Embodiments of the present invention provide an apparatus comprising a bag shaped for retaining one or more rechargable electronic devices, and a rechargeable battery unit that is removably attached to the bag. The battery unit provides power for powering and charging one or more electronic devices. The bag comprises at least one electrical connection. The battery unit provides power for powering and charging an electronic device via an electrical connection interconnecting the battery unit with the electronic device. The apparatus further comprises at least one induction charging unit that wirelessly provides power for powering and charging an electronic device positioned within proximity of the induction charging unit. In one embodiment, the battery unit includes at least one on-board induction charging unit. In another embodiment, the bag further comprises at least one induction charging unit that may be wired or wirelessly connected with the battery unit.
CARRY BAG APPARATUS CONFIGURED FOR MODULAR CHARGING

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority from U.S. Provisional Patent Application Ser. No. 61/666,697, filed on June 29, 2012, incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a portable charging system, in particular, to a carry bag apparatus for modular charging.

2. Description of Related Art

A portable charging system charges batteries utilized in re-chargeable portable electronic devices, such as mobile phones, tablets, laptops, portable media players, etc.

BRIEF SUMMARY OF THE INVENTION

Embodiments of the present invention provide an apparatus comprising a bag shaped for retaining one or more re-chargeable electronic devices, and a rechargeable battery unit that is removably attached to the bag. The battery unit provides power for powering and charging one or more electronic devices. The bag comprises at least one electrical connection. The battery unit provides power for powering and charging an electronic device via an electrical connection interconnecting the battery unit with the electronic device. The apparatus further comprises at least one induction charging unit that wirelessly provides power for powering and charging an electronic device positioned within proximity of the induction charging unit. In one embodiment, the battery unit includes at least one on-board induction charging unit. In another embodiment, the bag further comprises at least one induction charging unit that may be wired or wirelessly connected with the battery unit. For example, an induction charging unit of the bag may receive power from the battery unit via an electrical connection interconnecting the induction charging unit with the battery unit. As another example, an induction charging unit of the bag may wirelessly receive power from the battery unit via inductive coupling.

These and other features, aspects, and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a front perspective view of an embodiment of a carry bag apparatus configured for modular charging, in accordance with an embodiment of the invention.

FIG. 2 illustrates the bottom base of the bag, in accordance with an embodiment of the invention.

FIG. 3 illustrates the carry bag apparatus and an induction charging station for charging the battery pack, in accordance with an embodiment of the invention.

FIG. 4 is a block diagram illustrating the electrical components of the carry bag apparatus in FIG. 1, in accordance with an embodiment of the invention.

FIG. 5 is a block diagram illustrating electronic components of the carry bag apparatus, the lighting and display system, and an electronic device, in accordance with an embodiment of the invention.

FIG. 5B is a block diagram illustrating electronic components of the carry bag apparatus, an induction charging unit of the carry bag, and an electronic device, in accordance with an embodiment of the invention.

FIG. 6 illustrates the interior region of the bag, in accordance with an embodiment of the invention.

FIG. 7 illustrates an electronic device retained within a compartment of the bag, in accordance with an embodiment of the invention.

FIG. 8 illustrates an example electronic device disposed inside the carry bag apparatus, in accordance with an embodiment of the invention.

FIG. 9 illustrates the display unit attached to the carry bag, in accordance with an embodiment of the invention.

FIG. 10 is a block diagram illustrating electronic components of the lighting and display system, in accordance with an embodiment of the invention.

FIG. 11 illustrates an example mounting system for mounting one or more lighting accessories to the carry bag, in accordance with an embodiment of the invention.

FIG. 12 illustrates a top perspective view of an example mounting member, in accordance with an embodiment of the invention.

FIG. 13 illustrates a top perspective view of an example lighting accessory, in accordance with an embodiment of the invention.

FIG. 14 illustrates the example lighting accessory in FIG. 13 interlocked with the example mounting member in FIG. 12, in accordance with an embodiment of the invention.

FIG. 15 is a block diagram illustrating the mounting system, in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

Preferred embodiments of the present invention provide an apparatus comprising a bag shaped for retaining one or more re-chargeable electronic devices, and a rechargeable battery unit that is removably attached to the bag. The battery unit provides power for powering and charging one or more electronic devices. The bag of a preferred embodiment further comprises at least one electrical connection. The battery unit within the preferred embodiment provides power for powering and charging an electronic device via an electrical connection interconnecting the battery unit with the electronic device. In a preferred embodiment, the apparatus further comprises at least one induction charging unit that wirelessly provides power for powering and charging an electronic device positioned within proximity of the induction charging unit. In a preferred embodiment, the battery unit includes at least one on-board induction charging unit. In further preferred embodiments, the bag further includes at least one induction charging unit that may be wired or wirelessly connected with the battery unit. For example, an induction charging unit of the bag may receive power from the battery unit via an electrical connection interconnecting the induction charging unit with the battery unit. As another example, an induction charging unit of the bag may wirelessly receive power from the battery unit via inductive coupling.

