PORTABLE ELECTRONIC APPARATUS CARRYING CASE WITH AT LEAST ONE INTEGRATED DETACHABLE AUDIO HEADSET FOR A PORTABLE ELECTRONIC APPARATUS

Abstract: The present invention is directed to a novel case for storing and/or carrying a portable electronic device (PED), with the inventive PED case having at least one integrated detachable wireless headset, stored at least partially within a storage cavity in the case, the headset being capable of wireless communication with the audio-output capable PED placed at least partially within the case. Optionally, if the wireless headset is rechargeable, the PED case also includes the necessary components to recharge the headset when it is placed in the storage cavity. In an alternate inventive embodiment, the PED case may provide a substitute wireless link to the PED through the PED’s conventional audio interface, and/or recharge the PED itself from one or more optional internal power sources.

FIG. 1
PORTABLE ELECTRONIC APPARATUS CARRYING CASE WITH AT LEAST ONE INTEGRATED DETACHABLE AUDIO HEADSET FOR A PORTABLE ELECTRONIC APPARATUS

FIELD OF THE INVENTION

The present invention relates generally to carrying cases for portable electronic devices, and more particularly to a carrying case for a portable electronic device capable of utilizing at least one separate audio headset, that comprises one or more integrated detachable audio headsets.

BACKGROUND OF THE INVENTION

In recent years mobile communication devices, such as cellular telephones, smartphones, and communication-enabled PDAs, have taken the world by storm. Naturally, the popularity and prevalence of portable electronic devices (hereinafter "PEDs") equipped with communication and/or audio output capabilities, has led to development of various accessories designed for use therewith. Such accessories range from simple practical items such as PED carrying cases and belt clips, to portable battery chargers, to headsets and headsets with microphones that enable hands-free PED utilization.

In particular, headsets and headsets have proven to be the most essential accessory for mobile communication-enabled PEDs (hereinafter "MCE-PEDs") for a number of reasons. First, most MCE-PEDs are either very small and not
comfortable to hold during use for extended periods of time, or bulky and uncomfortable to hold next to the ear (in case of certain PDA and smartphone PEDs). Second, MCE-PED users prefer to have their hands free during MCE_PED utilization. Finally, in many areas, local laws prohibit MCE_PED use by vehicle drivers unless the MCE_PED is used in hands-free mode.

There are a great many different available headsets and headsets in all shapes, sizes and including various features such as integrated directional microphones, noise canceling, and even with capability of wirelessly linking with the MDA (for example, via Bluetooth or equivalent).

However, all previously known headset devices (hereinafter "H/E devices") suffer from one key disadvantage - being separate from the PED to which they must be connected, they represent yet another item that the PED user is expected to carry along with the PED - a significant inconvenience, especially since the H/E devices don't fit into typical PED cases. In fact having a separate H/E device takes away from the utility and advantage of a sleek PED, such as a mobile telephone. Furthermore, in many cases, if the PED is carried separately from the H/E device, the user must locate the H/E device and plug it into the PED prior to use - often a frustrating task due to relatively small sizes of both items. Finally, the coiled wires of most H/E devices cause additional delays in initial deployment thereof.

A commonly assigned co-pending PCT Patent Application entitled "PORTABLE ELECTRONIC APPARATUS WITH AT LEAST ONE DETACHABLE AUDIO HEADSET", which is hereby incorporated by reference herein in its
entirety, provided a solution for the above issues and challenges in form of various advantageous embodiments of an audio-output capable PED, having at least one integrated detachable headset, in one of a wireless (preferably), or a retractable wired configuration, that is stored at least partially within at least one storage cavity in the housing of the PED. In this manner, the at least one detachable headset does not need to be carried separately from the PED and is always available when needed. In another inventive embodiment the at least one detachable wireless headset is rechargeable, and the PED includes a recharger component connected to a power interface in the storage cavity in the PED housing, and also to the PED power source, such that when the at least one rechargeable headset is placed into the storage cavity, it contacts the power interface and is recharged with energy from the PED power source.

However, implementing the various inventive PED embodiments shown and described in the above-incorporated patent application, requires construction and configuration of entirely new PEDs that comprise one or more specially configured storage cavities therein - therefore the above solutions do not help the billions of PEDs currently being used worldwide. Additionally, while new PEDs are constantly being developed and released, in view of desired miniaturization for many PEDs, even a small space inside a PED can be difficult to configure.

