

THE CORRECTION of the FUNCTIONAL STATE of CREWS of MAGNITOLEVITATIVE VEHICLES

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Abstract

The complex of physio-corrective and physiotherapeutic measures including effect on an organism of the person individually fitted low-intensity (of a subthermal level) by electromagnetic fields of range extremely of high frequencies (30-300 GHz) and variable magnetic fields of special vector - frequency (polarization) frame, taking into account a spatial pattern of own electromagnetic fields of the person, geomagnetic and electromagnetic fields of space is submitted. It is demonstrated, that it is possible to consider actuation of low-intensity electromagnetic fields in an arsenal of means on correction of a physiological state of the crew personal.

Strong magnetic fields in space of a transport means created by superconducting-coil electromagnets on a gantry of a transport means and coils of fissile travelling frame, vaporizations of accumulator batteries, considerable accelerations and the running speeds of a transport means create the ecological tight conditions for crews of magnitolevitative transportation facilities (MTF) [1]. The experience of designing MTF demonstrates, that even if weight of a system of shielding makes more than 30 % from total loads of a transport means, the magnetic density in a cabin hardly comes nearer to a marginal level, and the protective system at the expense of creation «of a negative magnetic field» is difficult and is unsafe: at disturbance in its operation of magnetic fields in a zone of activity of crew considerably exceed values before application of a system «of a negative magnetic field» [1, 2]. At the same time working conditions of crew MTF are those, that the organism of the person is in hypo-geomagnetic fields, their frame is hardly distorted, that results in distorting «of an electromagnetic skeleton» the person [3] and to disturbance in operation of a number of major systems of an organism, in particular, alimentary, endocrine and nervous [4-8]. The strong magnetic field also essentially changes operation of a nervous system, rendering predominantly braking operating, oppressing conditional and unconditional jerks, changing an electroencephalogram in the party of predominance of sluggish rhythms [1, 9-12]. Last means, that the maintenance of the express-control and correction of a functional condition of crews is the constituent of a management system and safety control of motion MTF, and correction and therapy should implement with usage of the therapeutic agents aimed at increase of a resistance of all organism.

As such therapeutic agent can be low-intensity of electromagnetic fields of range extremely of high frequencies (EHF), completely affecting on an organism of the person and outstanding in a role effective adaptogenic factor, and acclimatization of an organism by described above manufacturing medium can implement including of composite gears of a miscellaneous level [13-15].

However, hardware implementations of the indicated method of correction and the therapies should allow for specific features of the person:

- for each person and concrete nosological form there is a optimum (resonant) frequency rate of EHF-radiation [15];
- the duration of a session for each person should be strictly determined, as is determined by a reactivity and stand-by capabilities of his organism, depth of a pathology, pace of therapeutic process, as in process of convalescence the optimum duration of a medical procedure changes [15].

In the present report the engineering solution on creation of the therapy-diagnostic device of the EHF-therapy largely satisfying to the indicated requirements is adduced: due to availability of a biotechnical feedback between the patient and vehicle with wide-range mechanical and electronic rearrangement of frequency controlled on objective responses of an organism of the person on physiotherapeutic effect, frequency of EHF-radiation and duration of a session are automatically set optimum for each inspected. On nature of responses the availability of pathological changes in an organism of the person can be established and tactic of physiotherapeutic correction given inspected (frequency and quantity of sessions) is formulated.

In a fig. 1 the functional diagram of the device, where 1 - coaxial resonator with a mobile plunger 2, central conductor 3 and generating diode 4 (Gunn diodes), 5 - section of the rectangular waveguide, 6 - quarter wave coaxial transformer is shown. The spring 7 provides a reliable contact of the diode 4 with central conductor 3, on which one through a low-pass filter 8 power supply voltage to the diode is made. To a coaxial resonator 1 through a window 9 in a common lateral wall 10 small depths and inductive loop 11 the coaxial resonator 12 with the mobile short circuiter 13, central conductor 14 and varicap 15 is connected. The spring 16 provides a contact of a varicap and central conductor, which one through filter 17, the transistors 18 and contacts 19 paired to a source 20 biases; 21 - reference amplifier, 22,34 - six-digit meters, 23,35 - six-inputs elements «AND», R1-R6, R9-R14 resistors, 24 - element «AND – NOT», 25 - clock, 26 - filter α - Λ - rhythm of electroencephalograph, 27 - screw of the initial installation of a resonator 12, 28 - radiator, 29, 30 - gear of electromechanical rearrangement of frequency of the EHF-generator (from 37,5 up to 54,5 GHz - in one modification and from 52,5 up to 78,2 GHz - in other modification), 30 - electromechanical drive, 31, 39 - trss, 33 - two-input element «AND», 36 - comparator, 37 - pulse shapers, 38 - time relay.

