A45C 11/04 (2006.01)
PCT/US2012/038398
17 May 2012 (17.05.2012)
English
US
A45C
Agents: KRATZ, Rudy et al; Fitch, Even, Tabin & Flannery, 120 S. LaSalle Street, Suite 1600, Chicago, IL 60603 (US).
Published:
with international search report (Art. 21(3))
Title: LIGHTED GLASSES CASE

FIG. 3.

Abstract: A case for lighted glasses is provided having one or more battery holders therein for receiving and retaining standard sized batteries for the lighted glasses. The battery holders can include a retaining surface that is sized and configured to engage and frictionally retain the standard size battery in the battery holder. This provides the battery holder with a friction fit with the standard sized battery. The battery holder may also be provided in a liner for the lighted glasses case. Upper and lower housing portions of the case are pivotably connected together to be pivotable with respect to each other between a closed configuration to form a housing interior space sized to receive the lighted glasses therein and an open configuration to provide access to the interior space to remove or replace the lighted glasses therein.
LIGHTED GLASSES CASE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application Number 61/487,118 filed May 17, 2011, which is hereby incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

[0002] The invention relates to storage containers for glasses and, more particularly, to cases for lighted eyewear.

BACKGROUND OF THE INVENTION

[0003] Hands-free lighting, such as lighted glasses, is often used to illuminate an area while performing a task or to direct generally outward for visibility. Light sources on eyeglasses usually include mounting arrangements of the light source, which may be an LED, on either the cross-frame or temple of the eyeglass so as to provide illumination forwardly of the wearer. In such configuration, lighted eyeglasses are typically used to provide directed or focused light so that an area immediately forward of the wearer can be illuminated for tasks such as reading, walking at night, camping, or emergency use.

[0004] Lighted glasses require a power source to energize the light sources mounted thereto, which is typically one or more batteries. When such power source dies, however, unless a user had the foresight to pack extra batteries, the lighted glasses are rendered inoperable. Often, glasses are stored in a case to protect the glasses from physical damage when they are not being worn. Typical glasses cases have a hollow interior sized to receive the lighted glasses therein. Attempting to keep spare batteries in such a case could disadvantageously scratch the lenses of the lighted glasses and/or the loose batteries could fall out of the glasses case during inadvertent or intentional opening or transportation thereof.

[0005] Some prior glasses cases incorporate battery compartments that are utilized to power various devices mounted to or forming a part of the glasses cases. For example, U.S. Patent Publication No. 2005/0194267 to Lam describes a multipurpose spectacle case with a battery compartment for powering a radio assembly built into the case. Similarly, Chinese Application No. 201278901 to Zhang describes an eyeglass case having a built-in radio with a battery compartment. Chinese Application No. 20115482 to Xie describes a spectacle case having rotating brushes for cleaning the spectacles built into the spectacles case and a battery slot provided in the case for the rotating brushes. These references all describe glasses cases where
batteries are utilized to power secondary devices forming a part of the case. With such cases, the batteries that power the secondary device may not be compatible with the lighted glasses, or even if the batteries are compatible, the batteries may still be dead or the user must choose between operating the secondary device in the case or operating the lighted glasses.

**SUMMARY OF THE INVENTION**

[0006] A case for lighted glasses is provided having one or more battery holders therein for storage of standard sized batteries for the lighted glasses. The battery holders include a retaining surface that is sized and configured to engage and frictionally retain the standard size battery in the battery holder. This effectively provides the battery holder with a friction fit with the standard sized battery. Upper and lower housing portions of the case are pivotably connected together to be pivotable with respect to each other between a closed position forming a housing interior space sized to receive the lighted glasses therein and an open position to provide access to the interior space to remove or replace the lighted glasses therein.

[0007] In this form, the case advantageously provides a secure housing for the lighted glasses while also providing convenient battery storage space. Accordingly, a user of the lighted glasses can have spare batteries on hand without having to remember and carry extra packaging containing the spare batteries. This convenient holder can also prevent a user from being unable to use the lighted glasses because of dead batteries. Additionally, by receiving the batteries in a friction fit, the battery holders substantially prevent the batteries from freely moving about the interior space of the case, which can damage the lighted glasses, such as by scratching/denting the lenses, the frame, and/or other components of the lighted glasses, inadvertently actuating a switch on the lighted glasses, or the like.