FIG. 1 illustrates a front perspective view of an embodiment of a carry bag apparatus 400 configured for modular charging, in accordance with an embodiment of the invention. The carry bag apparatus 400 comprises a bag 410, and a modular battery power source ("battery pack") 450.
[0026] The carry bag 410 is shaped to retain and transport multiple items, such as portable electronic devices 200 (e.g., mobile telephones, tablets, mobile lighting equipment/apparatuses, mobile media players, laptops, etc.), wallets, etc. In one embodiment, the carry bag 410 has a bottom base 420 (FIG. 2) and multiple walls 412. The carry bag 410 has a front wall 412A, a rear wall 412B (FIG. 6), a first side wall 412C, and a second side wall 412D (FIG. 13). The first side wall 412C is joined with the front wall 412A and the rear wall 412B. The second side wall 412D is joined with the front wall 412A and the rear wall 412B. Each wall 412 has an exterior side 41A and an interior side 41B.

[0027] The carry bag 410 further includes a top opening 415. The top opening 415 allows access to an interior region 410A of the carry bag 410. For example, an electronic device 200 may be deposited into, or retrieved from, the interior region 410A of the carry bag 410 via the top opening 415. The top opening 415 may be closed/partially closed using fasteners 416, such as magnetic fasteners, zip fasteners, buttons, snaps, hooks, and the like.

[0028] The carry bag 410 further comprises multiple compartments (e.g., pockets, sleeves) 411. Each compartment 411 is secured to either an exterior side 41A or an interior side 41B of a wall 412. Each compartment 411 may be used to hold one or more items, such as portable electronic devices, wallets, etc.

[0029] The carry bag 410 further comprises one or more carrying handles 417. Each handle 417 is secured to a wall 412 of the carry bag 410.

[0030] In one embodiment, each side wall 412C, 412D may include a closable opening 433 through which an item, such as portable electronic device, may be slid through into the interior region 410A of the carry bag 410.

[0031] The carry bag apparatus 400 further includes at least one electrical connection 45. As described later herein, the battery pack 450 powers on or more electronic devices 200 retained within the carry bag 410 and/or within proximity of the carry bag 410, and also charges a battery unit 333 of one or more electronic devices 200 retained within the carry bag 410 and/or within proximity of the carry bag 410. For example, one or more electronic devices 200 retained within the carry bag 410 may receive power from the battery pack 450 via an electrical connection 45 interwoven into a wall 412 of the carry bag 410.

[0032] The carry bag apparatus 400 further includes at least one induction charging unit 413. For example, the battery pack 450 may include at least one on-board induction charging unit 413. As another example, the carry bag 410 may further include at least one induction charging unit 413 that is wired or wirelessly connected with the battery pack 450. An induction charging unit 413 of the carry bag 410 may receive power from the battery pack 450 via an electrical connection 45 or via inductive coupling. Each induction charging unit 413 of the carry bag apparatus 400 wirelessly provides power for powering and charging an electronic device 200 positioned within proximity of the induction charging unit 413.

[0033] The battery pack 450 is modularly attachable to the bottom base 420 (FIG. 6) of the carry bag 410. A user may carry the carry bag 410 with or without the battery pack 450.

[0034] The battery pack 450 may come in different colors. A user may replace the battery pack 450 attached to the carry bag 410 with another battery pack 450 of a different color, shapes or sizes for utilitarian or aesthetic reasons. The battery pack 450 may also come in different sizes. A user may minimize the weight of the carry bag 410 by attaching a smaller-sized battery pack 450 to the carry bag 410. A user may also maximize the charge held by the battery pack 450 by attaching a larger-sized battery pack 450 to the carry bag 410. If the battery life of the battery pack 450 is reduced after many charge cycles, a user may replace the battery pack 450 with another battery pack 450.

[0035] The carry bag apparatus 400 further comprises a lighting and display system 480. The lighting and display system 480 comprises a light strip 418 that may be detachably affixed to a handle 417, the interior region 410A, or an exterior region 410B of the carry bag 410 (e.g., an exterior side 41A of a wall 412 of the carry bag 410). The light strip 418 may include a plurality of lighting elements 419. As described in detail later herein, the lighting elements 419 of the light strip 418 may be powered on to illuminate the interior region 410A of the carry bag 410. The lighting elements 419 may also function as indicator lights.

[0036] In one embodiment, the lighting and display system 480 further comprises a graphic display unit 600 (FIG. 9). As described in detail later herein, the display unit 600 may be programmed to display graphical imagery 50 (FIG. 9), such as a design, a logo (e.g., a logo selected from multiple available pre-programmed logos), video, animation, etc.

