A WATCH BAND

A band configured for being used with a wristwatch and comprising an electronic unit configured for a wireless communication with a variety of portable devices, such as a mobile phone, the band being further configured to be attached to a wristwatch so as corresponding engagement portions of the band and the wristwatch provide secure and tight engagement of the band to the wristwatch.

Fig. 5A

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A WATCH BAND

TECHNOLOGICAL FIELD

The field of the invention is wearable electronic devices that can connect wirelessly to external portable devices.

BACKGROUND

Wearable computing and communication devices are a rapidly growing segment within the consumer electronics market. Wearable devices aim to offer their wearers useful applications - either built into the device, or built into another device like a mobile phone which communicates with the wearable device - in a manner that is friendly and easy to carry around, and often also featuring a design which is more streamlined and often more fashionable, compared to traditional computing and telecom devices.

There are known several types of wearable devices, such as 'Smart' watches and 'Smart' bands, i.e. a group of wearable products which offer functionality similar to PDAs (personal digital assistants), smart phones, or personal computers.

One example of such wearable device is disclosed in US 8,787,006.

GENERAL DESCRIPTION

In accordance with one aspect of the presently disclosed subject matter, there is provided a band configured for being used with a wristwatch and comprising an electronic unit configured for a wireless communication with a variety of portable devices, such as a mobile phone, the band being further configured to be attached to a wristwatch so as corresponding engagement portions of the band and the wristwatch provide secure and tight engagement of the band to the wristwatch.

Such arrangement allows the band of the presently disclosed subject matter to replace any standard band of any kind of wristwatch having a replaceable band.

In accordance with one example of the presently disclosed subject matter there is provided a band configured for being used with a wristwatch, the wristwatch having at least one band engaging portion, the band comprising a watch engaging portion while being configured to be detachably attached to said wristwatch and further being configured to allow a secure and tight engagement to said at least one engaging portion,
the band further comprises an electronic unit having at least the following electronic components, including at least:

- a transceiver configured for wireless communication with at least one portable device including receiving and transferring information to said at least one portable device;
- a processing unit configured for processing at least said information;
- a notification unit configured for representing to a user said processed information associated with said portable device;

the transceiver and the notification unit being in communication with said processing unit; and

- a power source for supplying power to at least some of the electrical components.

The band can have one or more of the following features, and any combination thereof:

- The band can have a width defined so as to allow said secure and tight engagement.
- The band can comprise a plurality of separate straps, detachably attachable so as to create said band.
- The band can comprise two separate straps, a first strap having a first end and a second end, and a second strap having a first end and a second end, so that first ends of the first and the second straps are configured to be detachably attached to a first and a second end of said wristwatch, so as to provide said secure and tight engagement, and the second ends of the first and the second straps are configured to be detachably fastened to each other, so as to fit around a wrist of a user.
- At least two straps can be provided with fastening means for detachably fastening said straps to each other.
- The band can comprise two ends, each end being fitted with an engaging means constituting a part of said watch engaging portion and configured for said engagement with corresponding ends of said wristwatch.
- The engaging means can comprise a hollow cavity extending along a width dimension of the band, configured to receive therein a spring bar removably received between a pair of lugs at each end of a wristwatch case holding said
wristwatch, allowing thereby said engagement between the band and the wristwatch.

- A width of the band at least at the ends thereof fitted with said hollow cavities can be defined so as to fit, together with the spring bars received wherein, between said pairs of lugs of said wristwatch case, so as to allow said engagement.

- The wireless communication between the transceiver and the portable device can be achieved by means of at least one wireless communication protocol supported by the portable device.

- The portable device can be selected from a mobile phone, a portable computer, a desktop computer, a tablet or a phablet.

- The band can comprise an activating button, associated with a plurality of functions, configured at least for turning the portable device on and off.

- The button can be disposed adjacent the engagement between the wristwatch and the band.

- The transceiver can be configured for having a pairing mode allowing it to be paired with said portable device, prior to commencing communication.

- The band can comprise a pairing mechanism allowing a user to put the transceiver to said pairing mode.

- The pairing mechanism is associated with an activating button and is configured for being activated by applying a physical pressure on said button.

