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(54) Title: ACCESSORY FOR MOBILE PHONE

(57) Abstract: An accessory for a mobile phone includes a connection port capable of being coupled to or separated from an I/O connector of a mobile phone electrically connected to a battery of the mobile phone and electrically connected to the I/O connector when coupled to the I/O connector of the mobile phone, a casing including a body, to which the connection port is coupled to, so that the connection port is exposed outside of the body and a cap detachably coupled to the body and covering the connection port when coupled to the body, and an LED to electrically connected to the connection port and installed on the body to face outwardly, and emitting light by receiving power from the battery when the cap is separated from the body and the connection port is electrically connected to the I/O connector.
ACCESSORY FOR MOBILE PHONE

Technical Field

The present invention relates to an accessory for a mobile phone, and more particularly, to an accessory for a mobile phone which can be used as a flashlight by emitting light in a dark place or at night using electric power supplied from a battery of a mobile phone.

Background Art

In general, a flashlight is used to light up a dark place so that a person can function in the dark place. The flashlight is very useful since it can be carried around by a person and used in a dark place. However, it is inconvenient to load a plurality of batteries in the flashlight and carry the flashlight in preparation for cases when the flashlight is needed. Thus, it is normally not usual to carry the flashlight around everywhere. Thus, in unexpected case where, for example, one needs to open an entrance door or a car door in a dark place or at night or find something during a blackout or in a dark room, one usually does not have a flashlight with them and is inconvenienced. Accordingly, it would be more convenient if there is a product which is easier to carry than a conventional flashlight yet functions as a flashlight.

To solve the above problems, many studies have been actively performed to add a function of a flashlight to a mobile phone, a device that most individuals carry. As a result, many mobile phones including a lighting lamp have been introduced. In most mobile phones, an LED (light emitting diode) or lamp is included in the mobile phone and the lamp is turned on by a control circuit of a port by the manipulation of buttons of the mobile phone so that the mobile phone can be used instead of a flashlight in an emergency.

However, including an LED or lamp in a mobile phone requires
modifications of the existing design of a mobile phone, which increases manufacturing costs and complicates the structure of the mobile phone. In particular, considering that the mobile phones are made compact, the inclusion of an LED or lamp in a mobile phone is further difficult and commercialization thereof is hindered.

In the meantime, with a rapid spread of mobile phones, the market for accessories relating to mobile phones is increasing together. Thus, if an accessory for a mobile phone which can be used as a flashlight is developed in the state in which mobile phone are widely spread, it will be useful for its convenience to users by solving the above problems. However, conventional mobile phone accessories cannot be used as flashlights. For example, there is an accessory for a mobile phone which receives power from additional batteries and flickers by detecting a vibration or a sonic wave signal when the mobile phone rings.

However, the accessory is not sufficient to light up a dark place; thus it is not used as a flashlight.

As described above, since the conventional flashlight is inconvenient to carry, it is not carried in normal situations and thus cannot be used when needed. Also, the structure of an existing mobile phone should be modified so that it can include a lamp, which increases manufacturing costs and complicates the structure thereof. Furthermore, as for conventional accessories for a mobile phone, there are none that can be used as a flashlight.

Disclosure of the Invention

To solve the above problems, it is an object of the present invention to provide an accessory for a mobile phone that can be kept safely and conveniently, easily carried by being simply coupled to a strap of a mobile phone using a variety of methods, can light up by receiving power from a mobile phone battery when necessary without affecting the
design of the mobile phone, and can be used as a flashlight.

To achieve the above object, there is provided an accessory for a mobile phone comprising: a connection port capable of being coupled to or separated from an I/O connector of a mobile phone electrically connected to a battery of the mobile phone and electrically connected to the I/O connector when coupled to the I/O connector of the mobile phone; a casing including a body, to which the connection port is coupled to, so that the connection port is exposed outside of the body and a cap detachably coupled to the body and covering the connection port when coupled to the body; and an LED electrically connected to the connection port and installed on the body to face outwardly, and emitting light by receiving power from the battery when the cap is separated from the body and the connection port is electrically connected to the I/O connector.

A mobile phone strap hole, in which a mobile phone strap is inserted, is formed in the casing.