[0037] FIG. 2 illustrates the bottom base 420 of the carry bag 410, in accordance with an embodiment of the invention. The bottom base 420 has one or multiple attachment mechanisms 421 for detachably attaching the battery pack 450 to the bottom base 420, and maintaining the battery pack 450 in place. The attachment mechanisms 421 may include fasteners 422, such as screw-like fasteners, snaps, studs, buckles, clasps, buttons, treads, and the like.

[0038] The attachment mechanisms 421 may also include other mechanical and/or magnetic connections for maintaining the battery pack 450 in place, such as magnetic holders 423. Each of these attachment mechanisms 421 may be used alone or in combination with other attachment mechanisms 421.

[0039] The bottom base 420 further includes a power socket/coupler 424 for receiving power from the battery pack 450. The power received from the battery pack 450 is used to power and/or charge items retained within the carry bag 410. The coupler 424 may also receive power via a physical connection (e.g., electrical cable) from a power supply source, such as a power socket.

[0040] FIG. 3 illustrates the carry bag apparatus 400 and an induction charging station 500 for charging the battery pack 450, in accordance with an embodiment of the invention. The battery pack 450 may be inductively charged. The carry bag apparatus 400 includes an inductive coupling receiver component ("receiver") 451 (FIG. 4). When the battery pack 450 is attached to the bottom base 420 of the carry bag 410, the battery pack 450 may be inductively charged by setting the carry bag 410 on top of an induction charging station 500. The induction charging station 500 may be placed on a supporting surface 550, such as a table top.

[0041] The battery pack 450 may also be charged by detaching the battery pack 450 from the bottom base 420 of the carry bag 410 and setting the battery pack 450 on top of the induction charging station 500. In this manner, a user may continue using the carry bag 410 while the battery pack 450 is charging.
Inductive coupling replaces the need to physically connect (e.g., via electrical cables) the carry bag 410 or the battery pack 450 to a power source.

In another embodiment, the interior region 410A of the carry bag 410 includes a receptor compartment ("receptor") 488 (FIG. 6) for maintaining the battery pack 450. The battery pack 450 may be removed from the receptor 488 for charging or replacement. The receptor 488 may be disposed at the bottom base 420 of the carry bag 410 or on a wall 412 of the carry bag 410. The battery pack 450 may be inductively charged by setting an inductive charging station 500 adjacent to or within close proximity of the receptor 488.

FIG. 4 is a block diagram illustrating electrical components of an example carry bag apparatus 400, in accordance with an embodiment of the invention. The carry bag apparatus 400 includes an inductive coupling receiver component ("receiver") 451.

The receiver 451 comprises an inductor such as an induction coil or other magnetic receptive means 451A. The receiver 451 enables the battery pack 450 to wirelessly receive electrical energy from another inductor (e.g., an induction coil or other magnetic power transmission means 502 of an inductive charging station 500).

As stated above, the carry bag apparatus 400 comprises one or more inductive charging units 413. In one embodiment, the battery pack 450 comprises at least one on-board induction charging unit 413. Each induction charging unit 413 of the battery pack 450 comprises an inductive coupling transmitter component ("transmitter") 462. The transmitter 462 comprises an inductor such as an induction coil 462A. The transmitter 462 enables the wireless transmission of electrical energy to another inductor (e.g., an induction coil 315 (FIG. 5A) of an electronic device 200 disposed within the carry bag 410 and/or within proximity of the carry bag 410).

In one embodiment, the receiver 451 is disposed at a bottom side 450A (FIG. 1) of the battery pack 450, and an induction charging unit 413 of the battery pack 450 is disposed at a top side 450B (FIG. 3) of the battery pack 450. The induction coil 451A of the receiver 451 may be inductively coupled by an inductor coming within proximity of the bottom side 450A of the battery pack 450. The induction coil 462A of the transmitter 462 may inductively couple another inductor coming within proximity of the top side 450B of the battery pack 450. For example, the battery pack 450 may be inductively coupled by setting the battery pack 450 on top of an induction charging station 500.

The carry bag apparatus 400 further comprises a controller 460, a power input/output (I/O) driver 454, a surge protection unit 464, and a switch 455. A user may utilize the switch 455 to enable or disable the transmission of power from the battery pack 450 to an electronic device 200 maintained within the carry bag 410 and/or within proximity of the carry bag 410. When the transmission of power is disabled, the power of the battery pack 450 is conserved. In one embodiment, the transmission of power may be enabled for only a subset of electronic devices 200 maintained within the carry bag 410 and/or within proximity of the carry bag 410.

The power I/O driver 454 controls the power socket/coupler 424 of the carry bag 410. The surge protection unit 464 is used to prevent transients and other power spikes from damaging an electronic device 200 powered/charged by the carry bag 410.