[0008] In another form, a case for lighted glasses includes an elongate housing with a hard outer shell and an interior having a length sized to receive the lighted glasses therein. The case further includes a liner made of a shape retentive or resilient material and sized to fit within the housing interior. The liner includes one or more battery receptacles sized to receive standard sized batteries for the lighted glasses therein. The battery receptacles have a wall that extends transverse to the length of the housing interior and extends about the battery receptacle. The battery receptacle, and specifically the battery receptacle wall, is sized to frictionally engage the standard sized battery for the lighted glasses to retain the standard sized battery in the battery receptacle.
BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a case for lighted glasses showing top and bottom portions thereof in an open condition and a liner disposed within an interior of the case having battery holders with batteries received therein;

[0010] FIG. 2 is a top plan view of the case for lighted glasses of FIG. 1 showing an elongate outer shell of the top portion;

[0011] FIG. 3 is a front elevational view of the case for lighted glasses of FIG. 1 showing the top and bottom portions thereof in a closed condition;

[0012] FIG. 4 is a rear elevational view of the case for lighted glasses of FIG. 1 showing the top and bottom portions thereof in the closed condition and a hinge connecting the top and bottom portions;

[0013] FIG. 5 is a top plan view of the case for lighted glasses of FIG. 1 showing the top and bottom portions thereof in the open condition and the liner disposed within the interior of the case having empty battery holders;

[0014] FIG. 6 is a cross-sectional view of the case for lighted glasses of FIG. 1 taken along the line 6-6 in FIG. 5 showing the top and bottom portions thereof in the closed condition and a receptacle of one of the battery holders in the liner;

[0015] FIG. 7 is a cross-sectional view of the case for lighted glasses of FIG. 1 taken along the line 7-7 in FIG. 5 showing the top and bottom portions thereof in the closed condition and a channel connecting adjacent battery holders in the liner;

[0016] FIG. 8 is a cross-sectional view of the case for lighted glasses of FIG. 1 taken along the line 8-8 in FIG. 5 showing the top and bottom portions thereof in the closed condition and outer pairs of the receptacles of the battery holders connected by the channels within the liner;

[0017] FIG. 9 is a perspective view of a case for lighted glasses showing top and bottom portions thereof in an open condition and a liner disposed within an interior of the case having battery holders and an elastic cover thereover in a normal condition and a use condition;

[0018] FIG. 10 is a perspective view of a case for lighted glasses showing top and bottom portions thereof in an open condition and a liner disposed within an interior of the case having
battery holders with external threads and lids with internal threads configured to engage the external threads and cover the battery holders;

[0019] FIG. 11 is a perspective view of a case for lighted glasses showing top and bottom portions thereof in an open condition and a liner disposed within an interior of the case having pouches to store batteries therein;

[0020] FIG. 12 is a perspective view of a case for lighted glasses showing top and bottom portions thereof in an open condition and a liner disposed within an interior of the case having protuberances configured to engage hang holes of a battery package to hold the battery package within the interior of the case;

[0021] FIG. 13 is a cross-sectional view of the case for lighted glasses of FIG. 12 taken along the line 13-13 showing the protuberances engagement with the hang holes of the battery package;

[0022] FIG. 14 is a top plan view of a case for lighted glasses having a solar panel mounted thereto;

[0023] FIG. 15 is a top plan view of the case of FIG. 14 showing the top and bottom portions thereof in the open condition and showing a charging device for charging rechargeable batteries either in the lighted glasses received in the case or in battery holders of the case; and

[0024] FIG. 16 is a view similar to FIG. 15 with the rechargeable lighted glasses removed showing different battery holders for receiving differently configured standard batteries.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] In general and as further described below, a case for lighted glasses is provided with a battery holder for one or more standard sized batteries for the lighted glasses. The battery holder is sized to receive the one or more batteries therein to conveniently secure and retain the batteries until a user of the lighted glasses requires a replacement battery to operate the lighted glasses. At such time, the user can remove the one or more batteries from the holder and install the batteries in the lighted glasses for providing power to the light sources mounted thereto. The holder can further retain the batteries in a configuration that substantially prevents the batteries from damaging the lighted glasses, such as by scratching or denting.

[0026] The holder can utilize a variety of receptacles to receive the batteries therein. By one approach, the holder includes one or more recesses sized to receive the batteries in a press-fit,
such as with a depending wall. In another form, the receptacle includes a pouch with an opening therein sized to provide access to an interior of the pouch. A battery can be inserted into the interior of the pouch through the opening for storage thereof. The pouch can further include a flap that is positioned to selectively cover the pouch opening and thereby prevent the battery from exiting the pouch interior. In yet another form, the receptacle includes an elastic sheet that is stretchable to provide access thereunder and deformable for retaining the batteries. Specifically, after placement of the batteries under the sheet, the elastic sheet can then return towards an undisturbed configuration to elastically deform and conform to the battery to retain the battery thereunder. In another form, the receptacle can include one or more protuberances and separate battery packaging, where the protuberances are configured to interact with the packaging to retain the battery packaging within the lighted glasses case. For example, the protuberances can project through one or more openings provided in the battery packaging to frictionally retain the packaging in the lighted glasses case.

