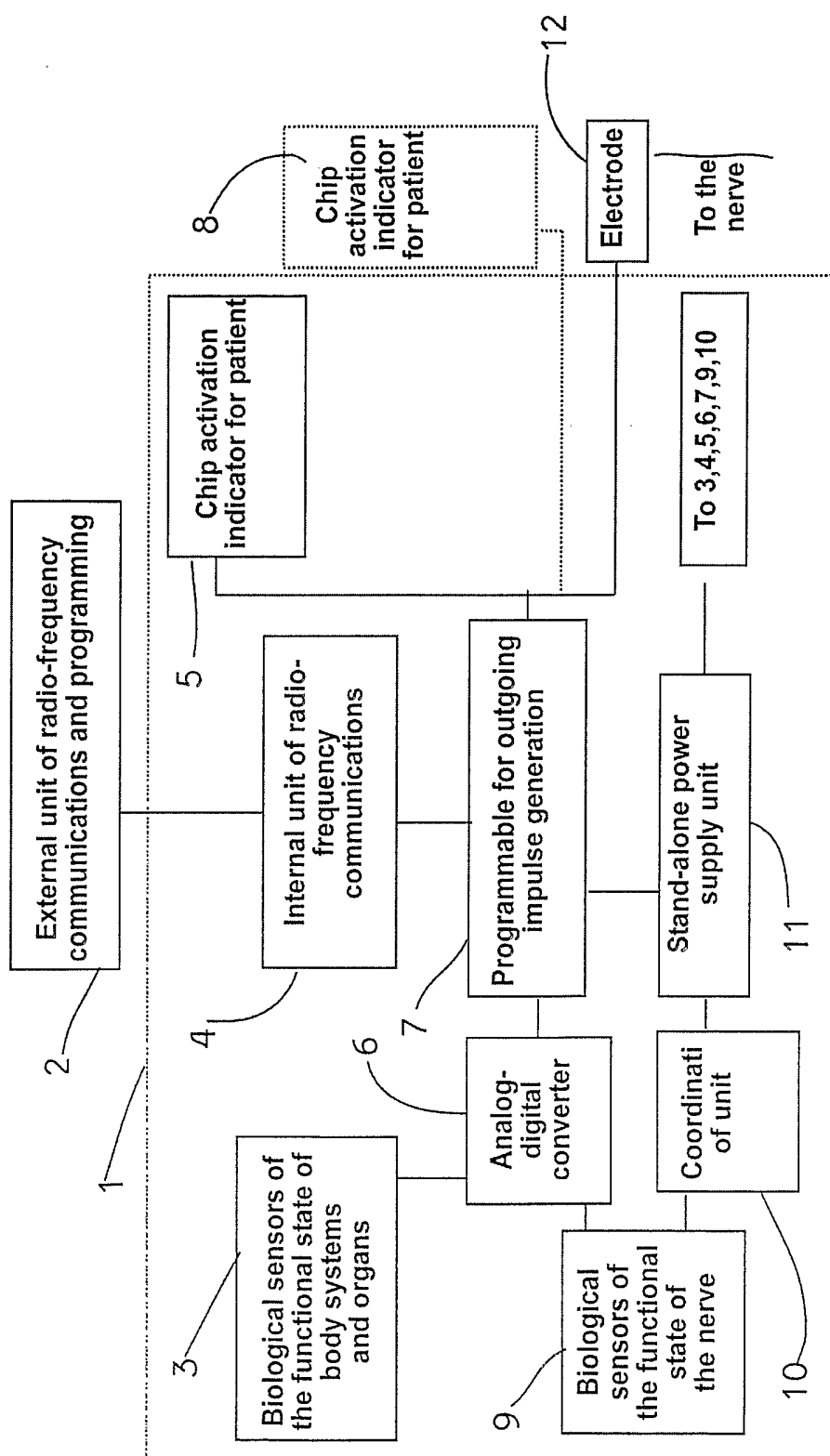


Fig. 6

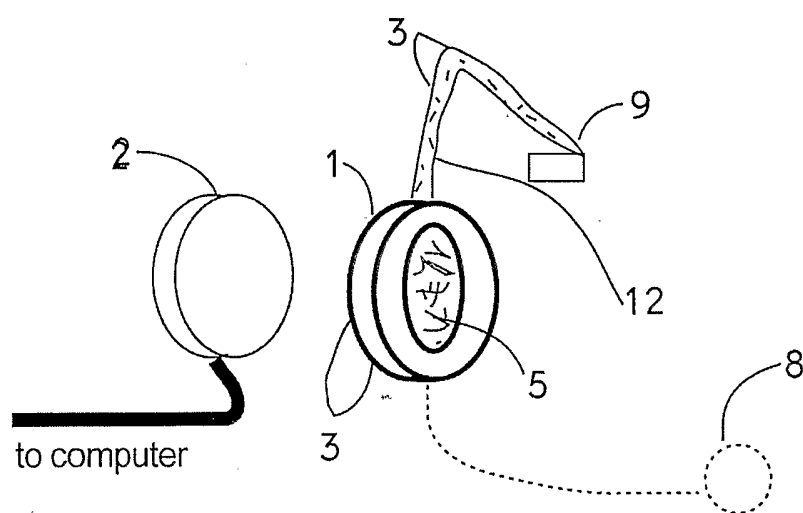


Fig. 7

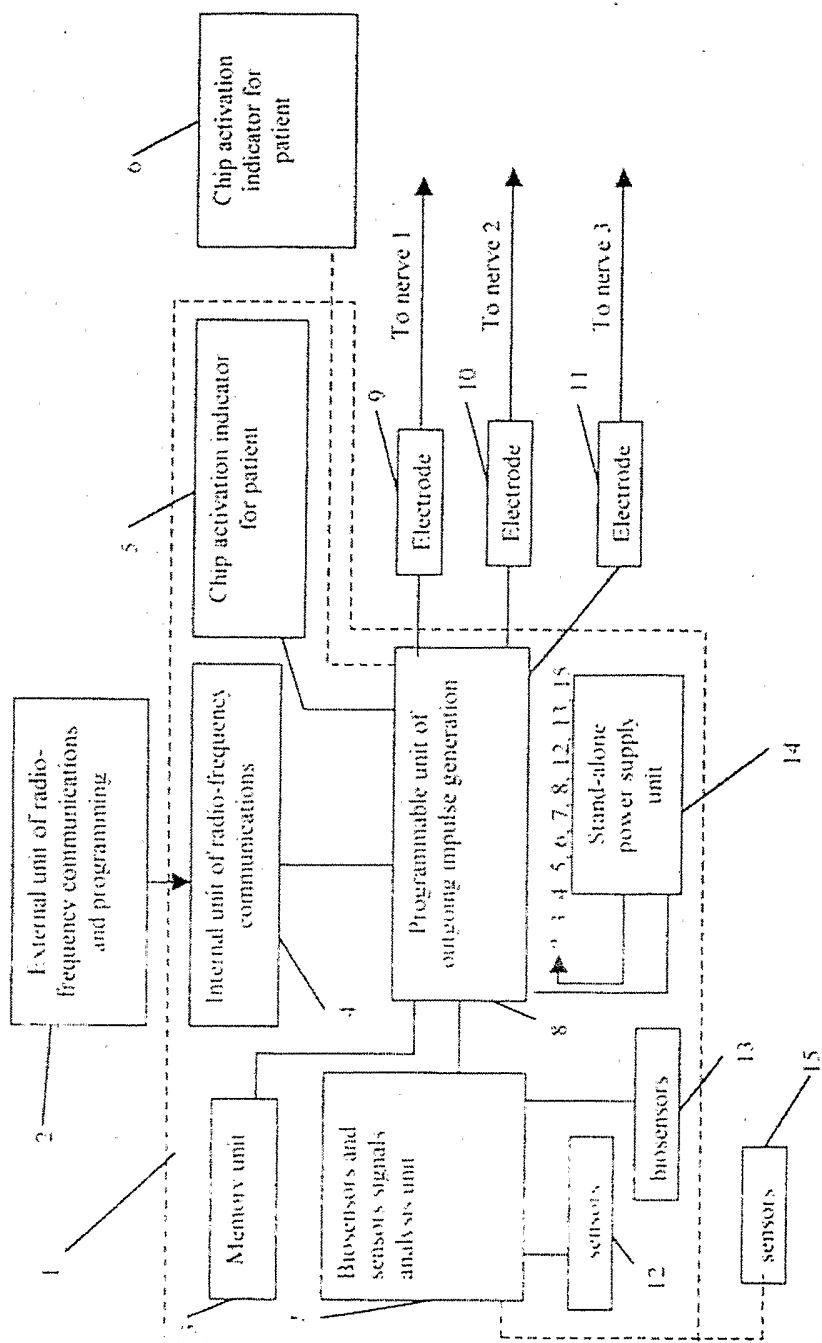


Fig. 8

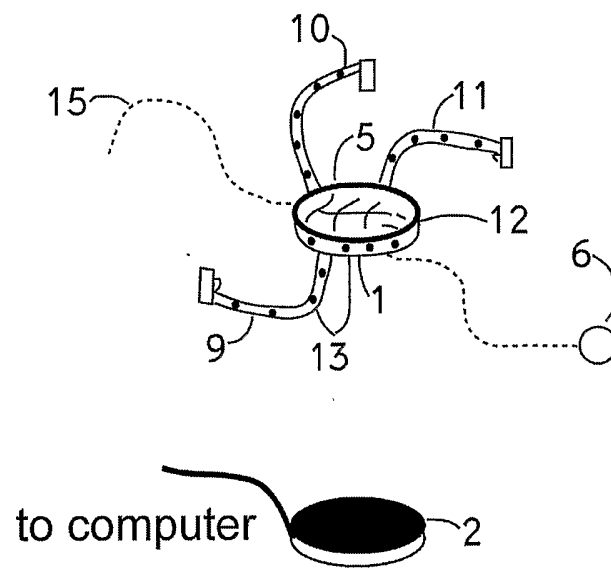


Fig. 9

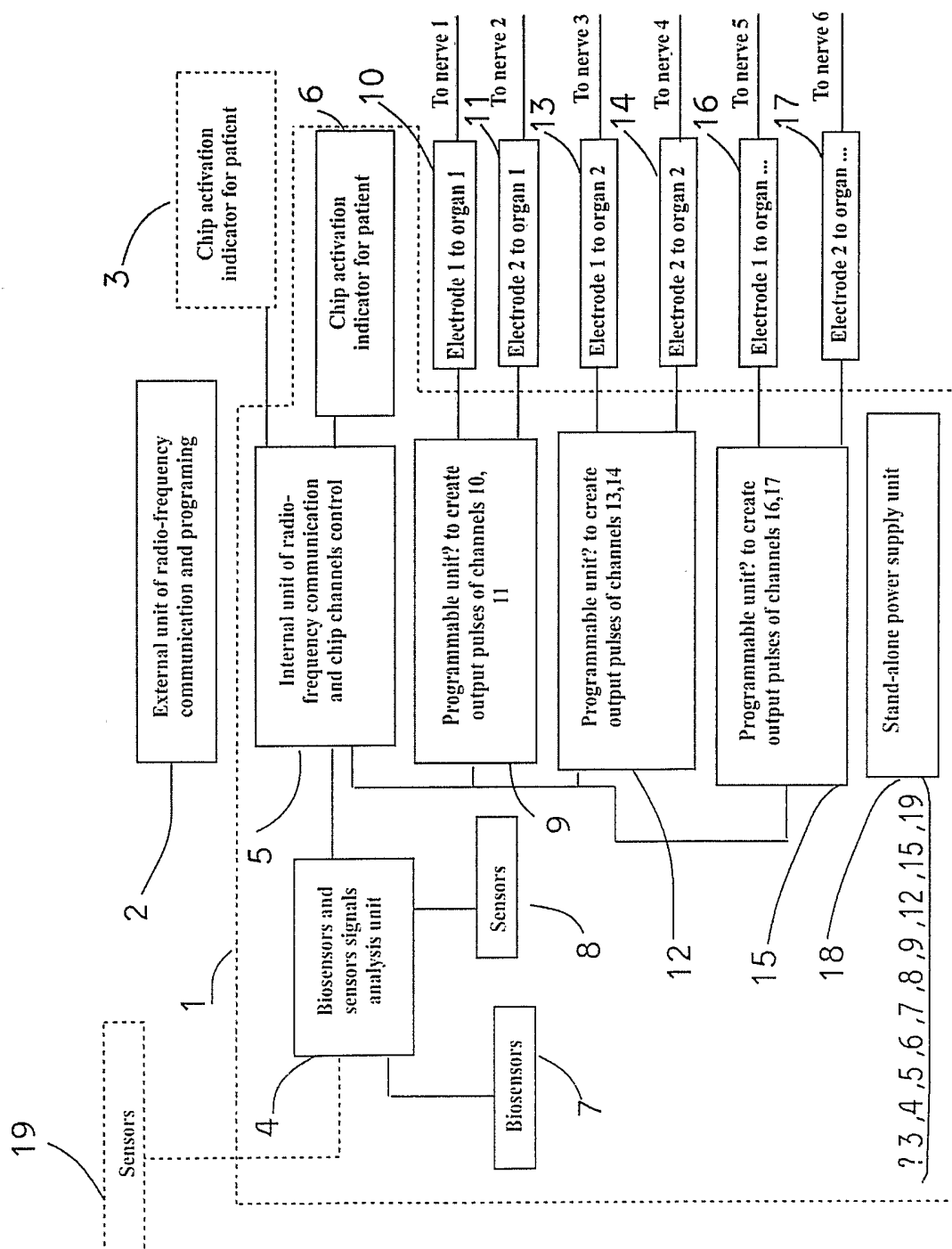


Fig. 10

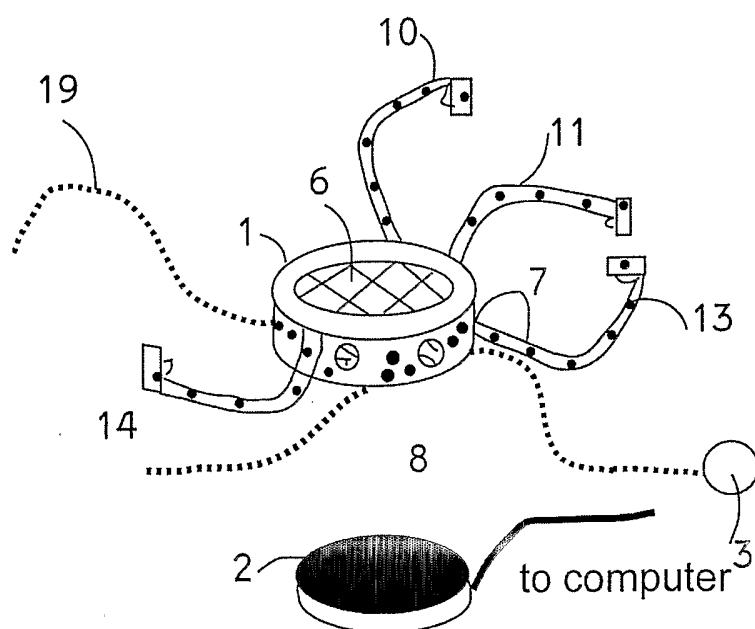


Fig. 11

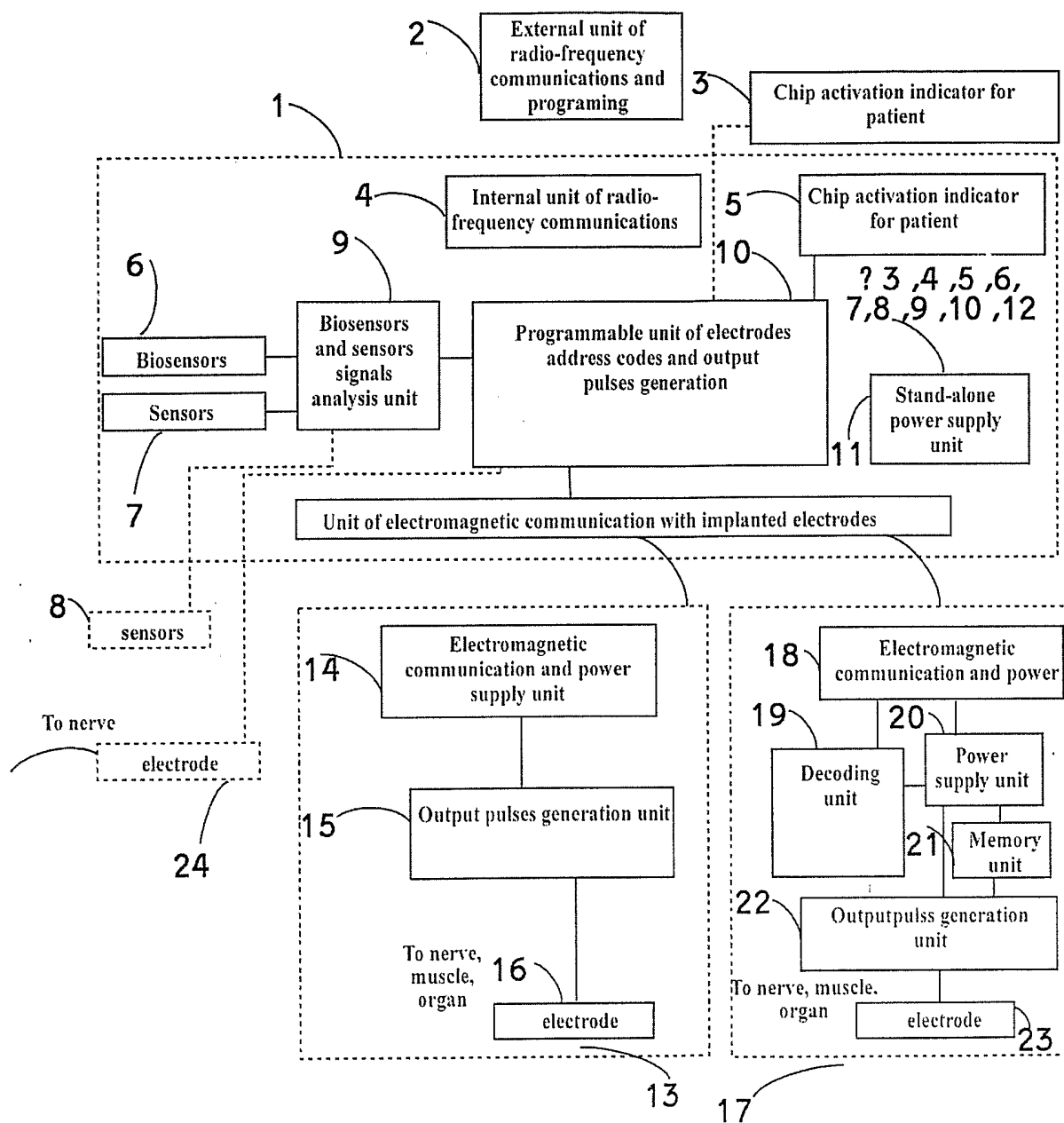


Fig. 12

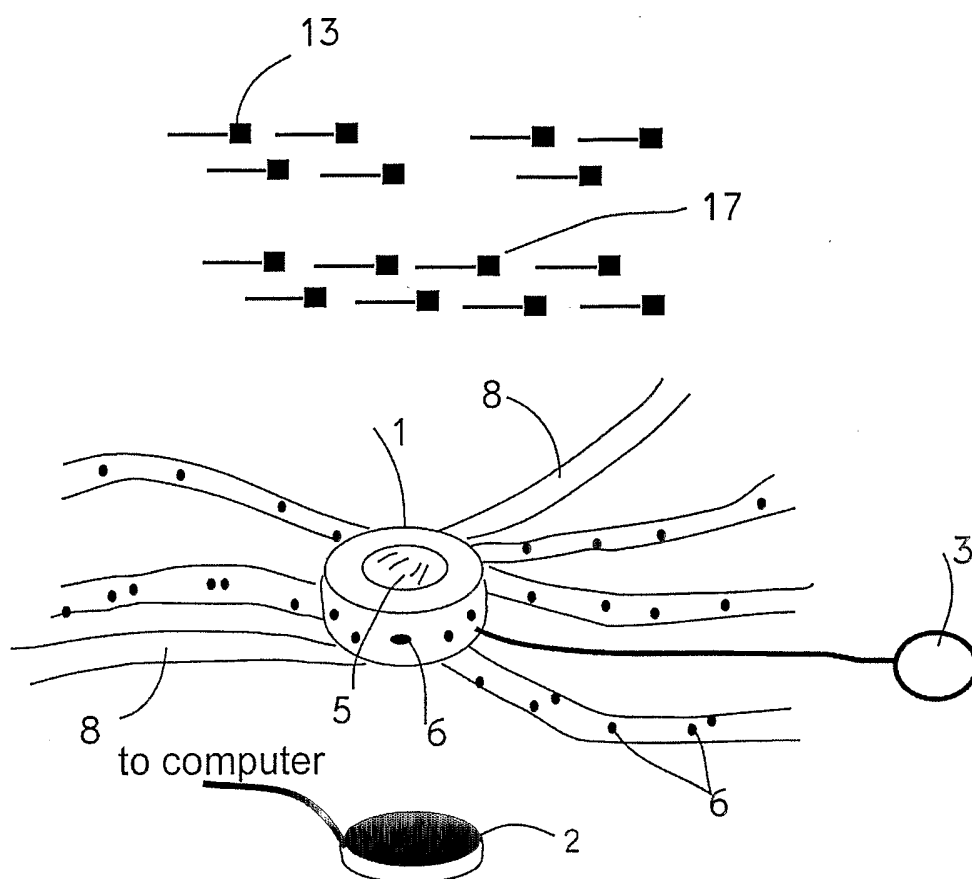


Fig. 13

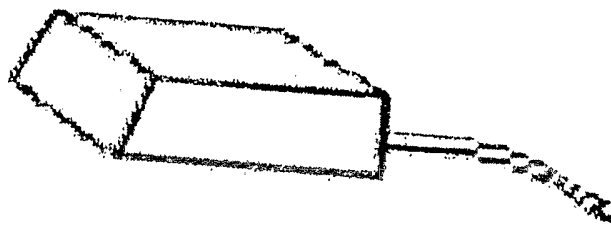


Fig. 14



Fig. 15



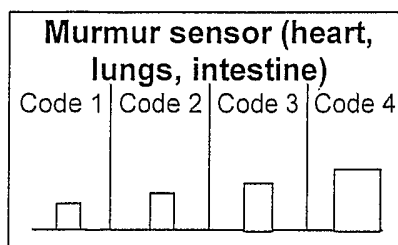
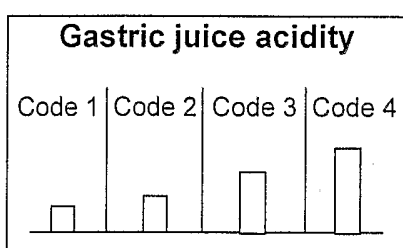
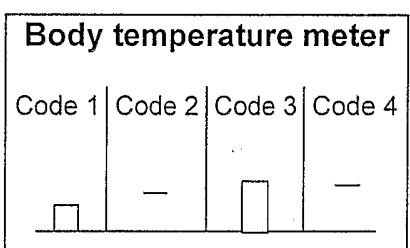
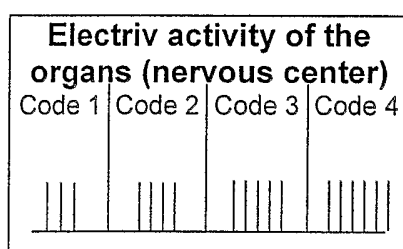
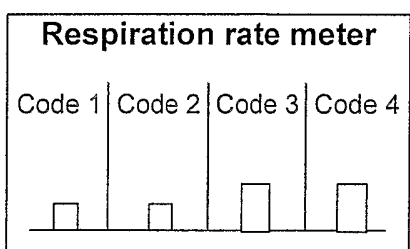
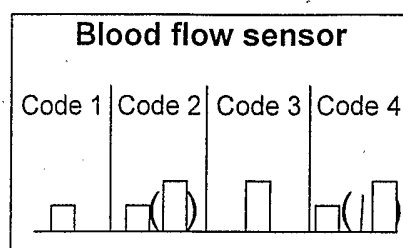
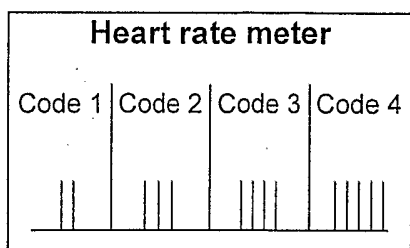
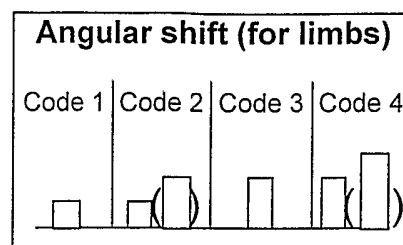
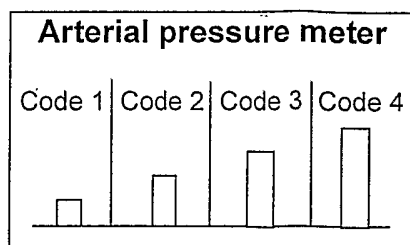
Fig. 16