The controller 460 distributes power to the electrical connections 45 and the transmitter 462 when the transmission of power is enabled.

Also shown in FIG. 4 is an induction charging station 500 inductively charging the receiver 451. The induction charging station 500 comprises an inductive coupling transmitter component ("transmitter") 501. Electric current flowing through an induction coil 502 of the transmitter 501 creates a magnetic field 340. The magnetic field 340 creates an electric current (i.e., voltage) in the induction coil 451A. The electric current induced provides enough electrical energy to charge the battery pack 450. The energy stored within the charged battery pack 450 in turn provides enough power to operate and/or charge an electronic device 200 within the carry bag 410 and/or within proximity of the carry bag 410.

FIG. 5A is a block diagram illustrating electronic components of the carry bag apparatus 400, in accordance with an embodiment of the invention. As shown in FIG. 5A, the transmitter 462 of the carry bag apparatus 400 is inductively charging an electronic device 200 maintained within the carry bag 410.

As stated above, the lighting and display system 480 includes the light strip 418. The light strip 418 may be detachably attached at different locations of the carry bag 410, such as along a carrying handle 417, to an interior side 41B of a wall 412, or to an exterior side 41A of a wall 412. The lighting elements 419 affixed to the light strip 418 may comprise, for example, semiconductor LEDs or organic LEDs. The lighting elements 419 of the light strip 418 may be powered on via an electrical connection 45. The lighting elements 419 may be turned on to illuminate the interior region 410A of the carry bag 410.

The lighting and display system 480 further includes a controller 470, a lighting driver 471, and an A/V interface 474. The A/V interface 474 may comprise a graphic display, alphanumeric and directional keypads, or other types of electronic or manual data input means. A user may utilize the A/V interface 474 to turn on/off the lighting elements 419, and set/program the lighting effects functions of the lighting elements 419. In a further embodiment, the user is provided an application (app) or program module which allows the user to remotely control the lighting elements 419 of the light strip 418 or other functionality of the carry bag apparatus 400 as described herein.

The controller 470 distributes power received via an electrical connection 45 to the lighting elements 419. The lighting driver 471 controls the lighting effect functions of the lighting elements 419, such as, for example, dimming, selective activation, pulsation, color temperature, and so on. The lighting elements 419 may also be used as indicator lights.

In one embodiment, the lighting elements 419 may be programmed to function as indicators for one or more electronic devices 200 within the carry bag 410 and/or within proximity of the carry bag 410 (e.g., an electronic device 200 held by, or retained within clothing of, a user of the carry bag 410). For example, the lighting elements 419 of the light strip 418 may exchange data with the electronic devices 200 using Bluetooth communication or other forms of wireless communication. The lighting and display system 480 further includes a Bluetooth module 473. The Bluetooth module 473 includes a wireless transceiver 475 configured to wirelessly exchange information with a Bluetooth enabled device using
Bluetooth communication. The transceiver 473A may wirelessly receive Bluetooth signals from an electronic device 200 that is in proximity with the transceiver 473A (e.g., an electronic device 200 that is disposed within the carry bag 410).

For example, the lighting elements 419 may be programmed to indicate the charging levels of the battery pack 450 and one or more electronic devices 200 within the carry bag 410 or within proximity of the carry bag 410. The colors/position of the lighting elements 419 may be used to differentiate which electronic device 200/battery pack 450 a lighting element 19 corresponds to. As another example, the lighting elements 419 may be programmed to turn on when the transceiver 473A receives Bluetooth signals indicating that a user’s electronic device 200 has received an incoming call or an incoming message (e.g., text message, e-mail message). The lighting elements 419 may be used to alert the user of an incoming call/message even if the electronic device 200 is on mute or hidden from view (e.g., within the carry bag 410).

As stated above, the lighting and display system 480 may further include the graphical display unit 600 (FIG. 9). The display unit 600 may be programmed to display graphical imagery 50, such as a design, a logo (e.g., a logo selected from multiple available pre-programmed logos), video, animation, etc. An embodiment of the graphical display unit 600 is described further below in relation to FIGS. 9-10.

FIG. 53 is a block diagram illustrating electronic components of the carry bag apparatus 400, an induction charging unit 413 of the carry bag 410, and electronic device 200, in accordance with an embodiment of the invention. As stated above, the carry bag apparatus 400 comprises one or more induction charging units 413. In one embodiment, the carry bag 410 comprises at least one induction charging unit 413 that may be wired or wirelessly connected with the battery pack 450. For example, an induction charging unit 413 of the carry bag 410 may receive power from the battery pack 450 via an electrical connection 45 interconnecting the charging unit 413 with the battery pack 450.