A neck strap hole, in which a neck strap is inserted, is further formed in the casing.

The accessory for a mobile phone further comprises a locking member having a pair of leg portions elastically deformable in directions in which the leg portions approach each other or separate from each other, each having a hook step formed on one end portion thereof, each coupled to the body, and preventing the connection port from being separated from the I/O connector while the hook step is hooked onto the mobile phone when the connection port is inserted in the I/O connector; and a pair of buttons coupled to the body such that one end portion thereof contacts the locking member and the other end portion is exposed outside of the body and, when pressed, elastically deforming the leg portions in the direction to approach each other.
A switch turning on/off power supplied from the battery to the LED is further provided on the body.

The body comprises a connection port coupling portion to which the connection port is coupled; an LED coupling portion to which the LED is coupled; and a connection portion connecting the connection port coupling portion and the LED coupling portion and is made of a flexible goose neck pipe.

According to another aspect of the present invention, an accessory for a mobile phone comprising an electrode port capable of being coupled to and separated from a charge port of a battery of a mobile phone and electrically connected to the charge port when coupled to the charge port; a casing to which the electrode port is coupled so as to be exposed outwardly; and an LED electrically connected to the electrode port and installed on the casing to face outwardly and emitting light by receiving power from the battery when the electrode port is electrically connected to the charge port.

A mobile phone strap hole, in which a mobile phone strap coupled to the mobile phone is inserted, is formed in the casing.

The casing substantially has an "L" shape having a predetermined thickness and the LED is coupled to the casing such that, when the electrode port is connected to the charge port, the LED is arranged in a direction substantially parallel to the charge port.

**Brief Description of the Drawings**

FIG. 1 is a perspective view illustrating an accessory for a mobile phone according to a first preferred embodiment of the present invention;

FIG. 2 is a perspective view illustrating a state in which the mobile phone accessory of FIG. 1 is coupled to an I/O connector of the mobile phone;

FIG. 3 is a sectional view illustrating a state of operation of a
locking member shown in FIG. 1;

FIG. 4 is a perspective view illustrating an accessory for a mobile phone according to a second preferred embodiment of the present invention;

FIG. 5 is a perspective view illustrating a state in which an accessory for a mobile phone according to a third preferred embodiment of the present invention is connected to the mobile phone via a strap of the mobile phone;

FIG. 6 is a perspective view illustrating a state in which the mobile phone accessory of FIG. 5 is coupled to the mobile phone;

FIG. 7 is a perspective view illustrating a state in which an accessory for a mobile phone according to a fourth preferred embodiment of the present invention is coupled to the I/O connector of the mobile phone;

FIG. 8 is a perspective view illustrating a state in which an accessory for a mobile phone according to a fifth preferred embodiment of the present invention is coupled to a charge port of the mobile phone;

FIG. 9 is a perspective view illustrating the rear side of the mobile phone accessory of FIG. 8; and

FIG. 10 a perspective view illustrating an accessory for a mobile phone according to a sixth preferred embodiment of the present invention.

Best mode for carrying out the Invention

FIG. 1 is a perspective view illustrating an accessory for a mobile phone according to a first preferred embodiment of the present invention.

FIG. 2 is a perspective view illustrating a state in which the mobile phone accessory of FIG. 1 is coupled to an I/O connector of the mobile phone. As shown in the drawings, an accessory for a mobile phone according to a first preferred embodiment of the present invention includes a
connection port 10 capable of being coupled to and detached from an I/O connector (not shown) provided in a groove formed at a lower end of a mobile phone 2 and electrically connected to the I/O connector when it is coupled to the I/O connector, a casing 20 where the connection port 10 is installed, an LED (light emitting diode) 40 electrically connected to the connection port 10 and installed in the casing 20 to be able to emit light externally, which emits light by receiving power from a battery when the connection port 10 is electrically connected to the I/O connector, a locking member 35 preventing the connection port 10 from being separated from the I/O connector when the connection port is inserted in the I/O connector, a pair of buttons 37 installed on the casing 20 to press the locking member 35 from the outside, and a switch 30 turning on/off the power supplied from the battery to the LED 40 when the connection port 10 is connected to the I/O connector. The casing 20 is made of a body 23, to which the connection port 10 is coupled so as to be exposed of the outside of the body 23, so that the connection port 10 can be coupled to the I/O connector and the cap 21 detachably connected to the body 23 which covers the connection port 10 when being coupled to the body 23.