Fig. 17

Fig 18

Code types from the sensors



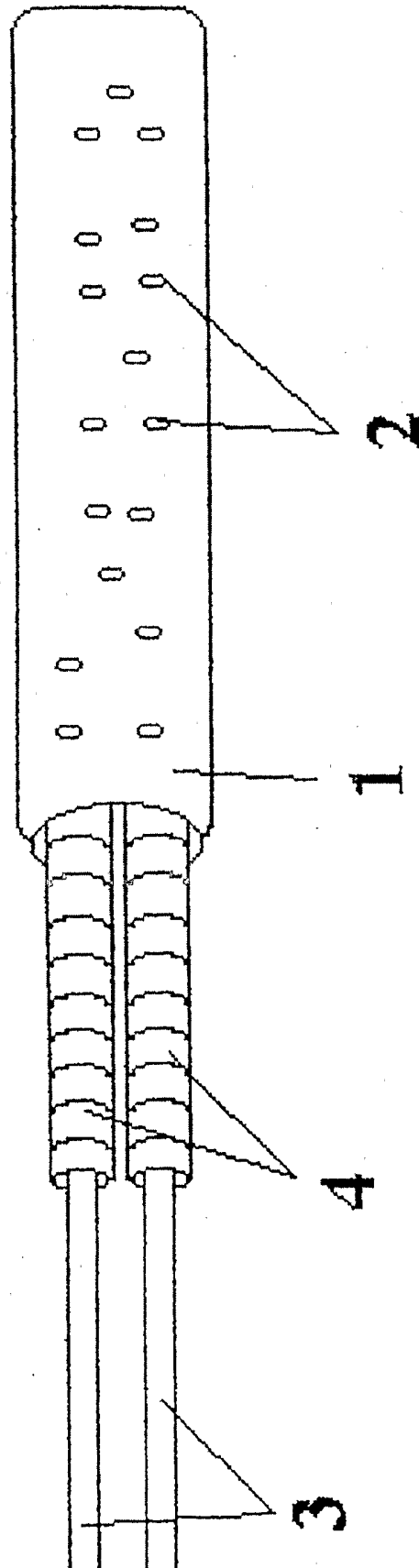


Fig. 19

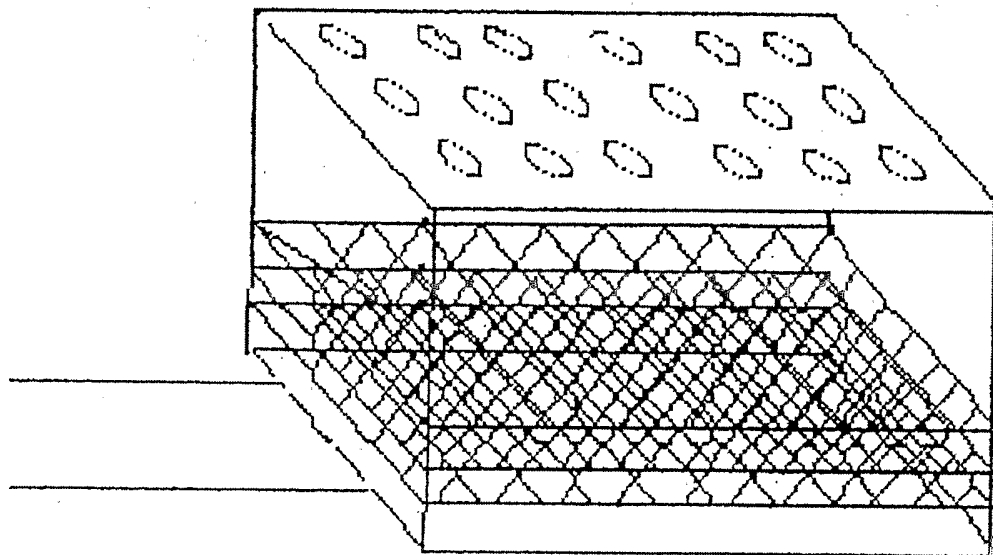


Fig. 20

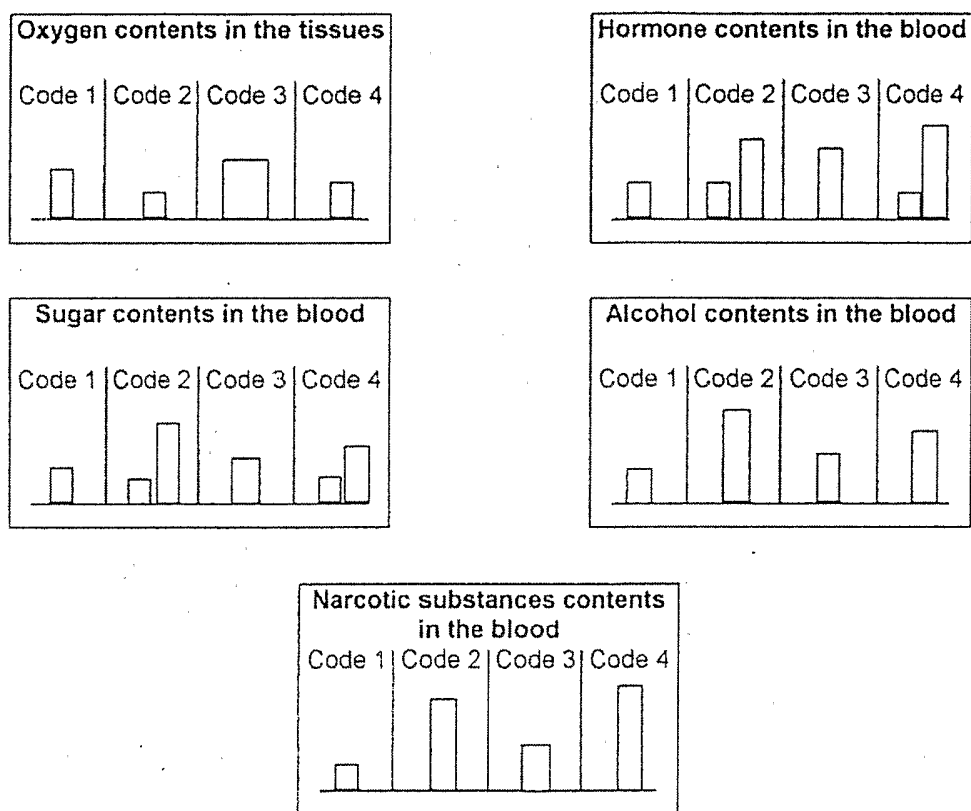
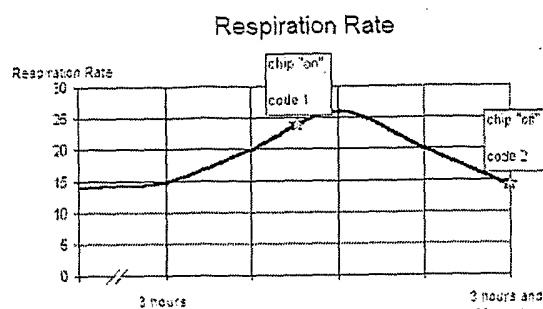


Fig. 21

Figure 21B - 24 hour Monitoring (a fragment)

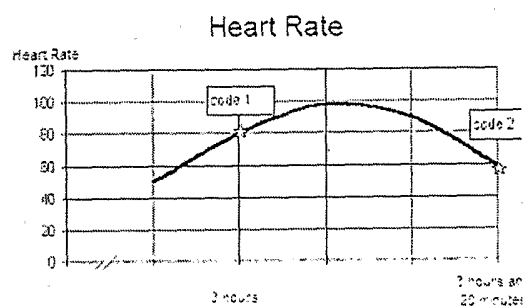
Patient's Identification No.: 0211 Date: 28 Apr., 2002
 Medical Technician: K.V.P.



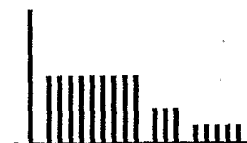
Code 1
 (3 hours
 08 minutes)
 (from Sensor No.
 10)



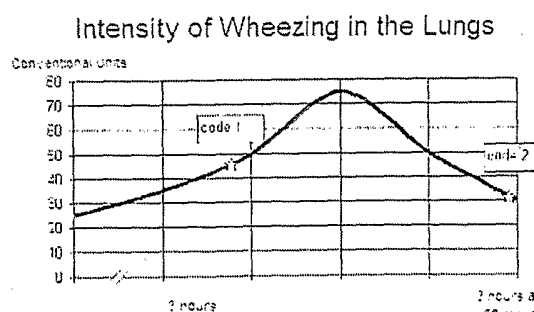
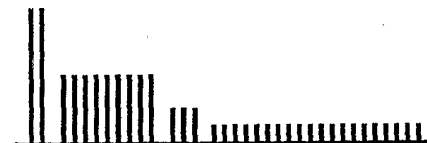
Code 2
 (3 hours
 20 minutes)
 (from Sensor No.
 10)



Code 1
 (3 hours
 05 minutes)
 (from Sensor No.
 9)



Code 2
 (3 hours
 20 minutes)
 (from Sensor No.
 9)



Code 1
 (3 hours
 03 minutes)
 (from Sensor No.
 16)

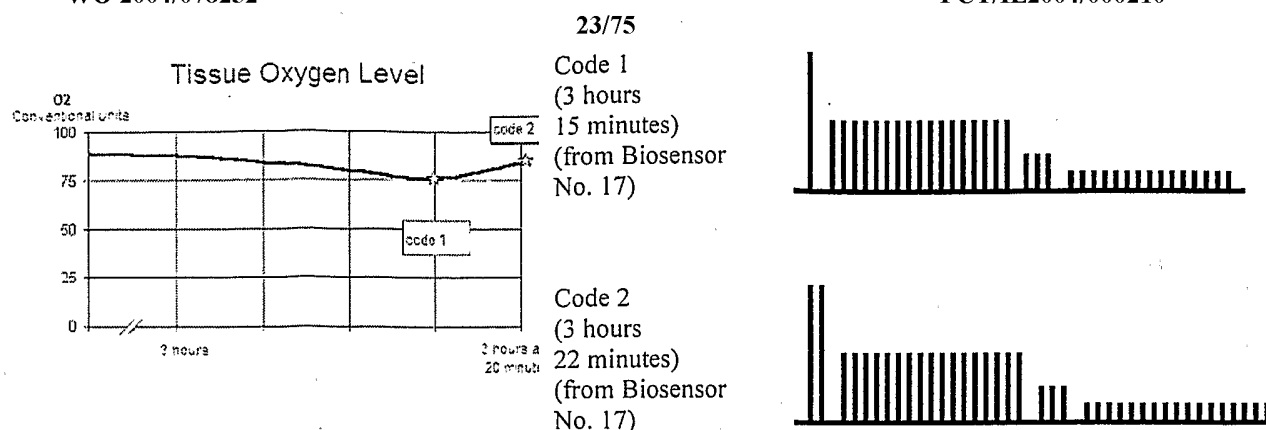


Code 2
 (3 hours
 19 minutes)
 (from Sensor No.
 16)



Code 1
 (3 hours
 15 minutes)
 (from Biosensor
 No. 17)





Note:

Asphyxia attack duration – 20 minutes (3 hours – 3 hours 20 minutes)

Chip on (stimulation mode) – at hours 08 minutes

Chip off – at 3 hours 20 minutes

Explanations and Remarks to Figure 1

1. In the figure's left part there are fragments of the diagrams reflecting changes in the homeostatic parameters of the patient (these have been obtained using an external non-implanted display equipped with sensors and biosensors). In the right part of the figure there are code pulses generated by the chip as a reaction to an asphyxia attack occurring in the patient. Time of code sending is shown in the above-mentioned diagrams with small crosses.

2. Each sensor / biosensor detects changes in the relevant homeostatic parameters in a real-time mode, while the chip generates different code signals identifying the most significant of the parametric changes that have occurred.

3. Each code signal is generated in accordance with the data provided by a specific sensor / biosensor, and it contains the four following data sets of code pulses:

A) 1st set – code signal No. from a specific sensor / biosensor. For example, there are three pulses in the first set. This means that Code No. 3 has been sent by this given sensor / biosensor.

B) 2nd set of pulses – a conventional No. of the sensor / biosensor for identification of the latter. Amount of pulses in this set corresponds to the sensor's / biosensor's number. For example, there are 17 pulses in the set. This shows that the code belongs to the tissue oxygen biosensor numbered 17 in the general list of sensors / biosensors.

C) 3rd set of pulses – time of the day when the code has been generated. For example, the set containing three pulses means that the code was sent at 3 a.m.

D) 4th set of pulses – minutes of the relevant hour when the code has been generated. For example, the set contains 20 pulses. This has to be interpreted as follows: the code was sent at the 20th minute of the relevant hour.

4. The code signals in certain chips do not include the time parameter, due to the fact that external non-implanted displays are used, and they perform this function.

5. A purely code method is not the only tool used as a data carrier in the chips' code signals.

6. "attack on" and "attack off" in the diagrams are to be interpreted as an asphyxia attack onset and end respectively.

