

## Abstract

(54) **Case for one earpiece with a USB charging connector**

(57) This invention relates to a portable device for wireless telephone communication (1) comprising:

- an earpiece (10), intended to be placed near a user's ear and comprising at least one hollow housing (11) specifically intended to house a rechargeable battery, and device for sound reproduction (13) linked to the hollow housing (11) and intended to be placed in the immediate vicinity of the pinna of the user's ear, and
- an electric recharging base (20) comprising a battery (22) and having a housing (21) adapted to receive the earpiece (10) in a recharging position thereof,

**characterized in that it** further comprises a magnetic coupling member (30) adapted to hold the earpiece (10) within the housing (21) of the base (20) in the recharging position.

## Description

**[0001]** This invention concerns a portable device for wireless telephone communication, comprising an earpiece, intended to be placed near a user's ear, an electric recharging base and a coupling member between the them.

**[0002]** Currently, earpieces paired with a cell phone via a Bluetooth-type wireless link are recharged by means of a suitable base upon which they rest. However, the link between these two members is often of poor quality. Thus, the earpiece is able to move relative to its base, which may lead to false contacts and a poor electrical connection. Therefore, the battery of the earpiece may not be recharged correctly. Furthermore, the headset may easily fall from its base, which cuts off the electrical connection, but above all may cause damage to the earpiece in the event of a fall and significant shock.

**[0003]** One purpose of this invention is therefore to solve the problem cited above. using a reliable and inexpensive solution that is easy to implement.

**[0004]** Thus, the subject-matter of this invention concerns a portable device for wireless telephone communication comprising:

- an earpiece, intended to be placed near a user's ear, and comprising at least one hollow housing specifically intended to house a rechargeable battery, and a device for sound reproduction linked to the hollow housing, and intended to be placed in the immediate vicinity of the pinna of the user's ear, and
- an electric charging base comprising a battery, and having a housing adapted to receive the earpiece in a recharging position thereof, said device being characterized in that it further comprises a magnetic coupling member adapted to hold the earpiece within the housing of the base in the recharging position.

**[0005]** According to preferred embodiments, the device according to this invention may further include at least one of the following characteristics:

- the magnetic coupling member comprises a magnet, and a metal plate provided respectively within the base and the earpiece, or vice-versa, said magnet and said plate work together to form the magnetic coupling;
- the earpiece is provided with an embedded flat magnet within the thickness of one of its surfaces, and the base is provided with an embedded flat magnet within the thickness of a housing surface, the magnet being placed opposite the plate in the recharging position;
- the earpiece is provided with electrical contactors that work together with the electrical connection pads provided on the charging base so that said pads are in contact with the contactors to establish an electrical connection between the base battery and the earpiece battery when in the recharging position;
- the electrical contactors comprise two flexible metal strips flush with one surface of the earpiece and the electrical connection pads protrude from the surface of the base which is placed opposite the surface of the earpiece provided with the strips when in the recharging position thereof;
- the base has a connector that may be plugged into a charger to recharge the base and/or the earpiece battery;
- the connector is a male USB type connector; and
- the base is equipped with a removable connector protection cap.

**[0006]** Advantageously, the wireless telephone communication device is a Bluetooth standard earpiece.

**[0007]** The invention will now be described in more detail with reference to particular embodiments given by way of illustration only and shown in the appended figures in which:

- Figure 1 is a view in perspective of the device according to this invention in its assembled state;
- Figure 2 is a view in perspective of the device in a disassembled state;
- Figure 3 is a view in perspective of the device showing a cap in the withdrawn position;
- Figure 4 is a longitudinal cross-sectional view of the device in its assembled state,
- Figure 5 is a cross-sectional view along line V-V of Figure 4;

- Figure 6 is a view in perspective taken from below an earpiece forming part of the device of this invention; and
- Figure 7 is an exploded view in perspective of the device before its assembly.

**[0008]** Figures 1 to 3 show a portable wireless telephone communication device 1 comprising a Bluetooth standard operating earpiece 10 so that it can be paired with a cell phone (not shown) and a charging base 20 adapted to receive said earpiece 10 to recharge it.

**[0009]** The earpiece (10) is intended to be placed near a user's ear. It comprises a hollow housing (11) specifically intended to house a rechargeable battery (not shown), a device for sound reproduction 13 linked to the hollow housing and intended to be placed in the immediate vicinity of the pinna of the user's ear. Preferably, the member to reproduce sound 13 is a mushroom-shaped speaker protruding from one surface 15 of the earpiece 10.

