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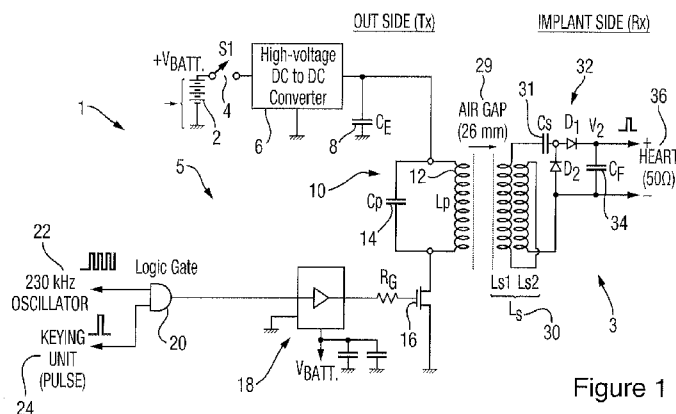
(54) **Title:** DEFIBRILLATOR APPARATUS AND METHOD

Figure 1

(57) **Abstract:** An apparatus and method for delivering an electrical defibrillation signal to a heart (36) transcutaneously. The apparatus (1) includes an external transmitter part (5) and implantable receiver part (3) arranged so that an RF pulse (22, 24) can be wirelessly transmitted through a barrier (29) and received internally to apply a defibrillating pulse to a heart (36). The oscillator (22) and the keying unit (24) are powered via a power source (2). The external transmitter (5) comprises a capacitor arrangement (8) connected to the power source (2) and a high voltage DC to DC converter (6). The capacitor (8) is connected through a resonant circuit (10) to circuitry (16, 18) operable to discharge the capacitor (8) through the resonant circuitry (10) and excite the primary coil (12) and cause RF pulse transmission. The primary coil (12) is inductively coupled to the secondary coil (30) of the implantable receiver (3), to enable instant wireless transmission of the RF pulse across the barrier (29). The receiver (3) further comprises a resonant circuit, rectification circuitry (32) and filtering circuitry (34).

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER INV. A61N1/39 ADD. A61N1/378		
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) A61N		
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) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/007861 A1 (CHAMALOW S A [LU]; KHURSENKO VAKERIY [UA]) 15 January 2009 (2009-01-15) figures 1-2 page 5 - page 7	1
X	DE 197 03 737 A1 (BEDRICH MICHAEL R DIPL PHYS [DE]) 6 August 1998 (1998-08-06) figure 1 column 2, lines 16-30	1
X	WO 00/67843 A1 (UNIV ULSTER [GB]; ANDERSON JOHN MCCUNE [GB]; EVANS NOEL [GB]) 16 November 2000 (2000-11-16) figure 1 pages 3-4 claim 2	1,14
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* 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 "&" document member of the same patent family		
Date of the actual completion of the international search 1 October 2012	Date of mailing of the international search report 31/10/2012	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Gentil, Cédric	

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/204756 A1 (AGHASSIAN DANIEL [US]) 12 August 2010 (2010-08-12) figures 4-6 paragraphs [0002], [0025] - [0026], [0039] - [0044] -----	1-21

INTERNATIONAL SEARCH REPORT

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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.: 22-24
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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.:
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:

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 an 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 22-24

Rule 39.1(iv) PCT - Method of treatment of the human or animal being by therapy. Claims 22-24 define different methods for delivering cardiac defibrillation, which comprise the step of delivering a defibrillation shock pulse via implanted electrodes (see claims 1 and 22 in combination, claim 23 and Fig. 2, (102, 104, 106) and p. 21, l. 5-8 of the description with respect to claim 24) therefore relates to the curing of diseases or malfunctions of the body in order to restore or maintain health. It is therefore considered that claims 22-24 define different methods of treatment of the human or animal body by therapy, for which no international search needs to be carried out (Rule 39.1(iv) PCT).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/052127

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009007861 A1	15-01-2009	DE 202007018529 U1 EP 2167190 A1 WO 2009007861 A1	04-12-2008 31-03-2010 15-01-2009
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