US 20240148131A1

(19) **United States**

(12) **Patent Application Publication**

BOHMAN et al.

(10) **Pub. No.: US 2024/0148131 A1**

(43) **Pub. Date: May 9, 2024**

(54) **PROTECTIVE CASE WITH DEVICE GRIP STORAGE**

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(21) Appl. No.: **18/372,924**

(22) Filed: **Sep. 26, 2023**

Related U.S. Application Data

(60) Provisional application No. 63/423,251, filed on Nov. 7, 2022, provisional application No. 63/427,246, filed on Nov. 22, 2022.

Publication Classification

(51) **Int. Cl.**

A45F 5/10 (2006.01)

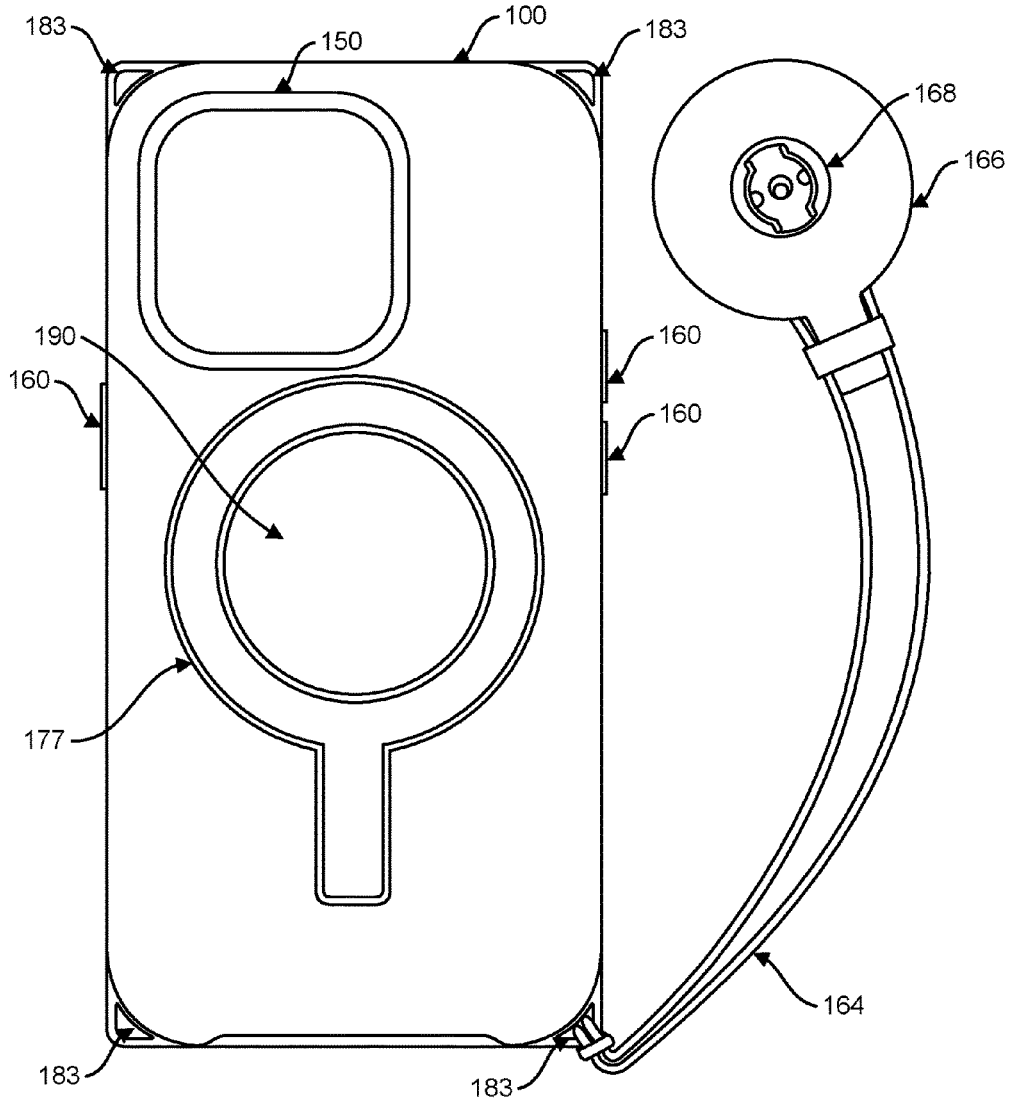
A45C 11/00 (2006.01)

(52) **U.S. Cl.**

CPC ***A45F 5/1026*** (2013.01); ***A45C 11/00*** (2013.01); *A45C 2011/002* (2013.01); *A45F 2200/0516* (2013.01)

(57) **ABSTRACT**

A protective case system for use with an electronic device includes a protective case and a flexible tether. The protective case includes a shell configured for receiving and removably retaining an electronic device. The flexible tether has a first end and a second end where the first end of the tether is attached to the protective case. The protective case system also includes a device grip mounting platform attached to the second end of the tether. The protective case system also includes a device grip configured to be removably attachable to the protective case and to the device grip mounting platform, alternatively.