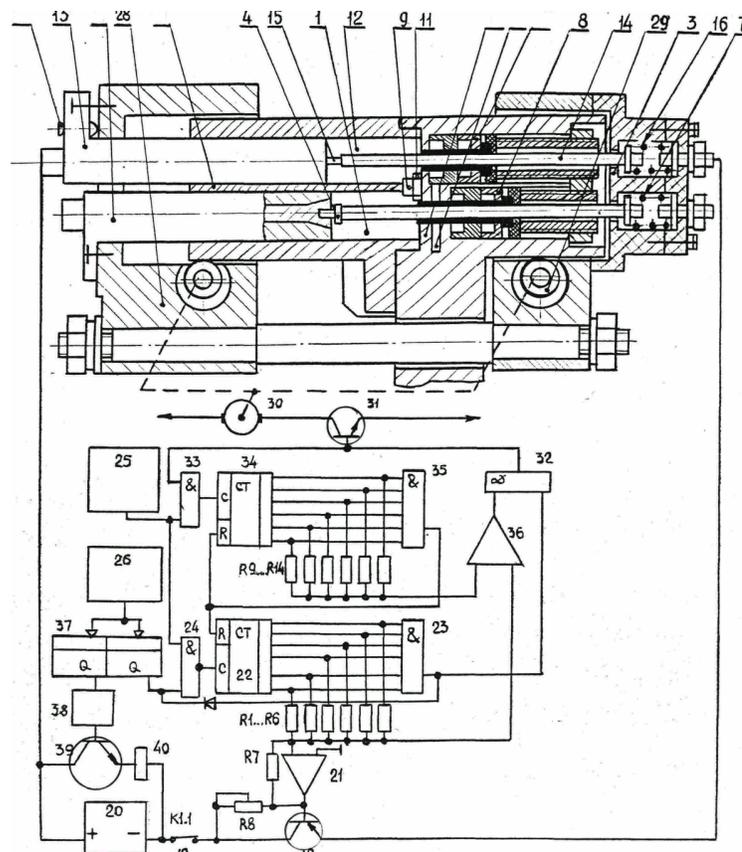


Fig. 1

Usage of the device implements as follows: after submission of supply voltages there is an automatic stepwise frequency shift of EHF-radiation acting on extrareceptor of a zones on a body inspected, instituted by a pathology and cartography of acupuncture zones, with step, set by clock from initial values $F_1, F_2 \dots F_n$ before occurrence of a signal of reacting of an organism on effect by the influence, going from the filter α - Δ -rhythm of the electroencephalograph, showing about set-up with personal (resonant) frequency, reference for the given person and given pathology ensuring biological (therapeutic) effect. The achievement of therapeutic frequency of EHF-radiation demonstrated by signal indicators also is fixed during a medical session up to the moment of a reconversion α - Δ - rhythm in a β -rhythm.

The device has also reliable diagnostic tags: as an able-bodied organism and the able-bodied internals, projections which one is biologically fissile points on a skin of the person and on which one the EHF-influence implements, on low-intensity electromagnetic radiation not "respond", absence of gang of a β -rhythm on α - Δ -rhythm, to what the indicators, hooked up to an output of the filter of the electroencephalograph testify, with a large measure of reliance indicate absence of a pathology of an investigated organ. Under our data the veracity of such diagnostic on gastroenterological to diseases makes 91-92 %, that corresponds or surpasses veracity of diagnostic on Voll. Besides foreseen in the given therapeutic -diagnostic device functional capability to set duration of a session in an automode (temporary interval between a straight line and return gang β - and α - Δ - rhythm) allows to optimize medical process and to avoid spurious reactings, and also provides a capability of service of the device and realization of procedures with middle medical staff and even by operator. This relevant enough circumstance, as predetermines broad usage of the device on a workstation - in a cockpit MTF.

We allocate by vast clinical stuff on correction of a physiological condition of the people with pathologies of stomatological and gastroenterological nature, which one testify to efficiency of such correction.

The *second path* in implementation corrective of influencing of low-intensity EHF-radiation on an organism of the person, damaged by the miscellaneous technogenic factors, consists in fractional irradiation of restricted segments of a person's body by amplitude-modulated electromagnetic waves with a wavelength of 7,05-8,5 mm, constant magnetic field and variable electrical field. An amplitude modulation execute by triangular impulses with a termination ratio of forward and back fronts 20-30. The ratio between a modulating frequency and ripple frequency of a blood veins is equal 1-10. Effect by electromagnetic waves will clock with an electrical field and carry out with a modulating frequency, proportional ripple frequency of a blood in veins, during 15-20 min. Value of induction of a magnetic field at butt end of a ring-type magnet select from an interval 40-100 mTl, and direction of lines of force of a magnetic field perpendicularly of irradiated body surface. The intensity of electromagnetic radiation is selected from range by 1-20 mW / cm², and a permanent magnet directed to bioobject by a southern (negative) pole [16].

As effect execute by amplitude-modulated electromagnetic radiation, at the expense of radiosonic effect in a biotissue in a place of input of the modulated electromagnetic radiation arise longitudinal (in a wave direction) mechanical oscillations on a modulating frequency, which one execute a biomechanical stimulation of veins in a biotissue. The periodic movings (oscillation) of veins walls in relation to a surface of a permanent magnet, adjoining to a biotissue (of an irradiated surface), are equivalent to the appendix of a variable magnetic field, the oscillation frequency which one is peer to a modulating frequency of electromagnetic radiation, and as the lines of force of a magnetic field are oriented perpendicularly to veins, according to a Faraday law of induction on inverse points of the vein laying in a plane, perpendicular magnetic field and direction blood-flow, the EMF with a modulating frequency will be induced, the amplitude value is equal to which one

$$E = B \cdot l \cdot v \cdot 10^{-4} ,$$

where E - potential difference, V; B - induction of a magnetic field, Tl; l - length of the vein within the limits of a magnetic field, cm; v - speed of blood-stream, cm /sec.