The connection port 10 has a structure which can be separated from and coupled to the I/O connector at the lower end of the mobile phone 2. When the connection port 10 is coupled to the I/O connector, it is electrically connected to the I/O connector. Since the I/O connector includes a power port other than a signal output port, which is electrically connected to the battery, when the I/O connector and the connection port 10 are electrically connected, battery power is supplied to the LED 40. In general, the I/O connector of the mobile phone 2 has a 18, 22, or 24 pin structure. Accordingly, the connection port 10 has a complementary structure which can be coupled to the I/O connector.

A high brightness LED instead of a common LED is used as the
LED 40 to perform the function of a flashlight properly. The high brightness LED is a light emitting device manufactured by using a composite semiconductor to exhibit a higher brightness than a common LED. If a product having a maximum voltage of 3.7 V and regular current of 20 mA which can be easily found in a market is used, the power of the battery of the mobile phone 2 can be used without an additional part. Although a high brightness LED is used in the present preferred embodiment, a common LED can be used therefor.

FIG. 3 is a sectional view for explaining the operation process of the locking member of FIG. 1. As shown in FIG. 3, the locking member 35 has a pair of leg portions each having a hook step 36 formed at one end portion thereof. The end portion of the leg portion where the hook step 36 is formed is arranged so as to be separated by a predetermined distance from both side portions of the connection port 10, and the buttons 37 are coupled to the body 23. Accordingly, when the buttons 37 are pressed from the outside, the leg portions are elastically deformed to approach each other. When the buttons 37 are released, the leg portions elastically return to their original positions. Thus, when the connection port 10 is coupled to the I/O connector and the buttons 37 are not pressed, the hook step 36 is caught in the groove where the I/O connector of the mobile phone 2 is installed so that the connection port 10 is prevented from being separated from the I/O connector. When the buttons 37 are pressed, the leg portions approach each other so that the hook step 36 is not caught in the groove. Thus, the connection port 10 can be separated from the I/O connector. The buttons 37 have one end portion contacting the locking member 35 to press the locking member 35 and the other end portion coupled to the body 23 so as to be exposed of the outside of the body 23.

In the meantime, the switch 30 is coupled to the body 23 so that the supply of battery power to the LED can be turned on or off. A
mobile phone strap hole 24 into which a mobile phone strap 3 is inserted is formed in the body 23 at an end opposite a side where the connection port 10 is coupled. In the present preferred embodiment, a variety of types of the switch 30, such as a push type or a slide type, can be adopted.

In the above structure shown in FIG. 2, when the cap 21 is separated from the body 23 and the connection port 10 is coupled to the I/O connector of the mobile phone 2, battery power is supplied to the LED so that the LED emits light. Thus, a user can use the accessory attached to the mobile phone 2 by directing the mobile phone 2 in a desired direction to illuminate a dark place. Also, by turning on the LED in a dark room, for example, in a restaurant, it may help to create a good atmosphere and may also prevent a user from leaving the place without the mobile phone 2. In addition, the accessory for the mobile phone 2 can be used when cheering at a concert or a night game.

FIG. 4 is a perspective view illustrating an accessory for a mobile phone according to a second preferred embodiment of the present invention. A letter "a" is suffixed to each of the reference numerals that is the same as that in the first preferred embodiment or correspond thereto. Thus, the descriptions of the same or similar elements will be omitted herein and only different portions will be described.

As shown in FIG. 4, as to an accessory 1a for a mobile phone according to a second preferred embodiment of the present invention, unlike the accessory 1 for a mobile phone according to the first preferred embodiment, a mobile phone strap hole 24a in which a mobile phone strap 3a is inserted is formed in a cap 21a.

FIG. 5 is a perspective view illustrating a state in which an accessory for a mobile phone according to a third preferred embodiment of the present invention is coupled to a mobile phone by a mobile phone strap. FIG. 6 is a perspective view illustrating a state of the accessory
for a mobile phone of FIG. 5 being connected to a mobile phone. A letter "b" is suffixed to each of reference numerals this is the same as that in the first preferred embodiment or correspond thereto. Thus, the descriptions of the same or similar elements will be omitted herein and only different portions will be described.