As another example, an induction charging unit 413 of the carry bag 410 may wirelessly receive power from the battery pack 450 via inductive coupling. An induction charging unit 413 of the carry bag 410 may comprise an inductive coupling receiver component (“receiver”) 465. The receiver 465 comprises an inductor such as an induction coil 466. The receiver 465 enables the induction charging unit 413 of the carry bag 410 to wirelessly receive electrical energy from another inductor. As shown in FIG. 53, the receiver 465 is wirelessly receiving electrical energy from the induction coil 462A of the battery pack 450.

Each induction charging unit 413 of the carry bag 410 wirelessly provides power for powering and charging an electronic device 200 positioned within proximity of the induction charging unit 413. Specifically, an induction charging unit 413 of the carry bag 410 further comprises an inductive coupling transmitter component (“transmitter”) 468. The transmitter 468 comprises an inductor such as an induction coil 469. The transmitter 468 enables the induction charging unit 413 of the carry bag 410 to wirelessly transmit electrical energy to another inductor. As shown in FIG. 53, the transmitter 468 is inductively charging an induction coil 315 of an electronic device 200 disposed within the carry bag 410 and/or within proximity of the carry bag 410.

An induction charging unit 413 of the carry bag 410 may further comprise a controller 467 for distributing power to the transmitter 468 when the transmission of power is enabled.

FIG. 6 illustrates the interior region 410A of the carry bag 410, in accordance with an embodiment of the invention. As stated above, the carry bag 410 includes multiple compartments 411. As shown in FIG. 6, multiple compartments 411 are attached to an interior side 41B of the front wall 412A.

A portable electronic device 200 retained within a compartment 411 may wirelessly receive power from an induction charging unit 413 secured to the compartment 411. Each induction charging unit 413 may be powered via an electrical connection 45. The electrical connection 45 may supply power from the battery pack 450 or a power supply source.

FIG. 7 illustrates an electronic device 200 retained within a compartment 411 of the carry bag 410, in accordance with an embodiment of the invention. As shown in FIG. 7, a compartment 411 is attached to an exterior side 41A of the front wall 412A. In one embodiment, a compartment 411 may be sized to receive an electronic device 200, such as a tablet device (e.g., an iPad®).

The compartment 411 may be translucent/transparent and include a roll-away cover 411A. By rolling open the cover 411A, a user may access the electronic device 200 without removing the electronic device 200 from the compartment 411. In one embodiment, the cover 411A interacts with the magnetic capabilities of the electronic device 200. For example, rolling open the cover 411A awakens the electronic device 200 from sleep mode. Rolling close the cover 411A puts the electronic device 200 in sleep mode.

An electronic device 200 retained within a compartment 411 may also receive power via an electrical connection 45. The electrical connection 45 may supply power from the battery pack 450 or a power supply source (e.g., an induction charging station 500). The power received may be enough to operate and/or charge the electronic device 200. A connector 45A may be used to interconnect the electrical connection 45 with the electronic device 200.

FIG. 8 illustrates an example electronic device 200 disposed inside the carry bag apparatus 400, in accordance with an embodiment of the invention. As shown in FIG. 8, the electronic device 200 is positioned within proximity of an induction charging unit 413 (e.g., the electronic device 200 is positioned directly above the induction charging unit 413), thereby allowing the receiver 311 of the electronic device 200 to wirelessly receive electrical energy from the induction charging unit 413. The electrical energy wirelessly received charges the battery unit 333 of the electronic device 200 and powers on the electronic device 200. Therefore, the electronic device 200 may be used and charged at the same time.

In one embodiment, an induction charging station 500 charges the battery pack 450 of the carry bag apparatus 400. The carry bag apparatus 400, in turn, inductively charges, via one or more induction charging units 413, multiple appliances such as an electronic device 200. Therefore, the present invention also allows for both the carry bag apparatus 400 and appliances within the carry bag apparatus 400 to be charged at the same time.

A key aspect of the present invention is the ability to allow a first induction charging station to charge a portable battery/power storage device, and for the charged portable battery to automatically power and/or charge a secondary portable device.
battery/power storage device to then drive a second induction charging station that powers and/or charges one or more electronic devices. This aspect of the present invention can be applied to other appliances and is shown in the form of a carry bag only in its most applicable form. For example, in its broadest sense this aspect of the invention allows any first mobile device to be inductively charged, have the ability to be used itself as well as having the ability to provide power to a second mobile device. It is further anticipated that the induction power received by the first mobile device will also serve a second purpose of transmitting power to the second mobile device, thereby removing the necessity of a second induction transmitter/receiver in the second mobile device. For example, a mobile tablet computer may be inductively charged, carried and then provide power to a mobile telephone.