[0027] By another approach, the lighted glasses case, with the holder therein, can further be configured to charge rechargeable batteries stored therein. Pursuant to this, the one or more standard sized batteries can be rechargeable batteries and the holder can include charging connections configured to electrically connect to the rechargeable batteries for providing recharging power thereto. Alternatively, the lighted glasses can include rechargeable batteries mounted thereto, such as permanently received therein, and the lighted glasses case can include charging connections configured to electrically connect to the lighted glasses for providing recharging power thereto. The charging device can take a number of forms, including, for example, one or more solar cells, a socket configured to connect to a standard electrical or power outlet through a cord, a kinetic energy device, or the like. So configured, the lighted glasses case can charge or recharge spare batteries received in the holder for subsequent use in the lighted glasses or rechargeable batteries within the lighted glasses.

[0028] Referring now to FIGS. 1-8, an exemplary lighted glasses case 10 is illustrated in more detail. The case 10 includes an elongate housing 12 with a length that extends along a longitudinal axis L thereof, as shown in FIG. 1. The housing 12 includes an interior 14 sized to receive lighted glasses therein for protection, transportation, and storage purposes. The housing interior 14 further includes one or more battery holders 17 sized and configured to receive and retain one or more batteries 19 therein, and can take a variety of forms and configurations, as
described in greater detail below. The battery receptacles 17 store batteries sized to fit within and power lights of the lighted glasses to provide convenient, on-hand access if a battery of the lighted glasses should die, thereby ensuring that a user is not without light when needed.

[0029] The battery holders 17 retain the batteries 19 therein using a variety of configurations and methods, including, for example, a receptacle sized to receive the batteries in a friction or press fit; within a pouch having a lateral opening, within a receptacle having a removable cover, held by a strip or sheet being at least partially elastic or resilient, and by securing a package containing the one or more batteries therein, for example. It will be understood, however, that battery holders can take various other forms.

[0030] As illustrated, the case 10 includes top and bottom portions 18, 20 that are movable with respect to one another between an open position or configuration exposing the interior 14 (FIG. 1), such as for removing or replacing the lighted glasses in the interior 14, and a closed position or configuration closing access to the interior 14 (FIG. 2). By one approach, the top and bottom housing portions 18, 20 are pivotally connected together, such as by a hinge 22 or the like, to be pivotable between the open and closed configurations. The hinge 22 can also be configured to hold the top and bottom housing portions 18, 20 in the open and closed positions with a biasing mechanism. For example, the hinge 22 can hold the top and bottom portions 18, 20 in the closed configuration and bias the top and bottom housing portions 18, 20 to the closed position when the top and bottom housing portions 18, 20 are at a relatively small angle, such as about 45 degrees or less with respect to one another. As such, the biasing mechanism can cause the top and bottom housing portions 18, 20 to snap shut when the top and bottom housing portions 18, 20 are at the relatively small angle to prevent unintentional removal of the lighted glasses from the glasses case 10. The biasing mechanism can further hold the top and bottom housing portions 18, 20 in the open configuration and bias the top and bottom housing portions 18, 20 to the open position when the housing portions 18, 20 are at a relatively larger angle, such as about 50 degrees or higher with respect to one another. In such a configuration, the open condition can correspond to the hinge 22 holding the top and bottom housing portions 18, 20 generally orthogonal to one another as illustrated in FIG. 1; however, the housing portions can open more, such as positioned side-by-side and even with one another. The biasing mechanism can be one or more spring steel strips or the like mounted thereto that are configured to apply forces on the hinge 22 so that it functions as set forth above.

- 6 -
[0031] As shown in the figures, the top and bottom housing portions 18, 20 are mirror images of one another. Each portion 18, 20 includes a longitudinal wall 24 that extends along the housing axis L to form a generally rectangular major surface 26 of the case 10. Front and rear walls 28, 30 depend from forward and rear edge portions 32, 34 of the longitudinal wall 24 respectively, and side walls 36 depend from side edge portions 38 of the longitudinal wall 24. The front, rear, and side walls 28, 30, 36 extend generally transverse to the housing axis L to an interior engagement edge 40 that is configured to engage the interior engagement edge 40 of the opposite housing portion when the top and bottom housing portions 18, 20 are in the closed position. So configured, the top and bottom housing portions 18, 20 combine and engage one another to define the interior 14 of the lighted glasses case 10.

