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(72) Inventor; and
(71) Applicant : **IONESCU, Iuliu** [RO/RO]; Piteşti, Street Grigore Tocilescu nr. 2, code 110260, County, Argeş (RO).

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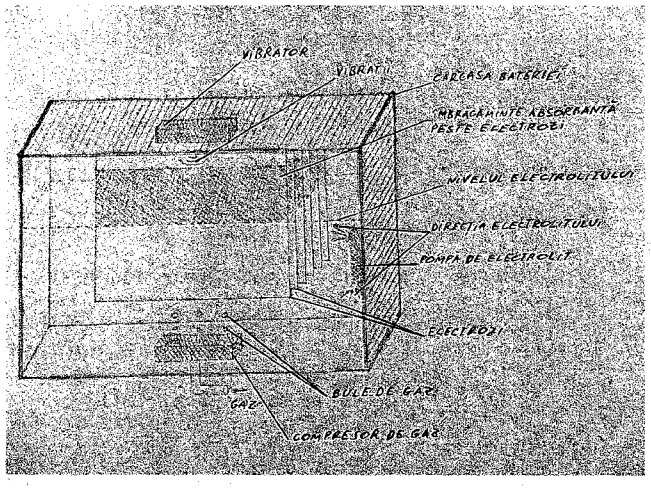
(54) **Title**: ENHANCED POWER ELECTRIC BATTERY SYSTEM

FIG. 1:Enhanced power electric battery system



1 – vibrator = vibrator;
2 – vibrații = vibrations;
3 – carcasa bateriei = battery housing;
4 – îmbrăcăminte absorbantă peste electrozi = absorbent covering over the electrodes;
5 – nivelul electrolitului = electrolyte level;
6 – direcția electrolitului = electrolyte direction;
7 – pompă de electrolit = electrolyte pump
8 – electrozi = electrodes;
9 – bule de gaz = gas bubbles;
10 – compresor de gaz = gas compressor.

(57) **Abstract**: The invention relates to an electric battery (or even accumulator) system with liquid electrolyte (Fig. 1) whose novelty is that with the actual battery, a vibrator to clean the electrodes from deposits is attached, a pump which makes the electrolyte flow among the electrodes to refresh it, a compressor introducing a supporting gas (air, oxygen, ozone, etc.) in the electrolyte or above it, and the electrodes are covered by a thin layer of a permeable and absorbent material, being only partially inserted into the electrolyte in order to better capture the gas on their surface above the electrolyte level. The advantage this system presents is that it enhances the battery- generated power in the same time unit, by at least 30% besides the consumption made by the attached devices.

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DESCRIPTION

ENHANCED POWER ELECTRIC BATTERY SYSTEM

The invention relates to an electric battery (or even accumulator) system with liquid electrolyte (Fig.1) which enhances the power the battery generates within the same time unit by at least 30% besides the consumption the devices attached make.

Liquid electrolyte batteries are well known. Their disadvantage is that a relatively swift decrease in the power generated occurs.

The issue this invention solves is that enhanced power is achieved by at least 30% within the same time unit besides the consumption the devices attached make.

The novelty consists of the fact that with the actual battery, a vibrator is attached to clean the electrodes from deposits, a pump which makes the electrolyte flow among the electrodes to refresh it, a compressor introducing a supporting gas in electrolyte or above it, and the electrodes are covered by a thin layer of a permeable and absorbent material, being only partially inserted into the electrolyte in order to better capture the gas on their surface.

Detailed description:

1. With a liquid electrolyte battery, one or several vibrating devices are attached (electromagnet, engine, etc.) to imprint vibrations on one or several frequencies concomitantly or successively, comprised between infrasound and ultrasounds (depending on the battery size, electrode thickness, distance between electrodes) on one or several dispersal directions, either to the battery housing, or to the electrolyte, or directly to electrodes. The purpose was that vibrations would reach the electrodes so as to clean them from deposits which, over time, shorten the battery's power. These vibrating devices may be fastened either in the electrode compartment, or outside it.