- The notification unit can be configured for representing information by producing notifications by at least one of visual means, audio means or sensual means.

- The representation unit can comprise a digital display.

- The notifications are visually presented on the digital display.

- The notifications can be associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device. Such information can be created on said portable device, or created elsewhere and communicated via that portable device.
The notifications can be associated with vibration of at least a portion of the band.

At least some of the electrical components can be embedded within the band.

At least some of the electrical components can be embedded within the two or more straps.

The power source can be configured for being connected to an external power supply.

Connections between the power source and said at least some of the electrical components are embedded within the band.

The power source can be rechargeable.

The band can comprise a storage unit for storing notifications upon their receipt. The notifications thus can be represented to a user in real time or at any other desired time.

The storage unit can constitute a part of the processing unit.

The storage unit can be configured for storing data associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device.

The band can comprise one or more bio-sensors associated with physiological parameters of the user. Such parameters can be for example a heart-rate, a body temperature, a skin moisture etc.

The information produced by one or more bio-sensors can be processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.

The band can comprise at least one of GPS receiver and an accelerometer.

The information produced by said at least one of GPS receiver and an accelerometer can be processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.

The portable device can be an external device other than said wristwatch.
In accordance with another aspect of the presently disclosed subject matter, there is provided a fastening arrangement configured to be used with a wristwatch band and comprising an electronic unit configured for a wireless communication with a variety of portable devices, such as a mobile phone, the fastening arrangement further being configured to be fixedly attached to the wristwatch band, so that corresponding fastening portions of the fastening arrangement and the wristwatch band allow an adjustment of the wristwatch band around a user's wrist and a secure fixation thereof.

The fastening arrangement is such that it is configured to replace any standard fastening arrangement, such as a standard buckle, of any kind of wristwatch having a band with a replaceable fastening arrangement.

In accordance with another example of the presently disclosed subject matter, there is provided a fastening arrangement for being used with a wristwatch band to be worn around a wrist of a user, the wristwatch band having at least one fastening portion, the fastening arrangement comprising a band engaging portion configured to be detachably attached to said fastening portion and further being configured to allow an adjustment of the wristwatch band around the user's wrist and a secure fixation thereof, the fastening arrangement comprises an electronic unit having at least the following electronic components, including at least:

- a transceiver configured for wireless communication with at least one portable device including receiving and transferring information to said at least one portable device;
- a processing unit configured for processing at least said information;
- a notification unit configured for representing to a user said processed information associated with said portable device;

the transceiver and the notification unit being in communication with said processing unit; and

a power source for supplying power to at least some of the electrical components.

The fastening arrangement can comprise a buckle configured for being detachably attached to a corresponding buckle support constituting a part of the fastening portion of the watch band.
The buckle can comprise a buckle frame having a pair of buckle frame supports spaced apart by a distance \( d \), conforming a width of said buckle support of the fastening portion of the watch band.

The buckle can be further configured to be rotatably attached to said buckle support.

When replacing a standard buckle of a wristwatch band, the buckle of the presently disclosed subject matter can be easily fitted over a standard bar and fixed by means of a standard spring bar, typically used in to attach after-market buckles to straps.

The electronic unit of the fastening arrangement can comprise any feature or combination of features listed above with reference to the electronic unit of the band.

The electronic components of the electronic units in accordance with the presently disclosed subject matter can be of any desired size so as to fit the size of the band or the fastening arrangement in which the unit is embedded.

**BRIEF DESCRIPTION OF THE DRAWINGS**

In order to better understand the subject matter that is disclosed herein and to exemplify how it may be carried out in practice, embodiments will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

**FIG. 1A** is a top view of two straps of a band in accordance with one example of the presently disclosed subject matter;

**FIG. 1B** is a top view of a standard wristwatch disposed within a case, suitable for use with the band of Fig. 1A;

**FIG. 2** is a schematic illustration of some electronic components of an electronic unit embedded inside the band of Fig. 1A;

**FIG. 3** schematically illustrates an arrangement of the electronic components in accordance with another example of the presently disclosed subject matter;