[0032] As illustrated in FIG. 3, the longitudinal walls 24 of the lighted glasses case 10 are slightly outwardly convex, such that the interior 14 has its greatest height generally centrally along the housing axis L and its smallest height adjacent to the side walls 26. Additionally, as shown in FIG. 2, the front and rear walls 28, 30 of the lighted glasses case 10 can also have end portions 42 thereof that slightly taper inwardly toward each other so that the top and bottom housing portions 18, 20 have tapered longitudinal ends 44. The tapered longitudinal ends 44 along with the pivoting action of the top and bottom housing portions 18, 20 about the hinge 22 gives the illustrated form of the lighted glasses case 10 a clamshell configuration with an oblong and streamlined appearance and configuration. The joints or edges between the housing walls 24, 28, 30, 36 can further be rounded as illustrated in the figures to minimize sharp edges on the lighted glasses case 10, which can minimize damage caused by the case 10 when stored next to other objects or jostled during transportation thereof.

[0033] One or both of the housing portions 18, 20 can further include a grip portion 46 formed in or mounted to the front walls 28 thereof. The grip portion 46 provides a user with a convenient surface to grip while opening the glasses case 10 and overcoming the biasing force of the hinge biasing mechanism. By one approach, the grip portion 46 includes a surface 48 with at least a portion thereof angled with respect to adjacent portions of the front wall 28. So configured, the angled surface 48 provides an abutment surface for a user's thumb or finger during opening of the lighted glasses case 10. The angled surface 48 is preferably positioned generally centrally along the housing axis L, so that sideways rotational forces acting on the hinge as a result of opening of the case 10 are minimized, as opposed to opening rotational forces
about the housing axis L. In the illustrated form, the grip portion 46 is inwardly concave and extends generally transverse to the housing axis L across the front walls 28 of both the top and bottom housing portions 18, 20.

[0034] As described above, the lighted glasses case 10 is configured to receive the lighted glasses therein to store and protect the lighted glasses from damage. Pursuant to this, the housing 12 may be constructed of a sufficiently rigid material, such as metal, rigid plastic, or the like. One or more outer surfaces of the housing 12 can further have a relatively softer coating, material, or layer 50 disposed thereon or applied thereto, so that the resulting outer surface of the housing 12 is relatively soft, which can help lessen damage caused by the case 10 when stored with other objects and provides an enhanced feel or touch for a user of the case 10. The coating or material 50 can include a variety of colors or designs, as desired. By one approach, the coating or material 50 can be at least partially deformable so that desired indicia, such as a company logo or trademark 52, or other graphic or alphanumeric content can be pressed therein. Alternatively, a company logo or trademark can be adhered to or otherwise attached to the case 10.

[0035] Turning now to one exemplary form for the battery holders 17 as illustrated in FIGS. 1 and 5-8. In this form, the battery holders 17 are recesses 54 sized to receive one or more of the batteries 19 therein in a friction or press-fit engagement. A user can manipulate one of the batteries 19 to align with the recess 54 and press the battery 19 into the recess. Preferably, the recess 54 is sized so that the recess 54 is the same size as or slightly smaller than the battery 19 so that the recess 54 resiliently deforms and receives the battery 19 in a friction-fit. By one approach, the batteries 19 are generally disc-shaped, coin cell batteries. In this form, the recesses 54 include a generally annular surface 56 having a diameter that is the same or slightly smaller than the coin cell batteries 19. As shown, the lighted glasses case 10 includes four recesses 54, but any desired number of recesses 54 can be provided within the case 10.

[0036] Because the batteries 19 are held within the recesses 54 by a press-fit, the annular surface 56 can include a circumferential opening 58 therein to provide access to a side surface 60 of the battery 19 to remove the battery 19 from the recess 54. The opening 58 can be any desired size, as long as the annular surface 56 extends about more than half of the battery side surface 60, and preferably more than three-fourths of the battery side surface 60, so that the annular surface 56 can provide the friction fit discussed above. Specifically, when a user desires to
remove the battery 19 from the press-fit engagement with the recess annular surface 56, the user can access the battery side surface 60 through the annular wall opening 58 and apply an upwards force on the battery 19 to overcome the friction between the battery 19 and the recess 54. In the illustrated form, a relatively narrow (with respect to the diameter of the recesses 54) channel 62 extends longitudinally between adjacent pairs of the recesses 54 and intersects the annular side surfaces 60 thereof to provide the circumferential openings 58 therein.

[0037] The lighted glasses case 10 illustrated in FIGS. 1 and 5-8 can further include a liner 64 disposed within one or both of the housing portions 18, 20. Preferably, the liner 64 is sized to be substantially complementary to the interior surfaces of housing portions 18, 20 so that is does not significantly decrease the size of the case interior 14. By one approach, this is achieved by thermoforming the liner 64 to substantially match the dimensions (with acceptable tolerances) of the interior of the case 10. As such, the liner 64 is a thin plastic material that is resilient and deformable to frictionally retain the batteries 19. Alternatively, the liner 64 can be composed of other resilient, deformable materials, including paperboard, or other plastic materials. The liner 64 can be secured within the case 10 by any suitable method, including adhesive, hardware, snap-fit structure, ultrasonic welding, or the like.