Having taken advantage known numerical values for speed of blood-stream in veins of a skin (for capillary tubes and arterioles), numerical values of value of induction of a magnetic field at $l = 0,8$ cm (for concrete probed of the device on frequency 42 GHz), we shall receive numerical values for E in the above-stated analytical expression - unit of a millivolt (up to 10), that is a best value for small-signal information effects, as is commensurable with an own electrical field of an organism in the field of receptor fields, and consequently high-performance and not damaging. Thus, on bioobject moves superhigh frequency low-intensity electromagnetic radiation in a pulsed-modulated modes, enriching the immune characteristics and executing correction of disturbance of a homeostasis, and also magnetic field improving a blood stream in vessels and many biochemical parameters(indexes) of an organism. Besides due to a carried out way of input of electromagnetic and magnetic fields, in the bioobject the variable electrical field in turn improving biopower parameters of an organism, rendering local biomechanical effect, correcting coagulative and an energy potential is generated. And all listed effects implement on frequencies, equal or multiple to one of the basic biorhythms of the person - ripple frequency of a blood in veins, that predetermines high therapeutic efficiency of a way, and also absence of spurious reactings.

The offered way of correction of a functional condition of the person realised in the device for a reflexotherapy (fig. 2). The device contains the generator (is not figured), the cylindrical waveguide 1, hooked up to a wave-guide horn 2, dielectric rod 3, constant ring-type magnet of a system neodymium-iron-boron 4, one end adjoining to an end part of a wave-guide horn in a plane of the greater section(cross-section), and second - to an irradiated segment. The dielectric rod by one end enters in a wave-guide horn, and second - in a foramen of a constant ring-type magnet flush with an end surface of a magnet, versed southern (negative) magnetic pole to an irradiated segment of a body inspected.

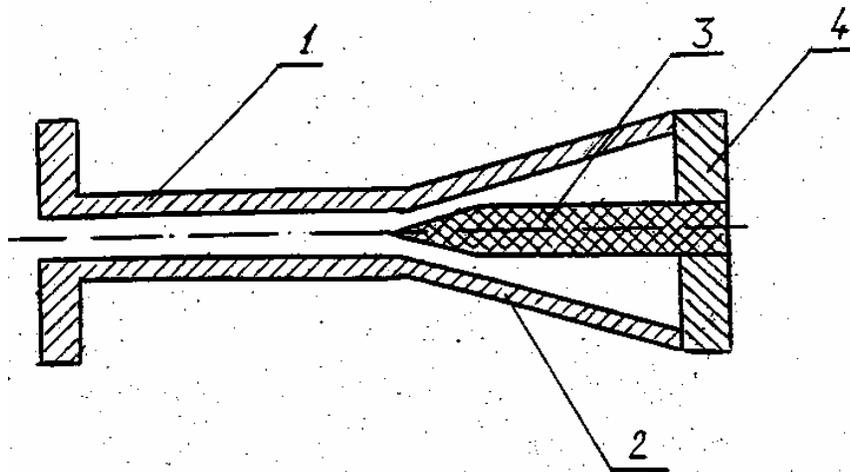


Fig.2

The electromagnetic radiation modulated on a ripple frequency of a blood in veins or on multiple frequency, on the cylindrical waveguide 1, wave-guide horn 2 and dielectric rod, established in a nem, 3 goes on a surface segment of bioobject by the area, equal cross section of a rod 3 in a place of contact with bioobject, and executes correction of disturbance of a homeostasis, immune characteristics for the score of reflective effect on ion- and osmoreceptors. The magnetic field is applied on the same segment of a skin, which one improves flow characteristics of a blood, develops a collateral circulation and improves vegetative - trophic functions. Besides the magnetic field increases sensitivity of receptors of a skin to low-intensity (less

than 20 mW / cm²) superhigh frequency electromagnetic fields, that the external respiration is fixed on sensory reactions of the patients and on objective physiological responses – vegeto-vessel reactions. The change of amplitude of pulse wave, that is a reliable objective parameter of biological effect at the stage of realization of a physiotherapeutic procedure, high general therapeutic effect are also consequent of implementation in an organism at usage of the given device bioresonant mechanic stimulation on segments of a body of the patient, where the input of electromagnetic waves implements at the presence of a magnetic field. And indicated biomechanic stimulation implements on frequency of one of the basic biorhythms - ripple frequency of a blood in veins. Thus, the organism of the person at realization of a physiotherapeutic procedure on the given way is both registering and control fissile element of physiotherapeutic effect, and, as against known acupuncture, as one of kinds of reflective effect, in the given way of a reflexotherapy and device for its implementation frequency and amplitude of local mechanical effect are determined by morphofunctional and biochemical properties of the biological system, as a matter of fact - own mechanical resonance of tissues being a fissile contour system. Definite it is experimentally a ratio interval of forward and back fronts of modulating impulses conceptually corresponds to a method of usage of acupuncture needles: to enter slowly, to extract fast. Value of induction of a magnetic field and its orientation are determined experimentally and the low limit corresponds to occurrence of sensory sensations of the patient (relaxation), upper - their petering, and from the analysis of efficiency of effect. The intensity limits of electromagnetic radiation (in recalculation on cross section of a dielectric rod in a place of input of radiation in bioobject) - low limit are similarly determined is determined by sensitivity of dermal receptors, upper - petering of a relaxation.