It would thus be desirable to provide a holding case for audio-output capable portable electronic device, the case having at least one integrated detachable wireless headset capable of wireless communication with the audio-output.
output capable portable electronic device. It would additionally be desirable to provide a holding case for audio-output capable portable electronic device, the case having at least one integrated detachable wireless headset capable of wireless communication with the audio-output capable portable electronic device, and also being capable of recharging the detachable headset when it is stored therein.
BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference characters denote corresponding or similar elements throughout the various figures:

Fig. 1 shows a diagram of an exemplary embodiment of the inventive case for a portable electronic device (PED), the case having at least one integrated detachable wireless headset operable to wirelessly communicate with a PED positioned therein; and

Fig. 2 shows a diagram of the PED case of Fig. 1, in an alternate embodiment thereof, having a novel PED with at least one integrated detachable wireless headset, positioned therein.
SUMMARY OF THE INVENTION

The present invention provides a novel case for carrying / storing an audio-output capable portable electronic device (PED), the case having at least one integrated detachable wireless headset, stored at least partially within a storage cavity positioned in the case, the headset being capable of wireless communication with the audio-output capable PED. Optionally, if the detachable headset is rechargeable, in an alternate embodiment of the present invention, the case includes an headset power interface in the storage cavity, that is connected to a recharger, and also connected to a power source inside the case (such as a long-term rechargeable battery, and/or a removable user-installable conventional battery), or to the power source in the PED, through the PED power interface (or equivalent).

In an additional alternate embodiment, if the PED is not equipped with a wireless communication component capable of communicating with the wireless headset of the case, the case may include a wireless communication component capable of connecting to an audio interface of the PED (such as the headphone or headset jack), or an equivalent interface capable of transmitting audio and/or control signals (e.g., Universal Serial Bus (USB)). The inventive PED case is particularly advantageous when utilized in conjunction with the various embodiments of the novel PED with at least one integrated detachable wireless headset, as disclosed in the above-incorporated co-pending PCT application.
In an alternate inventive embodiment, the PED case provided with at least one power source operable to selectively recharge the PED itself, when the PED is placed into the case.

Other objects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims.
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is directed to a novel case for storing and/or carrying a portable electronic device (PED), such as a mobile communication device (e.g., cellular telephone, smart phone, etc.), a personal digital assistant (PDA), an ultra mobile personal computer (UMPC), a media player, or the like, with the inventive PED case having at least one integrated detachable wireless headset, stored at least partially within a storage cavity in the case, the headset being capable of wireless communication with the audio-output capable PED placed at least partially within the case.

In this manner, the headset does not need to be carried separately from the PED and/or the PED case, and is always available when needed. Each at least one headset is activated for use by removing it from its corresponding storage cavity in the case (or optionally, it may be activated by a separate on/off control interface (e.g., button, switch, etc.) positioned thereon). When activated, the at least one headset forms a wireless communication link (for example utilizing Bluetooth technology or equivalent in one or more data transmission / utilization (DT/U) profiles supported by the PED and the headset), with the PED enabling the user thereof to utilize the headset to listen to audio signals transmitted through the wireless link to the headset, and, if the headset is supplied with a microphone component, transmit audio signals from the user to the PED for further processing (e.g., recording, activating a PED control
command, transmitting to a third party (i.e., such as during a telephone call), etc.).

Optionally, if the wireless headset is rechargeable, the PED case also includes the necessary components to recharge the headset when it is placed in the storage cavity. In an alternate inventive embodiment, the PED case may provide a substitute wireless link to the PED through the PED's conventional audio interface, and/or recharge the PED itself from one or more optional internal power sources.

The apparatus of the present invention can advantageously be utilized as a case for any form of audio output-capable PED ranging from a cellular / conventional / satellite / VOIP telephone, to a communication-enabled PDA, to a 2-way radio. The inventive case apparatus can also be readily utilized to carry/store with any portable electronic device (e.g., non-phone PDA, media player, etc.), where the user can receive audio data from the PED and/or transmit audio data thereto.