2. Apart from the vibrator, one or several pumps shall be attached (with electromagnets, propeller engine, etc.) so that the electrolyte may flow through the electrodes inside the battery, refreshing it and thus maintain the battery power to a high level for as long as possible. These devices may be attached inside or outside the electrode compartment.

3. Apart from the vibrator and the pump, one or several gas compressors are attached (with electromagnets, motor-driven fans, etc.) to insert air, oxygen, ozone or another appropriate gas to the battery, depending on the electrolyte, needs and possibilities These devices may be

attached inside or outside the electrode compartment. As an example, the oxygen surplus enhances the oxidation reaction and thus increases the power generated by the battery. The gas may be injected into the battery's electrolyte or above the electrolyte by ventilation.

4. In order that the gas may have a larger effect by a better dissolution in the electrolyte, the electrodes shall be solely partially inserted in the electrolyte, but they shall be covered by a thin layer of permeable and absorbent material (e.g.: polyester fabric) which shall preserve the electrodes surface in contact with the electrolyte and it shall better absorb the gas at the electrodes 'surface. Thus, the electrodes segment which is above the electrolyte level shall be permanently covered by a thin film of electrolyte absorbed by the fabric, whereby the supporting gas shall reach the electrodes 'surface much faster, thus generating more power. On the electrode portion above the electrolyte contact bridges may be placed, from place to place, between the cathode and anode, made from the same absorbent material or a conductor, so as to shorten the path of the charge carrier and implicitly, shorten the electrical resistance between the anode and the cathode. The electrodes may be vertical or inclined under a convenient angle. If inclined, the advantage is that better electrolyte absorption shall take place and on a higher electrode surface; moreover, the battery requires a few times less electrolyte than with vertical electrodes and it shall weigh less.

5. Another option, which at the same time carries out the electrode cleaning, electrolyte's refreshing and better gas absorption, is by fastening the electrodes on an axle and their swiveling or pivoting in the vertical plane or tilted. Among the electrodes disks or another form of certain material shall be fastened, on the same axle or separately, which shall swivel or pivot counter-clockwise to the electrodes, either at the same time, or in turn, cleaning them much better. Depending on the electrolyte and electrodes, it may be sufficient to swivel only the discs and the advantage is that they can be much lighter than the electrodes and a lot of power may be saved. The discs may be pierced if they are made from a non-electrical conductor material so as to reduce the electrical resistance between the electrodes. Both the electrodes and the discs between them may be totally or partly immersed in electrolyte and may be moved by a motor or by electromagnets.

According to the invention, this battery system apart from the higher power which can be achieved from a battery can also help us in critical situations. All these power enhancement devices need not be turned on permanently or operate concomitantly. For instance, if we are to use this battery system conventionally (without operating the power enhancement devices), the battery may no longer be of use to us precisely in an emergency situation. Then, we can actuate one or several power enhancement devices, attached to the battery, and the power will enhance instantaneously solving the issue.

These power enhancement devices can supply from the respective battery itself or from a different source.

CLAIMS

ENHANCED POWER ELECTRIC BATTERY SYSTEM

1. Electric battery system with liquid electrolyte with enhanced power, **characterized by the fact that** one or several vibrators are attached in the electrode compartment or outside it, tuned to one or several frequencies concomitantly or successively, comprised between infrasound and ultrasounds, on one or several dispersal directions they can imprint these vibrations either on the battery housing, or on the electrolyte, or directly in the electrodes in order to clean the electrodes from deposits.

2. Electric battery system with liquid electrolyte with enhanced power, **characterized by the fact that** one or several liquid pumps for electrolyte are attached in the electrode compartment or outside it, causing the electrolyte flow through the electrodes inside the battery in order to refresh the electrolyte between the electrodes.

3. Electric battery system with liquid electrolyte with enhanced power, **characterized by the fact that** one or several gas compressor or fans are attached in the electrode compartment or outside it so as to insert air, oxygen, ozone or another appropriate gas in the battery's electrolyte or above the electrolyte.