**FIGS. 4A to 4C** illustrate an engagement between a band and a watch in accordance with another example of the presently disclosed subject matter;

**FIG. 5A** illustrates a watch together with a band of the presently disclosed subject matter;

**FIG. 5B** illustrates the watch and the band of Fig. 5A worn by a user;
FIG. 6 illustrates a digital display of a band in accordance with another example of the presently disclosed subject matter;

FIG. 7 illustrates a band in accordance with another example of the presently disclosed subject matter provided with a button;

FIG. 8 illustrates an arrangement of electronic components of a band in accordance with another example of the presently disclosed subject matter, with addition of a sensor;

FIG. 9 illustrates a band in accordance with another example of the presently disclosed subject matter, comprising a vibrating unit embedded therewithin;

FIG. 10 illustrates a buckle in accordance with one example of the presently disclosed subject matter, comprising an electronic unit embedded therewithin; and

FIGS. 11A and 11B illustrate an attachment of a buckle of a type shown in Fig. 10, to a standard watch band.

DETAILED DESCRIPTION OF EMBODIMENTS

In the following detailed description, specific details are set forth in order to provide a thorough understanding of the invention. However, it will be understood by those skilled in the art that the presently disclosed subject matter may be practiced without these specific details. In other instances, well-known methods, procedures, components and circuits have not been described in detail so as not to obscure the presently disclosed subject matter.

Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions utilizing terms such as "processing", "computing", "representing", "controlling", "generating", "indicating", "writing", "identifying", "updating" or the like, refer to the action(s) and/or process(es) of a computer that manipulate and/or transform data into other data, said data represented as physical, such as electronic, quantities and/or said data representing the physical objects. The term "computer" should be expansively construed to cover any kind of electronic device with data processing capabilities including, by way of non-limiting example, the storage system and storage control layer disclosed in the present application.

With reference to Fig. 1A, there is shown a wristband in accordance with one example of the presently disclosed subject matter, generally designated 1. The wristband 1 is configured to be used with a watch, as shown for example in Fig. 1B,
which can be any standard wristwatch 2 held by a wristwatch case 3, as will be
discussed below in detail.

The case 3 comprises a first end 4, having a first band engaging portion 4' of a
width $d_1$ and a second end 5, having a second engaging portion 5' of a width $d_2$.

The wristband 1 comprises a first strap 10, configured for being attached to the
first end 4 of the case 3, and a second strap 11, configured for being attached to the
second end 5 of the case 3.

Optionally, the first strap can be a short strap, to be attached to the top, "twelve
o'clock" end of a wristwatch case, while the second strap can be a long strap to be
attached to the bottom ("six o'clock") side of a wristwatch case, as shown for example
in Figs. 5 and 7.

The first strap 10 comprises an engagement end 13 and a fastening end 14, and
the second strap comprises an engagement end 15 and fastening end 16, so that the
engagement ends 13 and 15 are configured for being engaged to the corresponding ends
4 and 5 of the case 3, and the fastening ends 14 and 16 are configured to be fastened to
each other so as to be fitted around a user's wrist.

One example of such fastening means is a buckle 17 disposed at the fastening
end 14 of the first strap 10, to be fitted within one of the holes 18, disposed adjacent the
fastening end 16 of the second strap 11.

It should be appreciated, however, that a wristband in accordance with the
presently disclosed subject matter can comprise any type of fastening means, allowing
fitting and adjusting thereof around a user's wrist, such as for example any snap or hook
and loop fastening arrangements.

The strap 10 has a width $w_1$ and the strap 11 has a width $w_2$, typically equal to
the width $w_i$. The widths $w_i$ and $w_2$ are defined so as to conform the widths $d_1$ and $d_2$,
i.e. so as to allow a secure and tight engagement between the band engaging portions 4'
and 5' with the corresponding engaging ends 13 and 15 of the wristband 1, which
allowed a fixed attachment of the case 3 to the wristband 1, eliminating any undesired
movements thereof with respect to the wristband.

Typical widths of $w_1$ and $w_2$ of the straps 10 and 11 can be in the range of 20-
24mm, and more specifically 20mm, 22mm or 24mm.
Referring now to Figs. 4A to 4C, there is shown one example of an engagement arrangement between the wristband and a standard case 40, showing only one strap 11’, similar to the strap 11 described above.