As in the given way of correction the electromagnetic radiation moves directly in a tissue from the dielectric radiator, the «geometrical resonances» - by virtue of features re-reflective of a surge in space - exit section of a channel - area of effect on a surface of a skin - are eliminated so-called at usage of known devices [15] there is hardly inhomogeneous picture of a field pattern with availability of a plenty of extremums, the position which one on a surface of bioobject all time varies at a frequency drift, mutual movement of an irradiated surface and radiator, causing a strong frequency dependence of biological effect, that makes great demands both on absolute values of frequency of electromagnetic radiation, and to its stability for maintenance of indispensable therapeutic effect.

The joint action in one therapeutic procedure, clocked with the basic biorhythm electromagnetic, magnetic, electrical fields and bioresonant mechanic stimulation, ensuring biological effect at all hierarchic levels (cell-like, organ, organism), allows to reduce duration and quantity of therapeutic sessions. It is reached with usage of devices structurally foolproof and low-budget.

The **third path** in maintenance of correction of a physiological condition of crews MTF consists in effect on an organism of the person by low-intensity variable magnetic fields, the vector - frequency (spectral - polarization) characteristic is as much as possible approximate which one to the spatial and biorhythmic characteristics of own electromagnetic fields of an organism of the person [17] and frequent - polarization frame of geo- and heliomagnetic fields being, as is known [18, 19], one of sources of information about a condition of an environment, providing ecological adequacy of a boring, supplementing it the data, obtained by the help of known sense bodys. Overcoming of pathological effect of magnetic fields, created by the energyforce installation of MTF, presenting a superposition of a constant magnetic field of transport superconducting-coil electromagnets and running electromagnetic field created by a thrust winding of the linear synchronic engine (frame of such composite field is well enough studied [2] and is three-dimensional), can be carried out by a low-intensity alternative magnetic field, the frame which one is as much as possible approximate to frame of a magnetic field MTF, realising influencing by a principle «similia similibus curanter».

The indicated frame of magnetic fields can be obtained with the help of the device - source of variable magnetic fields representing a combination of mobile and fixed permanent magnets and interacting among themselves, that allows to execute effect by magnetic fields having axial, radial and tangential components of induction of a magnetic field [20], that corresponds to a three-dimensional constitution of a microcircular channel and arteriovenous anastomoses in an organism of the person, providing miscellaneous physiotherapeutic effects. Availability in such generator of capabilities of dynamic change of magnetic density in bioobject and alternation of the area magnetic influence, the availability of variations amplitude and

frequency response curves of generated magnetic fields adequate to variations of a magnetic field of the Earth, space influencing space and geophysical factors, and reshaping adaptive reacting [18], augments quantity of biotrophical parameters of a magnetic field and accordingly therapeutic efficiency, eliminates by-effects. The energo-frequency and polarization characteristics of the indicated magnetic fields correspond to frame of muscle fibres and veins, kinetics of a lymph flow and blood-stream in tissues of an organism of the person.

The generator of variable magnetic fields (the fig. 3a, b) contains a body 1 with a cover 2, drive 4, on the arbor of which the reference disk 3 and the source of magnetic field made by the way of the disk from magnetopenetretial material stuff with symmetrical concerning the center of the disk the mobile magnets, arranged along radius, 5,6,7 and fixed magnet 8, arranged in magnetotransparent cover of a body are located. The end edges of magnets arranged on the reference disk, versed to object of effect, are bevelled in a direction of ring-type lines. In the disk from magnetotransparent material the grooves 9 with restraining forward and back walls 11,12, oriented along radiuses, with mobile magnets, located in them, predominantly by the way of tetragonal prism, and eiloid restoring springs 10 are executed. Each of their magnets by first butt end lying in a transverse plane of a groove, flanks to short-range concerning center of the disk, restraining wall, by second butt end - to a reflexive eiloid spring.