In one embodiment, the carry bag apparatus 400 is a portable power system that allows for disc jockeys (DJ’s) to transport their disc jockeying (DJ) equipment (e.g., mixing boards, tablet computers, effects lights, etc.) in the carry bag 410. The carry bag 410 is chargeable with power from the battery pack 450. The DJ may power the DJ equipment from the carry bag 410 by setting the DJ equipment on the induction charging units 413 contained within the carry bag 410 and/or connecting the DJ equipment to electrical connections 450 interwoven within the carry bag 410.

FIG. 9 illustrates the graphical display unit 600 attached to the carry bag 410, in accordance with an embodiment of the invention. As stated above, the lighting and display system 480 may further include the graphical display unit 600 including a display screen 610.

The display unit 600 may be positioned anywhere on the carry bag 410. For example, as shown in FIG. 9, the display unit 600 is attached to an exterior side 41A of a wall 412. The shape and size of the display screen 610 may vary. In one embodiment, the display unit 600 may be detachably affixed to the carry bag 410.

In one embodiment, the display screen 610 comprises a plurality of lighting elements 650. The lighting elements 650 may comprise, for example, semiconductor light-emitting diodes (LEDs) or organic LEDs. Other lighting elements, such as light bulbs, lasers, or liquid crystal display (LCD) devices may also be used. The arrangement of the lighting elements 650 may vary.

The display screen 610 may be powered on via an electrical connection 45 interwoven into a wall 412 of the carry bag 410.

In one embodiment, the display unit 600 further comprises a transparent/translucent cover plate that is fixedly but removably secured to the display screen 610 to protect the lighting elements 650.

The display screen 610 of the display unit 600 may be programmed to display graphical imagery 50 such as a design, a shape, a logo (e.g., a logo selected from multiple available pre-programmed logos), a picture, a video, an animation, and other examples of graphical imagery. For example, as shown in FIG. 9, the display screen 610 may be programmed to display a heart-shaped logo.

FIG. 10 is a block diagram illustrating electronic components of the lighting and display system 480, in accordance with an embodiment of the invention. In one embodiment, a user may also utilize the A/V interface 474 of the lighting and display system 480 to turn on/off the display screen 610 and set/program the display screen 610. In a further embodiment, the user is provided an application (app) or program module which allows the user to remotely control the display screen 610 or other functionality of the carry bag apparatus 400 as described herein.

In one embodiment, the controller 470 may also distribute power received via an electrical connection 45 to the display screen 610. The controller 470 may be further configured to program the display screen 610 to display graphical imagery 50 such as a design, a logo (e.g., a logo selected from multiple available pre-programmed logos), video, animation, etc.

In one embodiment, the controller 470 may maintain one or more pre-programmed graphical imagery 50, such as pre-programmed logos. A user may utilize the A/V interface 474 to select a pre-programmed graphical imagery 50 for display on the display screen 610.

In one embodiment, the lighting and display system 480 further comprises a display driver 661 for controlling the display functions of the display screen 610, such as, for example, dimming, selective activation, pulsation, color temperature, and so on.

In one embodiment, the display screen 610 may be programmed to display graphical imagery 50 provided by an electronic device 200 within the carry bag 410 and/or within proximity of the carry bag 410 (e.g., an electronic device 200 held by, or retained within clothing of, a user of the carry bag 410). For example, the display unit 600 may exchange data with the electronic device 200 using Bluetooth communication or other forms of wireless communication. In one embodiment, the transceiver 664 of the Bluetooth module 663 may also wirelessly receive Bluetooth signals targeting the display unit 600 from an electronic device 200 that is within proximity of the transceiver 664 (e.g., an electronic device 200 that is disposed within the carry bag 410).

In one embodiment, the display unit 600 may be incorporated into clothing, bags, accessories, wearable technology, etc.

FIG. 11 illustrates an example mounting system 700 for mounting one or more lighting accessories 750 to the carry bag 410, in accordance with an embodiment of the invention. The mounting system 700 comprises at least one mounting member 710 and at least one removable lighting accessory 750.

A mounting member 710 may be positioned anywhere on the carry bag 410. For example, as shown in FIG. 11, a mounting member 710 may be countersunk within a wall 412 of the carry bag 410. The mounting member 710 lies flush with, and does not protrude beyond, an exterior side 41A of the wall 412. The shape and size of the mounting member 710 may vary.

The mounting member 710 comprises a plurality of lighting elements 715. The lighting elements 715 may be powered on via an electrical connection 45 interwoven into a wall 412 of the carry bag 410. As described in detailed later herein, the mounting member 710 is adapted to engage and mate with a lighting accessory 750 to mount the lighting accessory 750 on to the carry bag 410.

A lighting accessory 750 comprises a translucent portion 752 shaped to form graphical imagery 50, such as a logo, a shape, a design, a picture, etc. When the lighting accessory 750 mates with a mounting member 710, lighting elements 715 of the mounting member 710 illuminate the graphical imagery 50 when the lighting elements 715 power on. The shape of the translucent portion 752 may vary. For
example, as shown in FIG. 11, the translucent portion 752 may be shaped to form a heart-shaped logo.

