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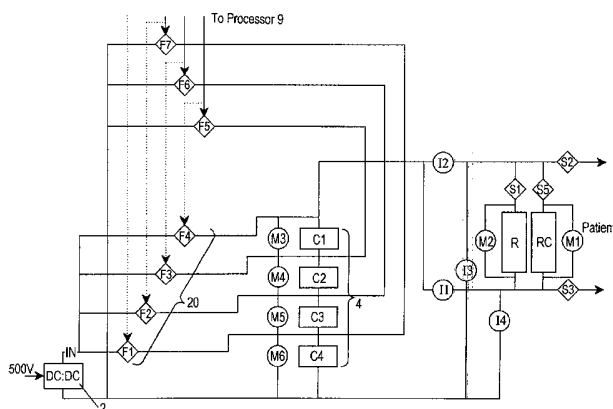
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(54) Title: IMPROVEMENTS IN AND RELATING TO PORTABLE DEFIBRILLATORS



(57) Abstract: A portable defibrillator which includes a self-test circuit (1, 2, 3, 4, 5, 8 & 9) in which during the self-test electrical energy is discharged from one or a bank of capacitors (4) to a charge receiving circuit (5, 8) which recycles the energy to a rechargeable battery (1) to thereby prolong the original charge within the battery. An alternative embodiment of the invention includes a charge receiving circuit (I1-I4, S1-S3, 21) containing a relatively high Ohmic value/low Wattage resistor means (21) such that the discharge occurs over a relatively long period of time, therefore dispensing with the requirement for a heat sink. The resistor means may be a single high value resistor or comprise a network (21a) of two or more smaller value resistors. The invention also provides optional switching (5, I1-I4, S1-S3, 21) of the discharge electrical energy during a self-test to either recycle it to the rechargeable battery or discharge it through the resistor. In a further refinement the self-test is carried out on a bank of capacitors (4) in rotation, which may also include the energy discharged from one capacitor being discharged into the next capacitor in the bank such that all capacitors are charged and discharged from substantially a single power input.

INTERNATIONAL SEARCH REPORT

PCT/GB 02/05361

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61N1/39

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)

IPC 7 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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 266 562 B1 (LEYDE KENT W) 24 July 2001 (2001-07-24) the whole document ---	2
X	US 6 141 584 A (ROCKWELL MARTIN G ET AL) 31 October 2000 (2000-10-31) the whole document ---	2
X	US 5 249 573 A (LOPIN MICHAEL L ET AL) 5 October 1993 (1993-10-05) the whole document ---	2
A	US 5 800 460 A (MYDYNski STEVEN T ET AL) 1 September 1998 (1998-09-01) the whole document --- -/--	1,2

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in 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 document 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

24 June 2003

Date of mailing of the international search report

01/07/2003

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INTERNATIONAL SEARCH REPORT

PCT/GB 02/05361

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 073 085 A (KOU ABRAHAM H ET AL) 6 June 2000 (2000-06-06) the whole document ---	1
A	US 6 169 387 B1 (KAIB THOMAS E) 2 January 2001 (2001-01-02) the whole document -----	1

INTERNATIONAL SEARCH REPORT

PCT/GB 02/05361

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 10
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

see additional 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 an additional fee, this Authority did not invite payment of any additional fee.

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.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1, 5-9

Portable defibrillator having a rechargeable battery which is recharged during self-test

2. Claims: 2-9

Portable defibrillator having a high ohmic test load

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 10

Rule 6.2 (a) PCT

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

PCT/GB 02/05361

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