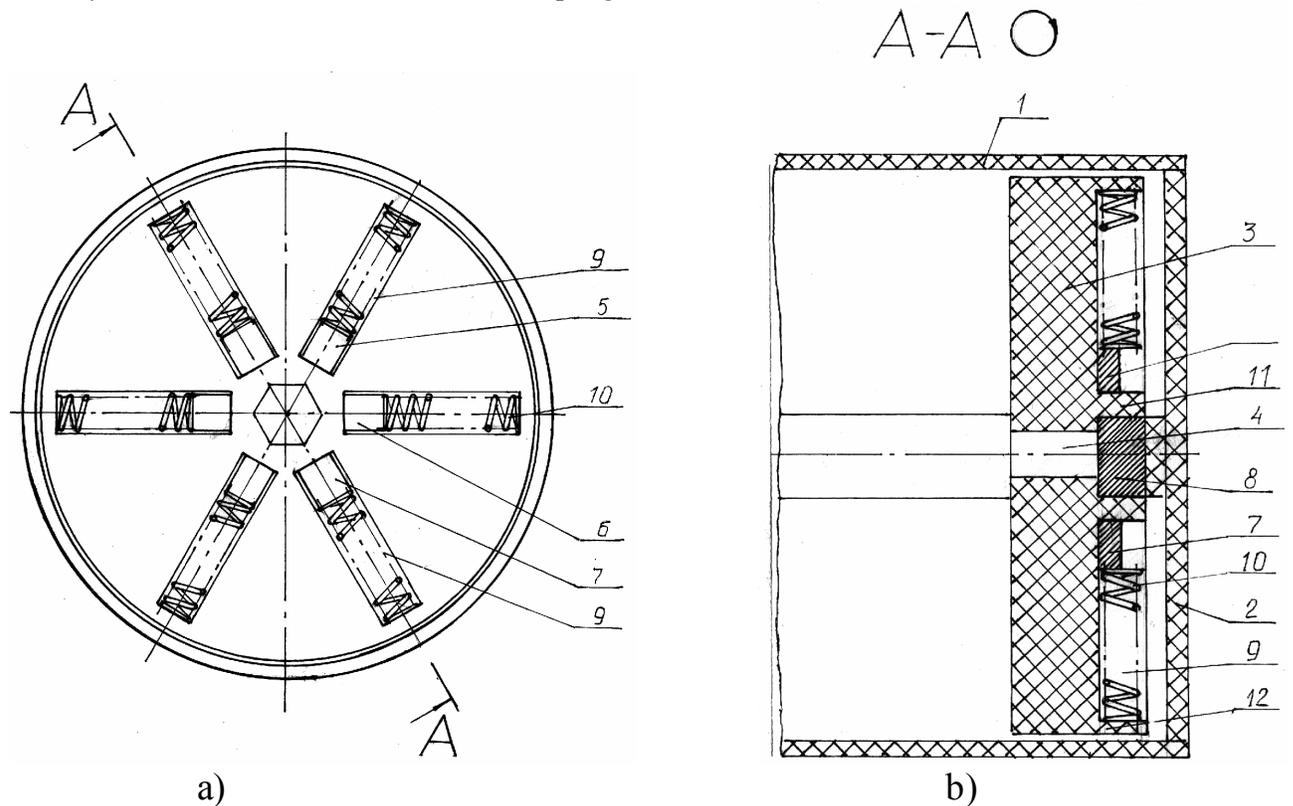


Fig. 3

Remote from center of the disk end of a spring flanks to a distant restraining wall arranged on peripherals of the disk. The cross section of a groove corresponds to cross-section of a mobile magnet in a plane perpendicular to base of the disk. The mobile magnets arranged on the different radial lines, are made with different sizes with interleaving from radius to radius by polarity and sizes. The magnets arranged on radial lines of definite diameter, have identical weight. The fixed magnet, predominantly as a hexagonal prism, versed to bioobject by a southern (negative) pole, is executed from an anisotropic material. The angle between vector of a magnetization and centerline of a fixed magnet is (15... 60 °).

In a static state the indicative lines of magnetic field coming from the north pole of mobile magnets, pass through bioobject and close on the south pole of a fixed magnet and south pole of mobile magnets on adjacent radius. Thus density of lines of induction and their orientation in magnetized object are non-uniform and are determined by orientation of vector of a magnetization of a fixed magnet by sizes of the area of mobile magnets at a given magnetization and spacing interval between a fixed magnet and mobile magnets, and owing to the indicated positional relationship of magnets the magnetic field in bioobject has three components - axial, radial both tangential, and their values can be determined numerically and are gauged experimentally [20].

At disk rotation with a mass of magnets owing to centrifugal efforts affecting mobile magnets, last will begin to be displaced on grooves along radial lines and value of this moving depends on a design of the device. From an equation of Lagrange for motion of a body of weight m on a circumference which is taking into account a moment of inertia of a body concerning an axis $I = mR^2$, where R - spacing interval of a body from an axis, potential energy of a body being a function of weight and attitude of a body, follows, that at equal angular acceleration for a system of bodies of miscellaneous weights arranged on the rotated disk, the deleting of bodies of miscellaneous weights from an axis at given elastic properties of restoring springs is proportional to their weights and depends on dimensional orientation of rotation axis. So, at a level attitude of the disk the bodies of all weights will commit circular trajectories, at deviation from horizontal - elliptical with focal distance dependent on weight of a body [21]. At increase of rotation rate of the disk the mobile magnets will leave from center, at decrease - under operating of restoring springs - to come nearer to center, deriving extending - constricted fields, that is running fields. And, as the mobile magnets are bevelled in a direction of ring-type lines, the axial component of a field in biomedium changes as continuously, at transit of each of mobile magnets of a variable altitude and, accordingly, with varied spacing interval between bioobject and magnet pole, and spasmodically - at transition from a magnet on one radial line to a magnet on other radial line.

