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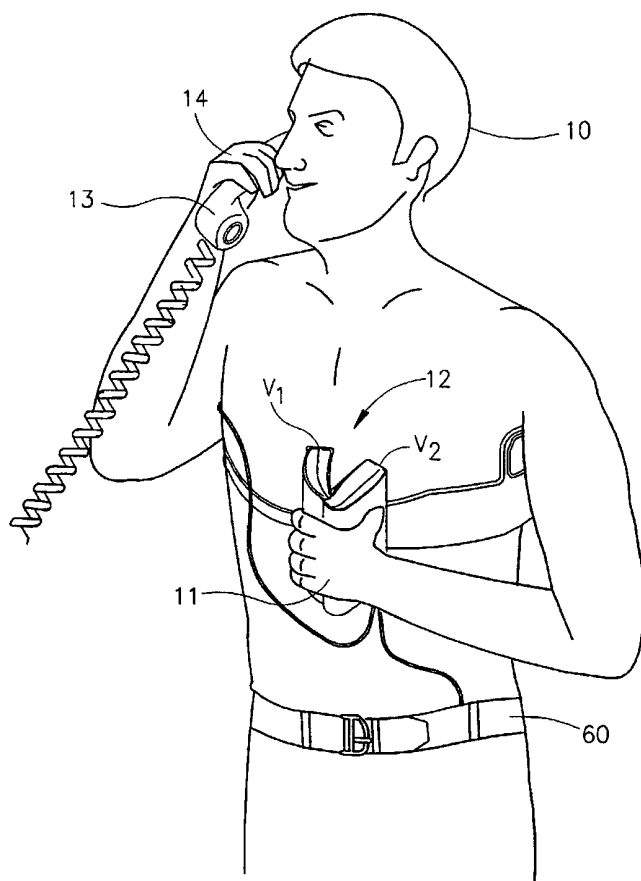
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(54) Title: PORTABLE ECG SIGNALING DEVICE



(57) Abstract: A portable ECG signaling device (12), comprising a housing (15) supporting a plurality of chest and limb electrodes (16, 17, 18, 19) for affixing to different parts of a patient's body (10) so as to measure the patient's rhythm strip and 12-lead ECG. An ECG signaling circuit (65) within the housing is adapted to collect and transmit in real time fractional ECG data on at least two output channels in parallel, thereby allowing complete ECG data to be transmitted in less time than could be done by collecting and transmitting the complete ECG data serially on a single output channel in real time. The ECG signaling circuit is preferably adapted to transmit on a first output channel the rhythm strip measured with two of the electrodes, and transmit on at least second and third output channels respective samples or functions thereof measured by predetermined ones of the chest and limb electrodes.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL 01/00261

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B5/00 A61B5/0404 A61B5/0408

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 A61B

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|--|
| X | US 4 889 134 A (GREENWOLD DOUGLAS J ET AL) 26 December 1989 (1989-12-26) | 1-4, 21-25, 56,58-61 |
| Y | cited in the application column 1, line 58 -column 2, line 9 | 6,12, 17-20, 29-33, 44-52, 63,65, 69-72 |
| A | column 6, line 17 - line 33 column 7, line 7 - line 14 --- -/-- | 27,73 |

☒ 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

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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

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& document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA

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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 4 958 645 A (CADELL THEODORE E ET AL) 25 September 1990 (1990-09-25) | 1,2,21, 23-25, 28,55, 56,58-60 |
| A | column 2, line 34 - line 37 column 3, line 4 -column 4, line 2 claim 4; table 1 --- | 3,26,27, 61,73 |
| X | US 5 919 141 A (CALDWELL ROGER ET AL) 6 July 1999 (1999-07-06) | 1,21,23, 25,28, 55-59 |
| A | column 5, line 61 -column 6, line 10 column 6, line 27 - line 44 column 8, line 41 - line 65 column 10, line 12 - line 35 column 11, line 22 - line 27 --- | 2,26,27, 60,73 |
| Y | EP 0 657 136 A (CASIO COMPUTER CO LTD) 14 June 1995 (1995-06-14) | 6,18-20, 29-33, 45-52 |
| A | column 3, line 30 - line 46 column 4, line 51 -column 5, line 1 --- | 1 |
| Y | WO 97 19631 A (BEITLER MARTIN M) 5 June 1997 (1997-06-05) | 6,18-20, 29-33, 45-52, 63,70-72 |
| A | page 7, line 1 - line 19 page 9, line 6 - line 10 --- | 1,7-11, 34-38, 64-68 |
| Y | WO 94 03106 A (SURVIVAL TECHNOLOGY) 17 February 1994 (1994-02-17) | 6,12, 17-20, 29-33, 44-52, 65,69 |
| A | page 8, line 11 - line 33 page 9, line 13 - line 16 page 9, line 29 -page 10, line 15 page 15, line 14 - line 20 ----- | 1,13,66 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL 01/00261

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.:
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 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: 1-5,21-28,55-62,73*

ECG signaling device using frequency modulation

*
claim 55 only if dependent on any of claims 1-5 or 21-27
claim 56 only if dependent on any of claims 1-5,21-28 or
claim 55 as above
claim 58 only if dependent on any of claims 1-5,21-28 and
claim 56 as above

2. Claims: 6-20,29-58,63-72*

Book-shaped portable ECG signaling device

*
claim 55 only if dependent on any of claims 6-20 or 29-54
claim 56 only if dependent on any of claims 6-20 or 29-55
claim 58 only if dependent on any of claims 6-20 and claim
56 as above

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. .ional Application No

PCT/IL 01/00261

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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