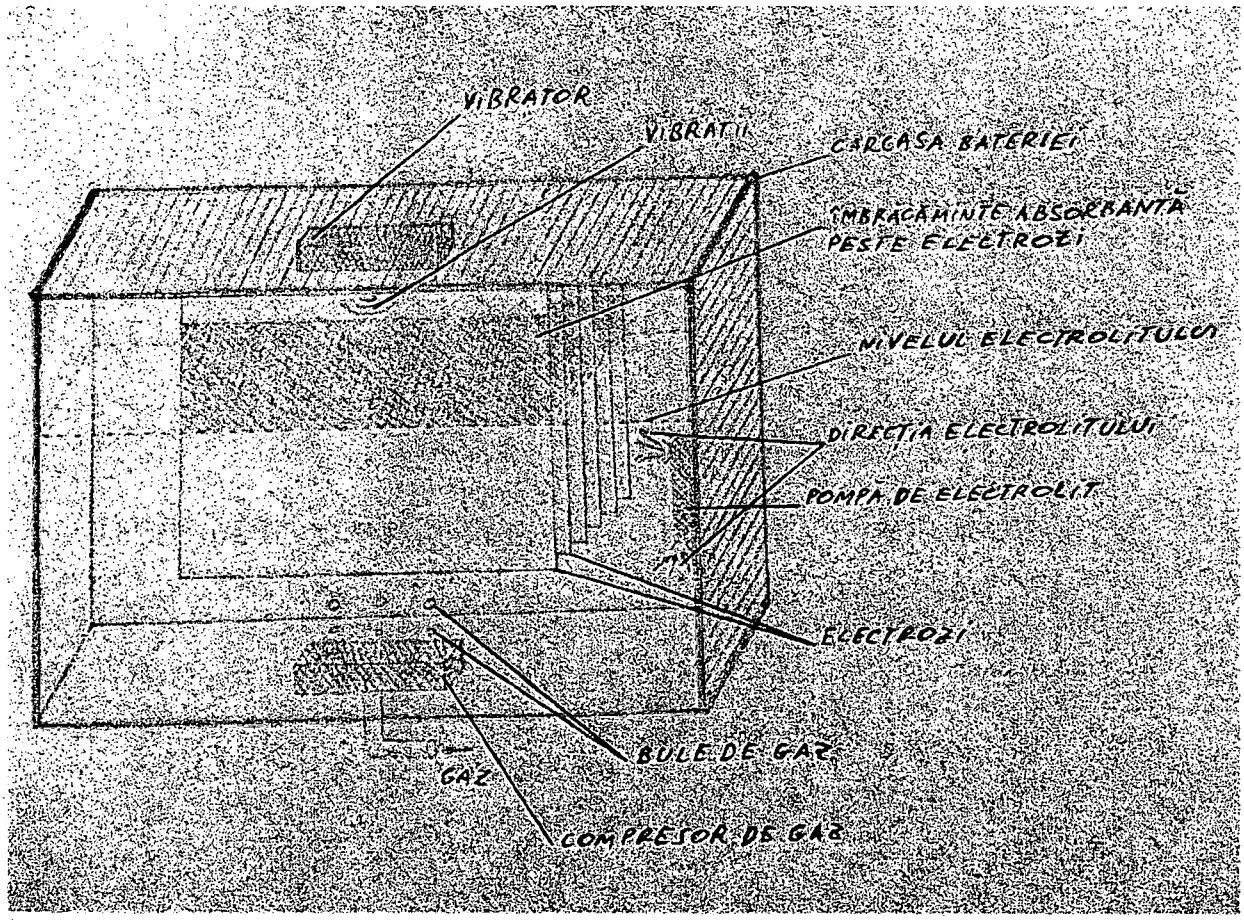
4. Electric battery system with liquid electrolyte with enhanced power, **characterized by the fact that** vertical electrodes or inclined under a convenient angle shall be solely partially inserted in the electrolyte, but they shall be covered by a thin layer of permeable and absorbent material which shall preserve the whole electrode surface in contact with the electrolyte and it shall better absorb the gas at the electrode surface, by placing contact bridges (pins) from place to place, between the anode and the cathode, made from the same absorbent material or from a different conductor.

