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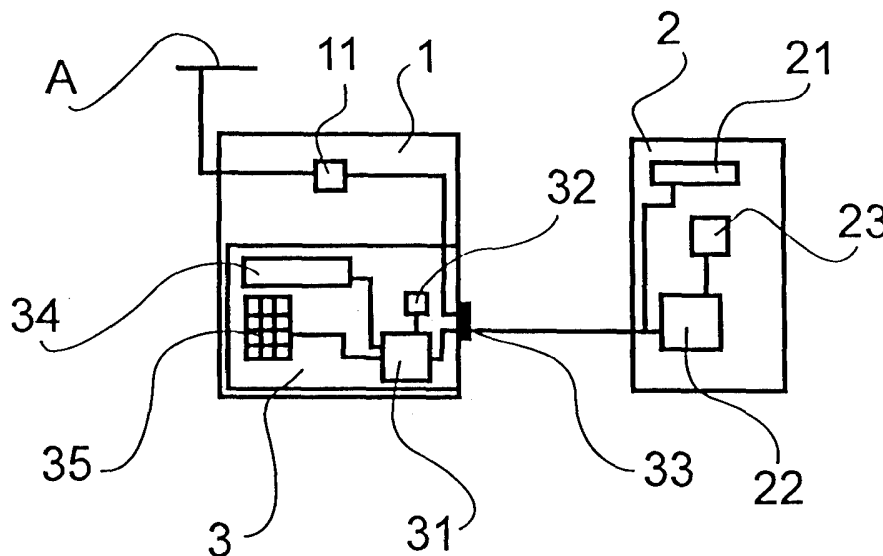
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(54) Title: BATTERY CHARGER FOR A MOBILE UNIT



(57) Abstract: The present invention relates to a battery charger (1) for a mobile unit (2) adapted to charge a chargeable battery (21) belonging to the mobile unit (2). The mobile unit (2) includes a first computer unit (22) and a first memory (23) in which information can be stored. The battery charger (1) is adapted to co-act with a memory handling unit (3) upon contact with a mobile unit (2). The memory handling unit (3) includes a second memory (32) and is adapted to read the contents of the first memory (23) belonging to the mobile unit (2) and to store said contents in the second memory (32) and to give the mobile unit (2) access to the contents of the second memory (32).



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## BATTERY CHARGER FOR A MOBILE UNIT

### *Field of invention*

The present invention relates to a battery charger intended for a mobile unit  
5 and adapted to charge a chargeable battery belonging to said unit when the unit is brought into contact with the battery charger.

The present invention also relates to a mobile unit that includes a first  
computer unit and a first memory in which information can be stored, wherein the  
mobile unit is adapted for the transfer of information to and for reading information  
10 from a memory handling unit which includes a second memory for the safe backup of the information content of the first memory and restoring any lost information in the first memory from the second memory.

The present invention also relates to computer program products and a  
computer readable medium with a computer program code which when executed  
15 by a computer unit causes the computer unit to perform the functions of a battery charger, a mobile unit, and a further computer unit in accordance with the present invention.

### *Description of the background art*

It is earlier known that mobile units, such as mobile telephones, personal  
20 assistants and mobile computers include chargeable batteries which, when dead, can be charged with the aid of a battery charger.

It is also known to connect such a mobile unit, primarily mobile telephones or  
personal digital assistants (PDA), to a computer unit, such as a stationary  
computer, in order to enable backups of the contents of the memories belonging to  
25 the mobile unit to be copied through said computer unit, and to insert this backup copy into the memory of the computer unit.

Patent Publications U.S. 5,974,238, U.S. 6,000,000 and U.S. 6,034,621  
describe examples of how synchronisation can be achieved between the memory  
content of a mobile unit and a stationary computer unit. This technique is well  
30 known and will not therefore be discussed further in this document.

In certain instances, a battery charger may also constitute a coupling, or a  
docking unit, between a mobile unit and a stationary computer unit in order to  
transfer a backup of the content of the mobile unit memory to the memory of the

stationary computer unit. However, this requires the battery charger to be coupled to the computer unit, the computer unit to be switched on when charging the mobile unit batteries, and the mobile unit, the battery charger or the stationary computer unit to give a command that will initiate copying of the memory of the mobile unit. An example of a docking unit used to connect a mobile unit with a stationary computer unit and also as a battery charger is illustrated in Publication U.S. 5,666,530.