**[0010]** The base 20 comprises a hollow housing 21 having a shape adapted to the outer shape of the housing 11 of the earpiece 10 and its speaker 13. Thus, in the charging position of the earpiece battery 10, the latter fits perfectly into the housing 21, as illustrated in Figure 1. In order to prevent the earpiece 10 from coming out of the housing 21 in this position; a magnetic coupling member 30 is also provided.

**[0011]** As shown in Figures 4 and 5, the magnetic coupling member 30 comprises a flat magnet 32 housed in the earpiece 10, under surface 15 carrying the speaker 13, and a plate 34 embedded within the thickness of the surface 23 of the base 20 facing the surface 15 of the earpiece 10, said magnet 32 and said plate 34 work together to form the magnetic coupling;

**[0012]** The base 20 also contains a battery 22 which may be recharged in turn when it is connected to a source of current such as the mains or to an annex charger via a connector 25 such as a male plug of the USB type. The base 20 is also provided with an end cap 28 to cover the USB socket 25 when not in use.

**[0013]** As can be seen in Figures 6 and 7, the earpiece 10 is provided with electrical contactors 16 working with the electrical connection pads 26 provided on the charging base 20. More precisely, the electrical contactors 16 comprise two flexible metal strips 17 and the electrical connection pads 26 protrude from the surface 23 of the base 20.

**[0014]** Thus, in the recharging position (Figure 1), the pads 26 are in contact with the strips 17 to establish an electrical connection between the base battery and the earpiece battery 10.

**[0015]** It goes without saying that the detailed description of the subject-matter of the invention given only by way of illustration, does not constitute in any way a limitation, technical equivalents also being included within the scope of this invention.

## Claims

1. Portable device for wireless telephone communication (1) comprising:

- an earpiece (10), intended to be placed near a user's ear and comprising at least one hollow housing (11) specifically intended to house a rechargeable battery, and a device for sound reproduction (13) linked to the hollow housing (11) and intended to be placed in the immediate vicinity of the pinna of the user's ear, and
- an electric recharging base (20) comprising a battery (22) and having a housing (21) adapted to receive the earpiece (10) in a recharging position thereof,

**characterized in that it** further comprises a magnetic coupling member (30) adapted to hold the earpiece (10) in the housing (21) of the base (20) in the recharging position.

2. Device according to claim 1, **characterized in that** the magnetic coupling member (30) comprises a magnet (32) and a metal plate (34) respectively provided in the base (20) and the earpiece (10), or vice-versa, wherein said magnet (32) and said plate(34) work together to form the magnetic coupling.

3. Device according to claim 2, **characterized in that** the earpiece (10) is provided with a flat magnet (32) embedded within the thickness of one of its surfaces (15) and the base (20) is provided with a metal plate (34) embedded within the thickness of one surface (23) of its housing (21), the magnet (32) being placed opposite

the plate (34) in the earpiece recharging position (10).

4. The device according to any of the preceding claims, **characterized in that** the earpiece (10) is provided with electrical contactors (16) that work together with the electrical connection pads (26) provided on the charging base (20) so that said pads (26) are in contact with the contactors (16) to establish an electrical connection between the base battery (20) and the earpiece battery (10) when in the recharging position;
5. Device according to claim 4, **characterized in that** the electrical contactors (16) comprise two flexible metal strips (17) flush with one surface (15) of the earpiece and the electrical connection pads protrude from the surface (23) of the base (20) which is placed opposite the surface (15) of the earpiece (10) provided with the strips (17) when in the recharging position thereof.
6. The device according to any of the preceding claims, **characterized in that** the base (20) has a connector (25) that may be plugged into a charger to recharge the base and/or the earpiece battery;
7. Device according to claim 6, **characterized in that** the connector (25) is a male USB type connector.
8. Device according to claim 6 or 7, **characterized in that** the base is equipped with a removable connector (28) protection cap (25).
9. The device according to any of the preceding claims, **characterized in that** it is a Bluetooth standard earpiece.