The case 40 comprises a first end 46 having an engaging portion formed as a pair of lugs 46’ and 46”, and a second end 47 having an engaging portion formed as a pair of lugs 47’ and 47”.

Each of the pairs of lugs comprises a pair of opposite receiving holes (not seen) facing each other, in which spring bars 41 and 42, each having bar end portions 41’ and 42’, are normally received.

At its engaging end 15’, the strap 11’ comprises a hollow through passage 45, extending along the width dimension of the strap 11’ and configured for receiving therein the spring bar 42’. Similarly, although not shown, the strap 10’ comprises a passage for receiving therein the spring bar 41’.

The engagement arrangement is such that the spring bars 41 and 42 are released out of their position between the corresponding lugs (as shown for the spring bar 41 in Fig. 4A), and are inserted within the corresponding passages of the straps 10’ and 11’, as shown in Figs. 4B and 4C.

The straps 10’ and 11’, together with the spring bars 41 and 42 received therein are then inserted between the lugs, such that the ends 41’ of the spring bar 41 are compressed and inserted within the holes of the lugs 46’ and 46”, and the ends 42’ of the spring bar 42 are received within the holes of the lugs 47’ and 47”.

The straps are firmly fitted between the lugs due to the correspondence between the width d’ between the lugs and the width w’ of the strap, as described above with reference to Figs. 1A and 1B.

The above engagement allows secure and tight fixation of the case 40 to the band 1’, and yet and easy detachment by releasing the springs by means of a standard spring bar tool.

Turning now to Figs. 5A and 5B, there is shown the wristband 11’ in a position that the straps 10’ and 11’ are attached to the case 40 (Fig. 5A) and worn on user hand 50, fitted about his wrist 52 (Fig. 5B). In such the latter position a back sides (not seen) of the straps face the user's hand, and front sides 51 and 53 face the user.

The straps are fastened by means of a buckle 55, allowing an easy adjustment of the wristband to the user's wrist.
Turning back to Figs. 1A and IB, the wristband 1 further comprises an electronic unit (most of which not seen in Fig. 1A) disposed therewithin, as will be detailed below, and having a digital display 12, visible to a user, for example through a corresponding aperture 19 within the strap 11. The electronic unit is configured for wireless communication with a portable device, such as a mobile phone.

When worn by a user, as shown for example in Fig. 5B, a digital display 53 faces the user and is conveniently located to allow a quick glance at the displayed information, in the same way as looking at the watch to read the time.

Generally, such electronic unit comprises at least a transceiver configured for wireless communication with at least one portable device including receiving and transferring information to said at least one portable device; a processing unit configured for processing at least said information; a notification unit configured for representing to a user said processed information associated with said portable device; the transceiver and the notification unit being in communication with said processing unit; and a power source for supplying power to at least some of the electrical components.

Referring to Fig. 2, there is shown one example of an electronic unit in accordance with a presently disclosed subject matter, generally designated 25.

The electronic unit comprises a plurality of electronic components, all disposed inside the strap 11 of the wristband, namely, a digital display unit 20, a processor unit 21, a transceiver unit 22 and a battery 23.

One example of an internal arrangement of the above electronic components is such that the digital display unit 20 is placed on top of a processor unit 21; the transceiver unit 22 is placed adjacent to the processor; and the battery 23 is placed adjacent to the transceiver.

The battery can be rechargeable by means of physically connecting to an external power source / charger via conductive elements protruding through the back of the strap. Alternatively, the battery can be rechargeable by means of electromagnetic induction, by being placed on or near an appropriate inductive charger.

Figure 3 illustrates schematically, the communications and relations between the electronic components, and between them and a mobile phone 35. The battery 33 supplies power over conductive wires 34, to the processor unit 31, transceiver 32, and digital display 30. In addition, the transceiver is connected to the processor unit over
wiring 39 enabling bi-directional information transfer. The processor is further
connected over wiring 38 to the display unit, enabling one-directional transfer of
information to the display.