It is also known to synchronise the memory content of a mobile unit with the memory content of a computer unit, so that said memory contents will mutually coincide. Such synchronisation can be effected automatically via a so-called "hotsync", by means of which synchronisation of the memory contents of both units is achieved. This can take place immediately the mobile unit is coupled to the computer unit, or in response to a command from the mobile unit or from the computer unit.

### 15 ***Summary of the present invention*** **Technical Problems**

Mobile units, such as mobile telephones, personal assistants and mobile computers, are often lost or mislaid. This is partly because mobile units are, naturally, carried with the user and are easily forgotten or lost, and partly because mobile units are theft-attractive. Regardless of how a mobile unit goes missing, the loss does not only mean the loss of the mobile unit itself, but also the loss of the content of the memory in the mobile unit. In many instances, the loss of this information may be more difficult to replace than the loss of the mobile unit itself. It may even be impossible to replace the lost information.

25 When considering the earlier standpoint of techniques, as described above, it will be seen that a technical problem resides in the possibility of making a backup of the memory content of a mobile unit.

A particular technical problem resides in making such a backup without having access to a computer unit, such as a stationary computer, for instance when travelling or simply when the person concerned does not have such a computer unit in his or her possession.

A technical problem also resides in the possibility of making a backup and restoring information lost from a mobile unit in a cost-effective and user-friendly manner, without using a computer unit, such as a stationary computer, to this end.

A technical problem also resides in the possibility of making a backup and handling the memory content of a plurality of different mobile units without having access to a computer unit, such as a stationary computer.

5 Solution

With the intention of solving one or more of the aforesaid technical problems, the present invention takes as its starting point a mobile unit battery charger which is adapted to charge a chargeable battery belonging to said mobile unit when the unit is placed in contact with the charger, wherein the mobile unit includes a first  
10 computer unit and a first memory in which information can be stored.

With the intention of enabling a backup to be made of the content of the first memory, it is proposed in accordance with the invention that when in contact with a mobile unit the battery charger will function to co-act with a memory handling unit that includes a processor unit, a second memory, and connections for  
15 communication with a mobile unit. The memory handling unit is also adapted to read the content of the first memory belonging to the mobile unit and to store the read content in the second memory, and to enable the mobile unit to read the content of the second memory.

According to the present invention, the memory-handling unit may form an  
20 integral part of the battery charger.

It is also proposed in accordance with the invention that the memory-handling unit is adapted to synchronise the content of the second memory with the content of the first memory when in contact with a mobile unit.

With the intention of simplifying the management of said backup and said  
25 synchronisation, it is proposed in accordance with the invention that the memory-handling unit includes a display and a requisite infeed means, such as buttons or keys. Moreover, the memory handling unit may be adapted to show the content of the second memory on the display and to enable a selected part of the content of the second memory to be displayed on the display through the medium of said  
30 infeed means.

With the intention of simplifying handling of the content of the second memory without having access to the mobile unit to this end, it is proposed in accordance with the present invention that it is made possible to erase or to

correct existing information and to enter fresh information in the second memory, through the medium of said infeed means.

The memory handling unit may also be adapted to transfer a selected part of the content of the second memory so as to supplement or update the content of  
5 the first memory belonging to the mobile unit, by selecting memory content via the infeed means.

With the intention of enabling a backup copy to be made by a plurality of different mobile units, it is proposed in accordance with the present invention that the memory handling unit is adapted to handle the memory contents of a plurality  
10 of different mobile units, and that the memory handling unit in contact with a mobile unit will function to clearly identify said unit.

There is nothing to prevent the memory handling unit being adapted for communication with a further computer unit, said memory handling unit functioning as a result of this communication to either update the content of the second  
15 memory to a content in a third memory belonging to the further computer unit, or to update the content of the third memory to the content of the second memory.

With the intention of further simplifying memory handling with respect to a mobile unit, it is proposed in accordance with the invention that when in contact with a mobile unit said memory handling unit can be set to either update the  
20 second memory automatically or to update said second memory only in response to a command from a user of the battery charger.

It is also necessary for the actual battery charger to provide security with respect to the storage of information in the second memory. Consequently, it is proposed in accordance with the invention that the second memory will function as  
25 a non-volatile memory. This is achieved by giving the second memory the form of a non-volatile memory or by giving the second memory the form of a volatile memory with battery backup. This enables the battery charger to retain the information in the second memory in the event of a power failure or when the battery charger is disconnected temporarily from an electricity supply network.