In accordance with the first electromagnetic Maxwell equation of the time variations of a magnetic induction generate in biomedium vortical electrical fields, which one in turn generate in biomedium variable magnetic fields. Mathematical modelling and the experimental testing of electrical and magnetic fields frame demonstrates, that produced variables electrical and the magnetic fields, contain longitudinal, radial and tangential components, that is in a biosphere they create a volumetric electromagnetic vortex, parameters which one - the area of magnetization, value of a magnetic induction of different spatial components, spectral concentration of challenging effects - can be preset by the form and measure of an anisotropy of mobile and fixed magnets and in dynamics can be changed by rotation rate of a mass of mobile magnets. It allows to optimize medical process magnetotherapy, as the broadband flows of highcoherent electromagnetic waves, which are presented to an organism pursuant to the existing base concepts, are one of kinds of buffer systems of alive organisms. A capability to change the area of magnetization and speed of this change allows to create constricting - extending, that is running magnetic fields without change of a positional relationship of bioobject and source of a magnetic field - last can be established directly on a body of the person - allows to execute medical procedures at the strictly determined parameters of physiotherapeutic effect, to supply the coordination of a propagation direction of running magnetic fields with a direction of a lymph flow and blood flow, orientation of fibres of muscles, direction of ionic currents and fissile transport.

The electromagnetic vortex pursuant to a Faraday law of induction on diametrically opposite points of veins lying in a plane perpendicular of magnetic flux lines and a direction of blood flow on a vessel, creates EMF, the value by which one is determined by the sizes (length) of a vessel in a plane of the putting of magnetic field, by the blood flow speed; by the value of induction of a magnetic field (see higher) also than its variations in time and on a direction, will supply(ensure) an electrical stimulation of veins of all orientations both on a surface of an organism, and in its volume by virtue of a high penetrating power of magnetic fields, and this stimulation encompasses practically all surface of veins copiously supplied with electroreceptors. Under operating induced in bioobject of vortex currents the ions commit oscillations on composite trajectories, encompassing considerable number of biotrophical parameters of physiological effect. The jumps of induction of a magnetic field at transition of mobile magnets of one radial line to magnets of adjacent radial line or at

discontinuous alteration of speeds of rotation of the drive and, accordingly, discontinuous movings of magnets along grooves result to excitation in bioobject, as in medium heterogenous, mechanical oscillations, variable both on force, and on a direction, that is in a biosphere there are cavitation oscillations observed not only in model experiments, but also showing in sensory reactings of the patients. Carried out at the expense of it vibrostimulation pursuant to existing representations about mechanostimulation [22, 23] results in strengthening of diffusion processes, changing of ionic condition and processes of oxidation. Vibrostimulation of specific primary receptors in biologically fissile points of a skin or reflexogenic zones on gum tissues invokes a high flow of afferent impulsation from peripherals to a central nervous system (CNS), which by reflectory way affects on general regulator mechanisms of an innervation of vessels, increases a volume of microcirculator channel, augments quantity of a circulating arterial blood and transport of oxygen, that positively has an effect for nature of metabolic processes, conducts to liquidation of stagnant phenomenons, improvement of a trophicity of magnetized tissues, improvement of function of operation of organs and systems, projections of which are biologically active zones of magnetized tissues of an oral cavity [27].

A capability to veer and rotation rate of the drive in the given generator of magnetic fields allows to veer circulation of electromagnetic vortexes and cavitation surges, generated by them, and thus to coordinate with the purpose of strengthening of therapeutic effect with a streamline of energy in those meridians of biologically fissile points, on which the points of effect are arranged: at treatment of diseases of a stomach, cholic bladder the rotation of a magnetic field is necessary right-handed (clockwise); at treatment of a pancreas a liver the rotation is necessary left-handed (counter-clockwise). At treatment of inflammatory damages of parodont (generalized parodontit) it is necessary left-side, at dystrophy (parodontoz) - right-handed rotation. At treatment of persons with a syndrome of a regional cerebrovascular dystonus for reduction of tone of regional vessels - the left-side rotation, for increase of tone - right-handed is necessary. And the indicated direction of a radial and torsion components of a magnetic field conceptually corresponds to a direction, recommended in an acupuncture, (left-hand - right-hand) rotation entered in biologically fissile points of acupuncture needles [24] at treatment of the indicated diseases. As the generated broadband flows of highcoherent magnetic fields have the miscellaneous polarization characteristics, the bioobject has a capability from the shown spectrum of magnetic fields to select that segment of a spectrum or that its component, which are matched to the own spectral and time-space characteristics, that is there can be an interplay for phylum, which N. Wiener [25] has called «*as the one whom it concerns*», meaning, that the frames of an organism accept only «necessary» and accessible signals for the given condition of an organism and that the able-bodied organism is poorly responsive to magnetic fields in large frequency and dynamic range. It means also, that selection of individual "truely therapeutic" frequencies is considerably facilitated. And, changing rotation rate of the drive, we receive a capability not only to change the area of magnetization, but also to move in this or that party a spectrum of generated magnetic fields and by that to encompass considerable number of bioobjects, of biotroph parameters of physiological effect, to change a functional condition of cells, organs, systems of an organism. A capability to veer rotations of the drive allows to agree a direction of flows of a magnetic field with a direction of energy flows and currents in a meridian: it is possible to achieve the summation of energies and it to achieve reacting of an activation; it is possible also, using counter hooking up (summation of energy in phase opposition), to supply a dispersion of the conforming meridian, to advance sedative (abirritating), antitumoral or analgetic effect, eliminating in an organism of the person functional shifts called by magnetic fields of an electric power installation MTF.