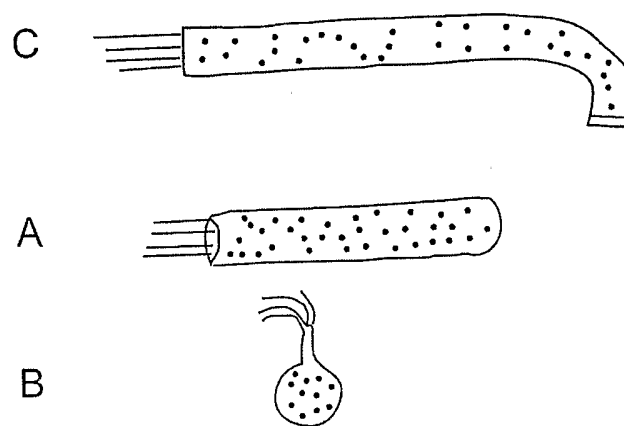


FIGURE 22

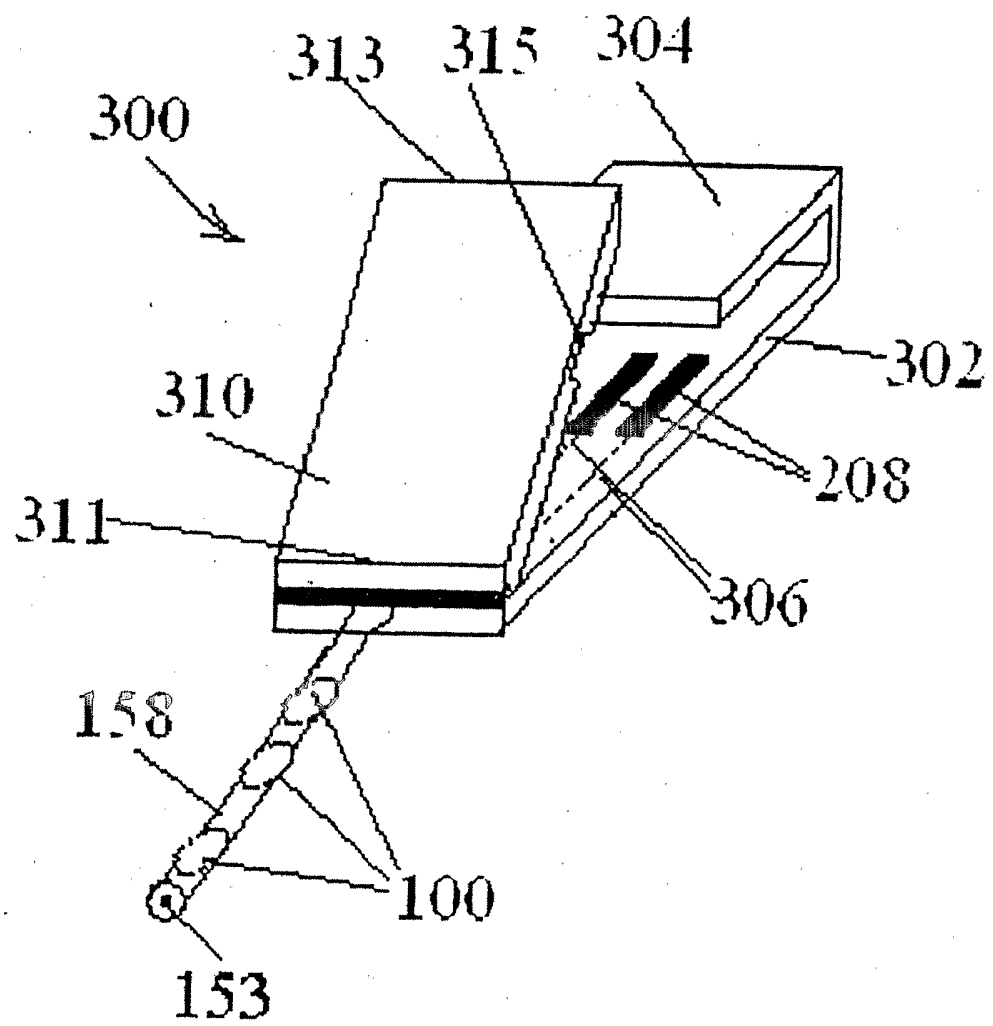


Fig. 23

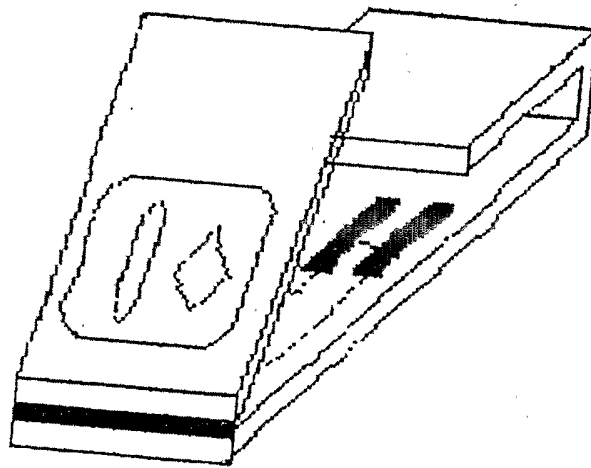


Fig. 24

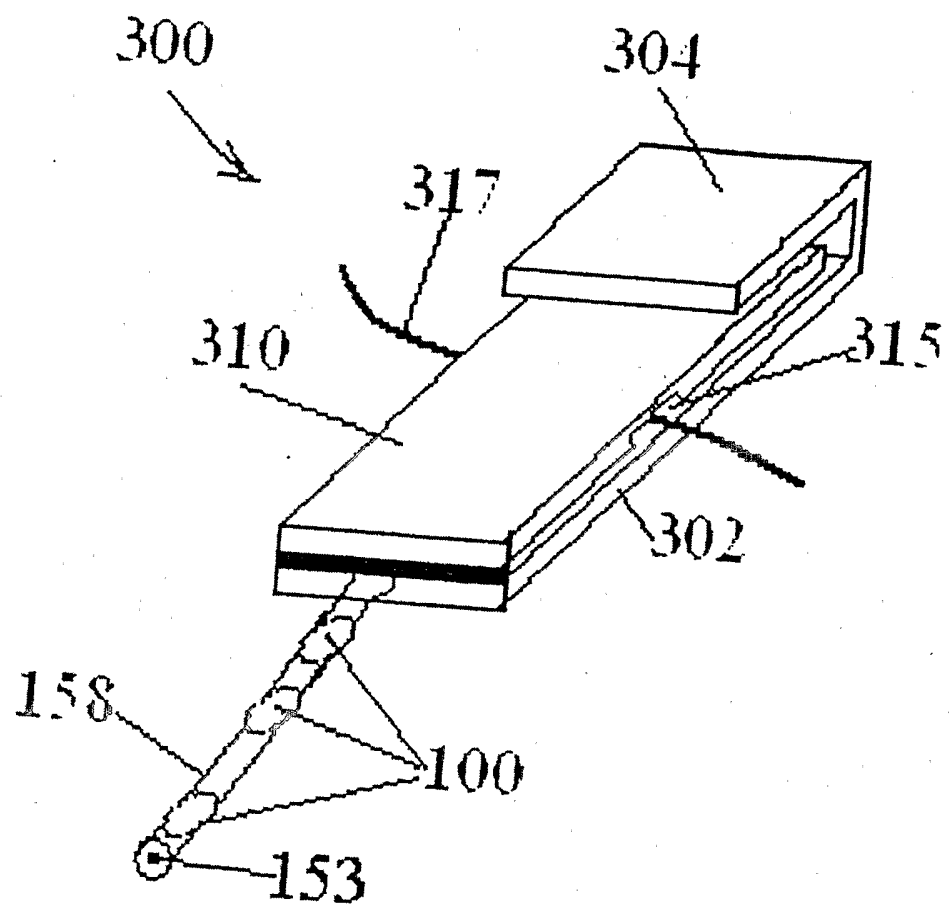


Fig. 25

power source charged from the human body kinetic energy

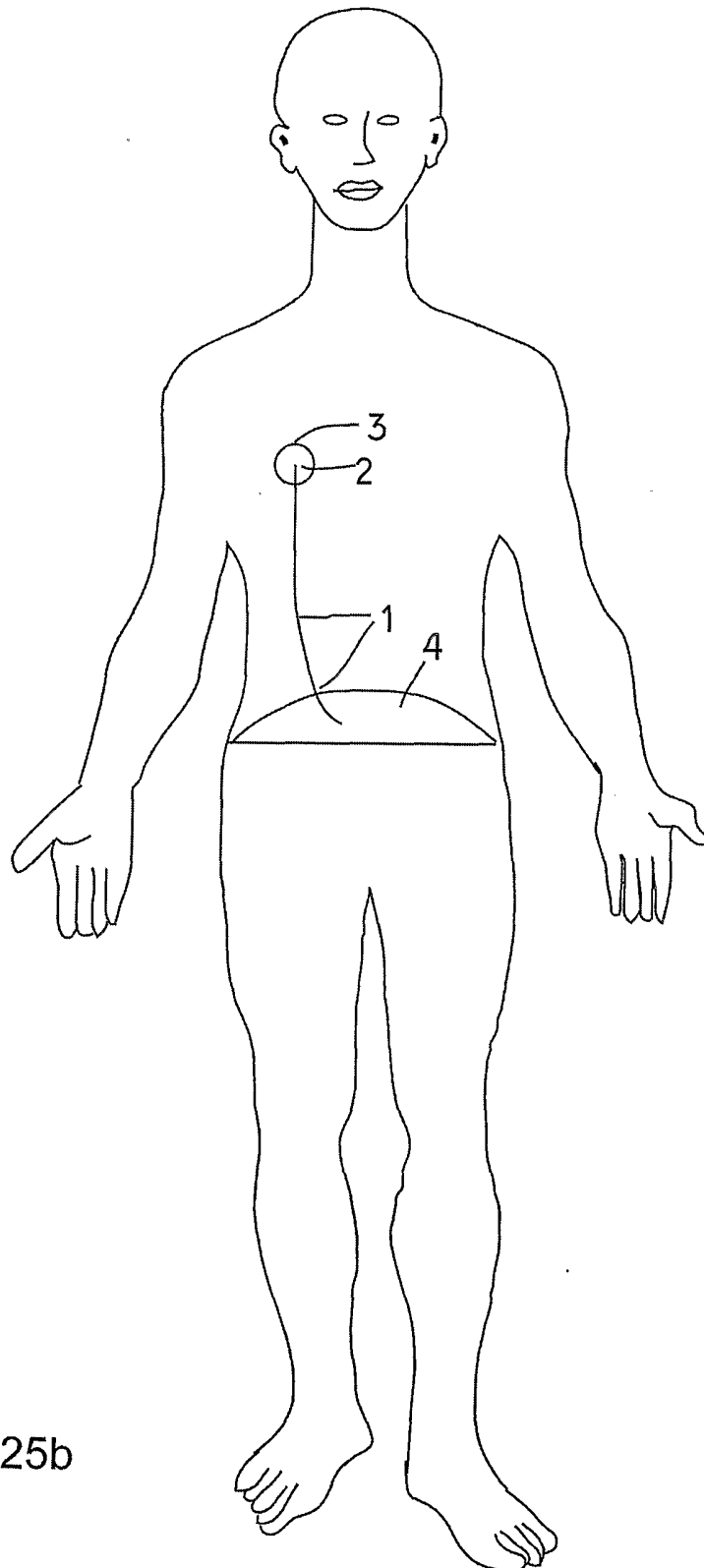


Fig. 25b

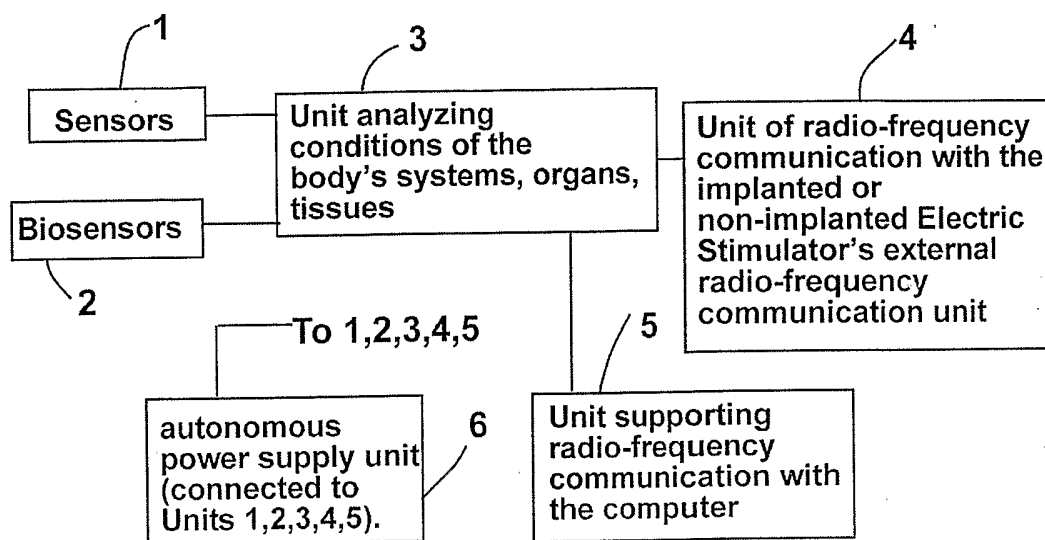


Fig. 25c

Basic algorithm of microchip channel/s program operation

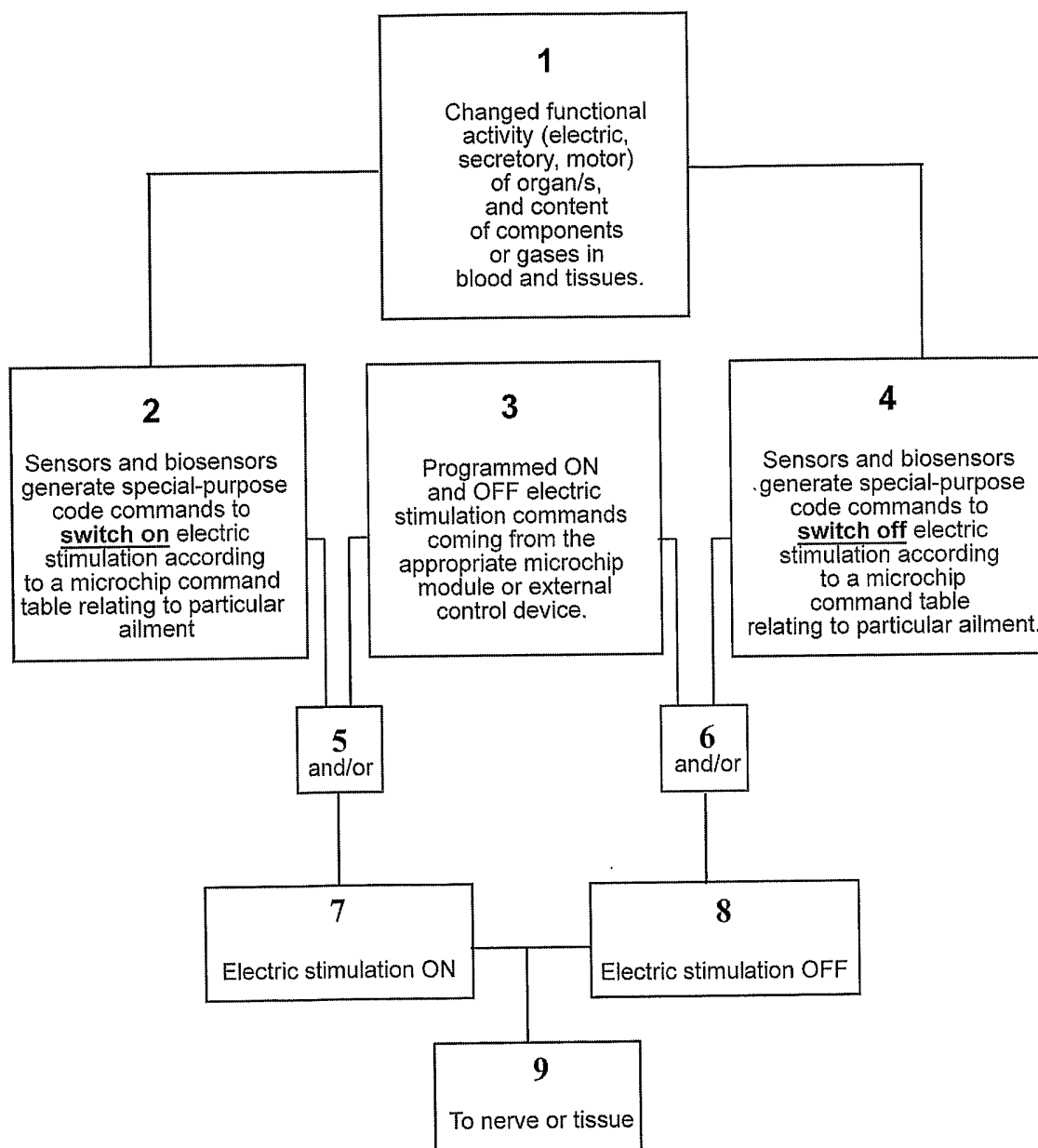
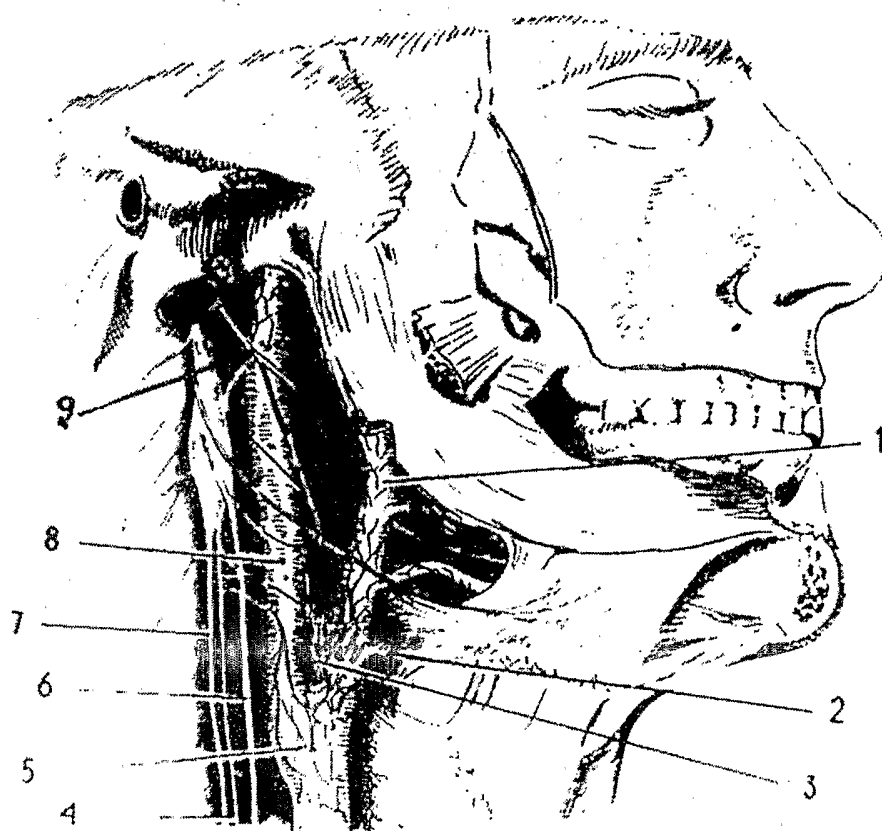


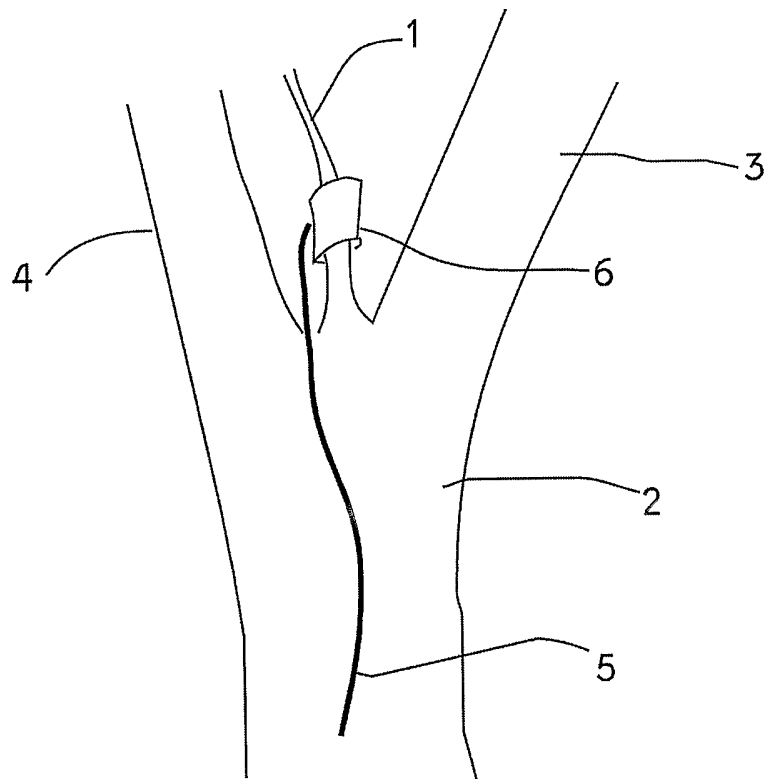
Fig 26



Index of symbols:

- 1 – External carotid artery
- 2 – Superior thyroid artery
- 3 – Carotid glome
- 4 – Superior cardiac nerve
- 5 – Carotid bulb
- 6 – Vagus nerve
- 7 – Marginal trunk of the sympathetic nerve
- 8 – Internal carotid artery
- 9 – Sublingual nerve

Fig 27



- 1- Sinocarotid collector of the Vegetative Nervous System (SCVNS)
- 2- Common carotid artery
- 3- External carotid artery
- 4- Internal carotid artery
- 5- Electrode from the chip to the SCVNS
- 6- Electrode contacts connected to the SCVNS