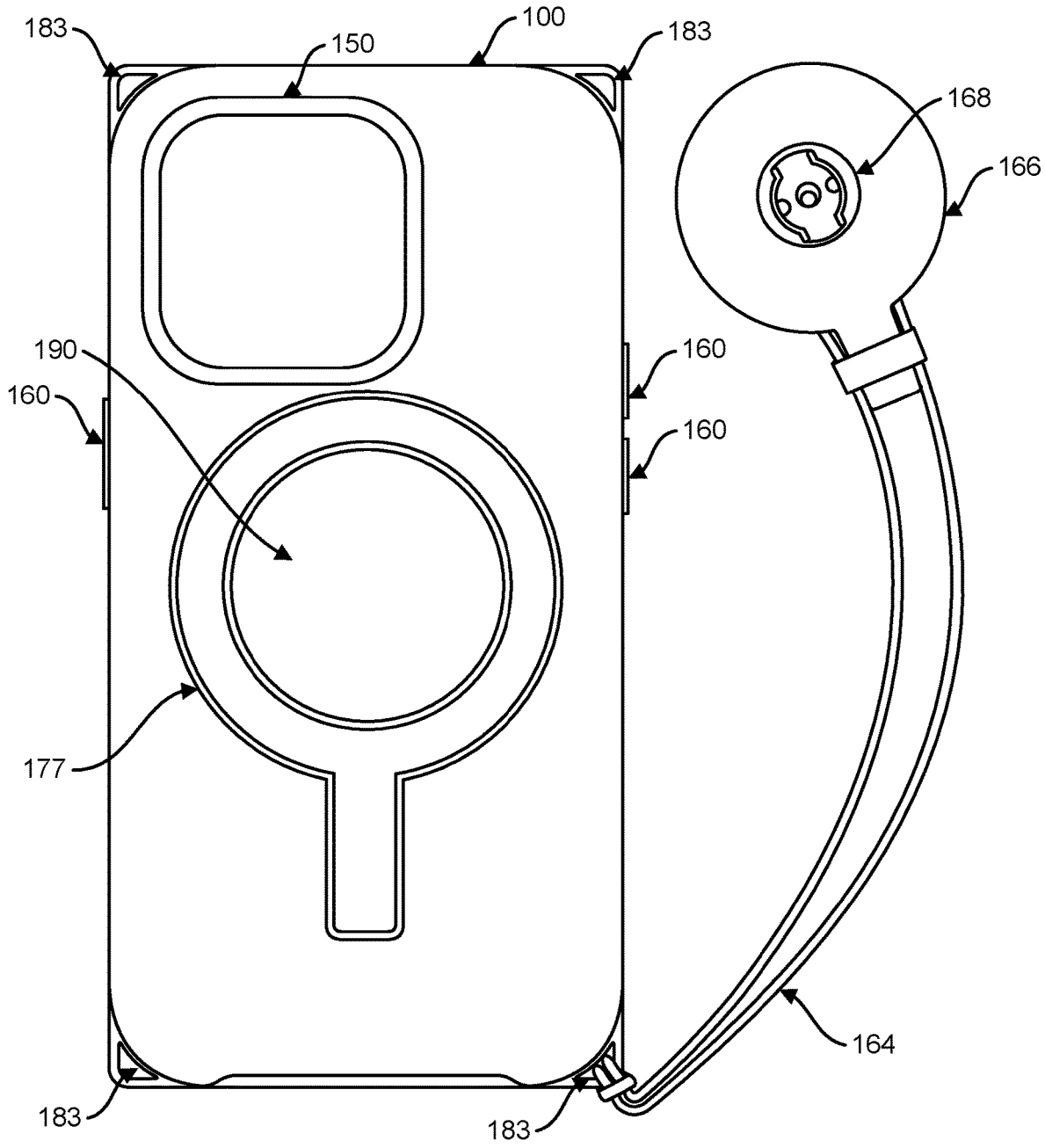


FIG. 1

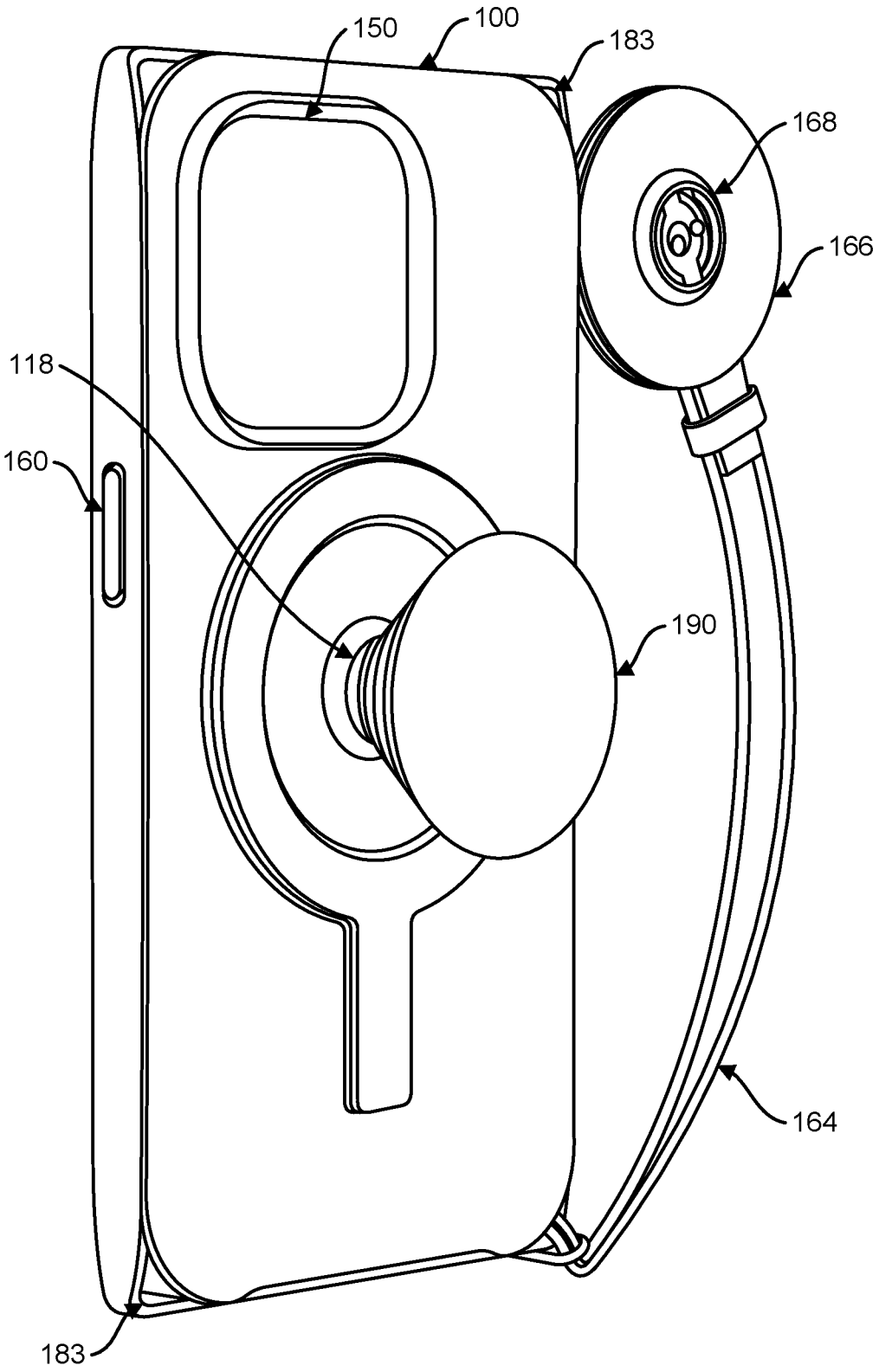


FIG. 2

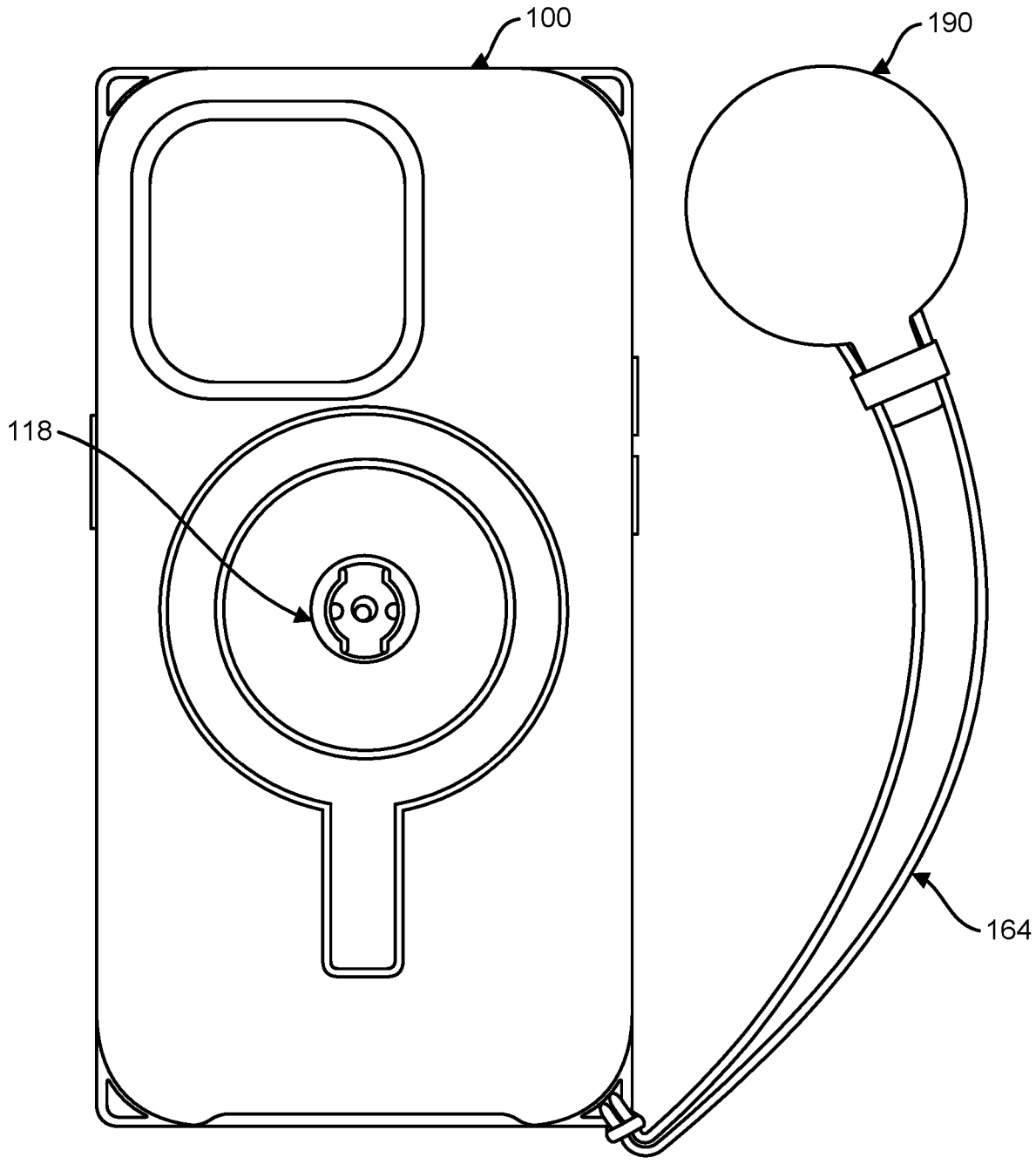


FIG. 3

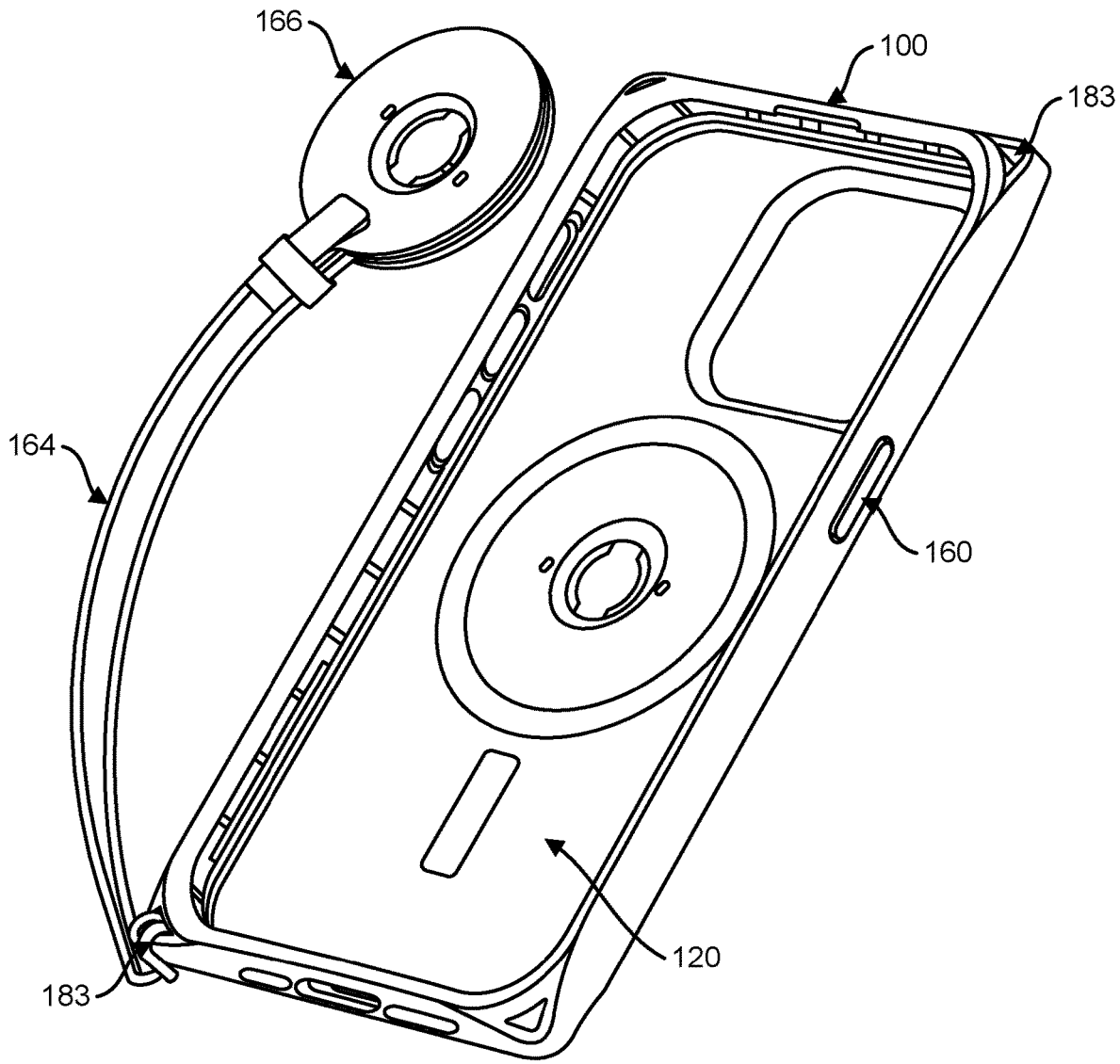


FIG. 4

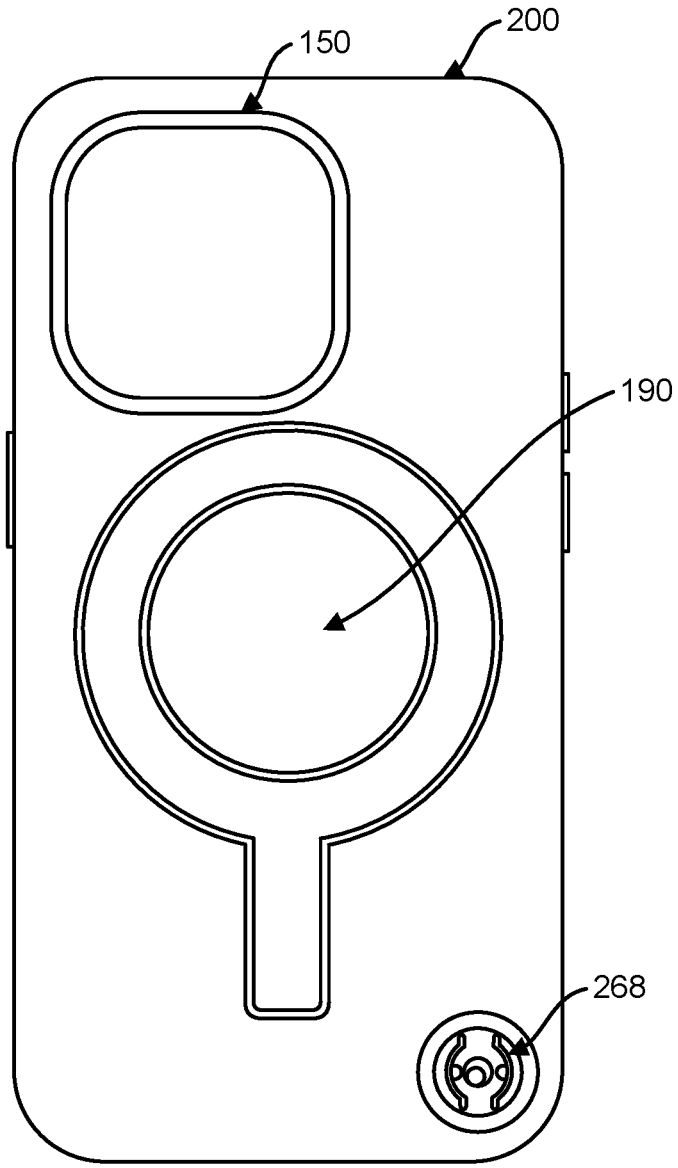


FIG. 5

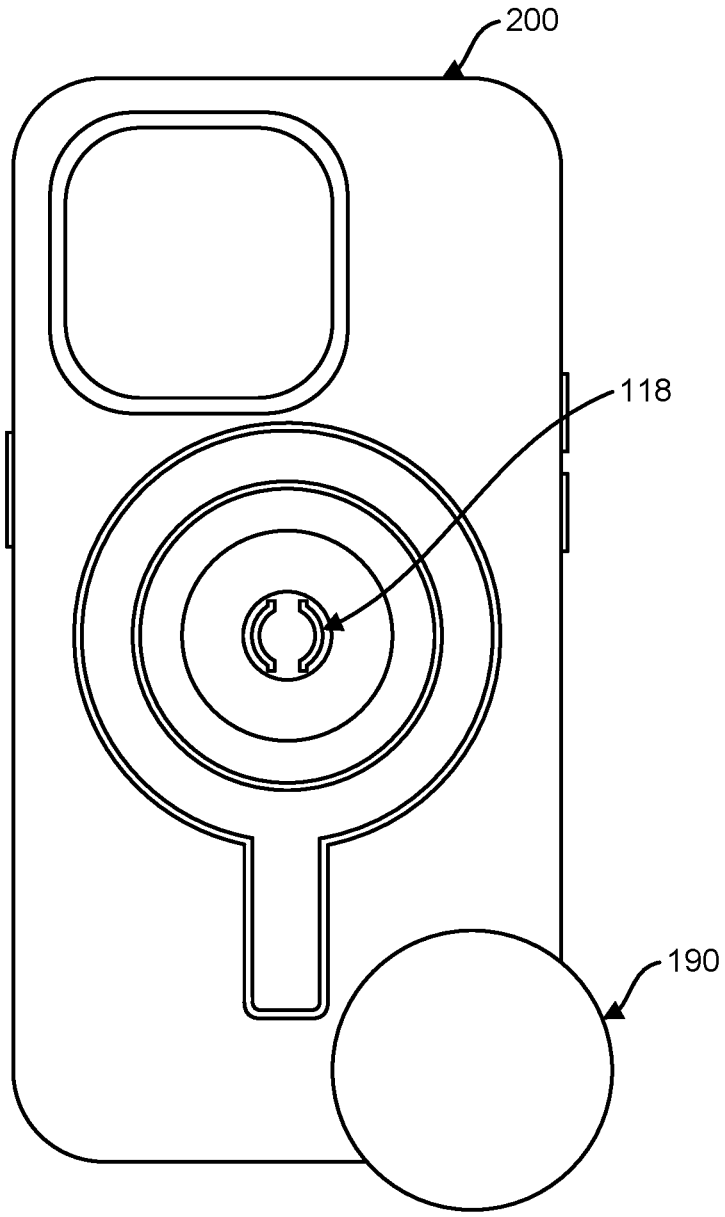


FIG. 6

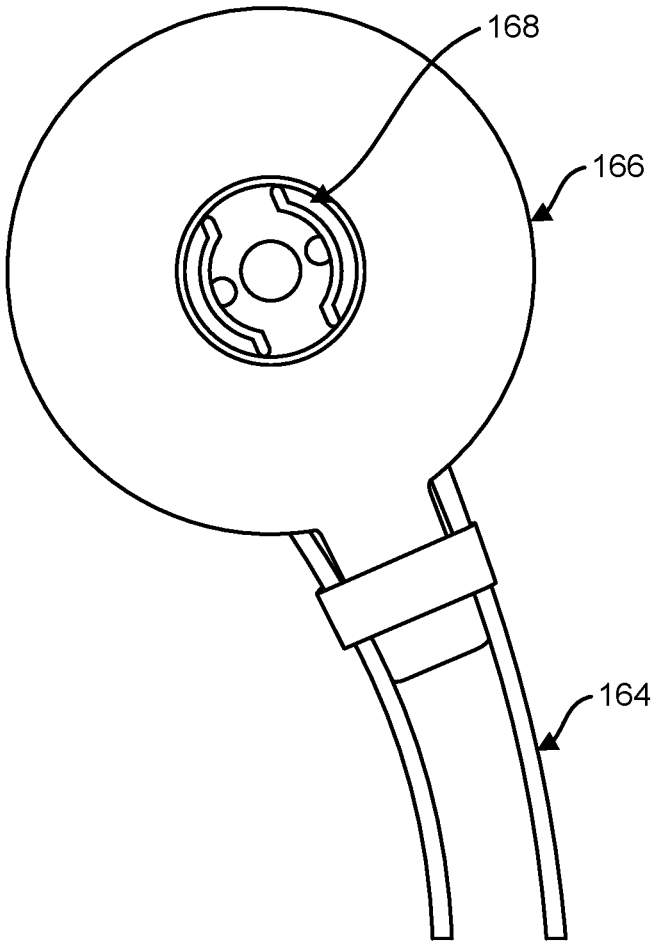


FIG. 7

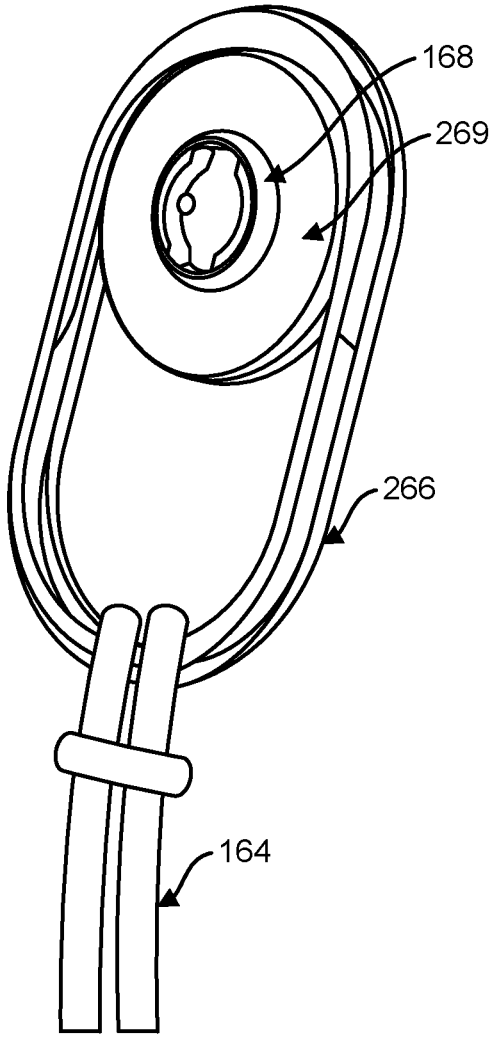


FIG. 8

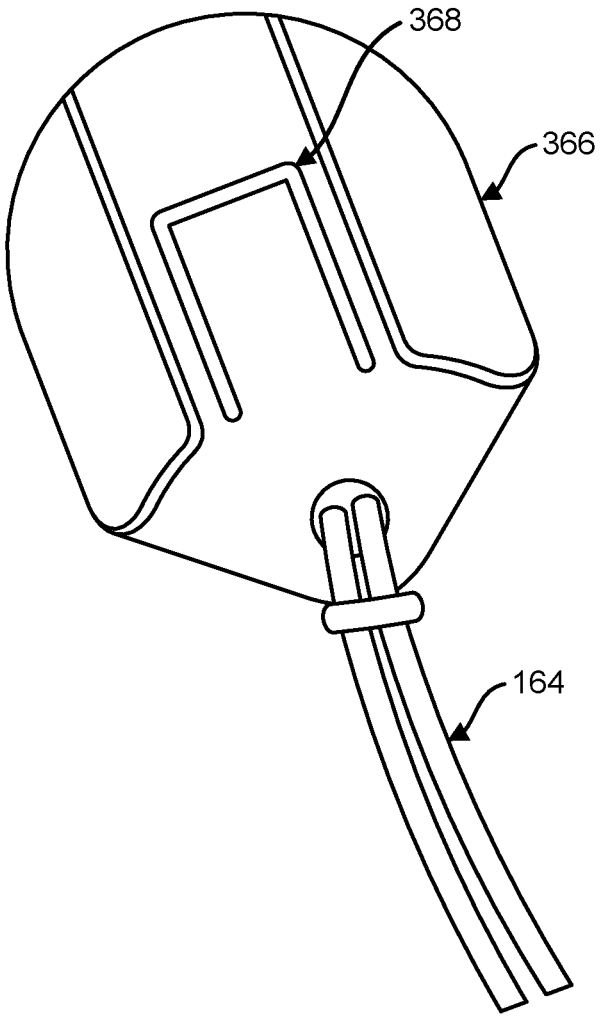


FIG. 9

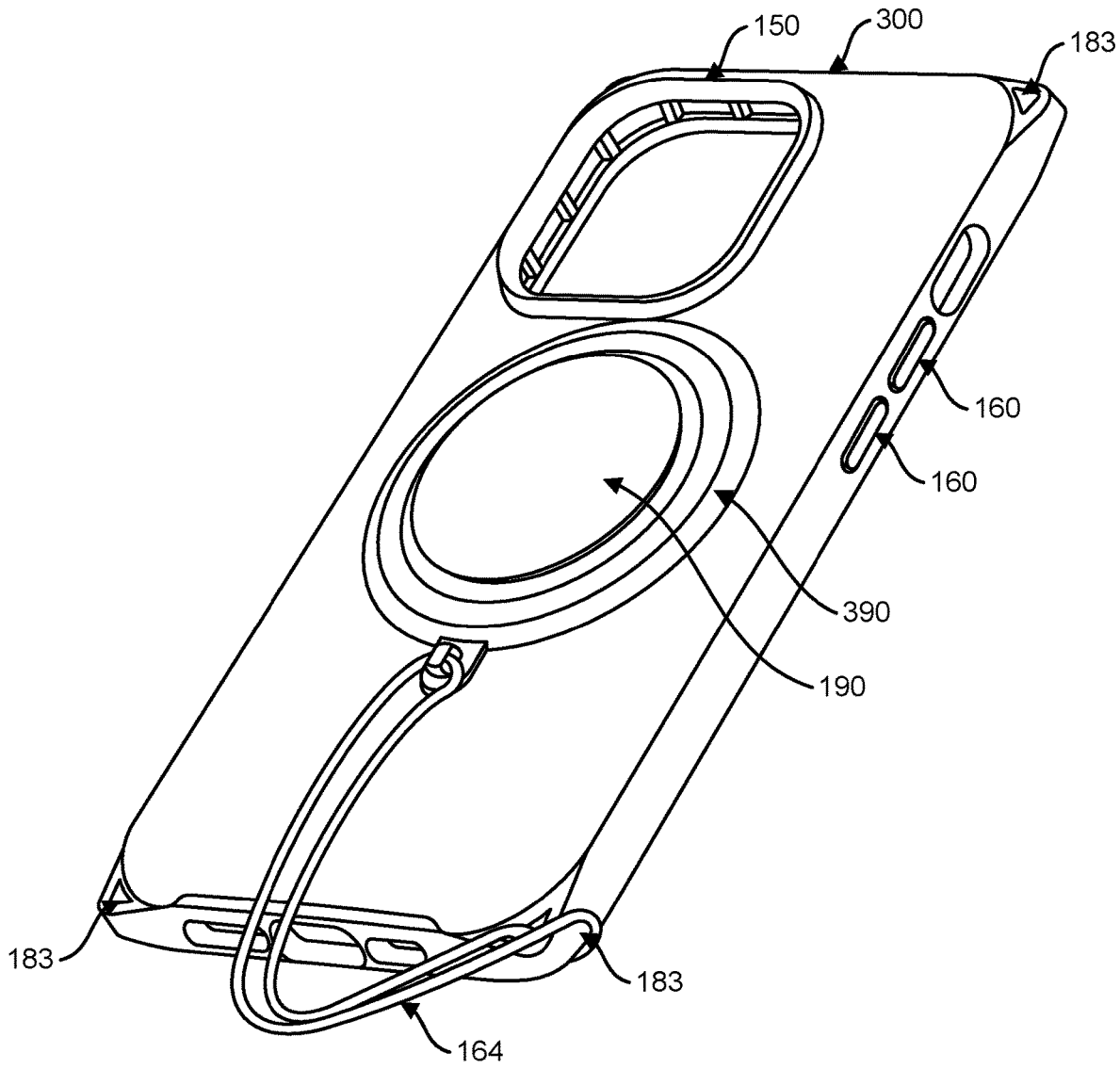


FIG. 10

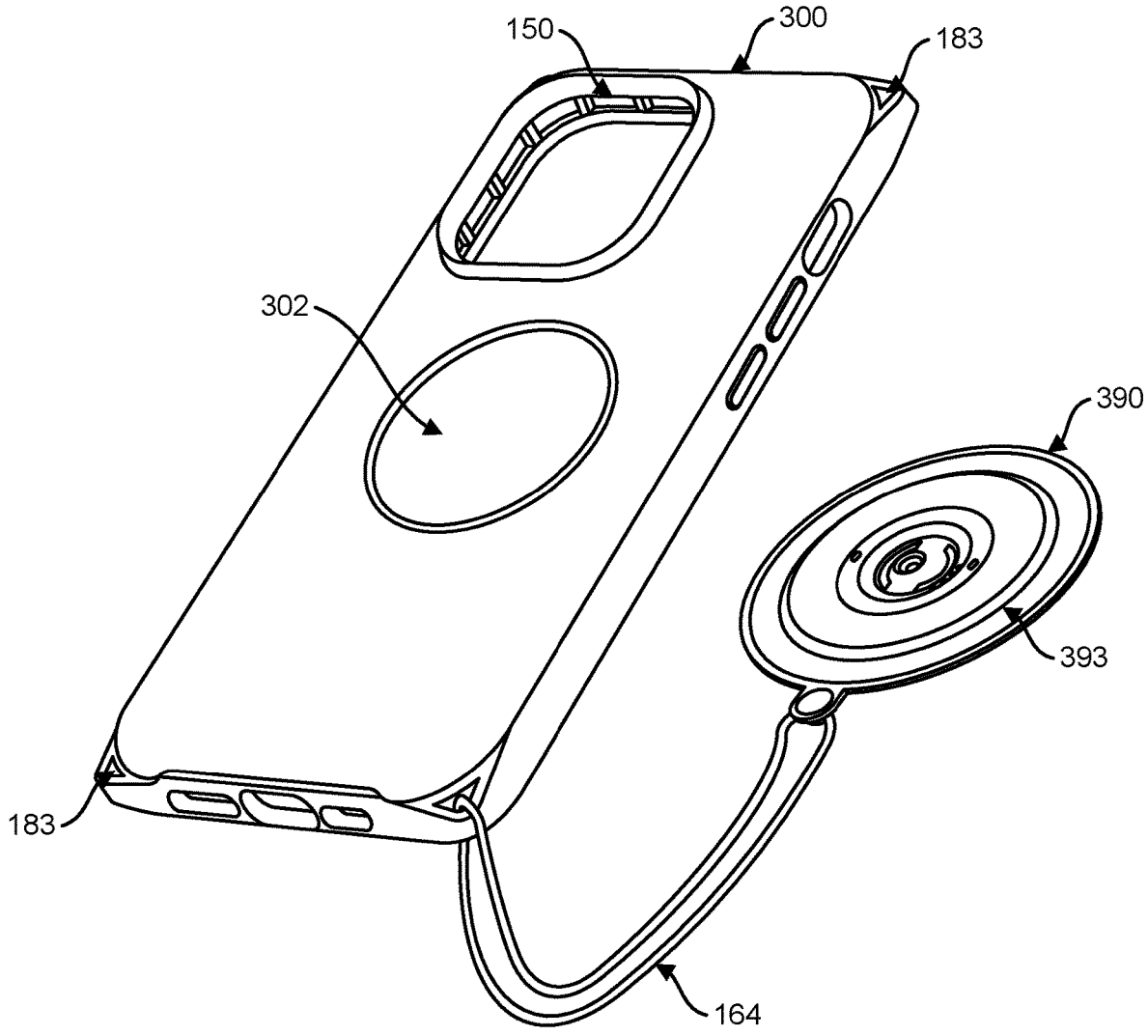


FIG. 11

PROTECTIVE CASE WITH DEVICE GRIP STORAGE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 63/423,251, filed Nov. 7, 2022, and U.S. Provisional Patent Application No. 63/427,246, filed Nov. 22, 2022, all of which are hereby incorporated by reference in their entireties.

BACKGROUND

[0002] Electronic devices, particularly portable electronic devices, are used for a growing variety of purposes, as well as in a growing variety of situations. Examples of portable electronic devices