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- (81) **Designated States (unless otherwise indicated, for every
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CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,
SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR,
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ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
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ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

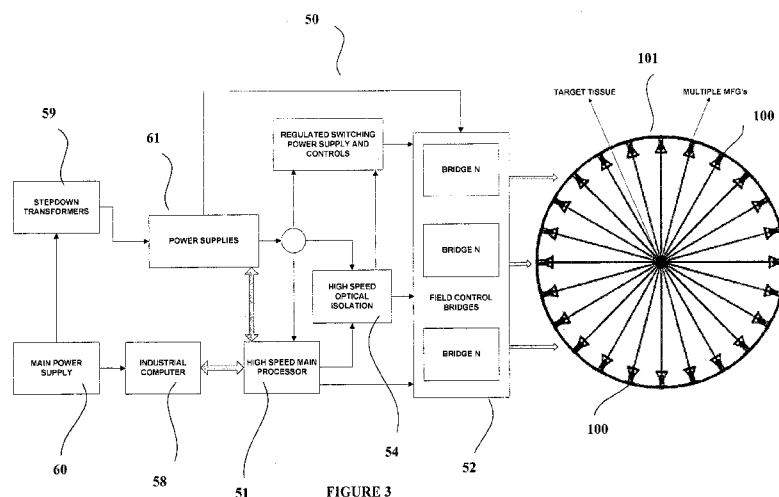
- as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of
the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

- (88) **Date of publication of the international search report:**
22 December 2011

(54) **Title:** SEQUENTIALLY PROGRAMMED MAGNETIC FIELD THERAPEUTIC SYSTEM (SPMF)



(57) **Abstract:** The invention relates to a Sequentially Programmed Magnetic Field (SPMF) therapeutic system and method that comprises a plurality of arrays of magnetic field generators (MFGs) to produce sequentially programmed pulsed magnetic fields of about 0.1 to about 2000Hz at a focal region in a substantially rotary manner, the pulsing being controlled by a switching system operably linked to a computer that generates the operating protocol based on an embedded logic that is dependent on the cellular degenerative condition and to cellular regeneration and / or the degeneration processes and methods based on such processes. Electromagnetic fields of certain frequency ranges and intensities are indigenous to living tissues and it has been found that inciting the inherent resonance by exogenous treatment using an SPMF can induce cellular regeneration and / or degeneration processes and find application in the treatment of various types of arthritis, cancers and neuro disorders.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN 10/00088

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61N 2/00; A61B 17/52 (2010.01)

USPC - 600/9

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)

USPC: 600/9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 600/9-15, 422, 427 (text search - see terms below)

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

PubWEST(USPT,PGPB,EPAB,JPAB); Google

Search Terms: magnetic, field generators, therapy, pulsed, focal, focus, stimulating, sensitizing, frusto-conical, coil, rod, ferrite, ferrous, funnel, array, opposite, tubular, gantry, torus, bobbin, permittivity, grade, severity, cell, regeneration, degeneration, crc, cyclic redundancy

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---	US 2005/0228209 A1 (SCHNEIDER et al.) 13 October 2005 (13.10.2005), entire document especially the Abstract; Figs 1-8; paras [0001], [0054], [0060], [0068], [0101]	1
Y		2, 18-20
Y	US 2007/0208249 A1 (KUMAR) 06 September 2007 (06.09.2007), entire document especially para [0073]	2, 24
Y	US 6,048,302 A (MARKOL) 11 April 2000 (11.04.2000), entire document especially Fig 1; col 1, lns 28-38; col 5, lns 6-34	18-20
Y	US 2005/0182287 A1 (BECKER) 18 August 2005 (18.08.2005), entire document especially the Abstract; Figs 10A-10C; paras [0012], [0043], [0069], [0076], [0120], [0146]	6-14, 24
Y	US 6,234,953 B1 (THOMAS et al.) 22 May 2001 (22.05.2001), entire document especially col 2, lns 1-6; col 18, lns 25-37	24
Y	US 2007/0027355 B2 (RIEHL et al.) 01 February 2007 (01.02.2007), entire document especially Fig 6; paras [0016]-[0018]	6-14
Y	US 3,658,051 A (MACLEAN) 25 April 1972 (25.04.1972), entire document especially Figs 2, 8; col 3, lns 11-36	6-14
Y	US 2005/0198812 A1 (SCHUSTER et al.) 15 September 2005 (15.09.2005), entire document especially Figs 4A-4C	6-14

☒ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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