30 It shall be possible to handle all sorts of memory contents, such as telephone numbers, contact information, memory tasks, diary-noted reminders, notations, e-mail, SMS messages or other received or entered information.

The present invention also relates to a mobile unit comprising a first computer unit and a first memory in which information can be stored.

The portable unit is adapted for transferring information to and reading information from a memory handling unit that includes a second memory for providing a backup of the information content of the first memory and restoring any information content lost in the first memory from the second memory. The memory  
5 handling unit forms a part of an inventive battery charger and the portable unit is adapted to co-act with such a battery charger.

A portable unit according to the invention may, for instance, be a mobile telephone, a personal assistant, or a mobile computer.

The present invention also relates to a number of different computer program  
10 products, where a first computer program product includes a first computer program code which when executed by a computer unit causes said unit to act as a processor unit with associated memory spaces and connections in accordance with the inventive memory handling unit, a second computer program product includes a second computer program code which when executed by a computer  
15 unit causes said unit to act as a first computer unit with associated memory spaces in accordance with an inventive portable or mobile unit, and wherein there is included in a third computer program product a third computer program code which when executed by a computer unit causes said computer unit with  
associated memory spaces to act as an inventive further computer unit.

20 The present invention also relates to a computer readable medium, in which the first, second and/or third computer program code is stored.

#### Advantages

The primary advantages afforded by the inventive battery charger and  
inventive mobile unit reside in enabling a user of a mobile unit to readily obtain a  
25 or backup of the memory content of the mobile unit even when having no access to a computer unit, such as a stationary computer. If a user has a mobile unit, he/she will also have a battery charger associated with the unit. The possession of an inventive battery charger means that the user will always have access to the function of making a backup copy, even whilst travelling.

30 The primary characteristic features of an inventive battery charger are set forth in the characterising clause of the accompanying Claim 1, while the primary characteristic features of an inventive mobile unit are set forth in the characterising clause of the accompanying Claim 16.

**Brief description of the drawings**

A method comprising features characteristic of the present invention will now be described in more detail by way of example and with reference to the accompanying drawings, in which

5 Figure 1 is a simple schematic illustration of a battery charger and a mobile unit connected thereto;

Figure 2 is a schematic illustration of a battery charger adapted to co-act with a plurality of different mobile units;

Figure 3 is a schematic illustration of the co-action between a battery charger  
10 and a further computer unit; and

Figure 4 is a schematic illustration of a computer readable medium, for instance a compact disk.

**Description of embodiments at present proposed**

Figure 1 illustrates a battery charger 1 for a mobile unit 2. The battery  
15 charger 1 is connected to an electricity supply network A and functions to charge a chargeable battery 21 in the mobile unit 2 through the medium of a charging device 11, when the mobile unit 2 is placed in contact with the battery charger. Although the connection between the battery charger 1 and the mobile unit 2 is shown schematically to be effected by means of a connecting lead, it will be  
20 understood that this connection can be effected by direct docking between the connectors when the mobile unit 2 is placed on or in the battery charger 1.

The mobile unit includes a first computer unit 22 and a first memory 23 in which information can be stored.

In accordance with the present invention, the battery charger 1 is adapted to  
25 co-act with a memory handling unit 3 upon contact of the battery charger with a mobile unit 2, said unit 3 including a processor unit 31, a second memory 32 and connections 33 for communication with a mobile unit 2.

The memory handling unit 3 is adapted to read the content of the first memory 23 belonging to the mobile unit 2, and to store this read data content in  
30 the second memory 32.

The memory-handling unit 3 is also adapted to provide the mobile unit 2 with access to the second memory 32, in order to read its contents.



According to one particularly preferred embodiment, the memory-handling unit 3 is an integral part of the battery charger 1.

Upon contact with a mobile unit 2, the memory handling unit 3 functions to update any information that may have been earlier stored in the second memory 32, such as to mirror said contents in the first memory 23 of said mobile unit 2.

The memory handling unit 3 may in the same way function to update any information that may have been earlier stored in the first memory 23 of a mobile unit 2, such as to mirror said contents in the second memory 32 upon contact with said mobile unit 2.

According to the present invention, the memory handling unit 3 also includes a display 34 and requisite infeed means 35, such as keys or buttons, wherein the memory handling unit 3 is adapted to show the contents of the second memory 32 on the display 34.