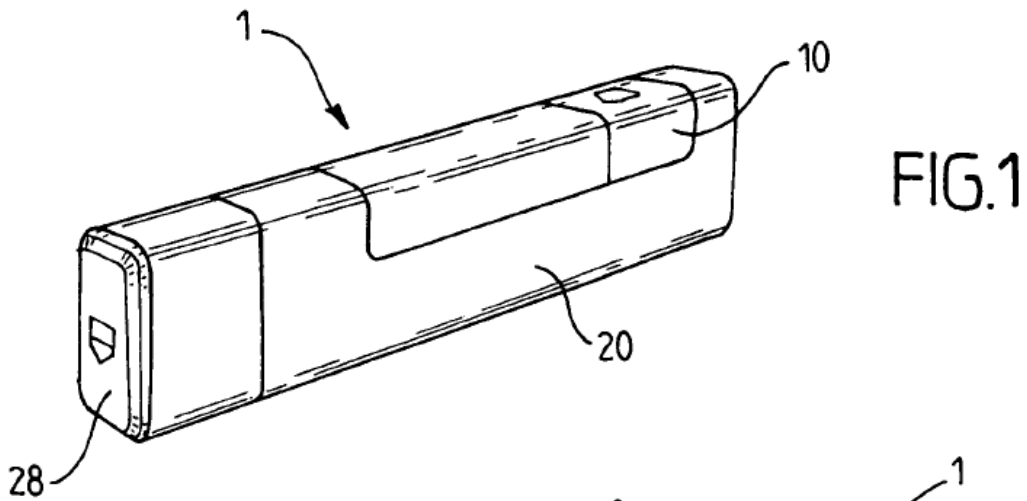


FIG. 1

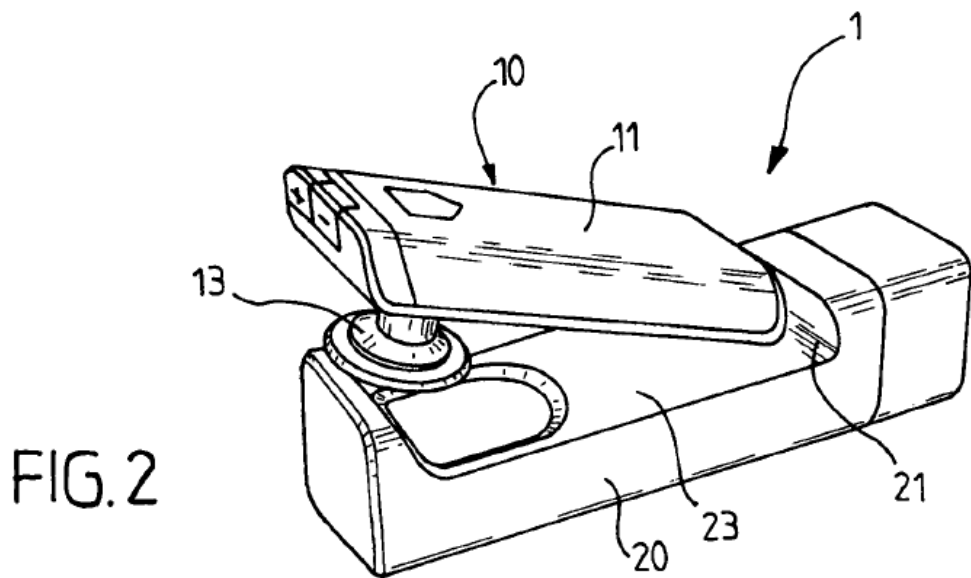


FIG. 2

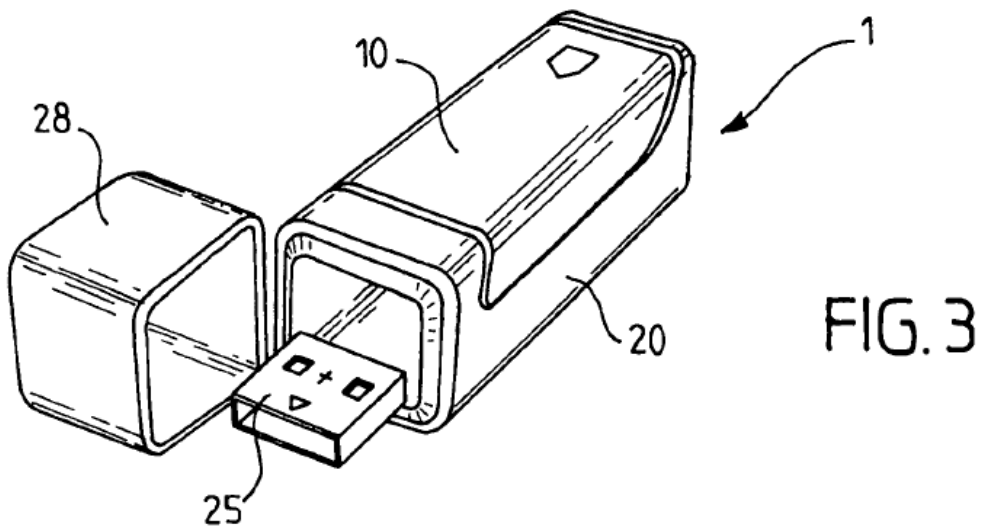


FIG. 3

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