[0038] As such, in this form, the liner 64 includes top and bottom portions 66, 68 sized to be received within the top and bottom housing portions 18, 20 respectively, and includes main longitudinal walls 72, front and back walls 74, 76, and side walls 78 that are sized to fit inwardly of the corresponding structure of the top and bottom portions 18, 20. The liner 64 can further include a connecting portion or bridge 80 that connects and extends between the top and bottom liner portions 66, 68. Due to the clamshell configuration of the lighted glasses case 10, the bridge 80 preferably substantially or completely covers the hinge 22, but does not extend to the tapered ends 44 of the housing portions 18, 20, so that the bridge 80 does not interfere with the pivoting action of the housing portions 18, 20 relative to one another. Additionally, to accommodate the rotation of the top and bottom portions 18, 20 with respect to one another, the bridge 80 connections with the top and bottom liner portions 66, 68 can be sufficiently flexible, include a fold or other area of weakness, or the like. By another approach, the bridge 80 can be configured to flex inwardly while the case 10 is in the closed configuration and translate or shift toward the hinge 22 during opening of the case 10 to accommodate the rotation of the top and bottom housing portions 18, 20 with respect to one another.
The liner 64 can also be advantageously structured to provide the recesses 54 therein. In the illustrated form, the liner 64 is generally closely adjacent to the interior surfaces of the top and bottom housing portions 18, 20; however, the liner 64 also includes a raised portion or shelf 82 that generally extends along the housing axis L adjacent to and provides a portion thereof spaced from one of the longitudinal walls 24 of the housing portions 18, 20. The liner 64 could include additional shelves to receive and store additional batteries as desired, such as the two shelves 82 illustrated in FIG. 1. In this instance, the shelves 82 are longitudinally spaced by a recessed area 83 generally at the longitudinal center of the elongate case 10 generally aligned with the gripping portion 46 thereof, and are also each generally spaced from corresponding longitudinal ends of the case 10 by recessed areas 85, as can be seen in FIGS. 1 and 5.

The shelf or shelves 82 each include a top surface 84 that is generally parallel to the housing axis L and extends between the liner front and back walls 74, 76. End walls 86 depend from the shelf top surface 84 to extend generally transverse to the housing axis L between the shelf 82 and the lower adjacent surfaces of the liner 64. The recesses 54 can then be provided by an annular wall 88 that depends downwardly from a central portion of the shelf 82 to a recess bottom wall or surface 90. So configured, the annular wall 88 provides the generally annular surface 56 to frictionally engage the battery 19, as discussed above.

Preferably, the shelf 82 is spaced from the housing longitudinal wall 24 to allow the annular wall 82 to extend downwardly for a distance sufficient for the recess 54 to be of a sufficient depth to fully receive the battery 19 therein so that no portion of the battery 19 projects above the shelf top surface 84 and with the bottom of the recess adjacent to the housing wall 24. This more securely holds the battery 19 within the recess 54 by maximizing the surface area of the battery 19, and specifically the annular side surface 60 thereof in frictional contact with the annular surface 56 of the recess 54, and also protects the lighted glasses being stored in the case 10 from being damaged by portions of the battery 19 projecting above the shelf top surface 84. Additionally, surface 92 of the liner 64 exposed in the case interior 14 including the shelf surface 84 can be relatively soft or have a relatively soft material or fabric disposed thereon to provide further protection for the lighted glasses.

As shown in FIGS. 1 and 5, the shelf 82 can further be sized and configured to have two of the annular walls 88 depending therefrom connected by the narrow channel 62, which includes side walls 94 depending downwardly from the shelf top surface 84 to a channel bottom
wall or surface 96 extending therebetween. This shelf configuration can be repeated as desired along the housing axis L for a desired amount of battery receptacles. Additionally, as discussed above, the liner 64 can be thermoformed into any of the configurations described herein to provide the various battery holders 17 structures set forth above, including the shelf 82, the recesses 54, and the channel 62.

[0043] By another approach as illustrated in FIG. 9, an elastic strip or sheet 100 can extend over and cover a majority or all of the recess 54 to deny access to the recess 54 and prevent the battery 19 held therein from dislodging from or falling out of the recess 54. Utilizing the elastic strip 100, the recess 54 can hold the battery 19 in a friction or press-fit, as discussed above, or can be sized larger than the battery 19 so that the battery 19 is received loosely therein. The elastic sheet 100 can be secured to the case 100 by attaching lateral ends 102 thereof to the liner 64 or housing portions 18, 20 as desired. As shown, the lateral ends 102 extend generally transversely to the housing axis L, but can be attached at angles thereto if desired. The elastic sheet 100 can be attached to the case 10 by any suitable method, including, for example, stitching, adhesive, ultrasonic welding, hardware, or the like. This configuration leaves longitudinal sides 106 of the elastic sheet 100 that extend between the lateral ends 102 thereof unattached to the case 10 so that a user of the lighted glasses case 10 can stretch the elastic sheet sides 106 generally away from the recesses 54 to access the recesses 54 and the batteries 19 held therein. The elastic sheet 100 prevents the battery 19 from inadvertently dislodging from or exiting the recess 54 in a normal or covering condition, but can be manipulated by a user as set forth above to a use or open condition. The elastic sheet 100 can take a variety of sizes, such as to cover one or more, or all of the recesses 54 as desired.