As shown in FIGS. 5 and 6, as to an accessory for a mobile phone 1b according to a third preferred embodiment of the present invention, unlike the accessory 1 for a mobile phone according to the first preferred embodiment, a mobile phone strap hole 24b is formed in a cap 21b and a neck strap hole 26 in which a neck strap 4 is inserted is formed in a body 23b. According to the above structure, the accessory 1b for a mobile phone according to the present invention can be used by being easily coupled to the neck strap 4.

FIG. 7 is a perspective view illustrating a state in which an accessory for a mobile phone according to a fourth preferred embodiment of the present invention is coupled to the I/O connector of a mobile phone. A letter "c" is suffixed to each of reference numerals that is the same as that in the first preferred embodiment or correspond thereto. Thus, the descriptions of the same or similar elements will be omitted herein and only different portions will be described.

As shown in FIG. 7, unlike the body 23 of the first preferred embodiment, a body 23c of an accessory for a mobile phone according to the fourth preferred embodiment of the present invention includes a connection port coupling portion 28 to which the connection port is coupled, an LED coupling portion 27 to which an LED 40c is coupled, and a connection portion 29 connecting the connection port coupling portion 28 and the LED coupling portion 27, which is made of a flexible goose neck pipe. According to this structure, as shown in FIG. 7, the cap is separated from the body 23c and the connection port is connected to the I/O connector. Then, by freely bending the connection portion 29,
the LED can emit light in various directions.

FIG. 8 is a perspective view illustrating a state in which an accessory for a mobile phone according to a fifth preferred embodiment of the present invention is connected to a charge port of a mobile phone. FIG. 9 is a perspective view illustrating the rear side of the accessory for a mobile phone of FIG. 8. As shown in FIGS. 8 and 9, an accessory 1d for a mobile phone according to the fifth preferred embodiment of the present invention includes an electrode port 10d which can be coupled to and separated from the charge port (not shown) of a battery of a mobile phone and electrically connected to the charge port, a casing 20d to which the electrode port 10d is coupled so as to be exposed outside of the casing, and an LED 40d electrically connected to the electrode port 10d, installed on the casing 20d so as to be capable of emitting light, and emitting light by receiving electric power from the battery when the electrode port 10d is electrically connected to the charge port. The casing 20d has an "L" shape having a predetermined thickness and is coupled to the casing 20 such that the LED 40d is arranged approximately parallel to the charge port when the electrode port 10d is coupled to the charge port. A mobile phone strap hole 24d in which the mobile phone strap 3 is inserted is formed in the casing 20d. According to this structure, as shown in FIG. 8, when the accessory 1d for a mobile phone according to the fifth preferred embodiment of the present invention is placed on the mobile phone 2d so that the electrode port 10d is connected to the charge port, battery power is supplied to the LED so that the LED emits light.

FIG. 10 is a perspective view illustrating an accessory for a mobile phone according to a sixth preferred embodiment of the present invention. A letter "e" is suffixed to each of reference numerals that is the same as that in the first preferred embodiment or correspond thereto.

Thus, the descriptions of the same or similar elements will be omitted
herein and only different portions will be described.

As shown in FIG. 10, an accessory 1e for a mobile phone according to the sixth preferred embodiment of the present invention includes a casing 20e having a ring shape. The casing 20e resembles a large version of a mobile phone strap hole 24e and can be put on a finger and provide a superior appearance.

As described above, the accessory 1 for a mobile phone includes the connection port 10, which can connect the output port supplying the power of the battery of the mobile phone externally, the LED 40 electrically connected to the connection port 10, and the casing 20, where the connection port 10 and the LED 40 are installed so that the LED 40 can illuminate outwardly output, accommodating electric wires connecting the connection port 10 and the LED 40. Therefore, the accessory 1 for a mobile phone can be safely and conveniently maintained and easily carried since it is simply coupled to the mobile phone strap 3 using a variety of methods. Also, the accessory 1 for a mobile phone can be used as a flashlight by receiving power from the battery of the mobile phone 2, if necessary, without affecting design of the mobile phone 2.