The transceiver is further connected over wireless communication 37 to a
compatible transceiver 36 located within the mobile phone 35.

Following pairing and enablement of the communication between the
transceivers 32 and 36, according to the specific protocol employed by these
transceivers, the wireless communication will enable transfer of any type of data and
parameters as appropriate for a particular embodiment and configuration, from the
mobile phone to the wristband, and present to the user information based on the data
received. Such data may include, for example, details of incoming phone calls, text
messages, Email messages, low-battery warning, etc.

Optionally, the wireless communication 37 may also transfer information from
the wristband to the mobile phone, including for example, low battery warning of the
battery 33, and any information that may, on certain particular embodiments, be
generated by additional sensors such as bio-sensors and accelerometers, which may be
embedded in the wristband.

With reference to Fig. 6, there is shown one example of representation of
notifications on a digital display. In accordance with the specific example, the display
represents graphic symbols ("icons") representing specific notifications which the
processor unit has determined based on information received from a mobile phone via
the transceiver.

In particular, a visible part of the display unit 61 may light up icons indicating:
Bluetooth communication is active 63; incoming phone call 62; incoming text message
65; incoming email 66. Icons not be displayed when Bluetooth is inactive, no incoming
call, no incoming message, no incoming Email, respectively. In addition, an icon 64
will present the battery level of the wristband, by changing from one line (low battery)
to, for example, 4 lines (full battery).

Fig. 7 shows another example of a wristband 70, in accordance with the
presently disclosed subject matter, comprising a button 71.

The button 71 is disposed adjacent an engaging end 75 of a strap 73 and is
depressible by a user, enabling a plurality of functions. For example, the button 73 is
configured to allow a user to: turn on the wristband by applying pressure to it while the
device is off; turn off the wristband by applying pressure to it while the device is on;
turn on pairing mode for the transceivers by applying pressure to it in order to turn it on,
and then keeping it pressed after the device has turned on.

Fig. 8 schematically shows another example of an electronic unit 85 in accordance with the presently disclosed subject matter, comprising an accelerometer 86.

In particular, the electronic unit comprises a battery 83, which supplies power over power-line 84, to a processor unit 81, a transceiver 82, and a digital display 80. In addition, the transceiver is connected to the processor unit over wiring 89 enabling bi-directional information transfer. The processor is further connected over wiring 88 to the display unit, enabling one-directional transfer of information to the display.

The accelerometer 86 is connected to the processor unit over wiring 87, enabling one-directional transfer of information to the processor. The accelerometer is configured for sending the processor information about the wearer's movement on all axes.

 Optionally, such information, after processed by the processor can be sent to a mobile phone or device using the transceiver, to enable functionality including, for example: rejecting an incoming call by wiggling the wearer's arm; recording a wearer activity for purposes of fitness applications; identifying long periods of time without movement in order to turn off the electronic components in the wristband thus saving battery power.

Fig. 9 schematically shows another example of an electronic unit 95 in accordance with the presently disclosed subject matter, comprising a vibrating unit 90.

In particular, the vibrating unit 90 is placed adjacent a back side (not seen) of the wristband, facing the user's arm when the wristband is worn around his wrist, and is disposed under processor unit 91; a transceiver unit 92 is placed adjacent to the processor; and a battery 93 is placed adjacent to the transceiver.

Fig. 10 schematically shows another example of an electronic unit 107 in accordance with the presently disclosed subject matter, wherein electronic components thereof are arranged within a buckle 101 of the wristband.

In particular, the electronic components inside the buckle 101 are connected to the short strap 102 of the wristband. The vibrating unit 103 is placed at the side closer to the user's arm, under processor unit 104; a transceiver unit 105 is placed adjacent to the processor; and a battery 106 is placed adjacent to the transceiver.
Referring now to Fig. 11, there is shown a buckle in accordance with a presently disclosed subject matter, generally designated 111.

The buckle 111 is configured to be used with a standard wristband, of a kind discussed with reference to the previous figures, however without any electronic components.

In particular, the buckle 111 is configured to replace standard buckles such as 17 or 55 discussed above.

The buckle 111 comprises a buckle frame having a pair of buckle frame supports 115 spaced from each other by distance \( d_3 \).