5. Electric battery system with liquid electrolyte with enhanced power, **characterized by the fact that** the electrodes swivel or pivot in a vertical or tilted plane, and between them pierced discs or other made from a certain material shall swivel or pivot counter-clockwise to the electrodes, moving concomitantly or successively with the electrodes, both the electrodes and the discs between them being totally or partly immersed in the electrolyte.

DESCRIPTION OFTHE DRAWINGS

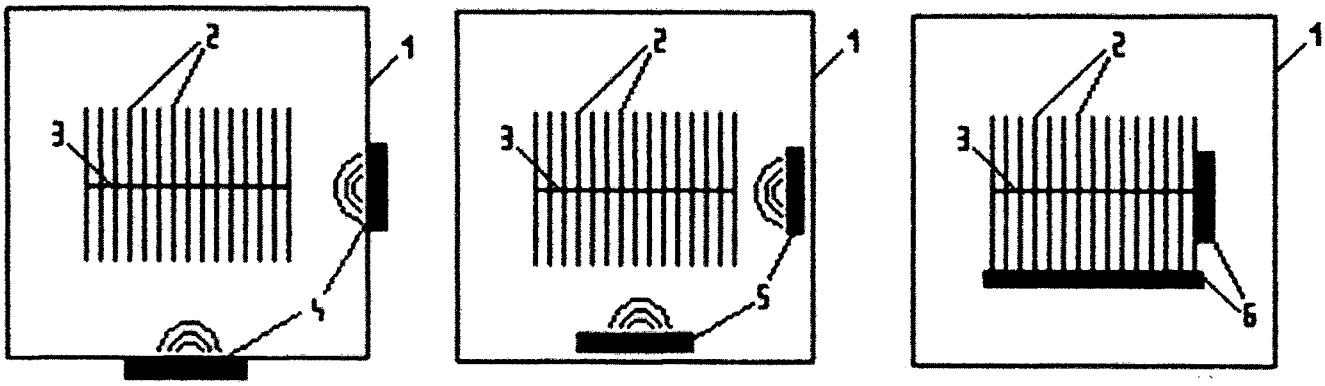
ENHANCED POWER ELECTRIC BATTERY SYSTEM

FIG. 1:Enhanced power electric battery system



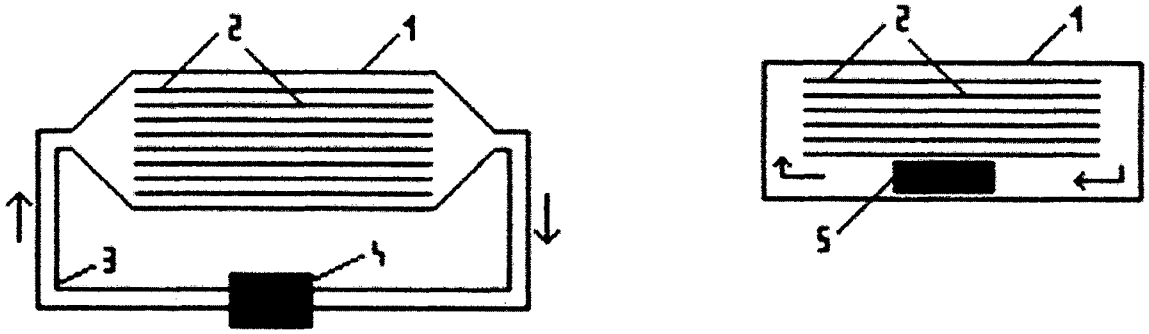
1 – vibrator = vibrator;
2 – vibrații = vibrations;
3 – carcasa bateriei = battery housing;
4 – îmbrăcăminte absorbantă peste electrozi = absorbent covering over the electrodes;
5 – nivelul electrolitului = electrolyte level;
6 – direcția electrolitului = electrolyte direction;
7 – pompă de electrolit = electrolyte pump
8 – electrozi = electrodes;
9 – bule de gaz = gas bubbles;
10 – compresor de gaz = gas compressor.