In the above-described preferred embodiments, the mobile phone strap hole 24 and the neck strap hole 26 are formed in the casing 20. However, since the mobile phone strap 3, the neck strap 4, and the casing 20 can be coupled with each other in various manners, for example, using an adhesive or a hook, a hook can be provided on the casing or an adhesive can be used.

**Industrial Applicability**

As described above, according to the present invention, the accessory for a mobile phone can be safely and conveniently maintained and easily carried since it is simply coupled to the mobile phone strap
using a variety of methods. Also, the accessory for a mobile phone can be used as a flashlight by receiving power from the battery of the mobile phone, if necessary, without affecting the design of the mobile phone.
What is claimed is:

1. An accessory for a mobile phone comprising:
   a connection port capable of being coupled to or separated from
   an I/O connector of a mobile phone electrically connected to a battery of
   the mobile phone and electrically connected to the I/O connector when
   coupled to the I/O connector of the mobile phone;
   a casing including a body, to which the connection port is coupled
   to, so that the connection port is exposed outside of the body and a cap
   detachably coupled to the body and covering the connection port when
   coupled to the body; and
   an LED electrically connected to the connection port and installed
   on the body to face outwardly, and emitting light by receiving power from
   the battery when the cap is separated from the body and the connection
   port is electrically connected to the I/O connector.

2. The accessory for a mobile phone of claim 1, wherein a
   mobile phone strap hole, in which a mobile phone strap is inserted, is
   formed in the casing.

3. The accessory for a mobile phone of claim 2, wherein a
   neck strap hole, in which a neck strap is inserted, is further formed in the
   casing.

4. The accessory for a mobile phone of any of claims 1
   through 3, further comprising:
   a locking member having a pair of leg portions elastically
   deformable in directions in which the leg portions approach each other or
   separate from each other, each having a hook step formed on one end
   portion thereof, each coupled to the body, and preventing the connection
   port from being separated from the I/O connector while the hook step is
hooked onto the mobile phone when the connection port is inserted in the I/O connector; and

a pair of buttons coupled to the body such that one end portion thereof contacts the locking member and the other end portion is exposed outside of the body and, when pressed, elastically deforming the leg portions in the direction to approach each other.

5. The accessory for a mobile phone of claim 1, wherein a switch turning on/off power supplied from the battery to the LED is further provided on the body.

6. The accessory for a mobile phone of claim 1, wherein the body comprises:

a connection port coupling portion to which the connection port is coupled;

an LED coupling portion to which the LED is coupled; and

a connection portion connecting the connection port coupling portion and the LED coupling portion and is made of a flexible goose neck pipe.

7. An accessory for a mobile phone comprising:

an electrode port capable of being coupled to and separated from a charge port of a battery of a mobile phone and electrically connected to the charge port when coupled to the charge port;

a casing to which the electrode port is coupled so as to be exposed outwardly; and

an LED electrically connected to the electrode port and installed on the casing to face outwardly and emitting light by receiving power from the battery when the electrode port is electrically connected to the charge port.
8. The accessory for a mobile phone of claim 7, wherein a mobile phone strap hole, in which a mobile phone strap coupled to the mobile phone is inserted, is formed in the casing.

9. The accessory for a mobile phone of either claim 7 or 8, wherein the casing substantially has an "L" shape having a predetermined thickness and the LED is coupled to the casing such that, when the electrode port is connected to the charge port, the LED is arranged in a direction substantially parallel to the charge port.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04B 1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04B 1/38, F21V33/00

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

Korean Patents and applications for inventions since 1975
Korean 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>KR 20-276068 Y(Ifan Bo Lim) 18 May 2002(18.05.2002) See the whole Document</td>
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<td>A</td>
<td>US 6254249 B(Kim Seong Soo) 03 July 2001(03.07.2001) See the whole Document</td>
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* Special categories of cited documents:

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Date of the actual completion of the international search

10 OCTOBER 2003 (10.10.2003)

Date of mailing of the international search report

10 OCTOBER 2003 (10.10.2003)

Name and mailing address of the ISA/KR

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Authorized officer

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Telephone No. 82-42-481-5705

Form PCT/ISA/210 (second sheet) (July 1998)
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