Each buckle frame support 115 comprises a receiving hole 116.

The buckle 111 further comprises an electronic unit 140, similar to all the units described above, so that some or all electronic components described above are embedded within the buckle 111.

A standard wristband 120 (only a portion of which is shown), to which such buckle can fit, normally comprises a fastening portion 122, fitted at its end with a hollow bar 124, separated into two passages 121 and 123 by a recessed cut 125, into which a prong 127 is inserted and rotatably fixed by means of a spring bar 113 received through both passages 121 and 123 and a corresponding hole 127' of the prong 127.

The hollow bar 124 is of a width \( w_3 \), in conformation with which the distance \( d_3 \) is defined, allowing a fine fitting of the hollow bar 124 between the buckle frame supports 115 (Fig. 11B).

The buckle 124 can be easily fitted over the fastening portion 122 of the wristband 120, by releasing out the spring bar 113 (normally so as to detach a standard buckle to be replaced), thereby separating the prong 127 from the hollow bar 124, then fitting the buckle 124 upon the fastening portion 122 so that the hollow bar 124 is received between the buckle frame supports 115 and the holes 116 are coaxial with the through holes 128 and 128' of the passages 121 and 123, and with the hole 127' of the prong 127. The spring bar is then inserted through all the above holes extending between the buckle frame supports 115 and rotatably fixing the prong 127 within the recessed cut 125 and attaching the buckle to the fastening portion 122.

Various modifications could be made in the above described examples. For example, the two straps 10 and 11 composing the wristband may be connected via an additional component, for instance a folding clasp (replacing the buckle shown in
Figure 1) or an additional piece of strap (such as can be worn underneath the watch case, for example) where such a connection may include electric wiring that allows positioning of the electronic components on both straps, rather than being all concentrated on the bottom strap as in the exemplary embodiments.

For example, the transceiver components can be based on communication protocols other than the Bluetooth protocol mentioned above.

The display unit can be larger than the small size indicated on some of the illustrations, so that in some embodiments this may in fact be wider than the base width of the strap, thus allowing additional information such as phone numbers to be presented.

Also, the entire electronic unit including all or some of the mentioned above components can be packed into a buckle or clasp that can be produced separately, in order to be attached to a standard watch strap using the standard means in which replacement buckles can be attached to the straps, which are very similar to the means of attaching a standard watch strap to the case of a watch.

It is to be understood that the presently disclosed subject matter is not limited in its application to the details set forth in the description contained herein or illustrated in the drawings. The presently disclosed subject matter is capable of other embodiments and of being practiced and carried out in various ways.

Those skilled in the art will readily appreciate that various modifications and changes can be applied to the embodiments of the invention as hereinbefore described without departing from its scope, defined in and by the appended claims.
CLAIMS:

1. A band configured for being used with a wristwatch, the wristwatch having at least one band engaging portion, the band comprising a watch engaging portion being configured to be detachably attached to said wristwatch and further being configured to allow a secure and tight engagement to said at least one engaging portion, the band further comprises an electronic unit having at least the following electronic components, including at least:
   - a transceiver configured for wireless communication with at least one portable device including receiving and transferring information to said at least one portable device;
   - a processing unit configured for processing at least said information;
   - a notification unit configured for representing to a user said processed information associated with said portable device; the transceiver and the notification unit being in communication with said processing unit; and
   - a power source for supplying power to at least some of the electrical components.

2. The band according to Claim 1, wherein the band has a width defined so as to allow said secure and tight engagement.

3. The band according to Claim 1 or 2, comprising a plurality of separate straps, detachably attachable so as to create said band.

4. The band according to Claim 3, comprising two separate straps, a first strap having a first end and a second end, and a second strap having a first end and a second end, so that first ends of the first and the second straps are configured to be detachably attached to a first and a second end of said wristwatch, so as to provide said secure and tight engagement, and the second ends of the first and the second straps are configured to be detachably fastened to each other, so as to fit around a wrist of a user.

5. The band according to Claim 3 or 4, wherein at least two straps are provided with fastening means for detachably fastening said straps to each other.