FIGURE 27B

AD

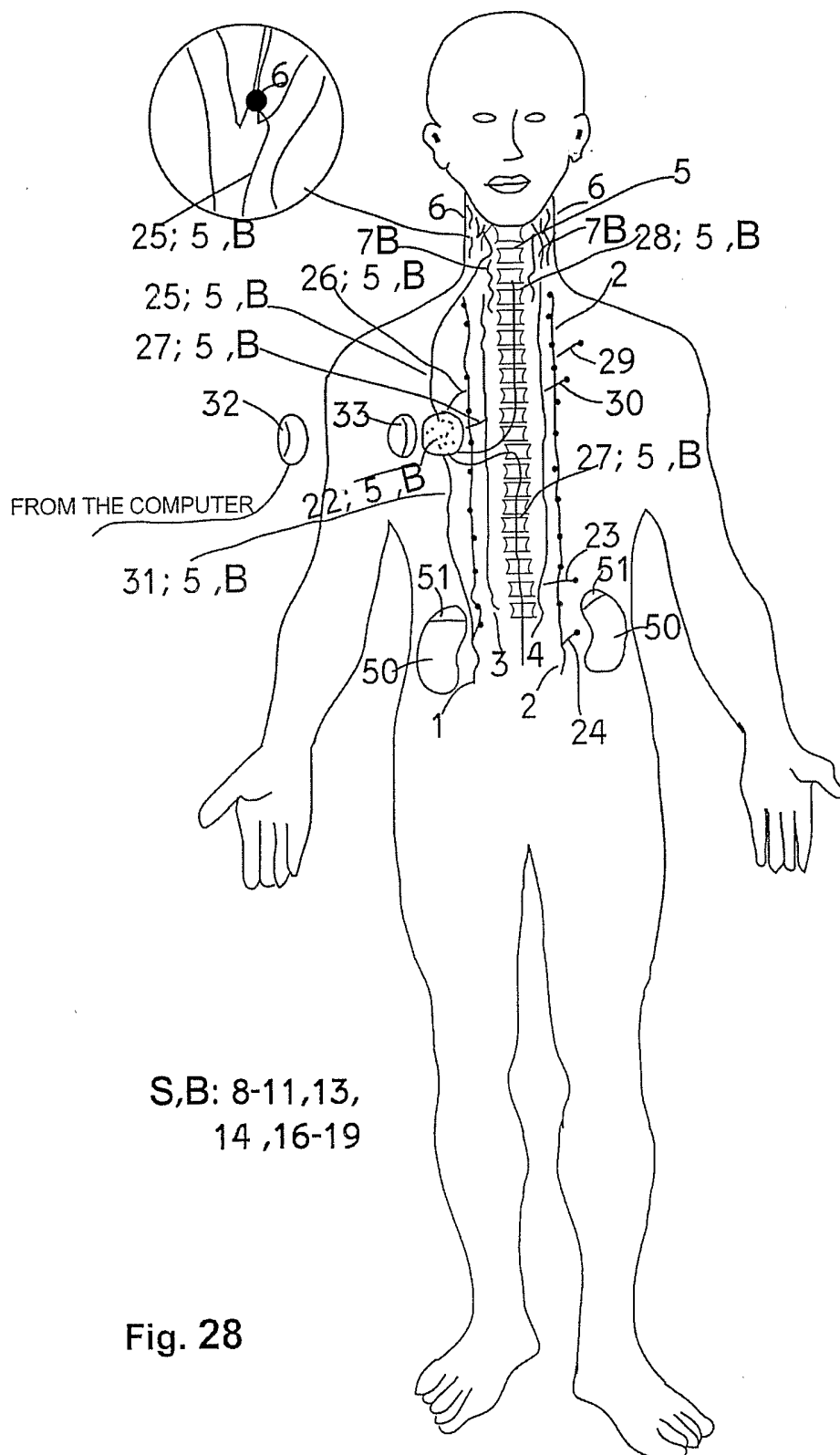


Fig. 28

Alcoholism & Drug addiction

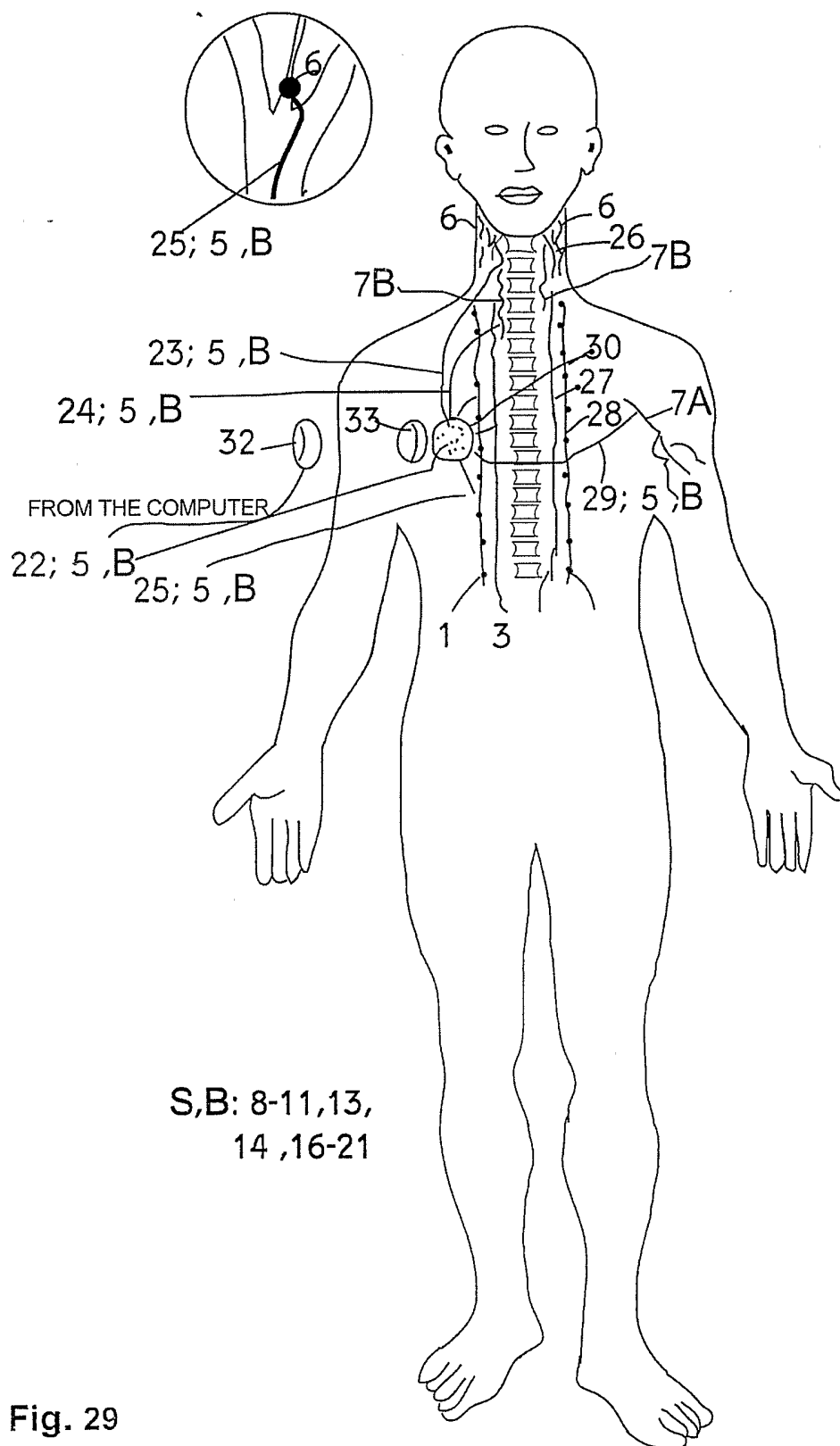


Fig. 29

DERMA

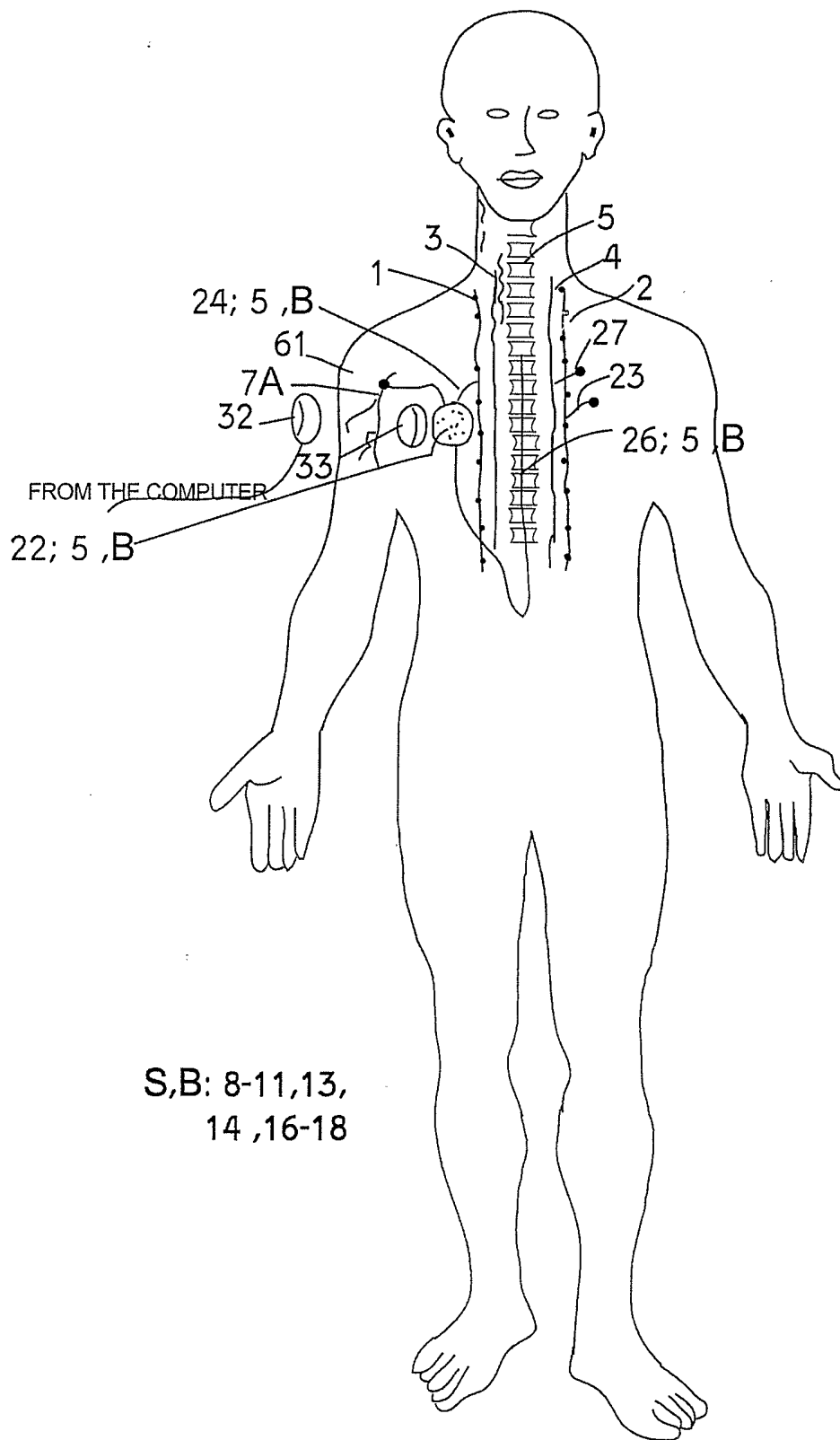


Fig. 30

Endocrine

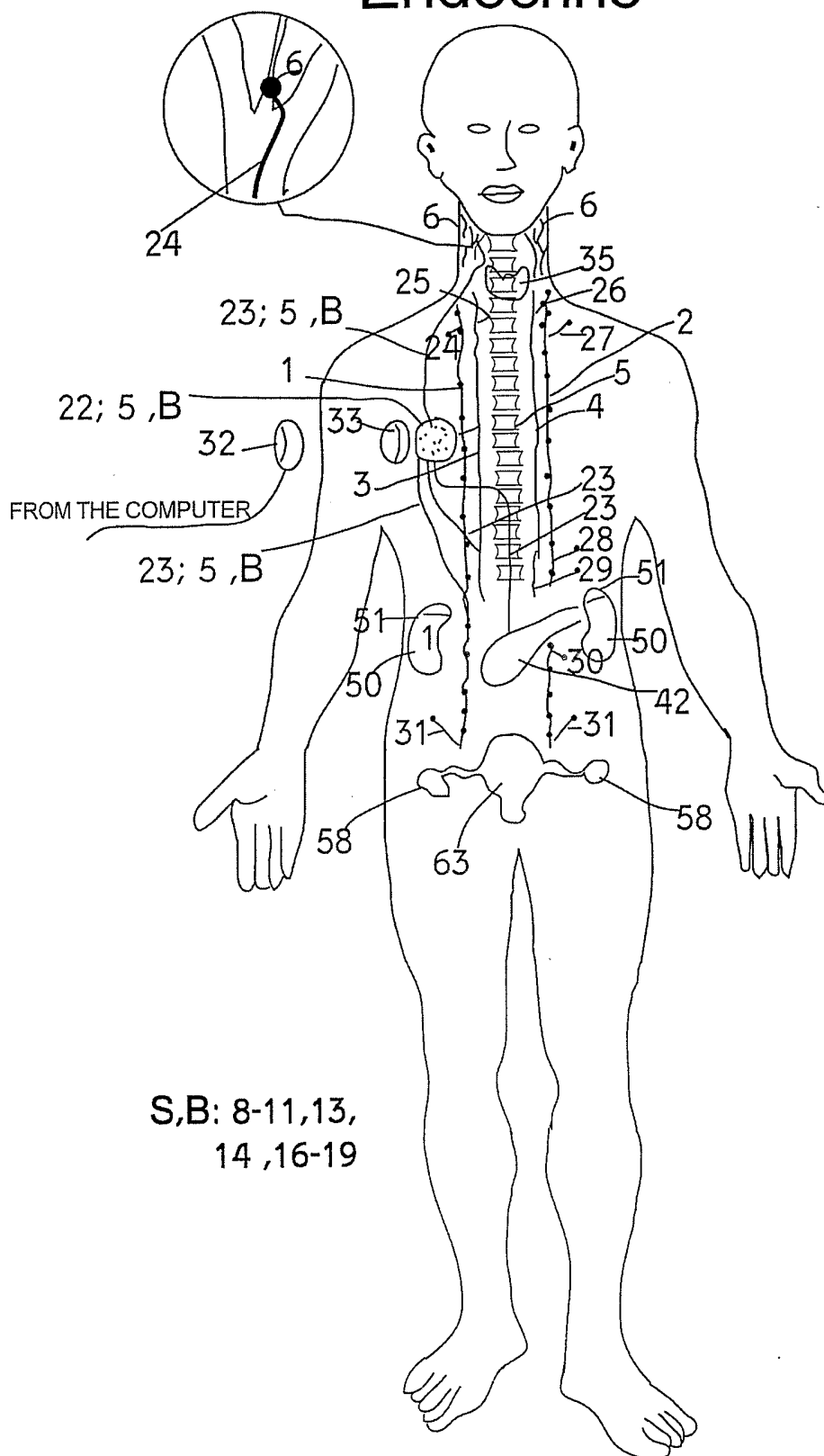


Fig. 31

Gastrointestinal 1

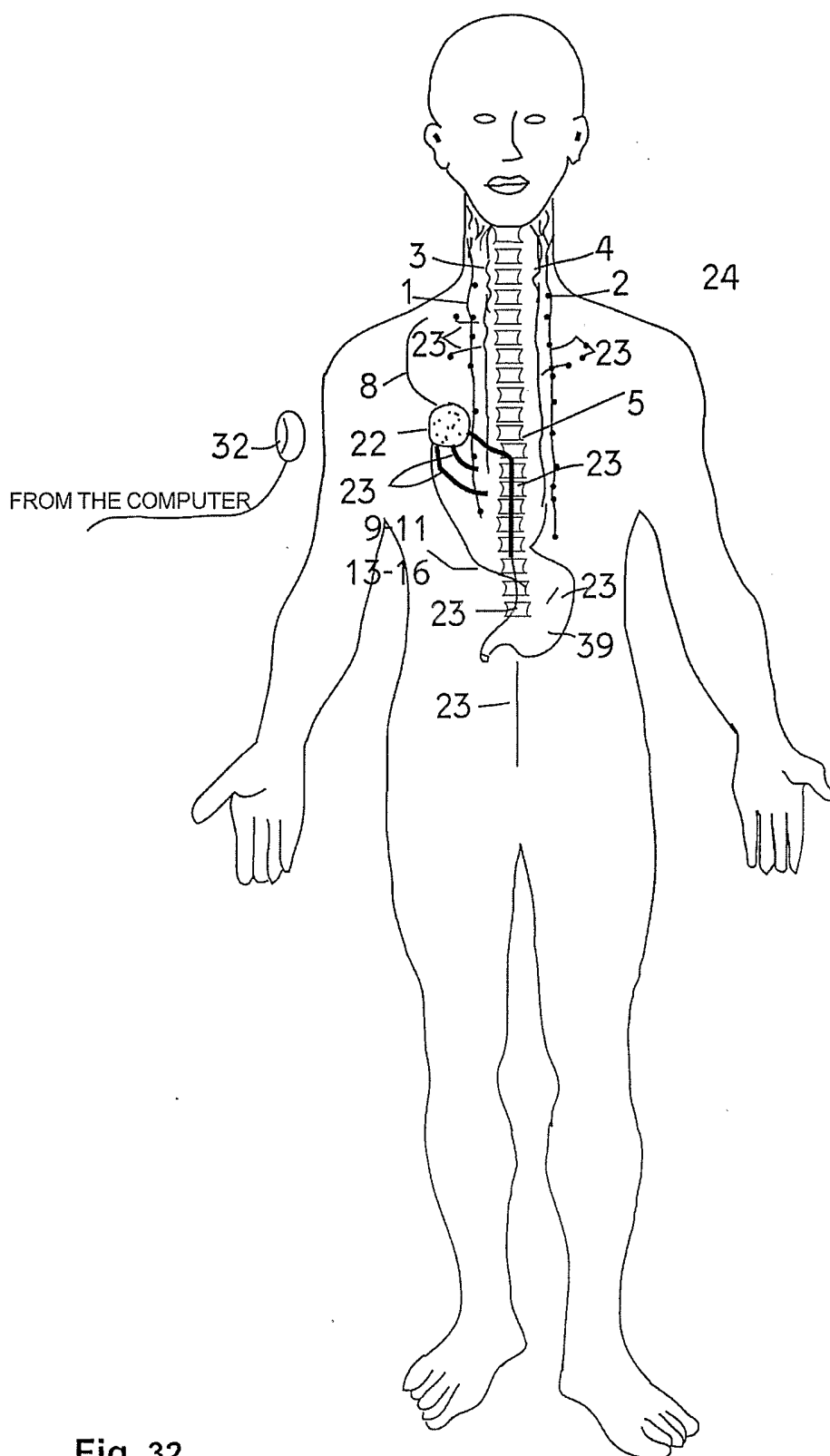


Fig. 32

Gastrointestinal 2

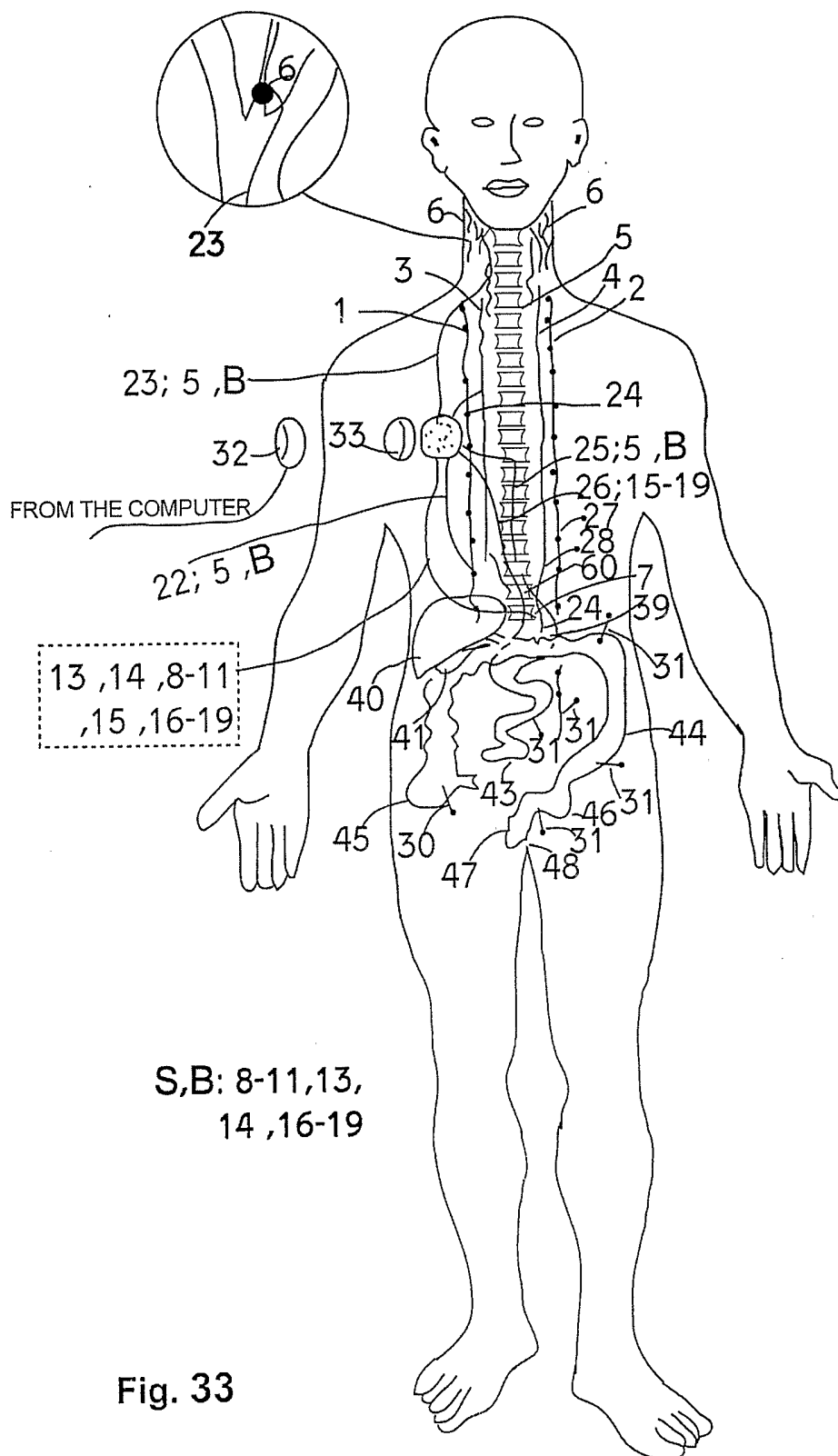
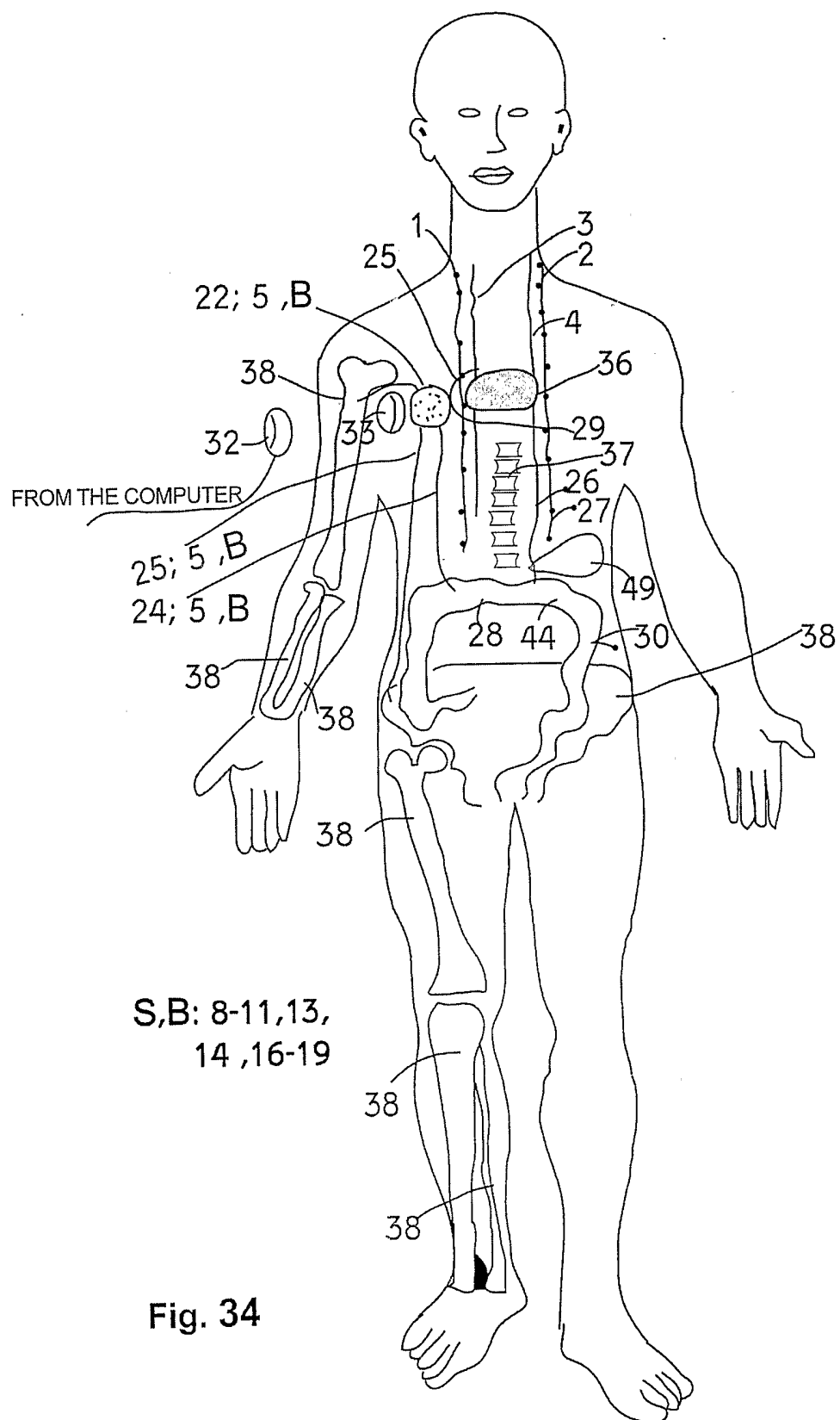
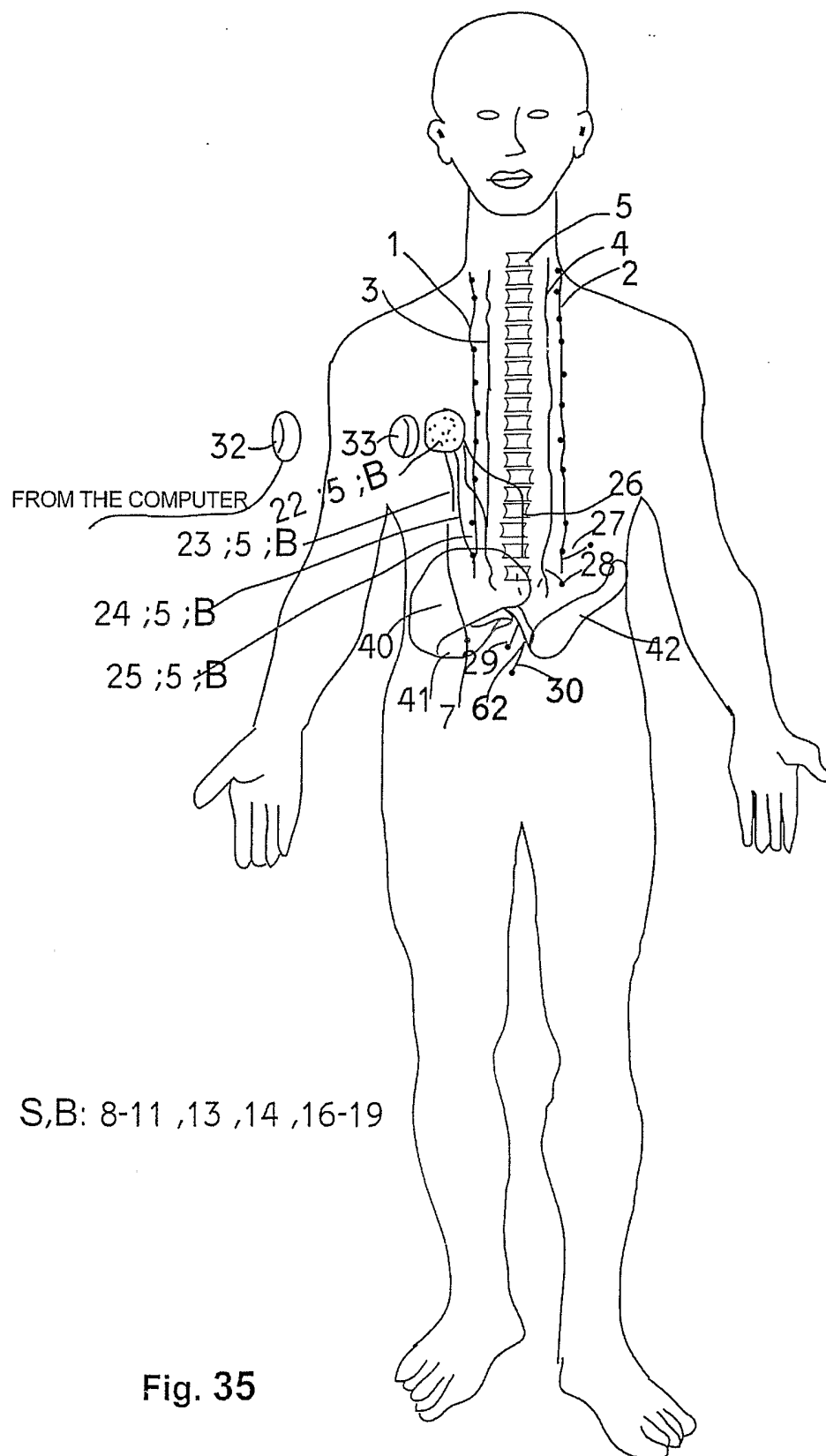
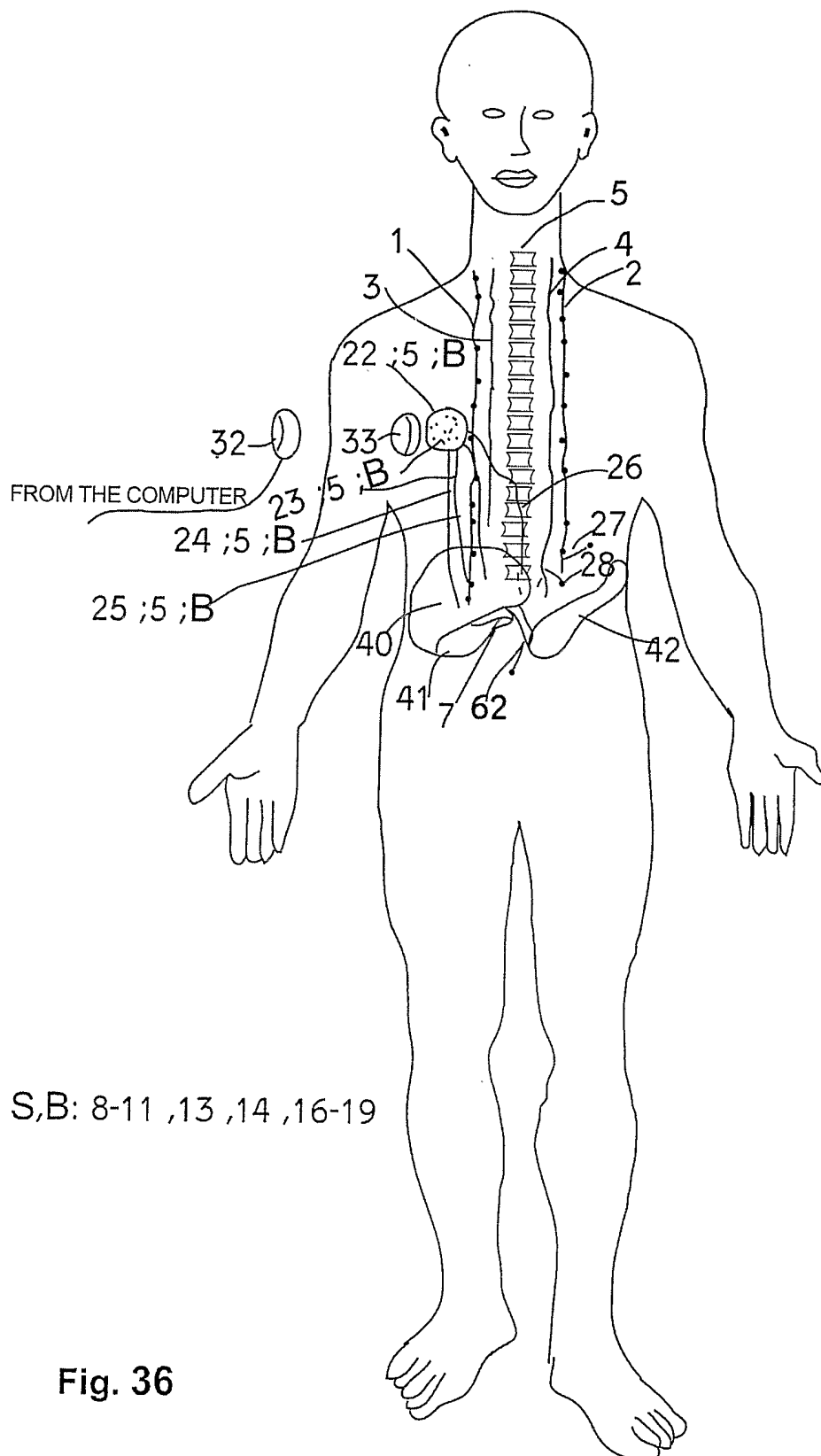