[0044] Alternatively, the elastic sheet 100 can be used without the recesses 54. By this approach, one or more of the elastic sheets 100 can extend along a portion of the interior surface of at least one of the housing longitudinal walls 24 or the liner longitudinal wall 72, if the liner 64 is included, and be attached thereto as discussed above in a taut condition. So configured, a user can elastically deform and stretch the sheet 100 and place one or more of the batteries 19 underneath the elastic sheet 100, so that when the sheet 100 is released, the elastic properties of the sheet 100 can be configured such that the elastic sheet 100 at least partially elastically deforms around the batteries 19 thereunder, which holds the batteries 19 in place. Depending on
the battery 19 and case 10 dimensions, one or more elastic sheets 100 can also be mounted to interior surfaces of the front, rear, and side walls of the liner 64 or housing portions 18, 20.

[0045] By another approach as illustrated in FIG. 10, the recess 54 includes a rigid upstanding generally annular wall 110 surrounding a recess bottom wall or surface 112 and exterior threads 114 extending outwardly from an outer surface 116 of the annular wall 110. A lid 118 is also provided having a generally circular top wall 120 with a diameter slightly larger than the diameter of the recess annular wall 110 such that a lid annular wall 122 depending from edges of the lid top wall 120 is sized to fit around the recess annular wall 110. Interior threads 124 project inwardly from an interior surface 126 of the lid annular wall 122 and are configured to engage the exterior threads 114 to secure the lid 118 over the recess 54. So configured, a user can rotate the lid 118 to engage and disengage the lid 118 from the recess 54 to access the recess 54 so that the user can place a battery 19 therein or remove the battery 19 therefrom. The recess 54 of this form can be a part of the liner 64 or can be a separate piece that separately attaches to the housing portions 18, 20 by suitable methods, including, for example, adhesive, ultrasonic welding, hardware, or the like. Additionally, two, three, four, or more recesses 54 can be provided with the lids 118 as desired.

[0046] Another form of the battery holder 17 is shown in FIG. 11. In this form, the battery holder 17 includes a pocket or pouch 130 sized to receive one or more of the batteries 19 in an interior thereof. The pocket 130 preferably includes a lateral opening 132 configured so that a battery inserted through the opening 132 and received in the pouch 130 lies flat against the adjacent housing surface to minimize the distance that the battery projects into the case interior 14. In the illustrated form, the pouch 130 includes a body portion 134 that attaches to one of the housing portions 18, 20 or liner 64, such as by the methods discussed above, to create the pouch 130. Specifically, the body portion 134 is attached along a majority of its outer edge portions 136, with the remaining edge portion 138 sized to create the opening 132. By another approach, the pouch 130 can include opposing body portions 134 that define the pouch interior and one of the body portions 134 is attached to the case 10.

[0047] The pouch 130 can further include a flap or flexible portion 140 positioned adjacent the pouch opening 132 to provide a cover therefor. The flap 140 is attached to the case 10 or liner 64 adjacent to the pouch opening 138 and is configured to be movable between a covered position covering the opening 138 and an open position exposing the opening 138. The flap 140
is positioned to restrict the battery 19 from exiting the pouch 130 inadvertently. In another form, the opening 132 and specifically the opening edge portion 138 can be elastic or include an elastic portion that in a normal condition is contracted to at least partially close the opening 132 and in an open condition is stretched by a user of the case 10 to access a battery in the pouch 130 or insert a battery into the pouch 130.

[0048] Yet another form of the battery holder is illustrated in FIG. 12. In this form, one or more of the batteries 19 are contained within a separate battery package 150 sized to fit within the interior 14 of the lighted glasses case 10. The battery package 150 can take a variety of suitable configurations, one of which is shown in FIG. 12. As illustrated, the package 150 includes a generally flat backing portion 152 with one or more of the coin cell batteries 19 secured thereto by plastic, film, or the like, so that one of the flat main faces thereof lies along the backing 152. By one approach, the battery package 150 can be individually offered for sale, being displayed such as by hanging the battery package 150 on a pole or rod projecting from a display shelf through a hang hole 154 provided in an upper portion 156 of the package 152. The battery package 150 may further include a second hang hole 158 in a bottom portion 160 of the package 150. The hang holes 154, 158 can take any configuration or shape, including, for example, generally circular, euro/sombrero, delta, slot, or the like.