FIG. 12 illustrates a top perspective view of an example mounting member 710, in accordance with an embodiment of the invention. In one embodiment, the mounting member 710 comprises a female connector 712. The female connector 712 includes a recess 712R. The recess 712R is shaped for receiving a removable lighting accessory 750 inserted into the recess 712R.

An inner wall 716 of the female connector 712 has one or more mechanical guides for engaging and mating with a lighting accessory 750 inserted into the recess 712R. For example, as shown in FIG. 12, the inner wall 716 may include one or more locking portions 711 adapted to engage and mate with a mating portion 754 (FIG. 13) of a lighting accessory 750. The inner wall 716 may further include a plurality of axially extending serrations (i.e., splines) 717. As described in detail later herein, the serrations 717 may engage and mate with a mating portion 755 (FIG. 13) of a lighting accessory 750. The mechanical guides of the mounting member 710 may further include additional fasteners like screws, snaps, or treads that further mate the mounting member 710 with a lighting accessory 750.

As stated above, the mounting member 710 includes a plurality of lighting elements 715. The placement and arrangement of the lighting elements 715 may vary. For example, in one embodiment, the lighting elements 715 are arranged around an inner periphery 713 of the mounting member 710. The lighting elements 715 may comprise, for example, semiconductor light-emitting diodes (LEDs) or organic LEDs. Other light-emitting elements, such as light bulbs, lasers, or liquid crystal display (LCD) panels, may also be used.

FIG. 13 illustrates a top perspective view of an example lighting accessory 750, in accordance with an embodiment of the invention. In one embodiment, the lighting accessory 750 comprises a translucent portion 752 and an opaque portion 751. Light from lighting elements 715 of a mounting member 710 may radiate (i.e., penetrate) through the translucent portion 752 to illuminate graphical imagery 50 that the translucent portion 752 is defined in the form of. Light from lighting elements 715, however, will not radiate (i.e., penetrate) through the opaque portion 751.

Each lighting accessory 750 comprises a male connector 753. The male connector 753 is adapted to engage and mate with a female connector 712 of a mounting member 710. In one embodiment, the lighting accessory 750 is mounted on the carry bag 410 by inserting the male connector 753 of the lighting accessory 750 into the recess 712R of the mounting member 710.

As shown in FIG. 13, in one embodiment, the outer periphery 756 of the male connector 753 further comprises internal teeth 755. The teeth 755 may engage and mate with the serrations 717 of the mounting member 710 to interlock the lighting accessory 750 with the mounting member 710.

FIG. 14 illustrates the example lighting accessory 750 installed in FIG. 13 interlocked with the example mounting member 710 in FIG. 12, in accordance with an embodiment of the invention.

FIG. 15 is a block diagram illustrating the mounting system 700, in accordance with an embodiment of the invention. The mounting system 700 further comprises a controller 760, a lighting driver 761, and an A/V interface 762. The A/V interface 762 may comprise a graphic display, alphanumeric and directional keypads, or other types of electronic or manual data input means for setting/programming the lighting elements 715. In a further embodiment, the user is provided an application (app) or program module which allows the user to remotely control the lighting elements 715 or the other functionality of the carry bag 410 as described herein.

The controller 760 distributes power received via an electrical connection 45 to the lighting elements 715. The lighting driver 761 controls the lighting effects of the lighting elements 715, such as, for example, dimming, selective activation, pulsativity, color temperature, and so on.

In one embodiment, the lighting elements 715 may be remotely controlled by an electronic device 200 within proximity of the carry bag 410. For example, the mounting system 700 may link up and exchange data with the electronic device 200 using Bluetooth communication or other forms of wireless communication. In one embodiment, the mounting system 700 further comprises a Bluetooth module 763. The Bluetooth module 763 includes a wireless transceiver 764 configured to wirelessly exchange information with a Bluetooth enabled device using Bluetooth communication. The transceiver 764 may wirelessly receive Bluetooth signals from an electronic device 200 that is within proximity of the transceiver 764.

In one embodiment, the mounting system 700 may be incorporated into clothing, bags, accessories, wearable technology, etc.

The present invention has been described in considerable detail with reference to certain preferred versions thereof; however, other versions are possible. The above description is made for the purpose of illustrating the general principles of the present invention and is not meant to limit the inventive concepts claimed herein. Further, particular features described above can be used in combination with other described features in each of the various possible combinations and permutations. Unless otherwise specifically defined herein, all terms should be given their broadest possible interpretation including meanings implied from the specification as well as meanings understood by those skilled in the art and/or as defined in dictionaries, treatises, etc. Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred versions contained herein.