At the outset, it should be noted that the term "headset" as used herein is meant to refer to any form of miniature device capable of enabling the user to receive and hear audio data (and optionally to capture audio data, such as speech). Both in-ear and out-of-ear configurations are contemplated.

Referring now to FIG. 1, a first exemplary embodiment of the inventive apparatus is shown as PED case 50. The PED case 50 includes the PED case body 52 shaped, sized, and configured for receiving a selected set of predetermined PED models 10 comprising exemplary PED components 12 to 20,
described in greater detail in the above-incorporated co-pending PCT Patent Application.

The PED case 50 having at least one integrated detachable wireless headset 60a, stored at least partially within a storage cavity 56 positioned in the PED case 50, the headset 60a being capable of wireless communication with the audio-output capable PED 10. Optionally, if the detachable headset 60a is rechargeable, in an alternate embodiment of the present invention, the PED case 50 includes an headset charge interface / recharger 64 in the storage cavity 56, that is connected to at least one power source 66 inside the PED case 50 (such as a long-term rechargeable battery, and/or a removable user-installable conventional battery - not shown), or to the power source 18 in the PED, through the case power interface 72 and the PED power interface 20 (or equivalent).

In an additional alternate embodiment of the PED case 50, if the PED 10 is not equipped with a wireless link component 14 capable of communicating with the wireless headset 60a, the PED case 50 may include a wireless communication component 70 capable of connecting via a case audio interface 68, to an audio interface 22 of the PED 10 (such as the headphone or headset jack), or an equivalent interface capable of transmitting audio and/or control signals (e.g., Universal Serial Bus (USB)).

The headset 60a may be equipped with a long-life user-replaceable battery, or, optionally, it may have a rechargeable power source (not shown), and the storage 66 may include an headset 60a-compatible power interface (not
shown) connected to a recharger 70, which in turn draws power from a power source 72, such that the headset 60a is recharged during storage.

In an alternate embodiment of the present invention, the PED case 50 may be provided with a second headset 60b, substantially similar to the headset 60a that may duplicate the audio output thereof, so that two users can simultaneously enjoy audio communication with the PED 10. In this inventive embodiment, the storage 6 is configured to be of sufficient size to store both headsets 60a, 60b (and may optionally be equipped to recharge them as described above in connection with the headset 60a).

Optionally, the headsets 60a and 60b may be configured to act as a stereo pair (i.e., one acting as the left headset and one acting as the right headset, corresponding to the left and right stereo audio components) and each forming a corresponding wireless connection 64a, 64b to the wireless link 62, so that stereo audio may be received from the PED 52 and enjoyed by the user.

Referring now to FIG. 2, a second exemplary advantageous utilization of the PED case 50 of FIG. 1 as used in conjunction with a PED 100 comprising components 102 to 124 and at least one integrated detachable headset, and that is substantially identical to the PED 50 shown in FIG. 1 of the above-incorporated co-pending PCT Patent Application and described in greater detail therein. In essence, the PED case 50 can readily provide additional power recharge capabilities to the PED 100 as well as other benefits of making multiple simultaneous wireless headsets available to the user.
Thus, while there have been shown and described and pointed out fundamental novel features of the invention as applied to preferred embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices and methods illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.
CLAIM

I claim:

1. A case for carrying and storing a portable electronic device capable of wireless audio communication, comprising:

   a case body having a receiving region sized, shaped and configured for releasably receiving one of a predetermined at least one set of portable electronic device models;

   a headset operable to establish a wireless data communication link with the portable electronic device;

   a storage region defined at least partially within the case body portable electronic device, operable to store said headset; and

   releasable means for releasably detaching said headset from said storage region to receive said audio data, and for selectively replacing said headset therein.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

*H04B 1/40(2006.01)*

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)

IP 8 H04B 1/40

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

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS (KIPO internal), "detaching", "removable", "headset" and similar terms

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<td>See abstract, claims 1-6 and figures 1-6</td>
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- **See patent family annex**

- **Further documents are listed in the continuation of Box C**

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<td>&quot;&amp;&quot; document member of the same patent family</td>
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Date of mailing of the international search report: 28 AUGUST 2008 (28.08.2008)

Name and mailing address of the ISA/KR

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Form PCT/ISA/210 (second sheet) (My 2008)
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