[0049] The lighted glasses case 10 of this form can then be configured to receive and retain the battery package 10 therein. In the illustrated form, this is achieved by one or more protuberances 162 projecting inwardly from the longitudinal wall of at least one of the top or bottom housing portions 18, 20. The protuberances 162 are sized and configured to securedly engage the one or more hang holes 154, 158 to retain the battery package 150 within the interior 14 of the lighted glasses case 10. The protuberances 162 can be a part of the liner 64 or can be mounted to the housing portions 18, 20 as desired. In the form illustrated in FIG. 13, the protuberances 162 are a portion of the liner 64 and include side portions 164 that project inwardly away from the adjacent housing longitudinal wall 24 generally transverse to the housing axis L and a rounded or arcuate top portion 166 that extends between the side portions 164. Preferably, the protuberance side portions 164 are resilient and are spaced apart equal to or slightly more than a width of the hang hole 154, 158 in the battery package 150. So configured, pressing the battery package 150 and specifically edges of the hang hole 154, 158 into
engagement with the protuberance 162 slightly deforms the side portions 164 inwardly, such that the protuberance 162 frictionally retains the battery package 150 thereon. As discussed above, the liner 64 can be thermoformed to include one or more of the protuberances 162 as desired.

[0050] Turning now to FIG. 14, a lighted glasses case 200 is illustrated that can charge or recharge rechargeable batteries received in the glasses case 200. Specifically, the case 200 includes one or more solar panels 204 mounted thereto to provide recharging power to the rechargeable batteries within the case 200. By one approach, the solar panel 204 is embedded within outer surfaces of one or both of the top or bottom housing portions 18, 20 and includes a clear protective coating or layer(s) outwardly thereof. As shown, the solar panels 204 are advantageously mounted to the longitudinal wall 24 so as to cover a large amount of surface area to provide greater power generation capabilities.

[0051] Wires or other electrical connections 106, such as a circuit board 206, traces, or the like, span between the solar panel 204 and a charging device 208 in the case interior 14. The electrical connections 106 can condition or store the energy generated by the solar panel 204 as desired. The solar panel 204 can charge the rechargeable batteries 19 within the battery holders 17, such as the recesses 54 discussed above, or can charge rechargeable batteries 19 received within lighted glasses.

[0052] The charging device 208 can take a number of different forms. In one form, lighted glasses 216 received within the case 200 include rechargeable batteries 218 therein, which can be permanently received therein. As such, the electrical connections 106 include a plug 220 and the lighted glasses 216 include a socket 222 sized to receive the plug 220 therein. When the plug 220 is inserted into the socket 222, the solar panel 240 charges the rechargeable batteries 218 so that the batteries 218 can power light sources 221 mounted to the glasses 216.

[0053] In one form, the recess 54 can include a pair of contacts 210 therein to electrically couple to the anode and cathode of the rechargeable battery 19 inserted therein. The contacts 210 include a side contact projecting inward from the recess side and a bottom contact projecting inward from the recess bottom. The contacts 210 are preferably resilient and retaining tabs 211 extend over the recess 54 generally opposite of the side contact 210 so that the battery 19 can be inserted thereunder when inserting the battery 19 into the recess 54. When the tabs 211 are combined with the resilient tabs 211, the battery 19 is held within the recess 54.
The charging device 208 can also include a status indicator light 212, which can be an LED or the like, to indicate whether the rechargeable battery is charging or fully charged. Alternatively, for cylindrical batteries 19, such as AA or AAA batteries, a curved recess 214 can be provided instead of the annular recess 54 discussed above. As such, the contacts 210 are provided on either side of the curved recess 214 for charging the batteries 19. If desired, the contacts 210 can be spring loaded to shift between compressed and extended conditions to accommodate the differing lengths of the cylindrical batteries.

Alternatively, the case 200 can include a socket configured to connect to a standard electrical or power outlet by an external cord, a kinetic energy device, or the like. So configured, the lighted glasses case can then charge or recharge spare rechargeable batteries received in the battery holders for subsequent use in the lighted glasses or rechargeable batteries within the lighted glasses.