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprising" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, ele-
ments, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0102] The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention. The embodiment was chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

What is claimed is:

1. An apparatus, comprising:
   a bag shaped for retaining one or more re-chargeable electronic devices; and
   a rechargeable battery unit that is removably attached to the bag, wherein the battery unit provides power for powering and charging said one or more electronic devices.

2. The apparatus of claim 1, wherein the bag comprises:
   at least one electrical connection;
   wherein the battery unit provides power for powering and charging an electronic device via an electrical connection interconnecting the battery unit with said electronic device.

3. The apparatus of claim 2, further comprising:
   at least one induction charging unit;
   wherein each induction charging unit wirelessly provides power for powering and charging an electronic device positioned within proximity of said induction charging unit.

4. The apparatus of claim 3, wherein:
   a rechargeable battery of an electronic device charges when said electronic device receives power from the apparatus.

5. The apparatus of claim 3, further comprising:
   an inductive coupling receiver unit that wireless receives power from an induction charging station positioned within proximity of the receiver unit, wherein the power wirelessly received inductively charges the battery unit.

6. The apparatus of claim 5, wherein:
   the battery unit inductively charges while simultaneously providing power for powering and charging an electronic device.

7. The apparatus of claim 6, wherein:
   an electronic device provides power for powering and charging another electronic device while simultaneously receiving power from the apparatus.

8. The apparatus of claim 1, further comprising:
   a lighting panel removably attached to the bag; wherein the lighting strip comprise a plurality of lighting elements; and
   wherein each lighting element is programmed a notification indicator for one of the following: an electronic device retained within the bag, or an electronic device positioned within proximity of the bag.

9. The apparatus of claim 1, further comprising:
   a display unit attached to the bag;
   wherein the display unit comprises a display screen including a plurality of lighting elements programmed to display an image.

10. The apparatus of claim 1, further comprising:
    a mounting system comprising:
    at least one mounting member attached to the bag, wherein each mounting member comprises a plurality of lighting elements; and
    at least one lighting accessory, wherein each lighting accessory is shaped to detachably engage and mate with a mounting member to mount said lighting accessory on to the bag.

11. The apparatus of claim 10, wherein each lighting accessory includes a translucent portion shaped to form an image, wherein the image is illuminated when lighting elements of a mounting member mates with said lighting accessory are powered on.

12. The apparatus of claim 3, wherein said at least one induction charging unit includes at least one an on-board induction charging unit disposed on the battery unit.

13. The apparatus of claim 3, wherein said at least one induction charging unit includes at least one induction charging unit disposed on the bag, wherein each induction charging unit disposed on the bag receives power from the battery unit via one of an electrical connection interconnecting said induction charging unit with the battery unit and inductive coupling.

14. A method, comprising:
    removably attaching a battery unit to a bag shaped for retaining one or more re-chargeable electronic devices; and
    powering and charging said one or more electronic devices, wherein the battery unit provides power for powering and charging said one or more electronic devices.

15. The method of claim 12, wherein powering and charging said one or more electronic devices comprises:
    providing power for powering and charging an electronic device via an electrical connection of the bag, wherein said electrical connection interconnects the battery unit with the electronic device.

16. The method of claim 13, wherein powering and charging said one or more electronic devices further comprises:
    wirelessly providing power for powering and charging an electronic device when said electronic device is positioned within proximity of an induction charging unit disposed on one of the battery unit and the bag.

17. The method of claim 14, further comprising:
    charging a rechargeable battery of an electronic device when said electronic device receives power from the battery unit via an electrical connection or an induction charging unit disposed on one of the battery unit and the bag.

18. The method of claim 14, further comprising:
    inductively charging the battery unit when the battery unit is positioned within proximity of an induction charging station.

19. The method of claim 16, wherein:
    the battery unit inductively charges while simultaneously providing power for powering and charging an electronic device.
20. The method of claim 17, wherein:
   an electronic device provides power for powering and
   charging another electronic device while simulta-
   neously receiving power from the battery unit.
21. The method of claim 12, further comprising:
   removably attaching a lighting panel to the bag;
   wherein the lighting strip comprise a plurality of lighting
   elements; and
   wherein each lighting element is programmable as a noti-
   fication indicator for one of the following: an electronic
   device retained within the carry bag, or an electronic
   device positioned within proximity of the bag.
22. The method of claim 12, further comprising:
   displaying an image via a display unit attached to the bag;
   wherein the display unit comprises a display screen includ-
   ing a plurality of lighting elements programmed to dis-
   play the image.
23. The method of claim 12, further comprising:
   mounting a lighting accessory to the bag via a mounting
   member configured to engage and mate with the lighting
   accessory;
   wherein the mounting member comprises a plurality of
   lighting elements; and
   wherein the lighting accessory includes a translucent por-
   tion shaped to form an image, wherein the image is
   illuminated when the lighting elements of the mounting
   member are powered on.

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