6. The band according to Claims 1 to 5, wherein the band comprises two ends, each end being fitted with an engaging means constituting a part of said watch engaging
portion and configured for said engagement with corresponding ends of said wristwatch.

7. The band according to Claim 6, wherein said engaging means comprises a hollow cavity extending along a width dimension of the band, configured to receive therein a spring bar removably received between a pair of lugs at each end of a wristwatch case holding said wristwatch, allowing thereby said engagement between the band and the wristwatch.

8. The band of Claim 7, wherein a width of the band at least at the ends thereof fitted with said hollow cavities is defined so as to fit, together with the spring bars received therein, between said pairs of lugs of said wristwatch case, so as to allow said engagement.

9. The band of Claims 1 to 8, wherein said wireless communication between the transceiver and said portable device is achieved by means of at least one wireless communication protocol supported by said portable device.

10. The band of Claims 1 to 9, wherein said portable device is selected from a mobile phone, a portable computer, a desktop computer, a tablet or a phablet.

11. The band of Claims 1 to 10, further comprising an activating button, associated with a plurality of functions, configured at least for turning the portable device on and off.

12. The band of Claims 1 to 11, wherein said button is disposed adjacent the engagement between the wristwatch and the band.

13. The band of Claims 1 to 12, wherein the transceiver is configured for having a pairing mode allowing it to be paired with said portable device, prior to commencing communication.

14. The band of Claim 13, further comprising a pairing mechanism allowing a user to put the transceiver to said pairing mode.

15. The band of Claim 14, wherein the pairing mechanism is associated with an activating button and is configured for being activated by applying a physical pressure on said button.

16. The band of Claims 1 to 15, wherein the notification unit is configured for representing information by producing notifications by at least one of visual means, audio means or sensual means.
17. The band of Claim 16, wherein the representation unit comprises a digital display.
18. The band of Claim 17, wherein the notifications are visually presented on the digital display.
19. The band of Claim 18, wherein the notifications are associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device.
20. The band of Claims 16 to 19, wherein the notifications are associated with vibration of at least a portion of the band.
21. The band of Claims 1 to 17, wherein at least some of the electrical components are embedded within the band.
22. The band of Claim 18, when dependent on Claims 3, 4 or 5, wherein at least some of the electrical components are embedded within the two or more straps.
23. The band of Claim 22, wherein the power source is configured for being connected to an external power supply.
24. The band of Claim 23, wherein connections between the power source and said at least some of the electrical components are embedded within the band.
25. The band of Claims 22 to 24, wherein the power source is rechargeable.
26. The band of Claims 1 to 25, further comprising a storage unit for storing notifications upon their receipt.
27. The band of Claim 26, wherein the storage unit constitutes a part of the processing unit.
28. The band of Claims 26 or 27, wherein the storage unit is configured for storing data associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device.
29. The band of Claims 1 to 28, further comprising one or more bio-sensors associated with physiological parameters of the user.
30. The band of Claim 29, wherein the information produced by said one or more bio-sensors is processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.
31. The band of Claims 1 to 30, further comprising at least one of GPS receiver and an accelerometer.
32. The band of Claim 31, wherein the information produced by said at least one of GPS receiver and an accelerometer is processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.
33. The band of Claims 1 to 32, wherein the portable device is an external device other than said wristwatch.
34. A fastening arrangement for being used with a wristwatch band to be worn around a wrist of a user, the wristwatch band having at least one fastening portion, the fastening arrangement comprising a band engaging portion configured to be detachably attached to said fastening portion and further being configured to allow an adjustment of the wristwatch band around the user's wrist and a secure fixation thereof, the fastening arrangement comprises an electronic unit having at least the following electronic components, including at least:
   - a transceiver configured for wireless communication with at least one portable device including receiving and transferring information to said at least one portable device;
   - a processing unit configured for processing at least said information;
   - a notification unit configured for representing to a user said processed information associated with said portable device;
     the transceiver and the notification unit being in communication with said processing unit; and
   a power source for supplying power to at least some of the electrical components.
35. The fastening arrangement of Claim 34, further comprising a buckle configured for being detachably attached to a corresponding buckle support constituting a part of the fastening portion of the watch band.
36. The fastening arrangement of Claim 35, wherein the buckle comprises a buckle frame having a pair of buckle frame supports spaced apart by a distance d, conforming a width of said buckle support of the fastening portion of the watch band.
37. The fastening arrangement of Claim 35 or 36, wherein the buckle is configured to be rotatably attached to said buckle support.
38. The fastening arrangement of Claims 34 to 37, wherein said wireless communication between the transceiver and said portable device is achieved by means of at least one wireless communication protocol supported by said portable device.
39. The fastening arrangement of Claims 34 to 38, wherein said portable device is selected from a mobile phone, a portable computer, a desktop computer, a tablet or a phablet.
40. The fastening arrangement of Claims 34 to 40, further comprising an activating button, associated with a plurality of functions, configured at least for turning the portable device on and off.
41. The fastening arrangement of Claims 34 to 40, wherein the transceiver is configured for having a pairing mode allowing it to be paired with said portable device, prior to commencing communication.
42. The fastening arrangement of Claims 34 to 41, further comprising a pairing mechanism allowing a user to put the transceiver to said pairing mode.
43. The fastening arrangement of Claim 42, wherein the pairing mechanism is associated with an activating button and is configured for being activated by applying a physical pressure on said button.
44. The fastening arrangement of Claims 34 to 43, wherein the notification unit is configured for representing information by producing notifications by at least one of visual means, audio means or sensual means.
45. The fastening arrangement of Claims 34 to 44, wherein the representation unit comprises a digital display.
46. The fastening arrangement of Claims 34 to 45, wherein the notifications are visually presented on the digital display.
47. The fastening arrangement of Claims 34 to 46, wherein the notifications are associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device.
48. The fastening arrangement of Claims 34 to 47, wherein the notifications are associated with vibration of the fastening arrangement.
49. The fastening arrangement of Claims 34 to 48, wherein at least some of the electrical components are embedded within the fastening arrangement.
50. The fastening arrangement of Claims 34 to 49, wherein the power source is configured for being connected to an external power supply.