Those skilled in the art will recognize that a wide variety of modifications, alterations, and combinations can be made with respect to the above described embodiments without departing from the spirit and scope of the invention, and that such modifications, alterations, and combinations are to be viewed as being within the ambit of the inventive concept.
CLAIMS

What I Claimed Is:

1. A case for lighted glasses, the case comprising:
   upper and lower housing portions that are pivotally connected together for pivoting
   between a closed position where the closed housing portions cooperate to form an interior space
   sized for receiving the lighted glasses therein, and an open position for removing the lighted
   glasses from the interior space or fitting the lighted glasses in the interior space;
   a battery holder in the housing interior for receiving a standard sized battery for the
   lighted glasses; and
   a retaining surface of the battery holder sized and configured to engage and frictionally
   retain the standard sized battery for the lighted glasses in the holder to provide the battery holder
   with a friction fit with the standard size battery for the lighted glasses.

2. The case of claim 1 wherein one of the housing portions includes an interior liner, and the
   battery holder, including the retaining surface thereof, comprises a predetermined portion of the
   liner.

3. The case of claim 1 wherein the housing portions each have an elongate configuration
   with opposite ends thereof, and the battery holder is disposed intermediate the opposite ends of
   one of the housing portions.

4. The case of claim 1 wherein at least one of the housing portions has a hard outer surface
   and a softer inner surface with the battery holder retaining surface comprising a surface portion
   of the softer inner surface.

5. The case of claim 1 wherein one of the housing portions includes a raised interior shelf
   portion, and the battery holder is a recess in the raised interior shelf portion.
6. The case of claim 5 wherein the standard size battery is a coin cell battery, and the battery holder retaining surface is an annular surface extending about the recess having a diameter thereacross sized to receive the coin cell battery in a press fit therein.

7. The case of claim 5 wherein the battery holder comprises:
   a pair of recesses each sized for receiving the standard sized battery for the lighted glasses therein; and
   a narrow channel extending between and interconnecting the pair of recesses to allow the standard sized batteries to be removed from the pair of recesses in which the standard sized batteries are press fit.

8. The case of claim 1 wherein the housing portions each include a hard outer shell.

9. The case of claim 1 in combination with lighted glasses received within the interior space of the housing portions, wherein the lighted glasses include a battery compartment sized to receive at least one standard sized battery to power light sources mounted thereto.

10. A case for lighted glasses, the case comprising:
    an elongate housing having a hard outer shell and an interior having a length sized for receiving the lighted glasses therein;
    a liner of generally rigid material sized to fit within the interior of the housing; and
    a battery receptacle of the liner having a wall extending transverse to the length of the housing interior and extending about the battery receptacle, with the battery receptacle sized so that the wall frictionally engages a standard sized battery for the lighted glasses to retain the standard sized battery in the battery receptacle.

11. The case of claim 10 wherein the liner has a soft inner surface.

12. The case of claim 10 wherein the wall defines a generally annular receptacle sized to receive the standard sized battery therein in a friction fit engagement.
13. The case of claim 12 wherein the battery receptacle is a first battery receptacle, and further comprising a second battery receptacle of the liner in a side-by-side relation with the first battery receptacle, where the second battery receptacle defines a second generally annular receptacle sized to receive the standard sized battery therein in a friction fit engagement.

14. The case of claim 13 further comprising a narrow channel extending between and connecting the pair of generally annular receptacles, the channel forming openings in the walls of the pair of generally annular receptacles to provide finger access to sidewalls of the standard sized batteries for removal thereof from the receptacles in which the standard sized batteries are press fit.

15. The case of claim 10 further comprising a hinge pivotably connecting the top and bottom portions of the housing.

16. The case of claim 15 wherein the hinge is configured for holding the top and bottom portions of the housing in an open configuration and for providing snap closure of the top and bottom portions upon pivoting of the top and bottom portions toward a closed configuration.

17. The case of claim 10 wherein the liner includes a raised portion spaced from the hard outer shell, and the battery receptacle is a recess in the raised portion.

18. The case of claim 10 in combination with a disc-shaped battery, the disc-shaped battery and the battery receptacle configured and sized to have a friction fit therebetween so that the disc-shaped battery is removably retained in the battery receptacle.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A45C 11/04 (2012.01)
USPC - 206/6

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(8) - A45C 11/04; G02C 1/00; 5/00 (2012.01)
USPC - 206/5, 6; 351/41; 158

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

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

Patbase, Orbit.com, GooglePatents, Proquest

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 2009/0184550 A1 (YING et al) 07 May 2009 (07.05.2009) entire document</td>
<td>4, 8, 10-18</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:
  **A** document defining the general state of the art which is not considered to be of particular relevance
  **E** earlier application or patent but published on or after the international filing date
  **L** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  **O** document referring to an oral disclosure, use, exhibition or other means
  **P** document published prior to the international filing date but later than the priority date claimed
  **T** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  **X** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  **Y** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
  **&** document member of the same patent family

Date of the actual completion of the international search 02 August 2012

Date of mailing of the international search report 17 AUG 2012

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Form PCT/ISA/2 10 (second sheet) (July 2009)