As modern drives (mechanical, electrical, pneumatic) provide rotation rate from 0,01 to 600000 rpm, and the connection between rotation rate N rpm and frequency of a generated magnetic field on a fundamental component F_{th} is determined as $N \text{ rpm} = 60F_{th}/k$, where k - quantity of radial lines, and as a magnetic field, generated by the device, - multivectorial with composite amplitude-frequency modulation of spatial components, the given generator can in a maximum measure replicate energy-frequency and polarization frame of geomagnetic fields supplying evolushional formation of gears of a neurohumoral regulation. Therefore usage of generated variable magnetic fields is effective in recovery of adaptive reactings for the operators, completely or particulatly screened from geomagnetic fields, providing situation-optimum interplay of an organism with environment.

The fulfilment of mobile magnets skewed in a radial direction provides at gang of a sense of rotation a capability to change nature of input of a magnetic field in separate areas of bioobject: to enter slowly - to inject fast, if spacing interval between a skewed (inclined) surface of a magnet and bioobject decreases, since maximum rating, at turn of the disk. The magnetic density in the indicated interval rises slowly to maximum rating, then unevenly is reduced up to minimum. At a retreating of the drive the magnetic density from maximum continuously varies up to minimum. Such nature of input in bioobject and conclusion (injection) of magnetic fields conceptually corresponds to a way, adopted in an acupuncture, of the introducing of needles in biologically fissile points: the reacting of an activation is reached at sluggish rotation of a needle and its fast extraction; reacting of sedation - at return picture.

The correction of the physiological state of the person realized as follows. Outgoing from pathology, in the drive control block the conforming operational mode of the drive - intermittent alternating with an automatic polarity changing of supply voltage and, accordingly, sense of rotation, or continuous with smoothly varying hand control of speed and direction of rotation is established. The intermittent operation of a power of the drive has two modifications: voltage pulses of the trapezoidal form with exponential forward and abrupt back fronts and with abrupt forward and exponential back fronts with serial through a pause by gang of polarity. The frequency and the intensity of impulses, given on the drive, establish so that on a flat part of power impulses of the drive could be ensured frequency generated a magnetic field in limits from 0,1 up to 100 Hz. Thus traditionally used in sources of variable magnetic fields the meters of frequency of a magnetic field on hermetic contacts fix the main (fundamental) frequency, and other components of a spectrum are determined from special measurements.

The source of variable magnetic fields dispose on definite spacing interval from object of effect or directly on bioobject so that the magnetic density in bioobject was within the limits of 8 - 42 mTl. For bioobjects, the optimum direction (left-hand - right-hand) tangential (torsion) components for which is not known, will use an intermittent alternating mode and speed control of rotation of the drive fine-tune frequency of a magnetic field before appearance of sensory sensations by the patient (in an internals at effect on the conforming reflexogenic zones and points) - and on this frequency carry out a therapeutic procedure. At treatment of diseases, for which the direction of rotation of torsion components is determined, establish the conforming direction of rotation of the drive and by speed control of rotation set its value, at which the patient definite sensory reactions show, or the values, defined earlier from statistically detected for other persons and brought in in the conforming normative documents on usage of the generator of magnetic fields as therapeutic device. So, a best value of frequency for strengthening of physiological activity of cells of immunal of a system is 1 Hz; the overcoming of thrombohemorrhage syndrome and normalization of haemocirculation in parodont tissues is reached at frequencies 1,9 - 4,8 Hz; the normalization of the factors of local immunological protection in an oral cavity distorted at generalized parodontit (on a catalase, generalized nitrohenaz and superoxide scavenger), is reached at frequencies 18 - 23 Hz; at treatment of atrophic processes of a mucosa of the upper respiratory pathes the optimum the frequencies are 40 - 50 Hz (as well as at treatment generalized parodontit will use two inductor sources); the normalization of tone of regional vessels of a brain is reached at the frequencies 60 - 100 Hz, that at a three-radial system of mobile magnets corresponds to rotation rate of the drive 1200 - 2000 rpm; the changes of proteolytic activity of Pepsinum are reached at frequencies 74 - 75 Hz, thus at a right sense of rotation the activity of Pepsinum increases, at the left-hand sense of rotation the activity of Pepsinum is reduced. The duration of a medical session from 2-3 minutes till 15-30 of minutes depending on disease, stand-by capabilities of an organism and within the limits of one session is determined from the moment of appearance of comfortable sensations before their petering and appearance of feeling discomfort. The duration of a course (quantity of sittings) is determined by clinical, biochemical, immunological parameters. Encompassing plutonic mechanisms of a homeostas, the vortical magnetic fields will actuate own resources of an organism, in this connection them the corrective the influencing on an organism of the person is optimum.