51. The band of Claim 50, wherein connections between the power source and said at least some of the electrical components are embedded within the fastening arrangement.

52. The fastening arrangement of Claims 34 to 51, therein the power source is rechargeable.

53. The fastening arrangement of Claims 34 to 52, further comprising a storage unit for storing notifications upon their receipt.

54. The fastening arrangement of Claims 34 to 53, wherein the storage unit constitutes a part of the processing unit.

55. The fastening arrangement of Claims 34 to 54, wherein the storage unit is configured for storing data associated with at least one of phone calls, text messages, social media messages, e-mail messages, low-battery warnings, network communication information and calendar events, based on information received directly or indirectly from said portable device.

56. The fastening arrangement of Claims 34 to 55, further comprising one or more bio-sensors associated with physiological parameters of the user.

57. The fastening arrangement of Claim 56, wherein the information produced by said one or more bio-sensors is processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.

58. The fastening arrangement of Claims 34 to 57, further comprising at least one of GPS receiver and an accelerometer.

59. The fastening arrangement of Claim 58, wherein the information produced by said at least one of GPS receiver and an accelerometer is processed by the processing unit and transmitted via the transceiver to the portable device or transmitted to the notification unit for representation to the user.

60. The fastening arrangement of Claims 34 to 59, wherein the portable device is an external device other than said wristwatch.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC (2015.01) G06F 15/16, A44B 11/00, A44C 5/00, G04B 47/06, G09G 5/00, H05K 7/00

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 (2015.01) G06F 15/16, A44B 11/00, A44C 5/00, G04B 47/06, G09G 5/00, H05K 7/00

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

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

Databases consulted: PATENTSCOPE

Search terms used: band wireless wrist sensor modular

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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

* Special categories of cited documents:
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  "T" member of the same patent family

Date of the actual completion of the international search 25 Mar 2015
Date of mailing of the international search report 30 Mar 2015

Name and mailing address of the ISA:
Israel Patent Office
Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel
Facsimile No. 972-2-5651616

Authorized officer
MAUDA Nissim
Telephone No. 972-2-5651733

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