Fig. 33

HEMO



HEPAT 1**Fig. 35**

HEPAT 2**Fig. 36**

MUSCLES 1

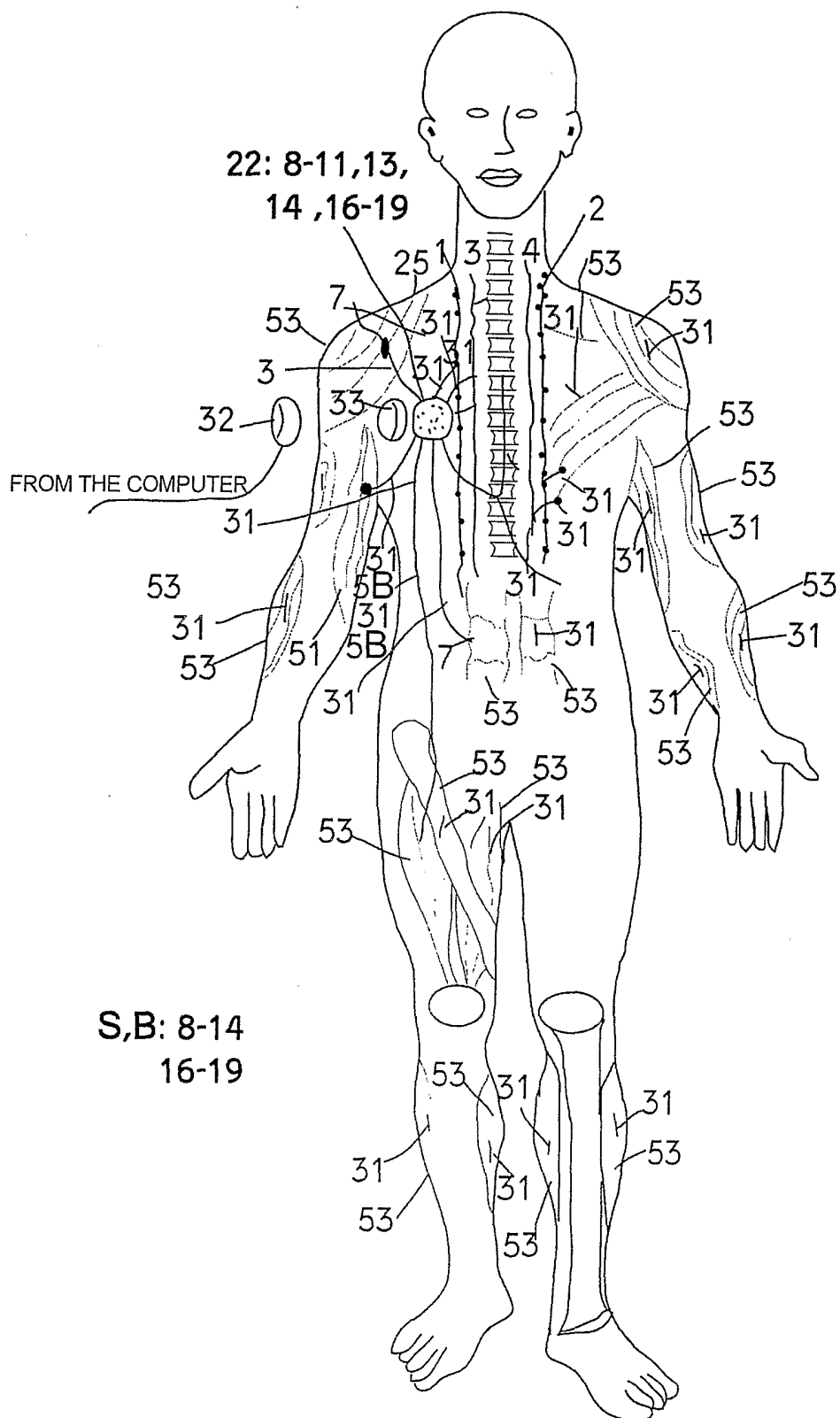
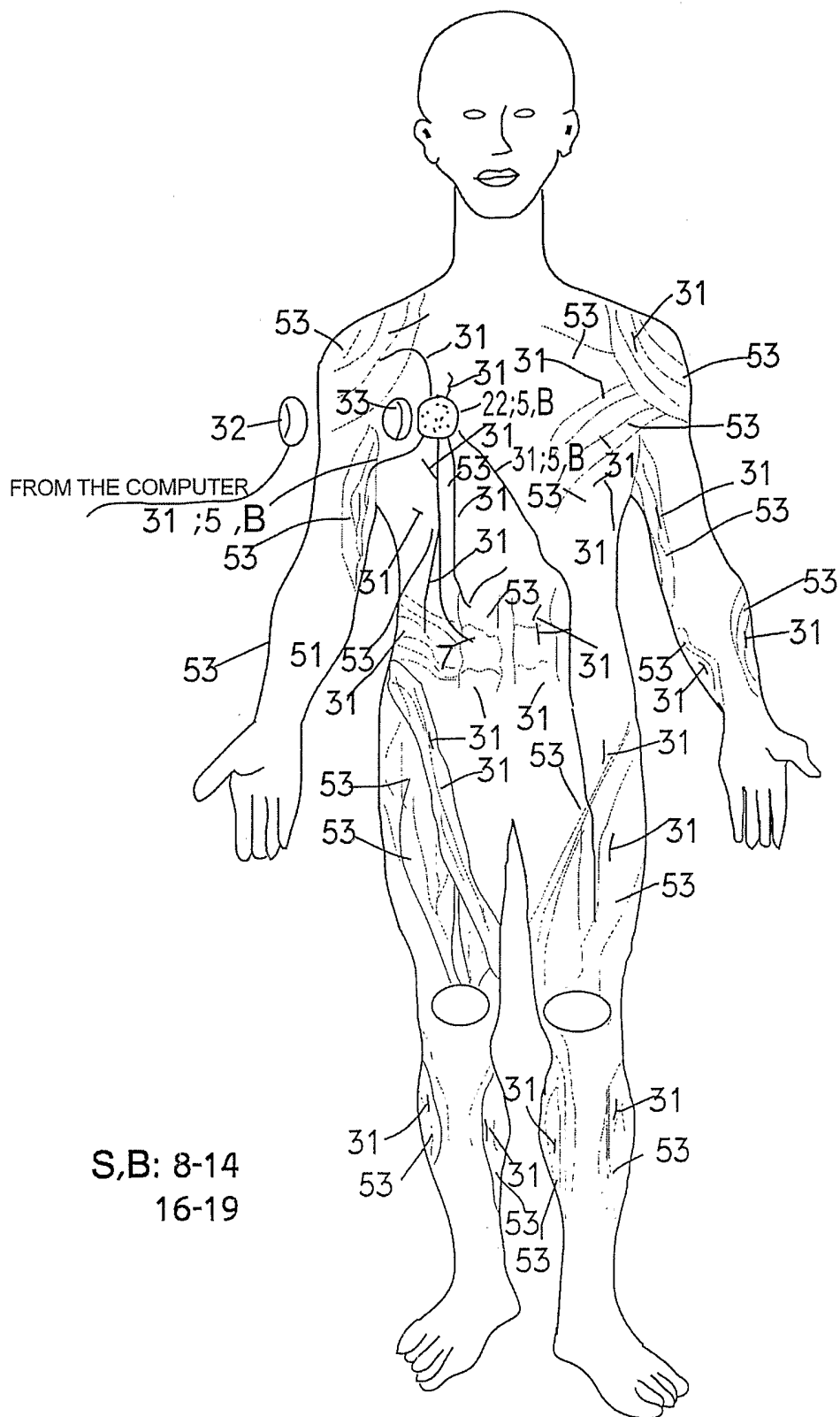


Fig. 37

MUSCLES 2



S,B: 8-14
16-19

Fig. 38

neuropsychiatric

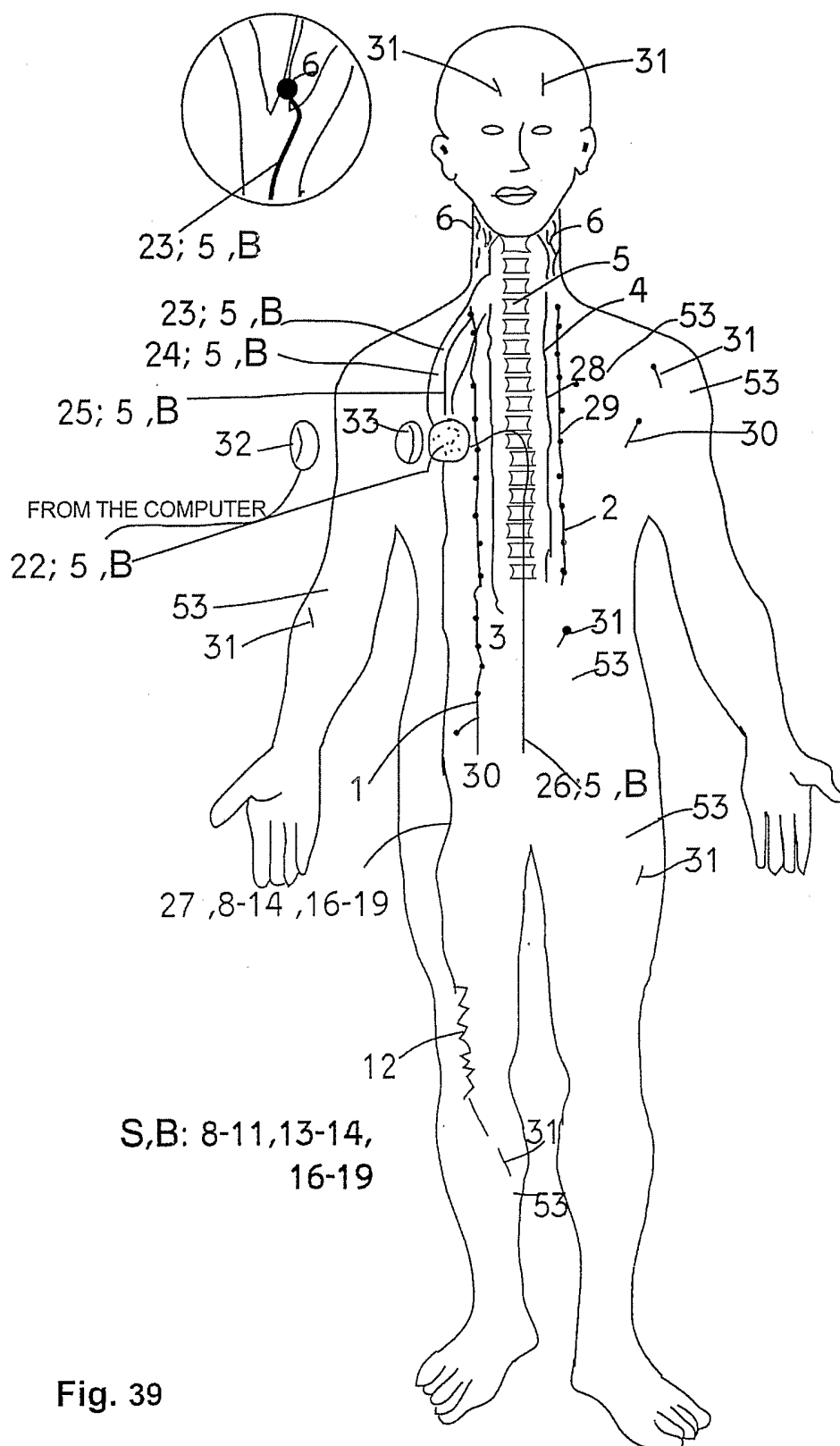


Fig. 39

OASIS

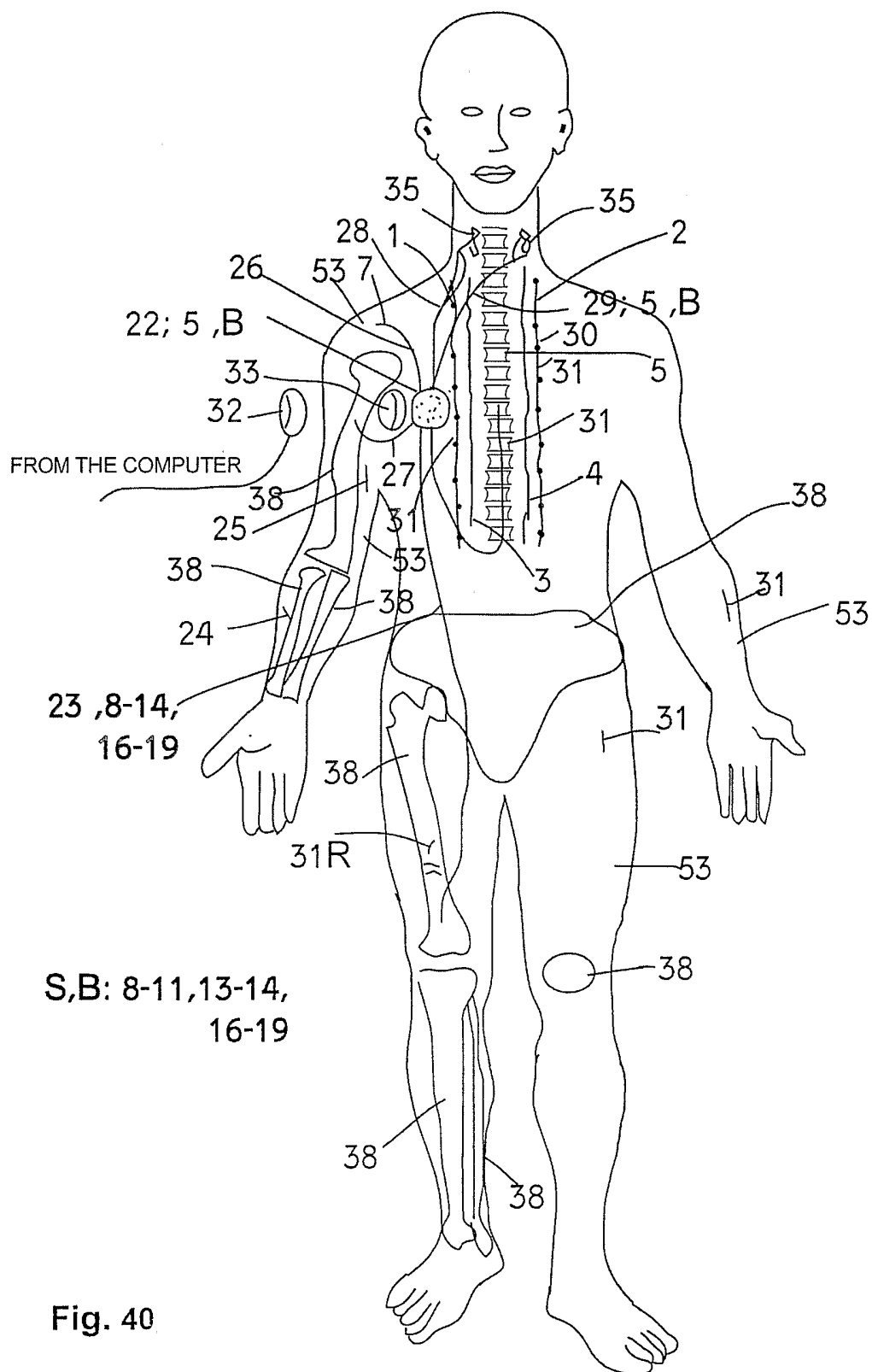


Fig. 40

Pain

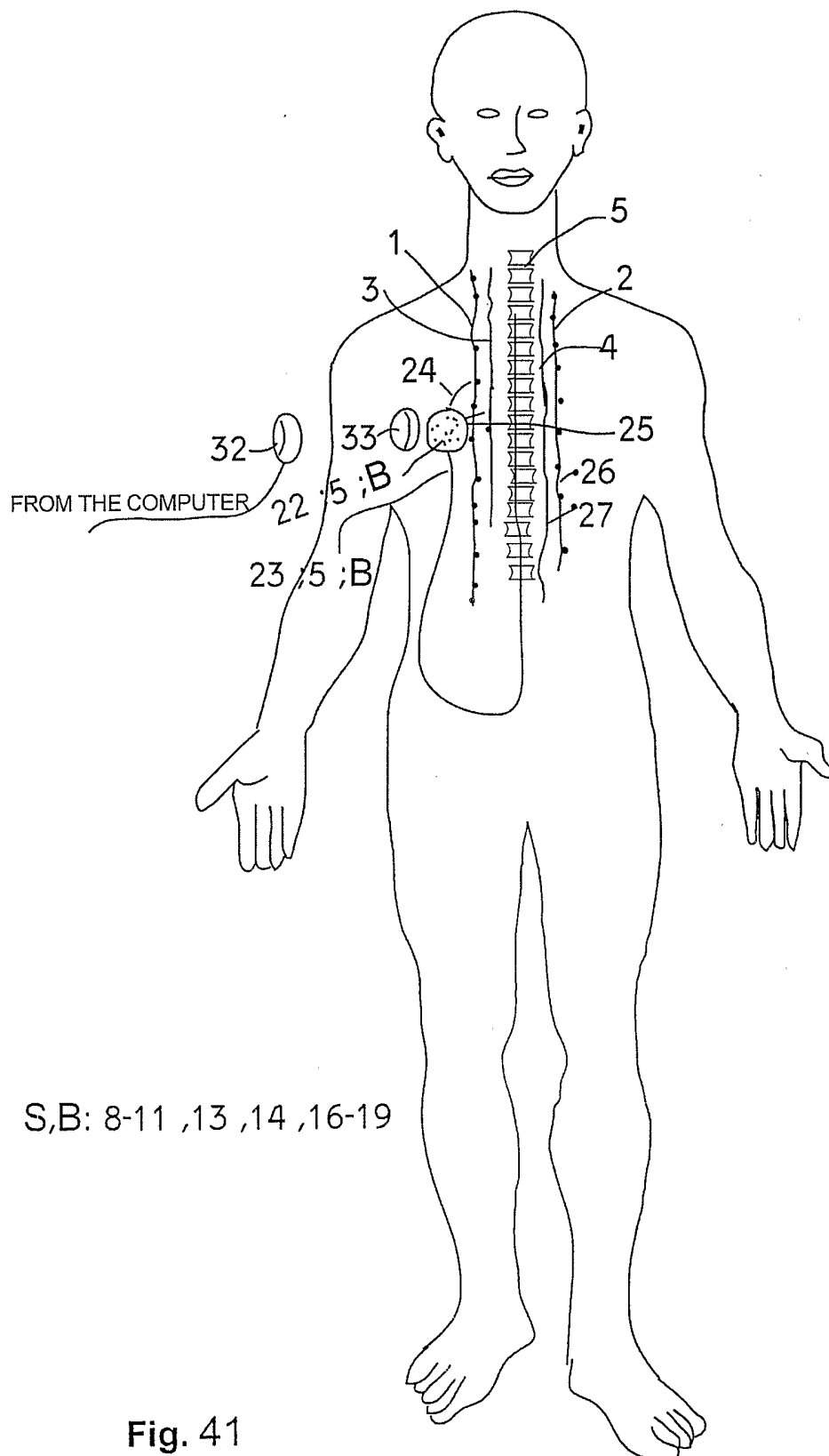
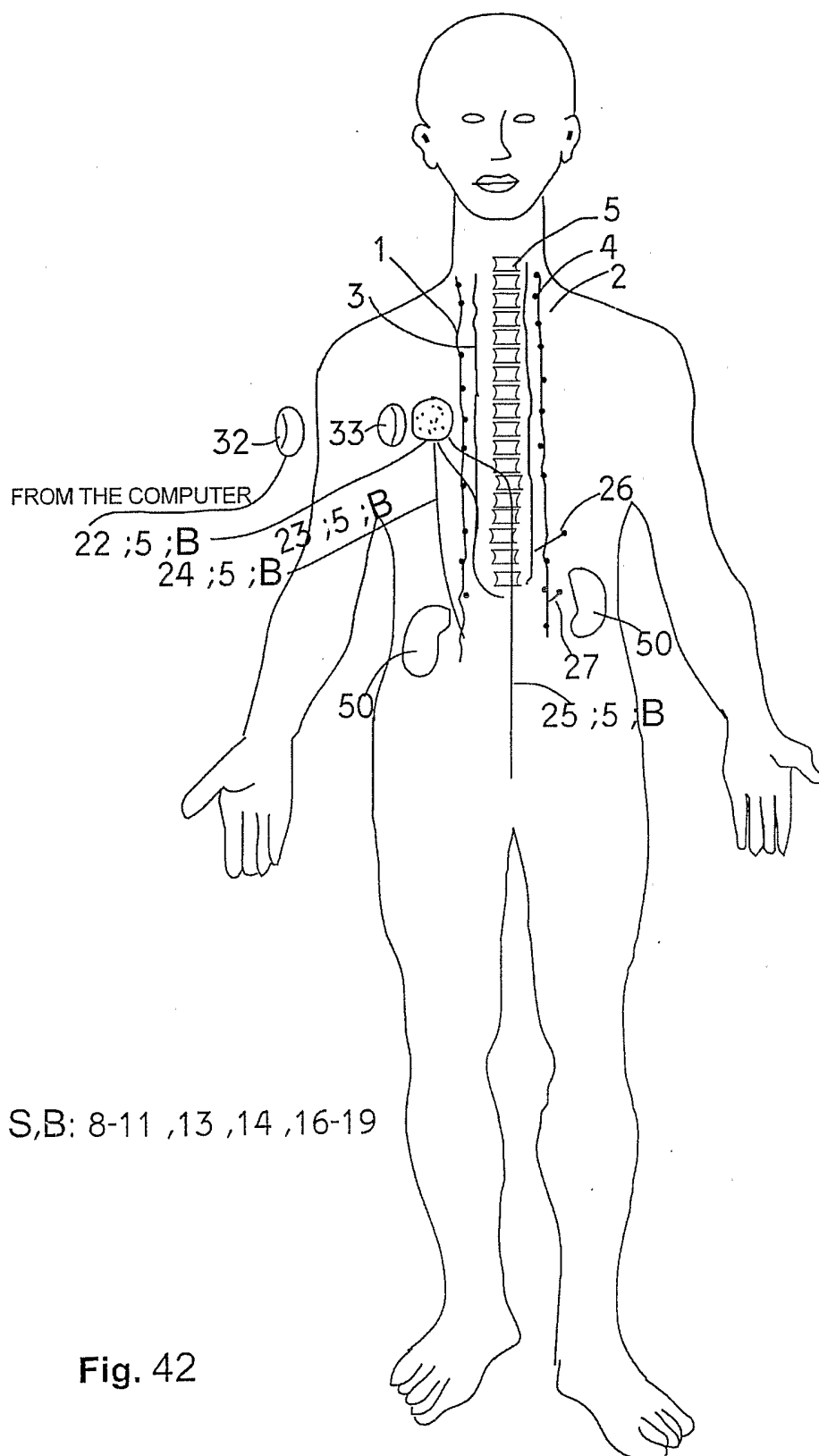