"G" document member of the same patent family

Date of the actual completion of the international search

16 February 2011 (16.02.2011)

Date of mailing of the international search report

28 FEB 2011

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN 10/00088

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,703,735 A (BLEEKE) 30 December 1997 (30.12.1997), entire document especially col 7, lns 28-30; col 8, lns 56-58	9
Y	US 2008/0097142 A1 (SAVAGE) 24 April 2008 (24.04.2008), entire document especially the Abstract; Figs 1, 2A; paras [0024], [0048], [0074]	16-17
Y	US 2005/0134265 A1 (WATKINS et al.) 23 June 2005 (23.06.2005), entire document especially Fig 3; para [0019]-[0020]	16-17
Y	US 2006/0245217 A1 (KIRBIE et al.) 02 November 2006 (02.11.2006), entire document especially paras [0028], [0044]	16-17
Y	US 2005/0259373 A1 (HOOPES) 24 November 2005 (24.11.2005), entire document especially para [0029]	16-17
Y	US 2007/0030176 A1 (SANCHEZ et al.) 06 February 2007 (06.02.2007), entire document especially paras [0005], [0062], [0127]	16-17
Y	US 6,647,301 B1 (SEDERLUND et al.) 11 November 2003 (11.11.2003), entire document especially col 75, lns 47-52	16-17
Y	US 4,556,051 A (MAURER) 03 December 1985 (03.12.1985), entire document especially Fig 12; col 8, lns 54-62	16-17
Y	US 2002/0091850 A1 (PERHOLTZ) 11 July 2002 (11.07.2002), entire document especially paras [0023], [0027], [0343]	17
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Y	US 4,128,824 A (MIRSCH) 05 December 1978 (05.12.1978), entire document especially Figs 1, 3	6-14
Y	US 4,177,796 A (FRANCO-VILLA) 11 December 1979 (11.12.1979), entire document especially Fig 2	6-14
Y	US 4,479,388 A (MATZUK) 30 October 1984 (30.10.1984), entire document especially col 5, lns 43-47;	9
Y	US 2007/0014055 A1 (NESS) 18 January 2007 (18.01.2007), entire document especially para [0045])	16-20
Y	SHUPAK, Therapeutic Uses of Pulsed Magnetic-Field Exposure: A Review December, Radio Science Bulletin [online], December 2003 (12.2003) [retrieved on 14 February 2011 (14.02.2011)]. Retrieved from the Internet: <URL: http://www.cytotron.com/pdf/Therapeutic%20uses%20of%20pulsed%20magnetic-field%20exposure,%20a%20review.pdf > pg 10, Table 1	24
A	US 96,044 A (SMITH) 19 October 1869 (19.10.1869), entire document	2, 6-14, 16-20, 24
A	US 435,343 A (BROWN) 26 August 1890 (26.08.1890), entire document especially	2, 6-14, 16-20, 24
A	US 703,989 A (BURRY) 08 July 1902 (08.07.1902), entire document especially	2, 6-14, 16-20, 24
A	US 1,164,356 A (KAISER) 14 December 1915 (14.12.1915), entire document	2, 6-14, 16-20, 24
A	US 4,095,588 A (GOLDMAN et al.) 20 June 1978 (20.06.1978), entire document	2, 6-14, 16-20, 24
A	HOVEY et al., THE GUIDE TO MAGNETIC STIMULATION, 21 July 2006 (21.07.2006) [retrieved on 14 February 2011 (14.02.2011)]. Retrieved from the Internet: <URL: http://www.icts.ucl.edu/neuroimaging/GuidetoMagneticStimulation2006.pdf >	2, 6-14, 16-20, 24

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN 10/00088

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 3-5, 15, 21-23, 25-38
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- Group I: claims 1-2, 16-20, and 24
- Group II: claims 6-14

---see extra sheet---

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/IN 10/00088

Box No. III **Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-2, 16-20, and 24: drawn to a sequentially programmed magnetic field therapeutic system (SPMF), including a plurality magnetic field generators and a switching system to control the pulses and a method of employing such technology..

Group II: claims 6-14: drawn to a magnetic field generating system, including a magnetically conductive hollow cylindrical base, a magnetically conductive rod, and an electrical coil.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group II does not require a SPMF having a plurality magnetic field generators and a switching system to control the pulse., as required by group I.

Group I does not require a magnetic field generating system having a magnetically conductive hollow cylindrical base, a magnetically conductive rod, and an electrical coil, as required by group II.

Groups I and II therefore lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.