Fig. 2 (plan view) –covering claim 1 of the invention:



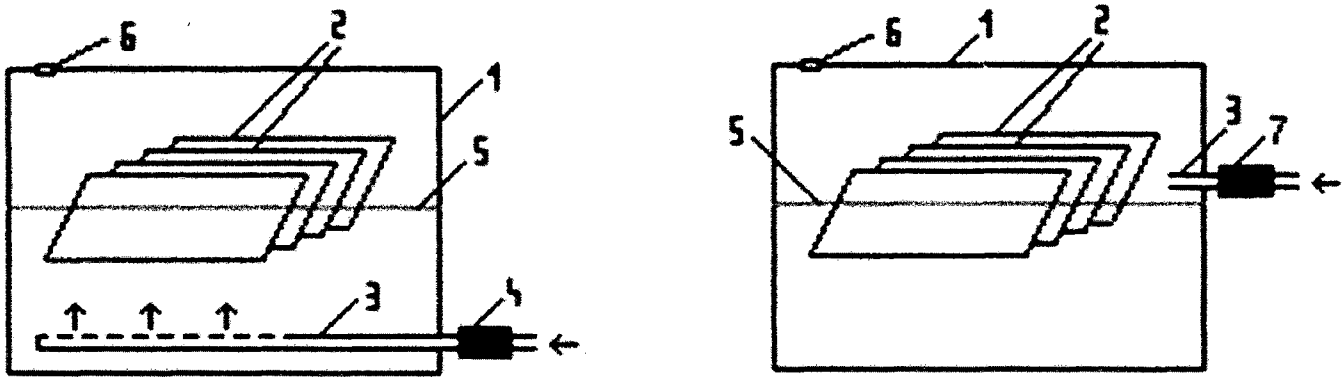
1 – battery housing;
2 – electrodes;
3 – electrodes supporting axle;
4 – devices inserting vibrations in the housing;
5 - devices inserting vibrations in the electrolyte;
6 - devices inserting vibrations directly in the electrodes.

Fig. 3 (plan view) –covering claim 2 of the invention:



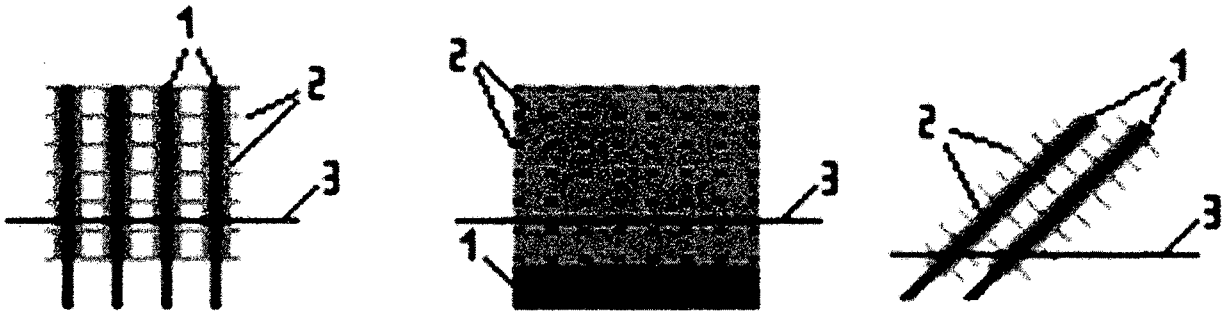
1 – battery housing;
2 – electrodes;
3 – pipe for electrolyte's travel;
4 – pump outside the battery – for electrolyte's travel;
5 – pump inside the battery – for electrolyte's travel;

Fig. 4 (side view)–covering claim 3 of the invention:



1 – battery housing;
2 – electrodes;
3 – pipe for gas injection;
4 – pump for gas injection in the electrolyte;
5 – electrolyte level;
6 – gas exhaust outlet;
7 – pump for gas injection above the electrolyte;