Fig. 41

Ren 1

S,B: 8-11 ,13 ,14 ,16-19

Fig. 42

Ren 2

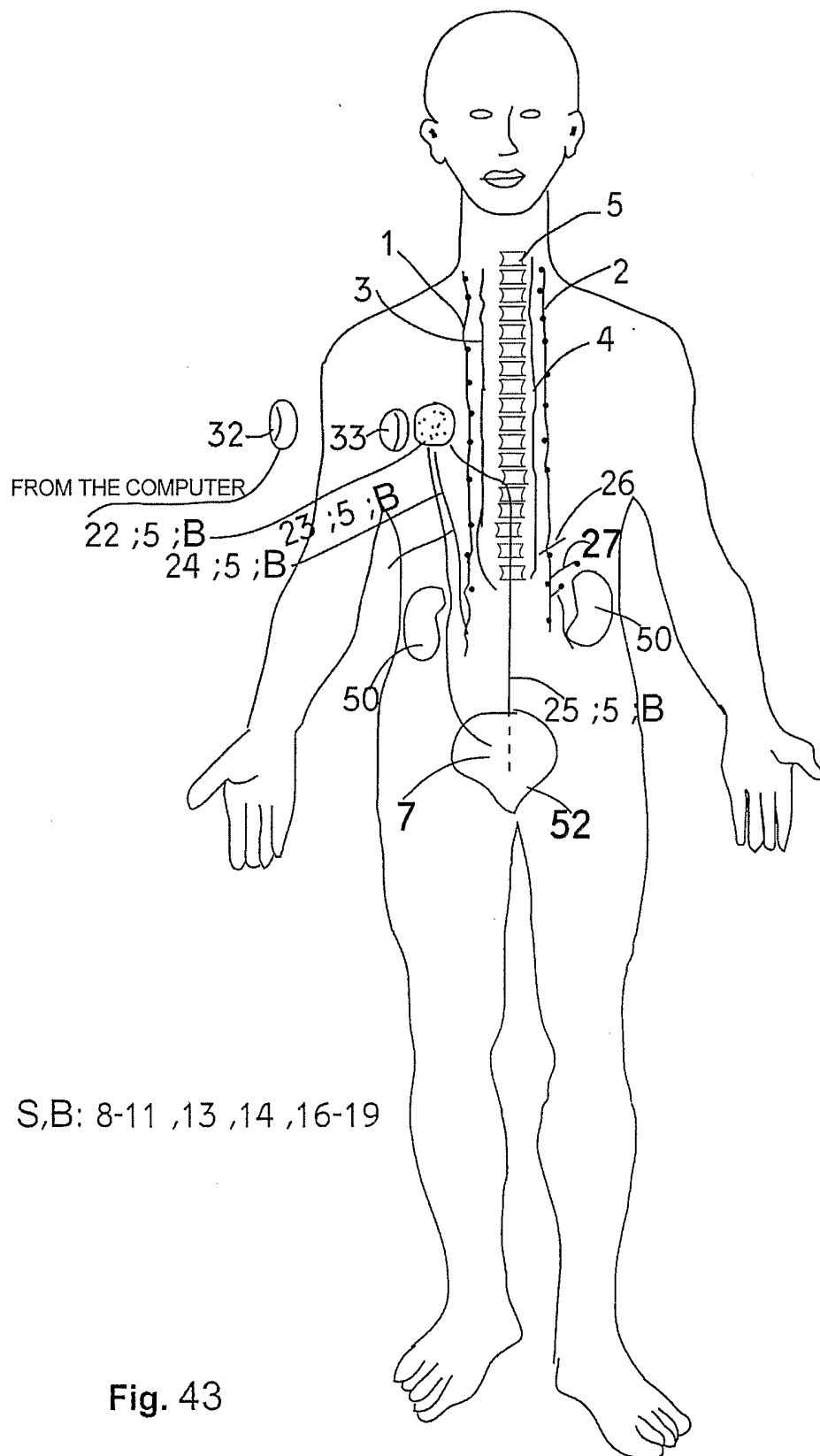
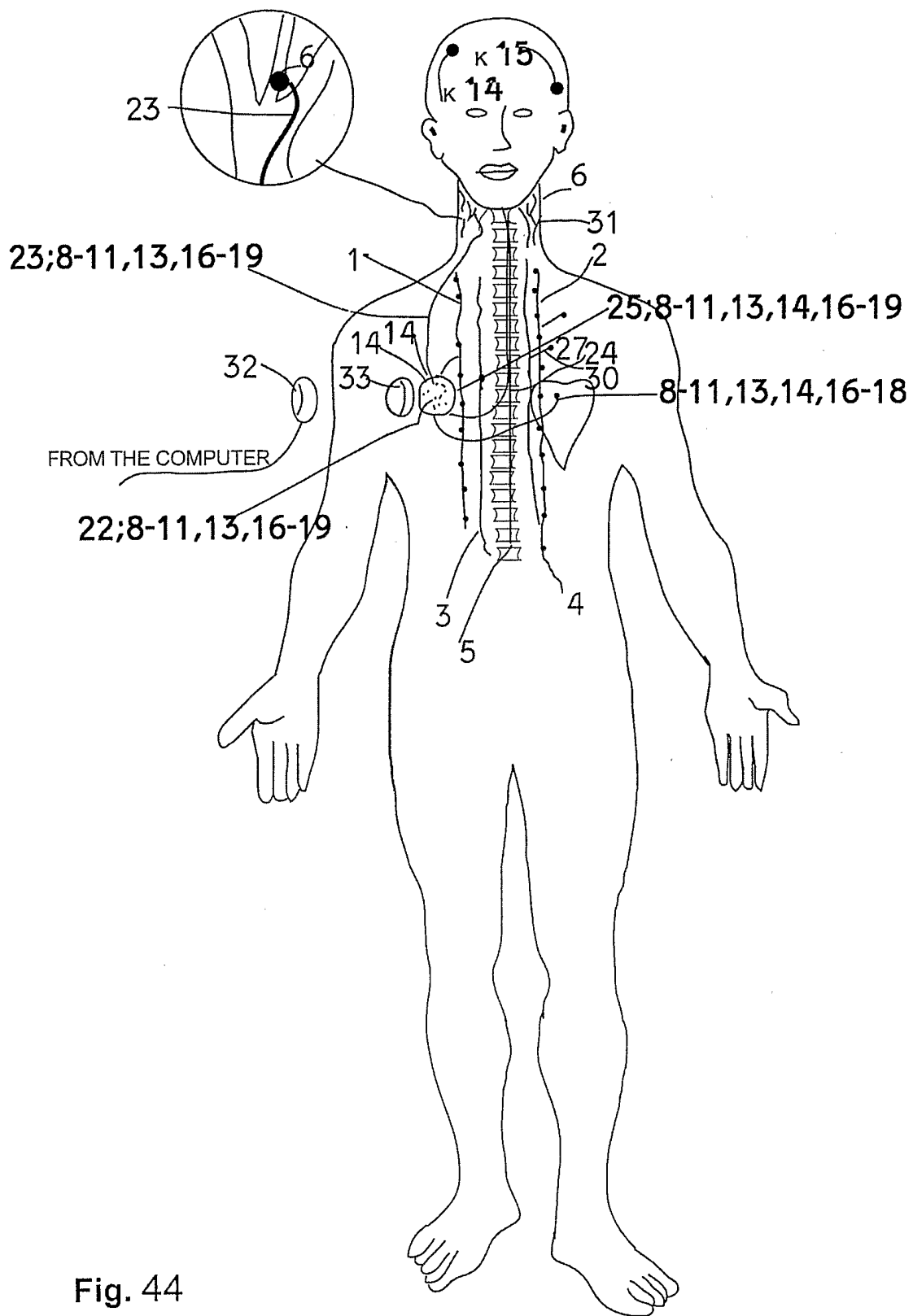


Fig. 43

Respiration 1



Respiration 2

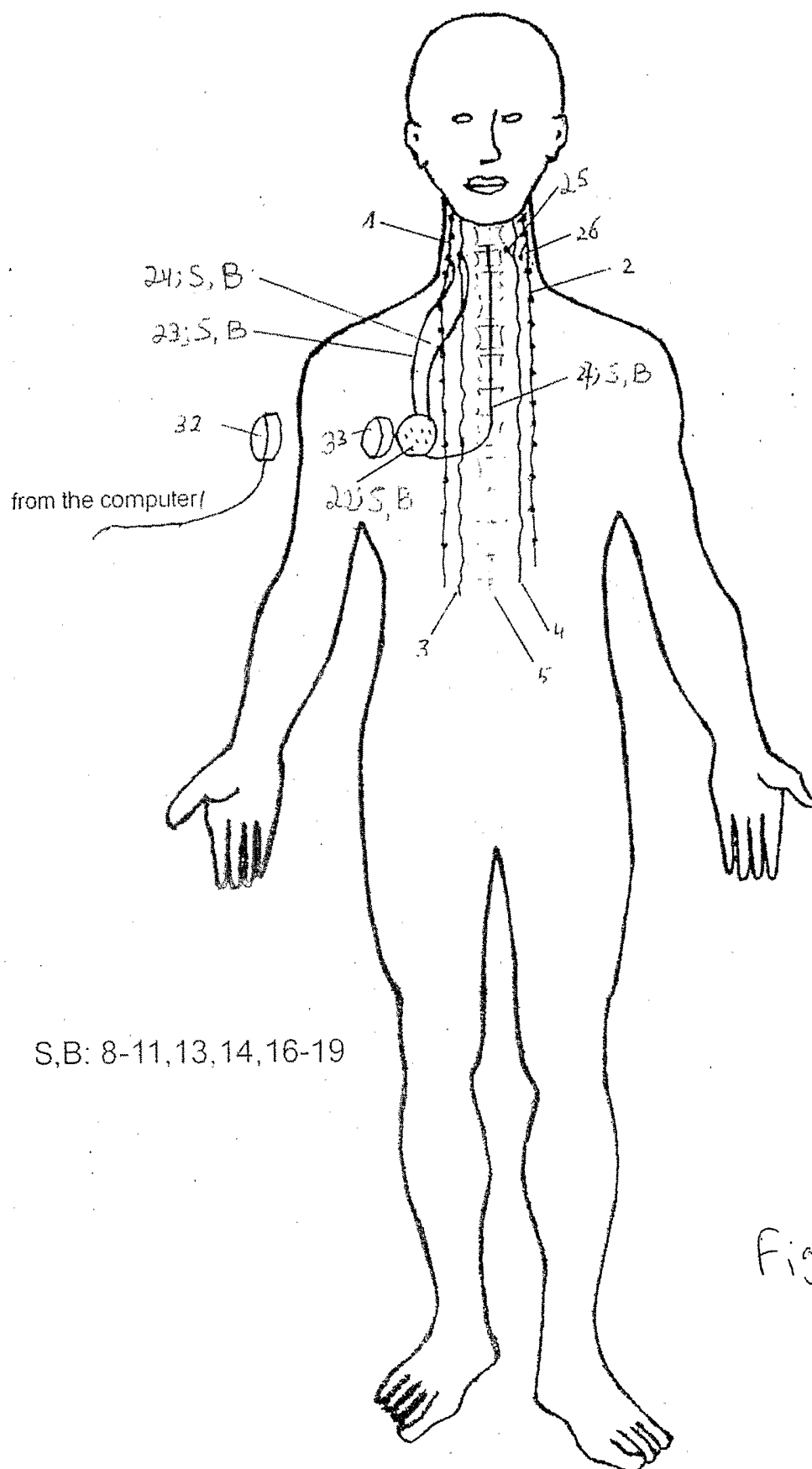


Figure 45

SLEEP 1

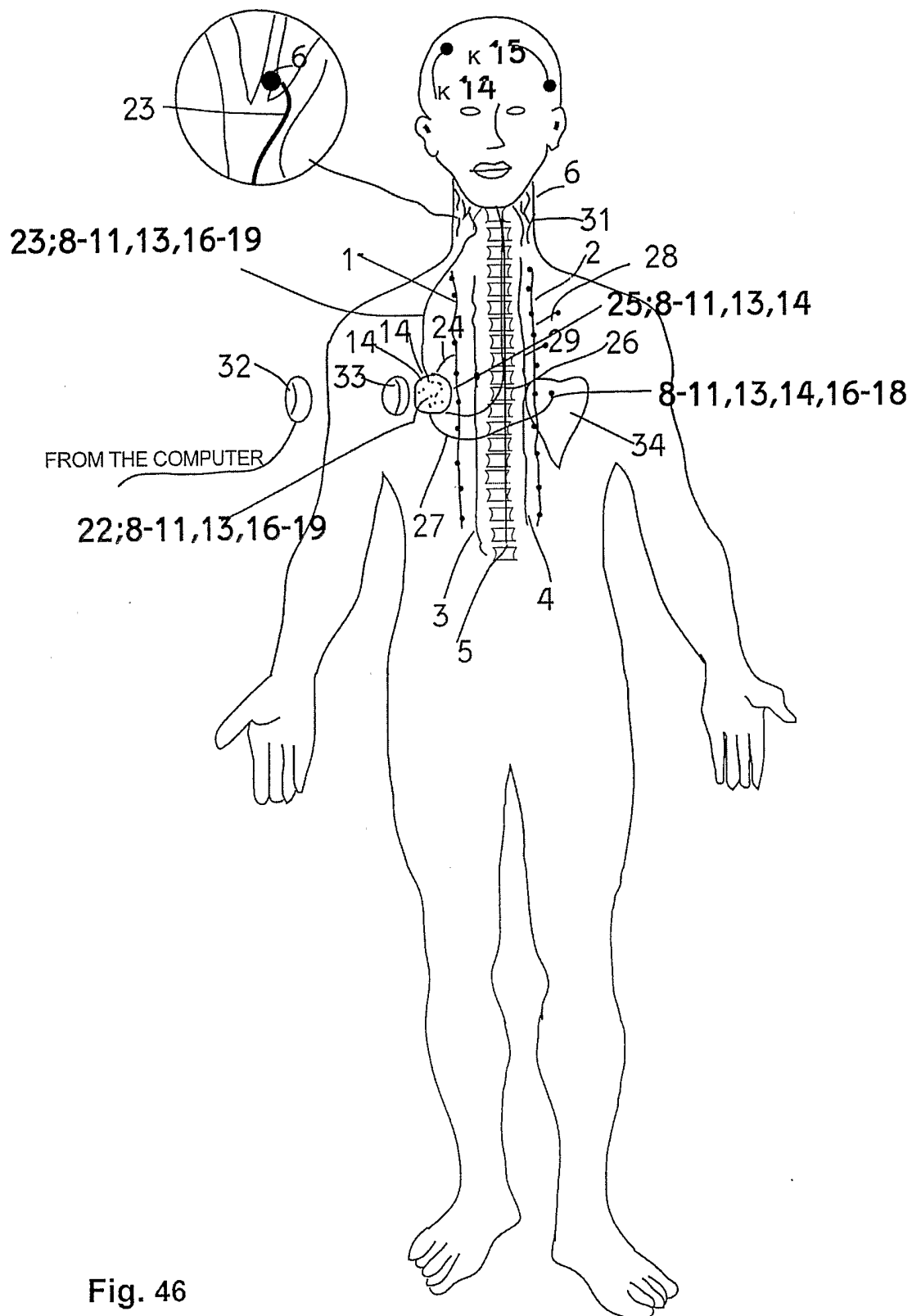


Fig. 46

Sleep 2

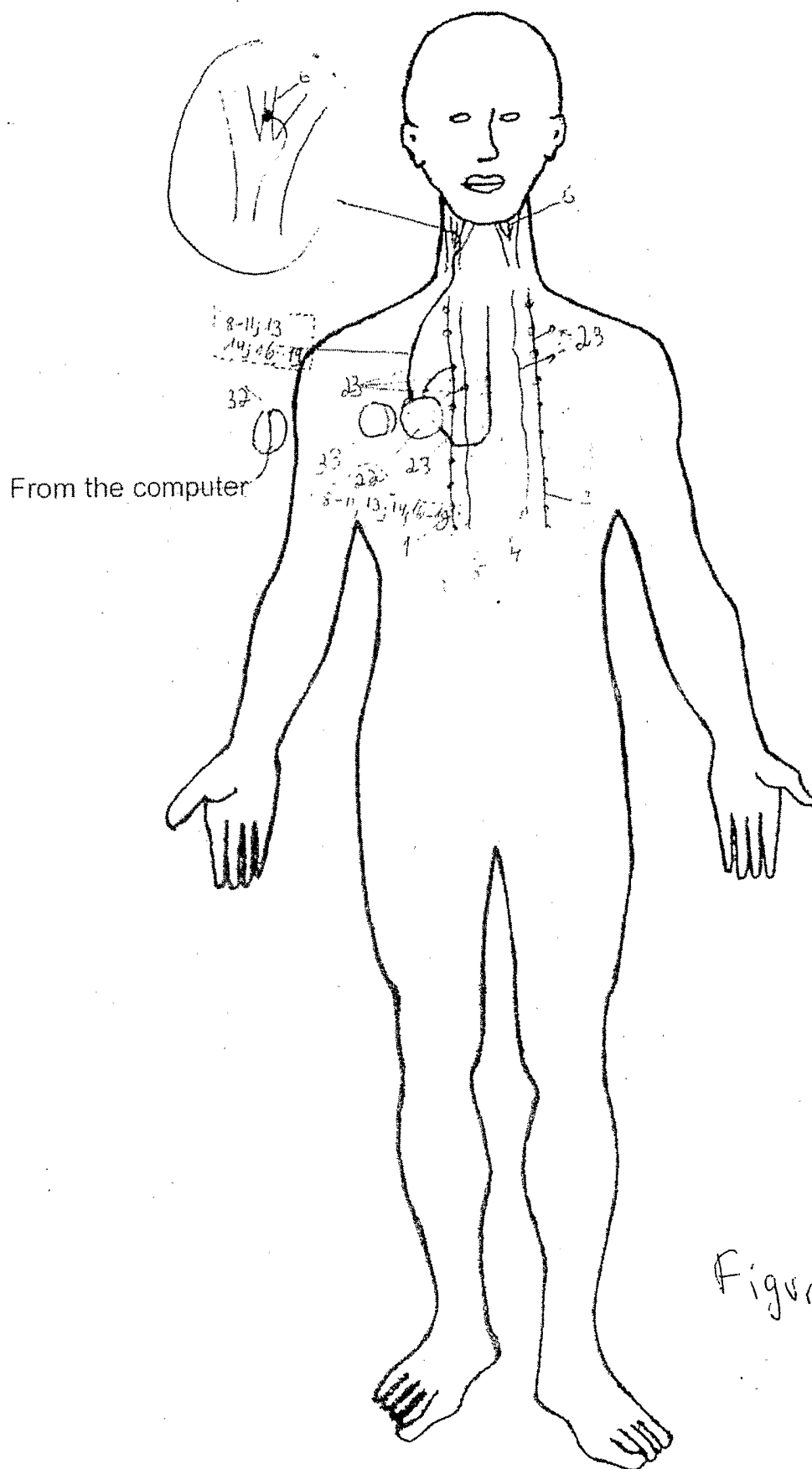
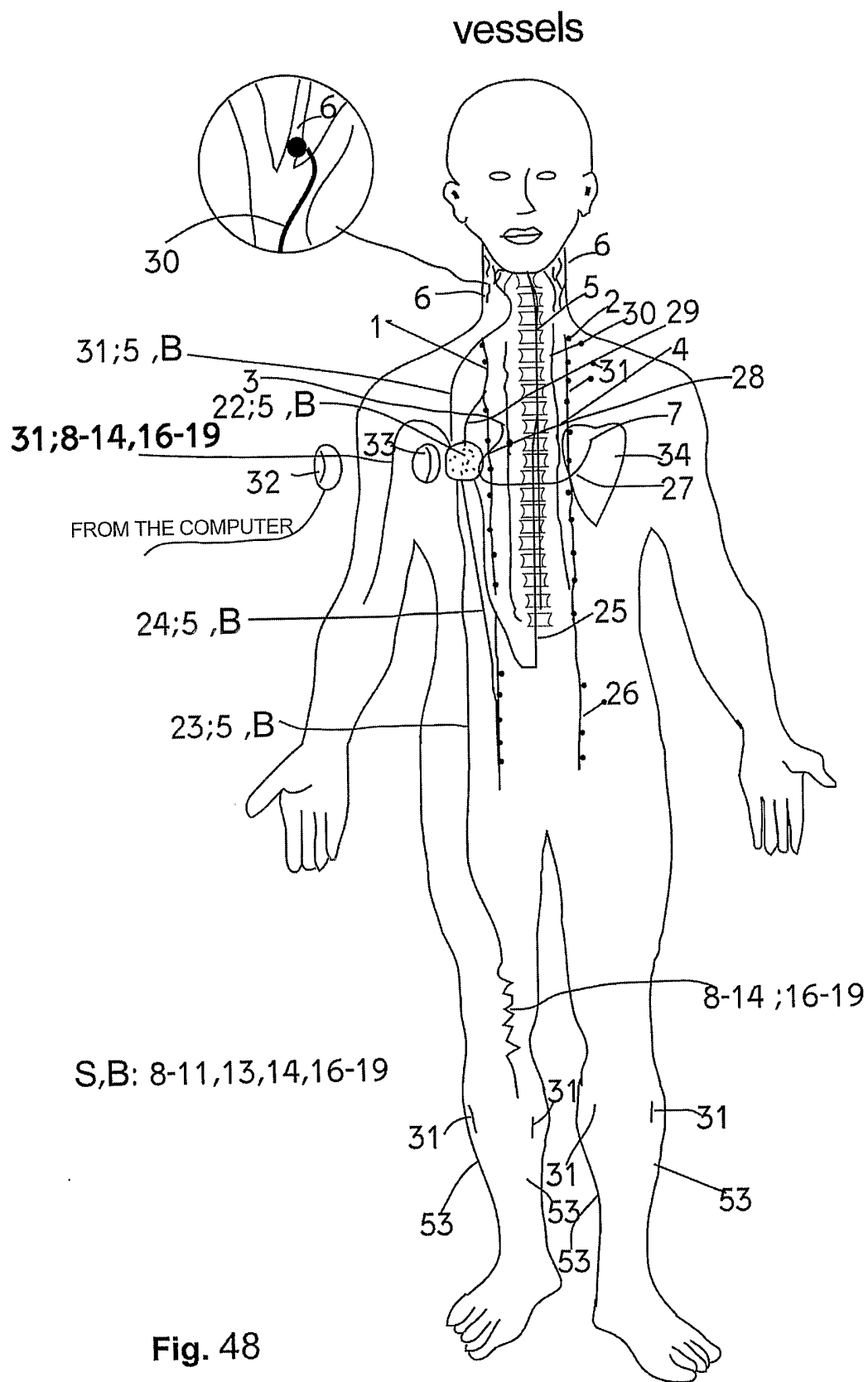