include smartphones, tablet computers, gaming devices, audio players, video players, cameras, portable computers, two-way radios, GPS receivers, and/or other portable devices. Portable electronic devices are susceptible to damage from a variety or forces or elements such as dropping, impact, and scratching. While gripping apparatuses are sometimes used, gripping apparatuses may interfere with use of other accessories, such as wireless charging devices. Improved apparatuses and techniques for gripping or holding portable and personal electronic devices are needed for better accommodating these changing use models while also still protecting the devices.

SUMMARY

[0003] In one exemplary embodiment, a protective case system is configured for use with an electronic device and includes a protective case and a flexible tether. The protective case includes a shell configured for receiving and removably retaining an electronic device. The flexible tether has a first end and a second end where the first end of the tether is attached to the protective case. The protective case system also includes a device grip mounting platform attached to the second end of the tether. The protective case system may also include a device grip configured to be removably attachable to the protective case and to the device grip mounting platform, alternatively.

[0004] Other embodiments, including various combinations of the features disclosed herein, are also envisioned. Many combinations of the features are possible, including combinations that do not include all of the described features and/or include other features.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. **1** illustrates a protective case with a device grip and a device grip storage tether;

[0006] FIG. **2** illustrates an alternative view of the protective case, device grip, and device grip storage tether of FIG. **1**;

[0007] FIG. **3** illustrates the protective case, device grip, and device grip storage tether of FIG. **1** with the device grip attached to the device grip storage tether;