That part of the contents of the second memory 32 which the user desires to be shown on the display 34 can be chosen through the medium of the infeed means 35.

According to one proposed embodiment of the invention, the infeed means 35 may be adapted to enable the information stored in the second memory 32 to be revised, wherein the revision may include the possibility of erasing or correcting information that exists in the second memory 32 or feeding new information into said memory.

The infeed means 35 enable the memory handling unit 3 to transfer only a chosen part of the contents of the second memory 32 upon contact with a portable unit 2, in order to supplement or update the contents of the first memory 23 in the mobile unit 2. This enables the user to elect to transfer solely chosen data or information from the memory-handling unit 3 to the mobile unit 2.

Figure 2 illustrates the possibility of adapting the memory-handling unit 3 to handle the memory contents of a plurality of different mobile units 2, 2', 2". In the illustrated case, when in contact with a particular mobile unit 2, 2', 2" the memory handling unit 3 is able to identify clearly the mobile unit concerned.

It is thus possible to prevent the memory contents of these different mobile units from being mixed together unintentionally or involuntarily. It also enables memory contents to be transferred from one mobile unit 2 to another mobile unit 2', via the memory-handling unit 3. It will also be understood that the various

mobile units 2, 2', 2'' may consist of mutually different sorts of mobile units. For example, one mobile unit may be a mobile telephone and another mobile unit may be a personal assistant.

Figure 3 shows the possibility of allowing a battery charger 1 to include a  
5 memory handling unit that is adapted for communication with a further computer unit 4, wherein the memory handling unit 3 is adapted to either update the content of the second memory 32 in respect of the content of a third memory 41 belonging to the further computer unit 4, or to update the content of the third memory 41 in respect of the content of the second memory 32, through the medium of said  
10 communication.

According to the present invention, a memory handling unit 3 may be capable of being set to either update the second memory 32 automatically or to only effect such updating in response to a command from a user of the battery charger 1, when said unit 3 is in contact with a mobile unit 2.

15 With the intention of providing safe storage of the content of the second memory 32, it is proposed in accordance with the present invention that the second memory 32 is adapted to perform the function of a non-volatile memory. This can be implemented by giving the second memory 32 the form of a non-volatile memory or by giving the second memory 32 the form of a volatile memory  
20 with a battery backup 36.

The present invention is not restricted to the sort of information handled by an inventive memory-handling unit 3. For example, the memory content may consist of contact information, such as name, telephone number, and possibly other contact information.

25 The memory content may also comprise information entered into the memory, such as memory data, calendar information, diary information, and other notations.

The memory content may also comprise received information, such as e-mail, SMS messages or other received information.

30 Turning back to Figure 1, it will be seen that the present invention also relates to a mobile unit 2 that includes a first computer unit 22 and a first memory 23 in which information can be stored.

This mobile unit 2 is adapted to be able to transfer information to and read information from a memory handling unit 3 which includes a second memory 32 in

which a backup of the information content of the first memory 23 is stored and any lost information content is restored to the first memory 23 from the second memory 32.

According to the present invention, such a memory handling unit 3 forms part  
5 of a battery charger 1 intended for charging a battery 21 belonging to the mobile unit 2.

The mobile unit 2 is adapted to co-act with the battery charger 1 in accordance with the foregoing.

The present invention is not restricted to any particular type of mobile unit 2.  
10 For example, a mobile unit 2 may be a mobile telephone, a personal assistant, or a mobile computer.

The present invention also relates to a number of different computer program products shown schematically in Figure 3.

For example, a first computer program product B1 includes a first computer  
15 program code B1' which when executed by a computer unit causes said unit to function as a processor unit 31 with associated memory spaces 32 and connections 33 in accordance with an inventive memory handling unit 3.

Also included is a second computer program product B2 having a computer program code B2' which when executed by a computer unit causes said unit to  
20 function as a first computer unit 22 with associated memory spaces 23 according to an inventive mobile unit 2.

Also included is a third computer program product B3 that includes a third computer program code B3' which when executed by a computer unit causes said unit to function as an inventive, further computer unit 4 with associated memory  
25 spaces 41.

The present invention also relates to a computer readable medium 5, in Figure 4 shown as a compact disk by way of example, said first, second and/or third computer program codes B1', B2', B3' being stored in said medium 5.