Figure 47



1st Stage
Acute condition experiment

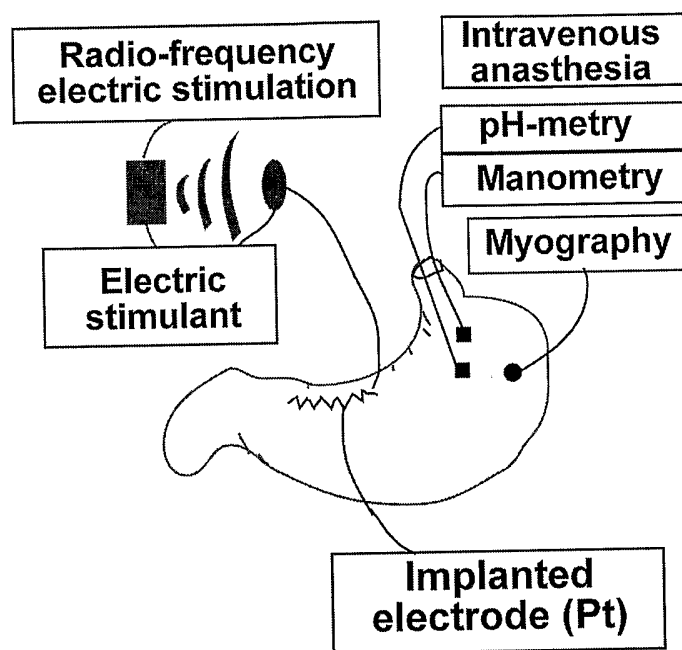


Fig 49

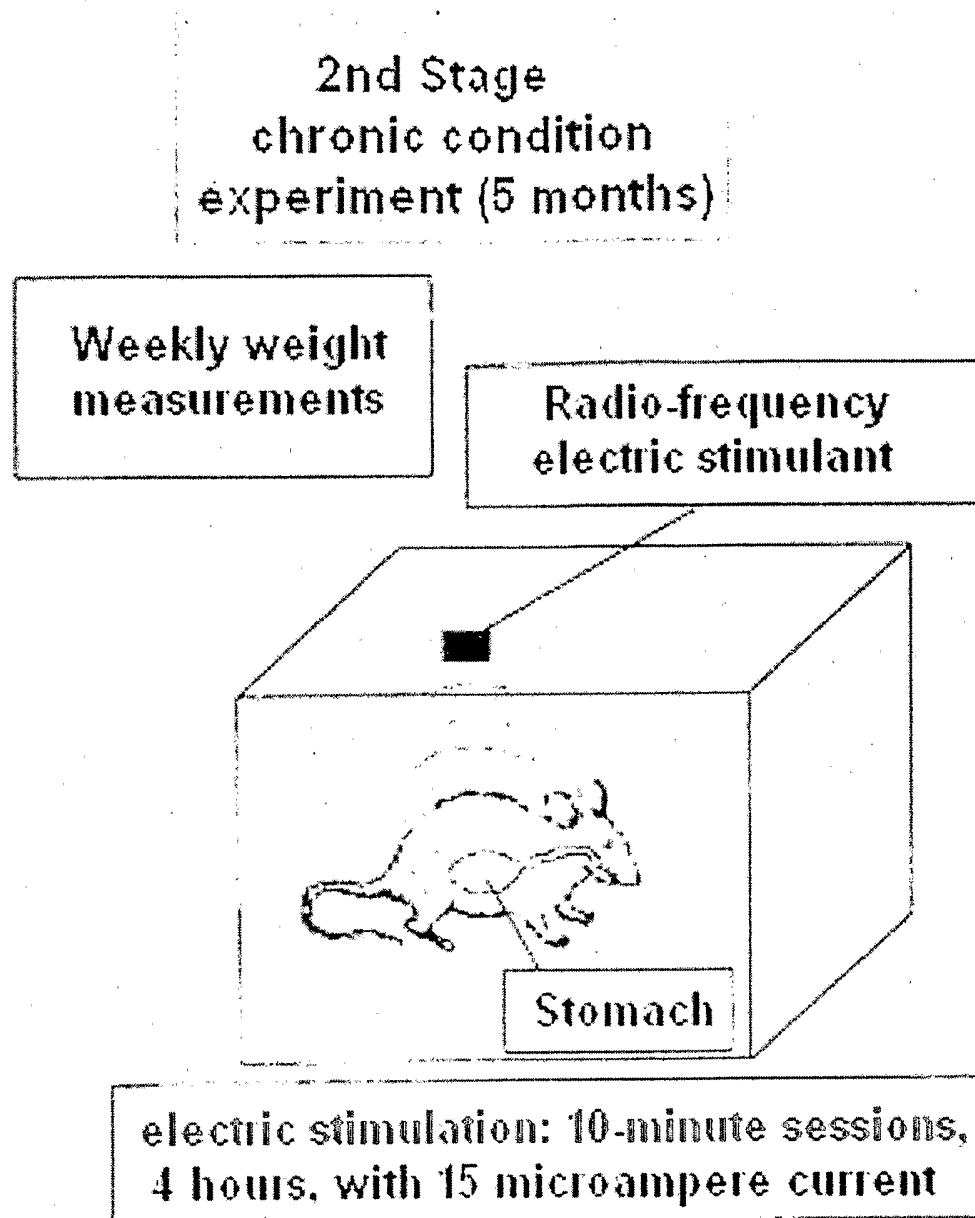


Fig 50

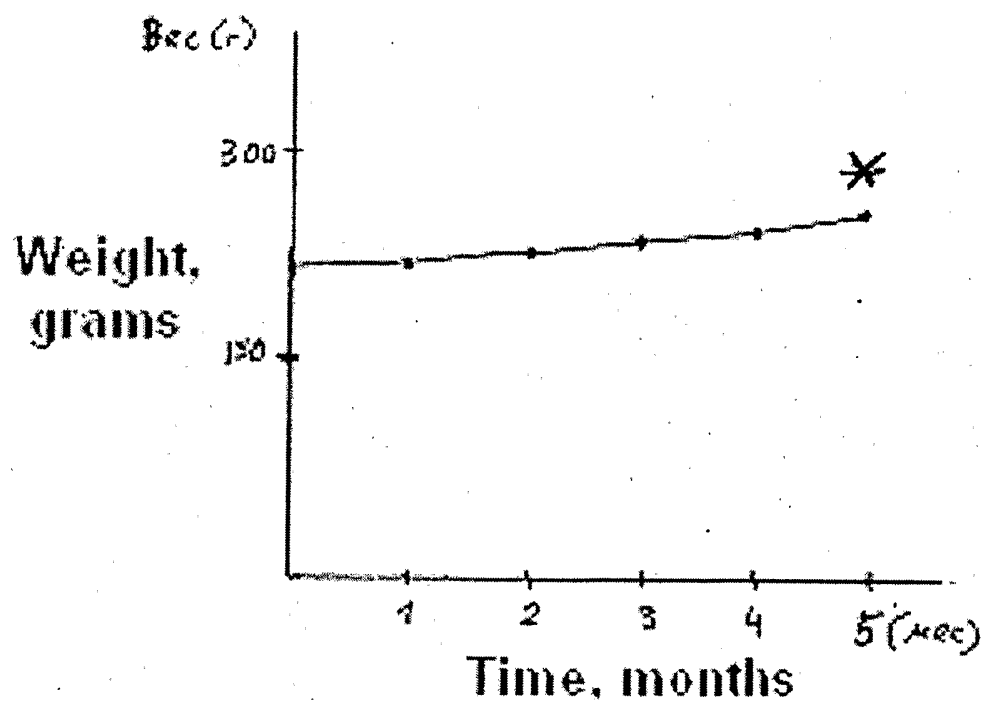


Fig 51

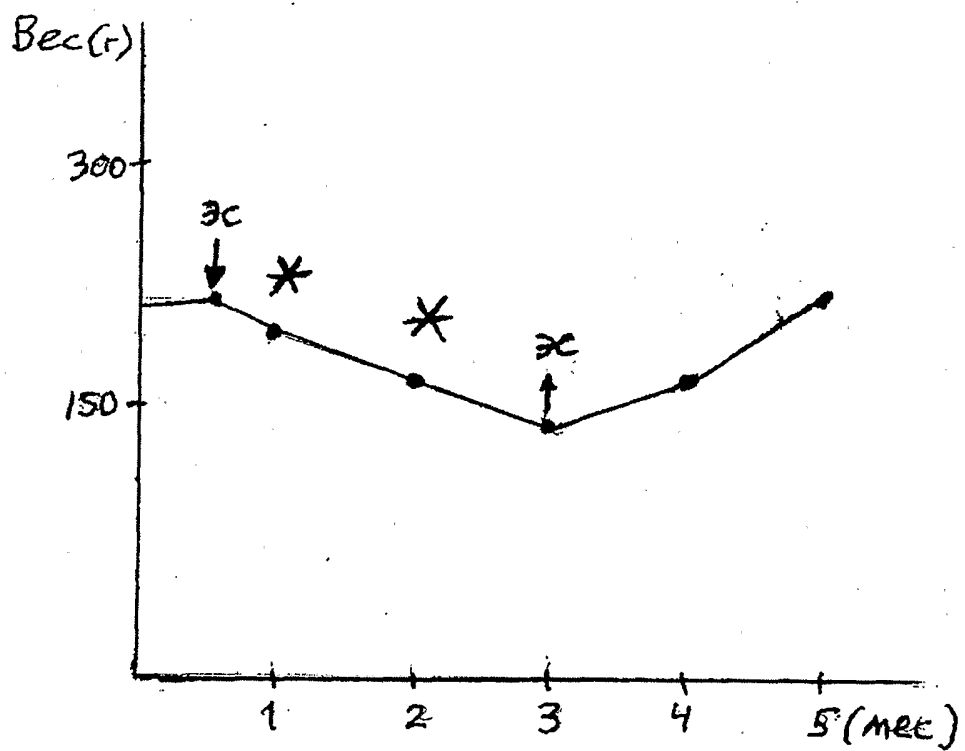
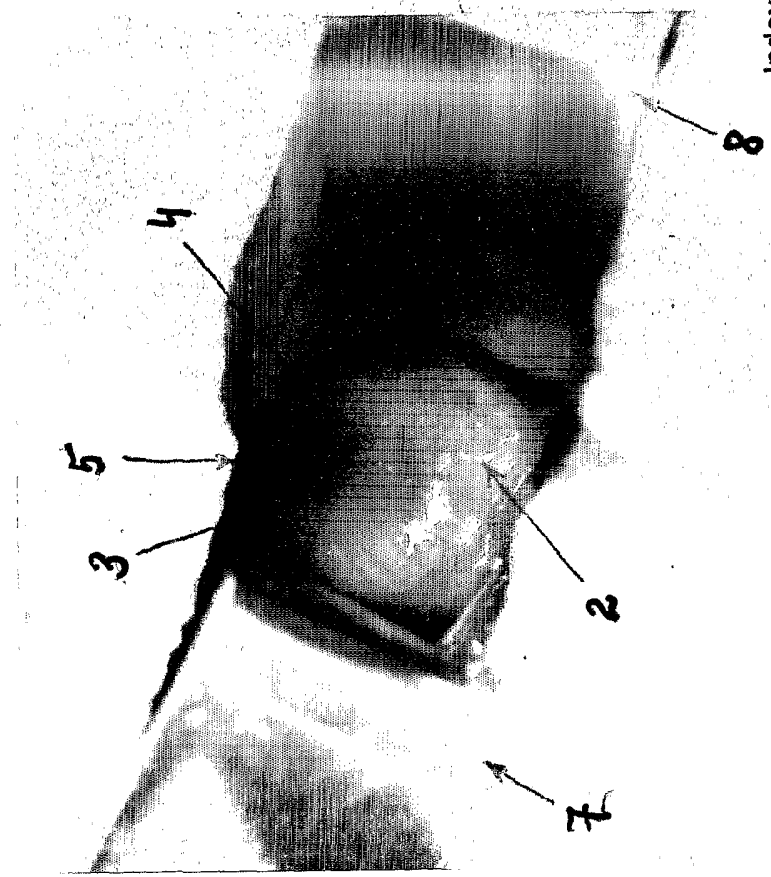
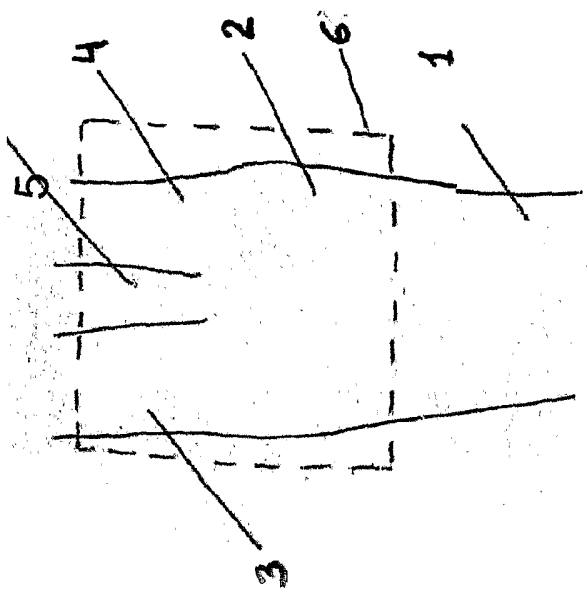


Fig 52



Separating bifurcation of the right common carotid artery

Index of symbols annexed to diagrams and photographs

In the right corner there is a diagram explaining a photograph situated in the left corner.

1-Common carotid artery, the right one (cannot be seen in the photograph)

2-Bifurcation of the common carotid artery covered by the four fascia.

3-Internal carotid artery.

4-External carotid artery

5-Tissues located between the external carotid artery and the internal one,

from which, at a later stage (see Figure 2), an intercarotid collector is going to

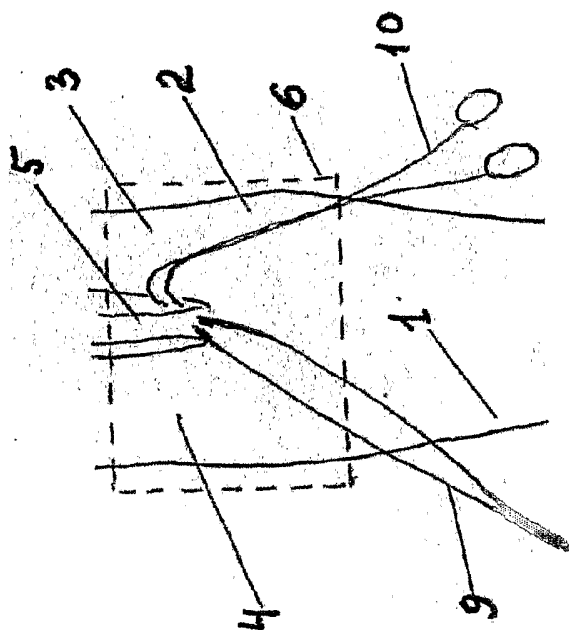
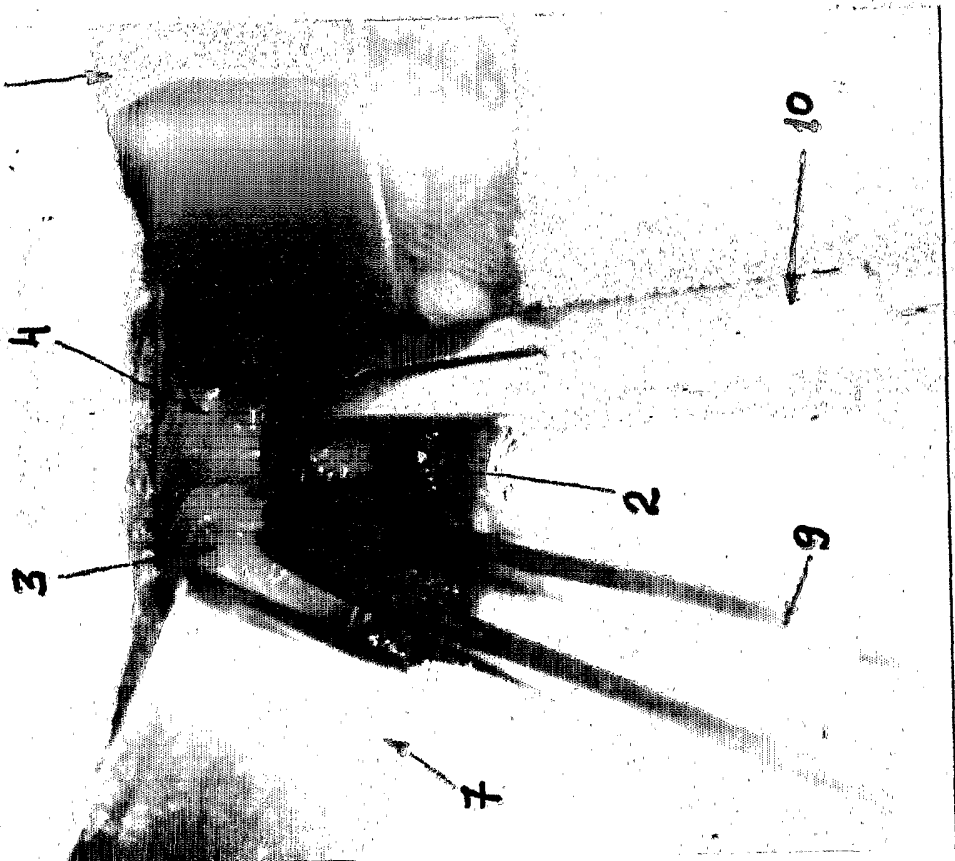
be formed using surgical instruments (a dissector and forceps).

6-Surgery field, through only a part of the arteries can be seen.

7,8- Surgical hooks to widen the wound.

Fig 53

Forming the intercarotid collector using surgical instruments (a dissector and forceps) 8



Index of symbols annexed to diagrams and photographs

In the right corner there is a diagram explaining a photograph situated in the left corner.

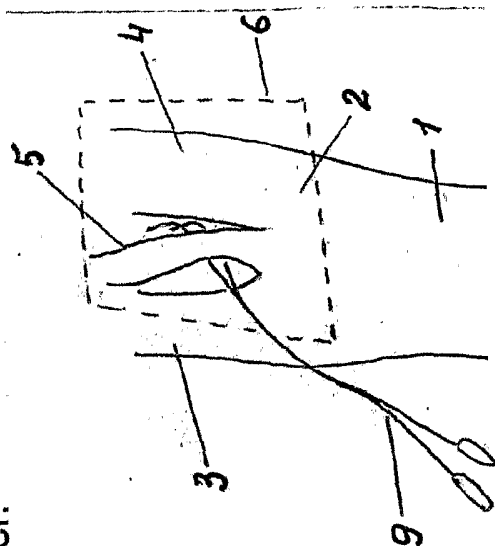
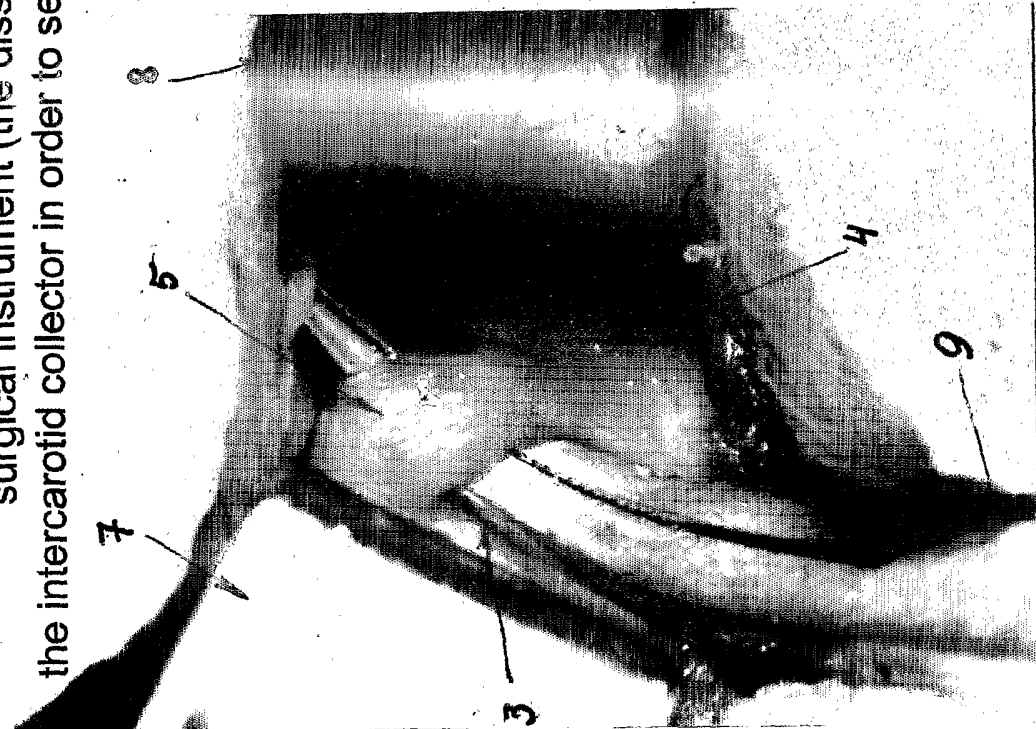
- 1-Common carotid artery, the right one (cannot be seen in the photograph
- 2-Bifurcation of the common carotid artery covered by the four fascia.
- 3-Internal carotid artery.
- 4-External carotid artery
- 5-Intercarotid collector
- 6-Surgery field, through only a part of the arteries can be seen.
- 7,8- Surgical hooks to widen the wound.
- 9-Forceps.
- 10-Dissector.

Note:

To separate the intercarotid collector, the tissues found between the external carotid artery and the internal one are lifted up using the forceps, and then they are separated from the arteries with the dissector thus forming the intercarotid collector.