[0008] FIG. **4** illustrates a front side view of the configuration of FIG. **1**;

[0009] FIG. **5** illustrates a protective case with a device grip and a storage location;

[0010] FIG. **6** illustrates the protective case of FIG. **5** with the device grip attached to the storage location;

[0011] FIG. **7** illustrates a close up view of the device grip storage features of FIGS. **1-2**;

[0012] FIG. **8** illustrates an alternative grip storage apparatus;

[0013] FIG. **9** illustrates another alternative grip storage apparatus;

[0014] FIG. **10** illustrates a protective case with a device grip in a docked position; and

[0015] FIG. **11** illustrates the protective case of FIG. **10** with the device grip undocked.

DETAILED DESCRIPTION

[0016] Electronic devices are increasingly used with protective cases and/or covers that protect the electronic devices from a variety or forces or elements such as dropping, impact, and scratching. As people carry electronic devices with them more frequently, they have become more interested in using them for a wider variety of tasks and in a wider variety of situations. Electronic devices, particularly portable electronic devices, are being used now more than ever and the longer devices are held by the user the greater the chance that they may be dropped or otherwise damaged. In addition, people are using their electronic devices in a greater variety of situations. In some cases, these challenges are coupled with an increasing need for holders, grips, or stands to make it easier to hold the device. Further, there may also be a desire to hold the device in a particular preferred configuration or location when the user wants the device to be visible and/or in a particular orientation but may not necessarily be holding it.

[0017] At the same time, electronic devices are also being used with an increasing number of accessories. In some examples, the accessories may be temporarily attached to the electronic device or placed near the back of electronic device. Specifically, wireless chargers or wireless charging devices are sometimes used to recharge portable electronic devices. The nature of inductive wireless charging is such that the charger must be within a specified distance of the electronic device for charging to occur. Other types of accessories may also be used with portable electronic devices or temporarily attached to the back of the portable electronic devices. One set of examples are MAGSAFE ACCESSORIES and MAGSAFE wireless chargers provided by APPLE and/or compatible with APPLE DEVICES. Sometimes these devices must be placed within a specified distance of the primary housing of the electronic device in order to work properly. Protective cases must be relatively thin in order for the accessory to still work when the electronic device is in the protective case. Grip or gripping devices provide an additional challenge in that they often result in additional thickness beyond the wall of the protective case itself. Convenient solutions are needed for temporarily storing a grip device and/or temporarily moving it out of the way when these types of accessories are used.