It will be understood that the invention is not restricted to the aforescribed  
30 and illustrated exemplifying embodiments thereof and that modifications can be made within the scope of the inventive concept as illustrated in the accompanying Claims.

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## CLAIMS

1. A mobile unit battery charger adapted to charge a chargeable battery belonging to the mobile unit when said unit is placed in contact with said battery  
5 charger, wherein the mobile unit includes a first computer unit and a first memory in which information can be stored, **characterised** in that when said battery charger is in contact with a mobile unit the charger functions to co-act with a memory handling unit; in that said memory handling unit includes a processor unit, a second memory, and connections for communication with a mobile unit; in that  
10 said memory handling unit is adapted to read the contents of the first memory belonging to said mobile unit and store said read contents in said second memory; and in that the memory handling unit is adapted to provide the mobile unit with access to said second memory in order to read the contents of said second memory.

15

2. A battery charger according to Claim 1, **characterised** in that said memory handling unit is an integral part of the battery charger.

3. A battery charger according to Claim 2, **characterised** in that when in  
20 contact with a mobile unit said memory handling unit functions to update the contents possibly stored earlier in said second memory, so as to mirror said contents in the first memory belonging to said mobile unit.

4. A battery charger according to Claim 3, **characterised** in that when in  
25 contact with a mobile unit said memory handling unit functions to update the contents that may have been stored earlier in the first memory of the mobile unit so as to mirror said contents in said second memory.

5. A battery charger according to Claim 4, **characterised** in that the memory  
30 handling unit includes a display and requisite infeed means, such as keys or buttons; in that said memory handling unit is adapted to show the contents of said second memory on said display; and in that a selected part of the contents of said second memory can be shown on the display with the aid of said infeed means.

6. A battery charger according to Claim 5, **characterised** in that said infeed means enable existing information in said second memory to be erased or corrected and new information to be entered in said second memory.
- 5 7. A battery charger according to Claim 5 or 6, **characterised** in that when in contact with a mobile unit said memory handling unit functions to transfer only a selected part of the contents of said second memory such as to supplement or update the contents of the first memory belonging to said mobile unit.
- 10 8. A battery charger according to Claim 7, **characterised** in that said memory handling unit is adapted to handle the contents of a plurality of different mobile units; and in that when in contact with a mobile unit said memory handling unit functions to clearly identify said mobile unit.
- 15 9. A battery charger according to Claim 8, **characterised** in that said memory handling unit is adapted for communication with a further computer unit; in that said memory handling unit functions either to update the content of said second memory to the content of a third memory belonging to said further computer unit, or to update the content of said third memory to the content of said  
20 second memory, through the medium of said communication.
10. A battery charger according to any one of the preceding Claims, **characterised** in that when in contact with a mobile unit the memory handling unit can be set either to update the second memory automatically or to update said  
25 memory only upon receipt of a command from the user of said battery charger.
11. A battery charger according to any one of the preceding Claims, **characterised** in that said second memory is adapted to perform the functions of a non-volatile memory.  
30
12. A battery charger according to Claim 11, **characterised** in that said second memory is a non-volatile memory.

13. A battery charger according to Claim 11, **characterised** in that said second memory is a volatile memory with battery backup.

14. A battery charger according to any one of the preceding Claims,  
5 **characterised** in that said memory content is comprised of contact information, such as names, telephone numbers and possibly other forms of contact information.

15. A battery charger according to any one of the preceding Claims,  
10 **characterised** in that said memory content is comprised of entered information, such as memory information or data, calendar or diary information, and other notations.

16. A battery charger according to any one of the preceding Claims,  
15 **characterised** in that said memory content is comprised of received information, such as e-mail, SMS messages, or some other received information.

17. A mobile unit comprising a first computer unit and a first memory in which information can be stored, wherein said mobile unit is adapted for transferring  
20 information to and reading information from a memory handling unit that includes a second memory so as to produce a backup of the information content of said first memory from said second memory, **characterised** in that the memory handling unit is a part of a battery charger; and in that the mobile unit is adapted for co-action with the battery charger according to any one of Claims 1 to 16.