Fig 54

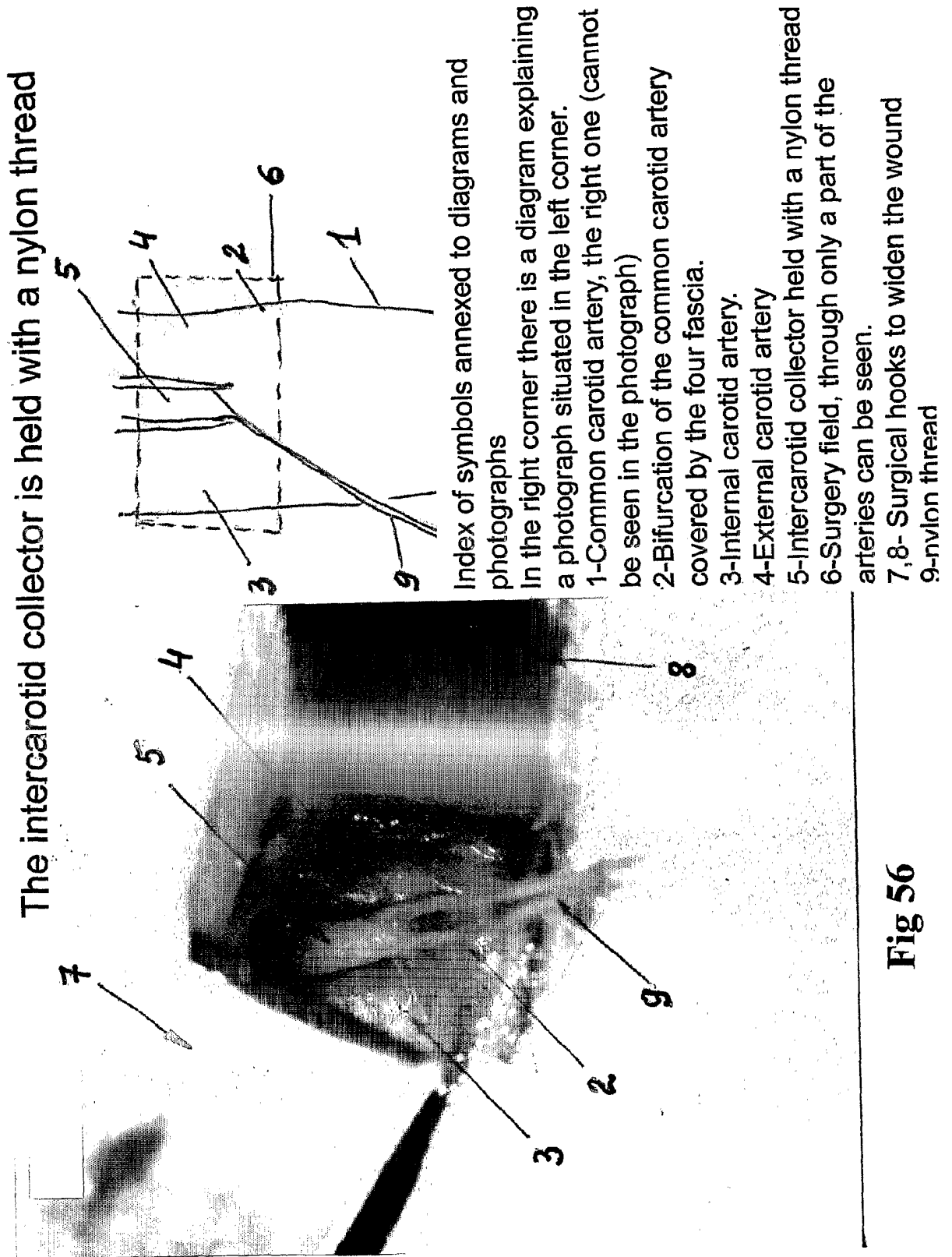
surgical instrument (the dissector) is placed under the intercarotid collector in order to separate the latter.



Index of symbols annexed to diagrams and photographs
In the right corner there is a diagram explaining a photograph situated in the left corner.

- 1-Common carotid artery, the right one (cannot be seen in the photograph)
- 2-Bifurcation of the common carotid artery covered by the four fasciae.
- 3-Internal carotid artery.
- 4-External carotid artery
- 5-Intercarotid collector
- 6-Surgery field, through only a part of the arteries can be seen.
- 7, 8- Surgical hooks to widen the wound.
- 9-Dissector placed under the intercarotid collector.

Fig 55

**Fig 56**

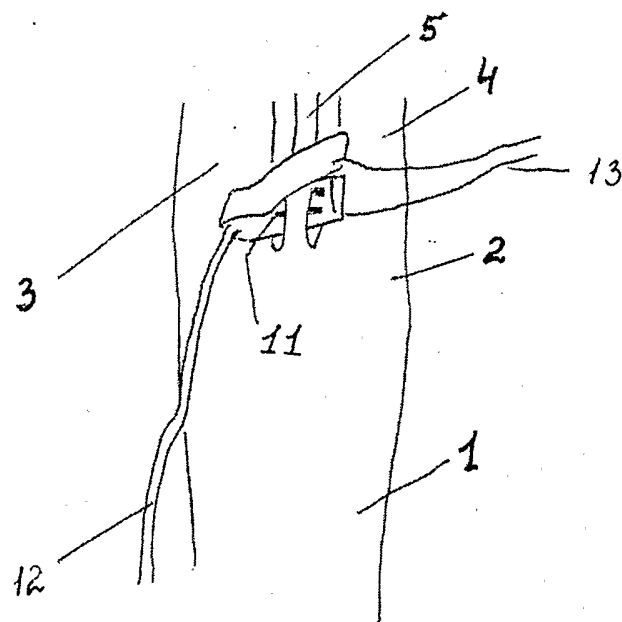


Fig 57

Roentgen for patient No 1: KMP

- 1-chip's shell,
- 2-contacts of the chip electrode connected to the right sinocarotid nerve collector.
- 3-electrode from the chip shell to the right sinocarotid nerve collector
- 4- the above-mentioned sensors and biosensors
- 6 - cervical part of the spinal cord



FIG 58

Roentgen for patient No 2: STV

- 1-chip's shell,
- 2-contacts of the chip electrode connected to the lumbar section of the right sympathetic trunk
- 3-electrode from the chip shell to the lumbar section of the right sympathetic trunk
- 4 the above-mentioned sensors and biosensors
- 5 lumbar area of the spinal cord

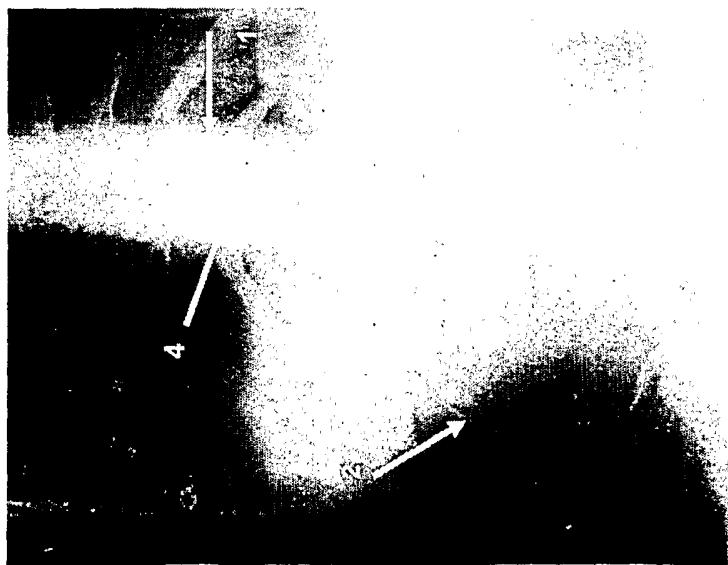


Figure 59

Roentgen for patient No 3: LGN

- 1-chip's shell (Chip-4),
- 2-contacts of the Chip-4 electrode connected to the nerves of the stomach
- 3-electrode from the Chip-4 shell to the stomach
- 4 chip's shell (Chip-3)
- 5 electrode from Chip-3 shell to the lumbar part of the right sympathetic trunk
- 6 lumbar area of the spinal cord
- 7-the above-mentioned sensors and biosensors

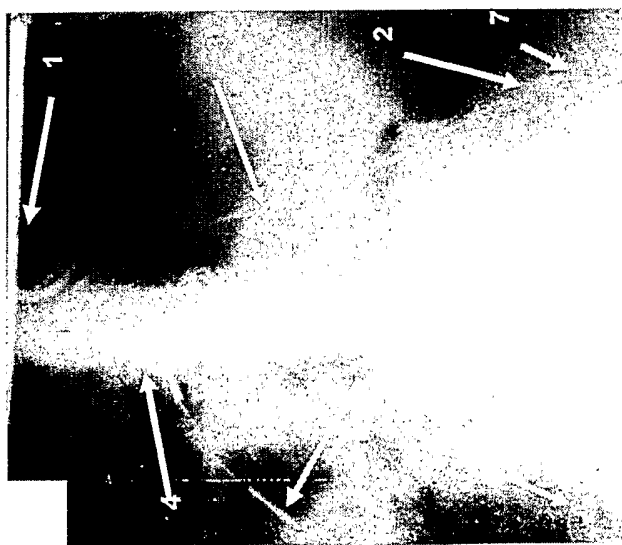


Fig 60

Roentgen for patient No.4: PHA

- 1-chip's shell,
- 2-contacts of the chip's electrode connected to the left sympathetic trunk
- 3-electrode from the chip's shell to the sympathetic trunk
- 4-the above-mentioned sensors and biosensors
- 5-thoracic area of the spinal cord

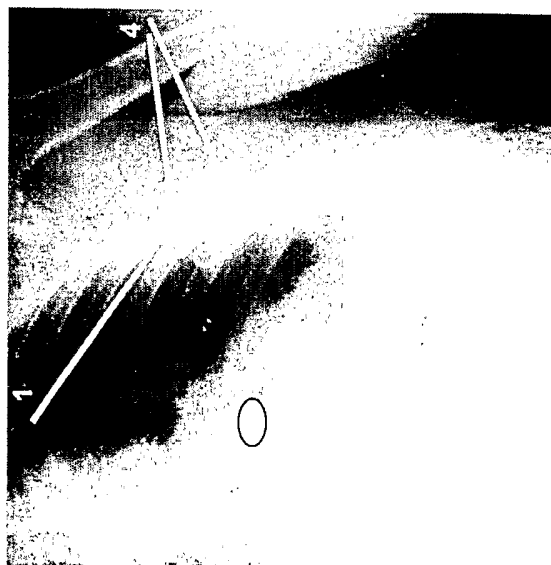


Fig 61

Roentgen for patient No 5: MA

- 1-chip's shell,
- 2-contacts of the chip electrode connected to the nerves of the right sympathetic trunk
- 3-electrode from the chip's shell to the sympathetic trunk
- 4-the above-mentioned sensors and biosensors
- 5- thoracic section of the spinal cord

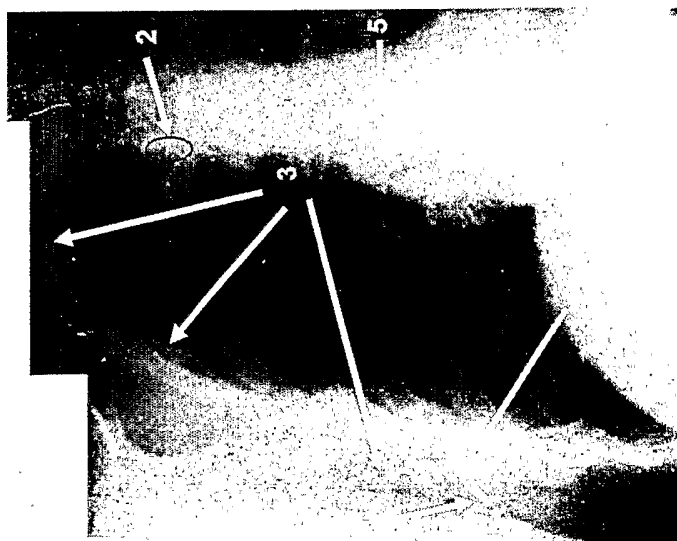


Fig 62

Roentgen for patient No 1: KV

1-chip's shell,

2-contacts of the chip electrode connected to the right sinocarotid nerve collector.

3-electrode from the chip shell to the right sinocarotid nerve collector

4- the above-mentioned sensors and biosensors

6 – cervical part of the spinal cord

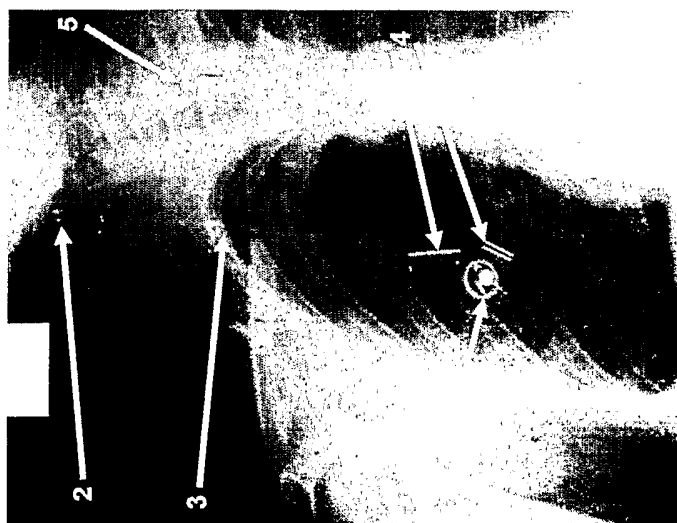


Fig 63

Roentgen for patient No 3: DV

1-chip's shell,

2-contacts of the chip electrode connected to the right sinocarotid nerve collector.

3-electrode from the chip shell to the right sinocarotid nerve collector

4, 5- the above-mentioned sensors and biosensors

6 -- cervical part of the spinal cord

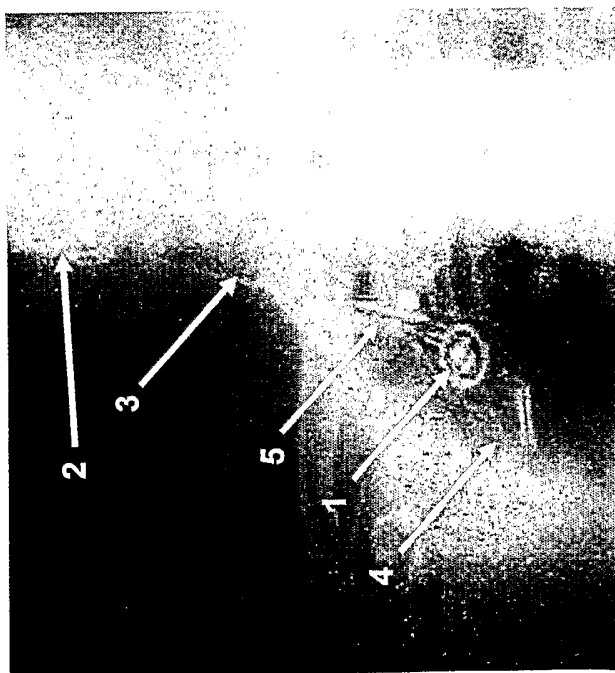


Fig 64

Roentgen for patient No 4: GSA

1-chip's shell,

2-contacts of the chip electrode connected to the right sinocarotid nerve collector.

3-electrode from the chip shell to the right sinocarotid nerve collector

4- the above-mentioned sensors and biosensors

5-cervical part of the spinal cord

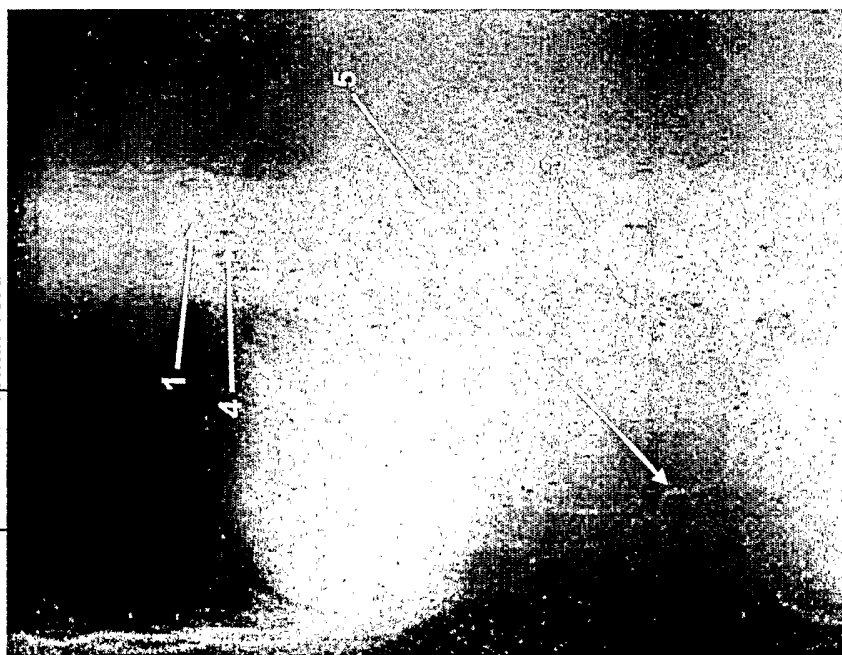


Fig 65

Roentgen for patient No 5: KL

1-chip's shell,

2-contacts of the chip electrode connected to the right sinocarotid nerve collector.

3-electrode from the chip shell to the right sinocarotid nerve collector

4, 5- the above-mentioned sensors and biosensors

6 – cervical part of the spinal cord

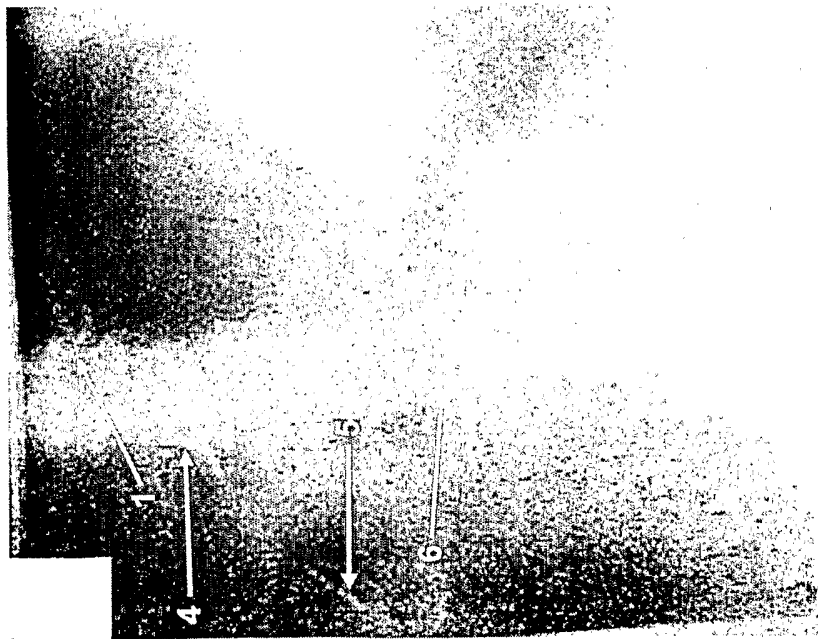


Fig 66

Epilepsy Clinical Examples

Roentgen for patient No 2: DNI

- 1-chip's shell,
- 2-contacts of the chip electrode connected to the right sinocarotid nerve collector.
- 3-electrode from the chip shell to the right sinocarotid nerve collector
- 4- the above-mentioned sensors and biosensors
- 6 – cervical part of the spinal cord

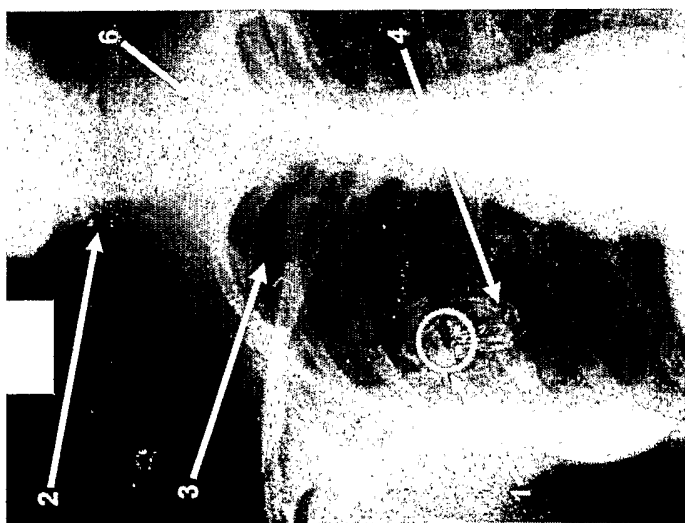


Fig 67

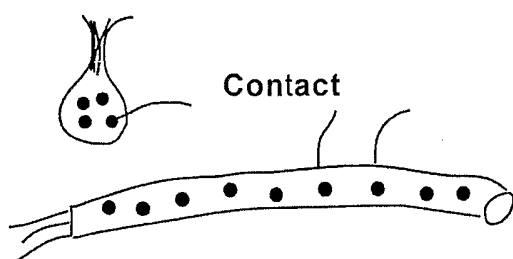


Fig. 68

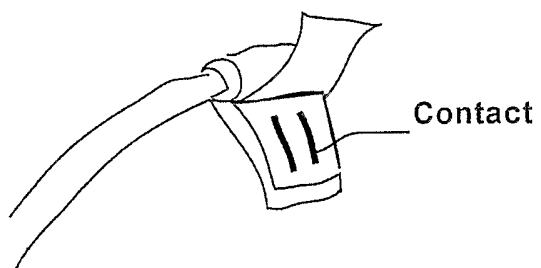


Fig. 69

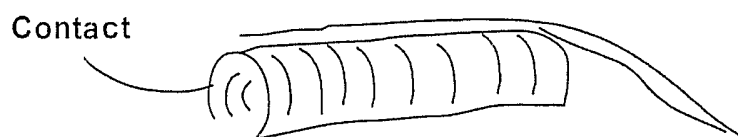


Fig. 70

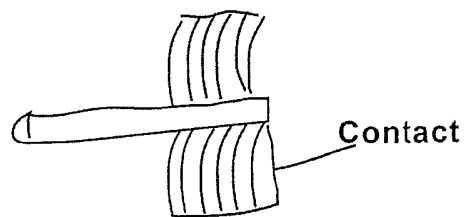


Fig. 71

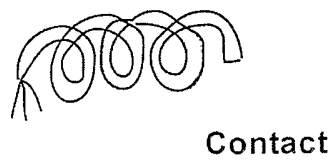


Fig. 72

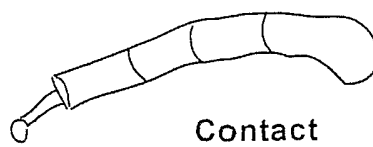


Fig. 73

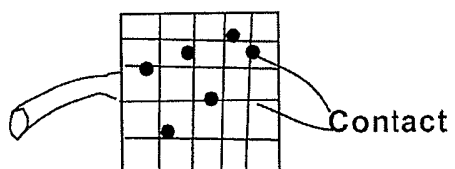


Fig. 74

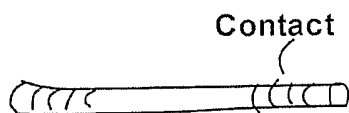


Fig. 75

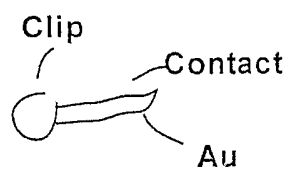


Fig. 76