Envisioned to the data by a way of correction of a physiological state of the person the inverse of a sense of rotation vortical (torsion) components of a magnetic field is dictated by the factor of disymmetrisation of dextral and left-hand (D-L) of the forms of life in a material world (chirality) [26] and by advantages given

to alive systems by chirality of molecules. In the precursor period on the basis of physical, biological, microbiologic, experimental, clinical researches we push a scientific hypothesis, that "asymmetrical" (left-right rotated) the electromagnetic fields both in the prebiological period, and during of biological development were the predominant factor in a parentage chirality and that property of chirality of living matter and alive systems is their that fundamental property, which one can be controlled by artificially synthesized electromagnetic fields, the time-space characteristics of which correlate with the characteristics of own electromagnetic fields of bioobjects, and on frequencies which are immanent to bioinformation exchange. It guesses a capability of targeted control of parameters of bioobjects if to establish, what from the forms - left-hand or dextral - evolutionary is fixed to this object. How it was indicated earlier, from biophysical researches *in vitro* was established, that the stomachal protease Pepsinum has clearly expressed chirality: at a right sense of rotation of vortical components of a variable magnetic field the proteolytic activity of Pepsinum increases, at left-hand - is reduced. In other words, Pepsinum the D-form of chirality is characteristic. Thus the optimum (as a matter of fact - resonant) frequency is frequency of 75 Hz (center frequency of a ruled spectrum). Indicated regularities of changes of activity of Pepsinum have confirmed in clinical researches: at effect of vortical magnetic fields directly on the pathological locus - on epigastric area of patients by a peptic ulcer of a stomach and duodenum: in a phase of peaking effective there was only left-hand sense of rotation of a magnetic field; at the reduced proteolytic activity of a gastric juice for the patients with disease of gastroduodenal zone - only right-handed sense of rotation rendered positive influencing. Thus the frequencies of a variable magnetic field of 74-75 Hz have appeared optimum. X-ray crystallographic analysis of a substratum Pepsinum has shown, that the mechanism of influencing of a vortical magnetic field actuates change of structural intramolecular interatomic interplays of all molecules of Pepsinum.

At treatment of diseases of cholic bladder the sense of rotation vortical components is necessary right-handed (clockwise); at treatment of a pancreas and liver (fatty hepatitis) is necessary left-side (counter-clockwise) sense of rotation. At treatment of patients with a syndrome of regional cerebrovascular dystonia: for **increase** of tone of regional vessels of a brain the right-handed direction is necessary, for **downturn** of tone of regional vessels the sense of rotation vortical components of a magnetic field is necessary left-side (counter-clockwise): subjected projection zones 1G-17 and E8, G1-18 and VB-8, V-10 and TM-15 - depending on localization of disturbances: in basin of an internal somnolent artery (CA), in basin of outside CA, in vertebrobasilar system - accordingly.

The authentic increase of an osmotic resistance of erythrocytes to hypotonic salt solutions is reached at a right sense of rotation of vortical components of a magnetic field; authentic increase of sensitivity of the strains enterobacterias *E.coli* and *Proteus vulgaris* to antibiotics (kanamycinum, kotrymaksazol, nitrofurangin, gentamicin, chloramfenicol) was reached at the left-hand sense of rotation of vortical components.

Is generalized - all substratums and organs of the person, which to the present time were investigated [27], had "own", from the point of view of correctional influencing, sense of rotation of vortical components of a magnetic field, that allows to consider to mandatory actuation of parameter chirality in set of the spatial characteristics of alive systems and treatment of concrete nosologies to execute with allowance for such as (D - L) chirality and this established (experimentally or clinically) chirality is necessary to support for maintenance of normal operation of an organism. The vortical magnetic fields allow to execute it. Thus their role can be relevant not only at combined (with pharmaceuticals) correction of a physiological state of the person, but also in measures on normalization of evolutionary formed chirality and disturbed by technogenic electromagnetic fields.

Therefore it is possible to consider actuation of low-intensity electromagnetic fields in an arsenal of means on correction of a physiological state of the person justified.

In summary we shall indicate, that as during changes of the evolution alive electromagnetic, electrical and the magnetic fields of a natural parentage (geo-helio-cosmogonical) from foregone satellites and witnesses of biochemical processes as a result of natural selection have turn into a major informative system and mandatory attribute of life and as magnetolevitative train is an effective screen for the mentioned above fields, the artificially synthesized electromagnetic fields of range extremely of high frequencies and vortical

magnetic fields should be used not only for correction of the detected or anticipated disturbance in operation of an organism of the members of MTF-crews, but also to execute a role of an electromagnetic background in a MTF-cabin or passenger saloon with allowance for established affinity of the affecting physical factors and accepting biological frame - organism of the man.

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