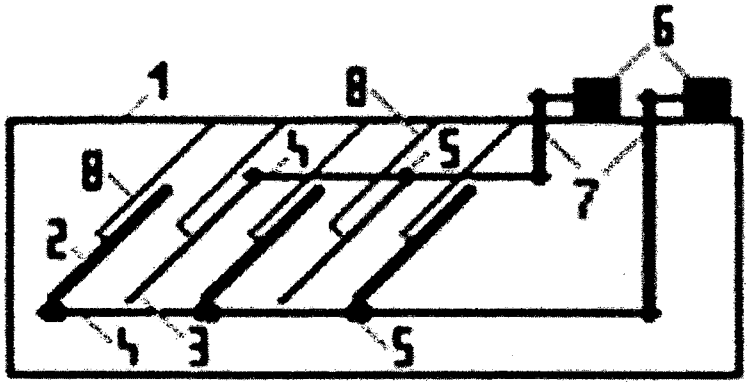
Fig. 5 profiles of vertical and oblique electrodes – covering claim 4 of the invention:



a) b) c)

a) Vertical electrodes – side view;
b) Vertical (or inclined) electrodes- surface view;
c) Inclined electrodes – side view;
1 – metal electrodes;
2 – liner over electrodes made from an absorbent material with pins from the same material (contact bridges between the anode and the cathode);
3 – electrolyte level.

Fig. 6 Swiveling inclined electrodes (side view) – covering claim 5 of the invention:



1 – battery housing;
2 – rotating electrode;
3 – rotating disc between the electrodes;
4 – axle for electrode r discs' swiveling;
5 – toothed wheel fastened on the axle which spins the electrodes or the discs;
6 – engines spinning the electrodes and the discs;
7 – driving belts from the engine to the axle;
8 – metal rod for support and electrical contact for the electrodes.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/RO 2016/000006

A. CLASSIFICATION OF SUBJECT MATTER

H01M 8/08 *(2016.01)*
H01M 8/18 *(2016.01)*
H01M 10/42 *(2016.01)*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01M 8/00, 8/08, 8/18, 10/42, 10/44, 10/54, 16/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSearch (RUPTO internal), USPTO, PAJ, Esp@cenet, DWPI, EAPATIS, PATENTSCOPE, Information Retrieval System of FIPS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	RU 69322 U1 (OBSCHESTVO S OGRANICHENNOI OTVETSTVENOSTYU "NATSIONALNAYA INNOVATSOINNAYA KOMPANIYA "NOVYE ENERGETICHESKIE PROEKTY") 10.12.2007, claim 2, fig.1	1
X	RU 2250239 C2 (GZENZERSKII VIKTOR ALEKSANDROVICH et al.) 20.04.2005, abstract, claims, p.5 lines 33-40	2
X	US 4221847 A (GLOBE-UNION INC) 09.09.1980, abstract, fig.1	3
Y	US 20140065460 A1 (ENERGY STORAGE SYSTEMS, INC.) 06.03.2014, fig.(A, B, C), claims	4

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 September 2016 (26.09.2016)	06 October 2016 (06.10.2016)
Name and mailing address of the ISA/RU: Federal Institute of Industrial Property, Berezhkovskaya nab., 30-1, Moscow, G-59, GSP-3, Russia, 125993 Facsimile No: (8-495) 531-63-18, (8-499) 243-33-37	Authorized officer M. Schegoleva Telephone No. 8 499 240 25 91

INTERNATIONAL SEARCH REPORT

International application No.

PCT/RO 2016/000006

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 1994/009522 A1 (NEHSHNL PAUEHR PL-EHL-SI) 28.04.1994, p.6, abstract	4
Y	RU 2530266 C1 (STAROVEROV NIKOLAI EVGENEVICH) 10.10.2014, claims 5, 8	4
Y	US 4684585 A (LTH ASS) 04.08.1987, fig.1, abstract	5
Y	RU 107989 U1 (GOSUDARSTVENNOE NAUCHNOE UCHREZHDENIE VSEROSSIISKII NAUCHNO-ISSLEDOVATELSKII TEKHNOLOGICHESKII INSTITUT REMONTA I EKSPLUATATSII MASHINNO-TRAKTORNOGO PARKA ROSSIISKOI AKADEMII SELSKOKHOZYASTVENNYKH NAUK) 10.09.2011, claim 1, fig.1	5