25

18. A mobile unit according to Claim 17, **characterised** in that the mobile unit is a mobile telephone.

19. A mobile unit according to Claim 17, **characterised** in that the mobile unit  
30 is a personal assistant.

20. A mobile unit according to Claim 17, **characterised** in that the mobile unit is a mobile computer.

21. A first computer program product, **characterised** in that said first computer program product includes a first computer program code which when executed by a computer unit causes the computer unit to function as a processor unit with associated memory spaces and connections belonging to a memory  
5 handling unit according to any one of Claims 1 to 16.

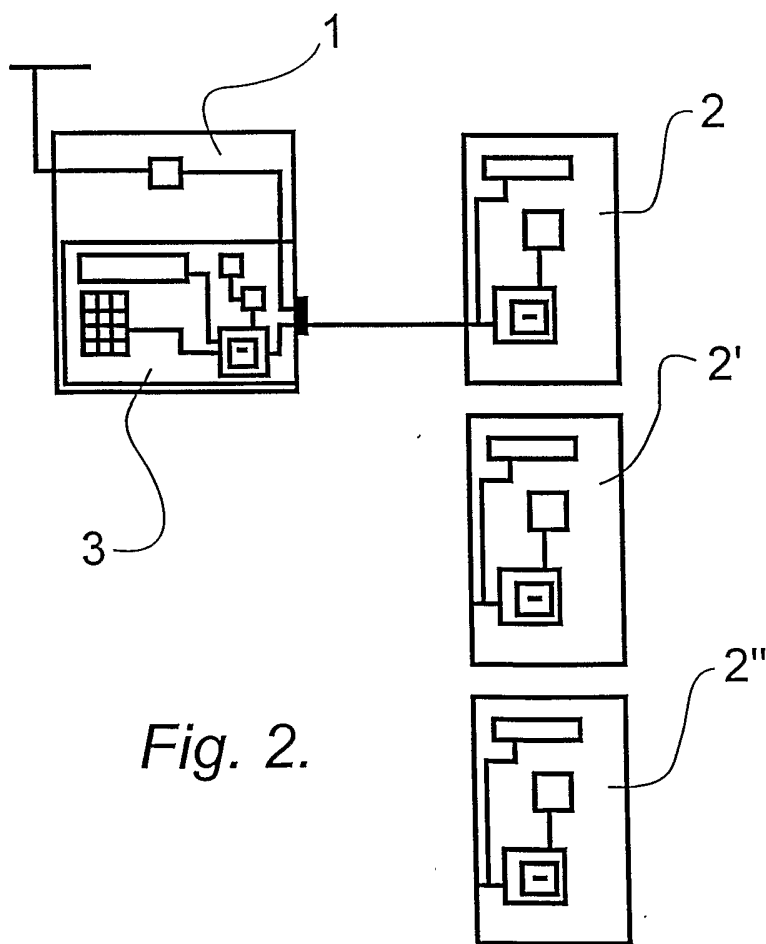
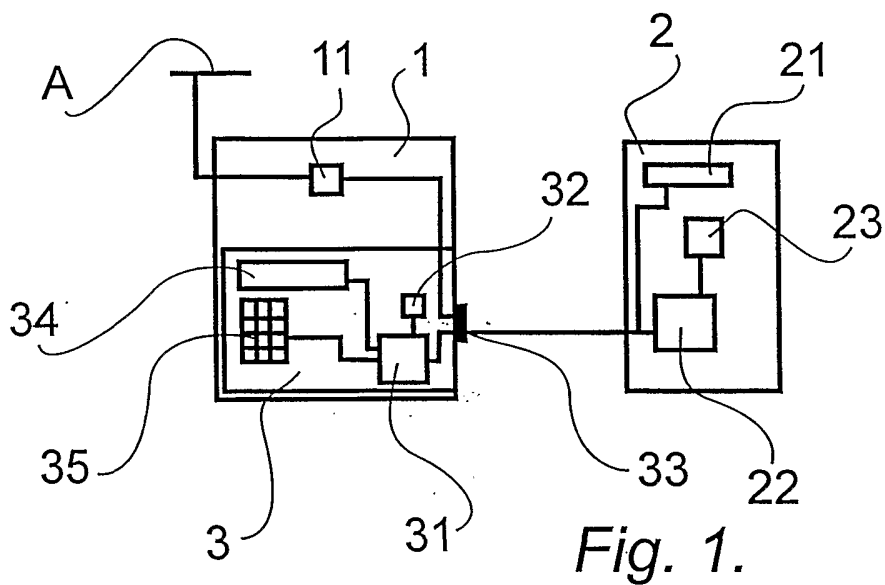
22. A second computer program product, **characterised** in that the second computer program product includes a second computer program code which when executed by a computer unit causes said computer unit to function as a first  
10 computer unit with associated memory spaces belonging to a mobile unit in accordance with any one of Claims 17 to 20.

23. A third computer program product, **characterised** in that the third computer product includes a third computer program code which when executed  
15 by a computer unit causes said computer unit to function as a further computer unit with associated memory spaces in accordance with Claim 9.

24. A computer readable medium, **characterised** in that said computer readable medium has stored therein a computer program code according to any  
20 one of Claims 21 to 23 inclusive.

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1/2





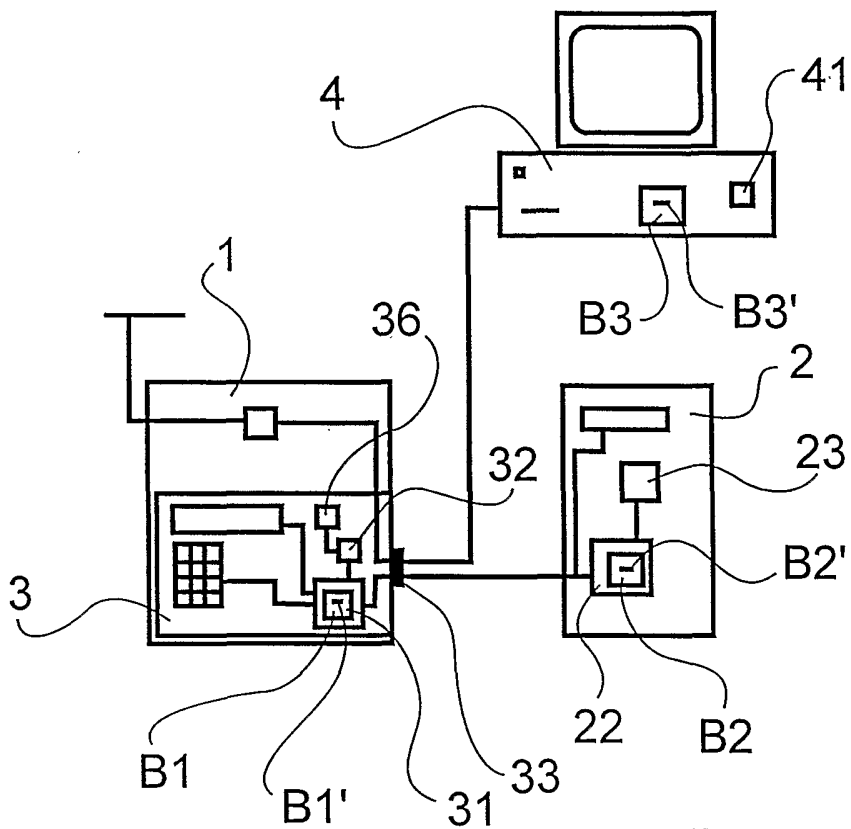


Fig. 3.

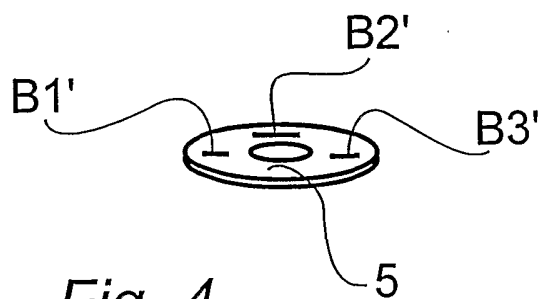


Fig. 4.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 02/01300

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H02T 7/00, H01M 10/44

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)

IPC7: H02T, H01M

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

SE,DK,FI,NO classes as above

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

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5666530 A (OHSAWA), 9 Sept 1997 (09.09.97), claims 1-12 --	1-24
X	US 6034621 A (KAUFMAN), 7 March 2000 (07.03.00), claims 1-44 --	1-24
A	US 6289464 B1 (WECKER ET AL), 11 Sept 2001 (11.09.01), claims 1-58 --	1-24
A	US 5572110 A (DUNSTAN), 5 November 1996 (05.11.96), claims 1-19 --	1-24

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

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 02/01300

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5974238 A (CHASE, JR.), 26 October 1999 (26.10.99), claims 1-25  --	1-24
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