[0018] While most of the electronic device cases and/or covers discussed herein are described as "protective" cases, the apparatuses and techniques disclosed herein do not necessarily require that the case is protective and could apply to any type of electronic device case, cover, sleeve, shell, attachment panel, etc. In other examples, the case may be water-resistant or water proof for protecting the electronic device from water or other liquids. In yet other examples, the case or protective case may have other char-

acteristics, such as but not limited to, chemical resistance and/or antimicrobial characteristics.

[0019] FIG. **1** illustrates a back view of a protective case **100** with a device grip **190** and a device grip storage tether **164**. Protective case **100** is configured for receiving and holding an electronic device in the protective case. Protective case **100** includes a front opening which permits or allows insertion of and access to at least some portion of the installed electronic device. In one example, the front opening permits access to an interactive interface of the electronic device such as a touchscreen, a touch screen interface, a resistive touchscreen, a display, and/or a capacitive touchscreen. The front opening may contain a lip or edge that removably retains the electronic device in the protective case such that it does not easily or readily come out of protective case **100**, but can still be intentionally removed by a user when desired. The front opening may also include a lip, ledge, protrusion, raised edge, rim, elevated rim, elevated protective rim, or other raised feature around at least a portion of the front opening to reduce the chances of a front surface of the installed electronic device from coming into contact with another object or surface, particularly when protective case **100** is laid face down on a flat surface, such as a table. Protective case **100** may include multiple layers or materials, including an internal cushion layer.

[0020] Protective case **100** also includes camera aperture **150** in a back surface of protective case **100**. Camera aperture **150** provides optical access and/or an optical path to/from a camera and/or a flash of an installed electronic device. In other words, camera aperture **150** permits use of the camera and/or flash even though the electronic device is installed in protective case **100** and much of the back of the electronic device is covered by protective case **100**. Camera aperture **150** may be covered with a clear, mostly clear, transparent, or mostly transparent membrane, lens, or film that protects the camera and/or the flash but also still permits optical access and/or an optical path to/from the camera and/or flash. In some examples, the membrane or film may serve a lensing function and/or provide an optical effect, such as magnification.

[0021] Protective case **100** provides protection for an installed electronic device against external forces by reducing or eliminating transfer of those forces to the installed electronic device, as well as providing a relatively soft contact surface for the installed electronic device. The relatively soft contact surface can resist scratching, scraping, marring, and/or rub marks. While providing protection, protective case **100** enables a user to still use the electronic device while it is in protective case **100**.

[0022] Protective case **100** also includes one or more button pads **160** on one or more sides of protective case **100**. In some cases, button pads **160** may be formed in or from the material that makes up an inner surface of protective case **100**. Button pads **160** correspond to respective buttons or control features of an installed electronic device. Button pads **160** enable actuation or operation of the respective buttons or control features of the installed electronic device from outside of protective case **100** without necessarily having direct access to the buttons or control features. Protective case **100** may also include another aperture, hole, or opening for directly accessing a button, switch, port, or control feature of the installed electronic device. Button pads and apertures may have many other shapes or configurations. Protective case **100** may have more or fewer button pads or apertures than illustrated, or no button pads or apertures at all.

[0023] Protective case **100** may also permit access to other features of an installed electronic device. For example, protective case **100** may permit access to an audio feature of the electronic device, such as a speaker or headphone jack of the electronic device. In some configurations, protective case **100** may include an aperture with a water impermeable membrane that allows sound to pass through the membrane while keeping water from passing through the associated aperture.

[0024] A device grip **190** is attached to protective case **100** in FIG. **1**. Device grip **190** may be used with electronic devices and/or with protective cases or covers as described herein. Device grip **190** is one example of a device grip, or holder, which is currently available in the market. The particular device grip illustrated in FIG. **1** is a POPSOCKET sold by POPSOCKETS of Boulder, Colorado. Device grip **190** is used in the examples herein only for explanation purposes. The improvements discussed herein are not limited to any particular design or brand of device grip and may be applicable to or usable with many different types of device grips, holders, and/or stands. Accommodating different grips, holders, and/or stands may include changing shapes, sizes, dimensions, geometries, quantities, and/or positions of case features described herein to accommodate other grips, holders, or stands. In some examples, device grip **190** may also be called a grip device, a ring holder, a loop, a strap, a finger loop, or a holder.

[0025] Device grip **190** may include a grip end, an expanding portion, and a foot. The foot or base may be attached to an object, permanently or removably, to allow device grip **190** to assist in the holding the object and/or make it less likely the object is dropped. The foot may also be referred to as a base or mounting interface. The expanding portion may have an accordion or tapered accordion structure to allow it to be expanded, collapsed, and/or adjusted into various positions. For example, device grip **190** may have an extended or use position in which the expanding portion is partially or fully extended. Device grip **190** may also have a non-extended, stowed, or compressed position in which a height of device grip **190** is reduced or minimized in order to reduce its interference with other objects or activities when it is not in use. The techniques and improvements herein may be practiced with a wide variety of other device grips and/or other device grip designs. Device grip **190** of FIG. **1** is used herein only for purposes of explanation and the improvements disclosed herein are not to be limited to any specific design or type of grip or holder.

[0026] Protective case **100** may also include a metallic or magnetic feature **177** for interfacing with one or more accessories. In some examples, an accessory placed near this region of protective case **100** may be intended to interact with an electronic device inside protective case **100**. In one specific example, a wireless charging device may be placed adjacent to protective case **100** to recharge a battery of the installed electronic device. Wireless chargers typically must be within a specified distance of the surface of the primary housing of the electronic device to work properly or to work with sufficient efficiency. In some examples, device grip **190**, even in the stowed position, may be too thick in conjunction with protective case **100** such that it keeps an accessory from working, or working well, with the installed

electronic device. In these situations, it may be desirable to temporarily remove device grip **190** and stow it in another location so it is not lost or forgotten. While many of the examples herein discuss removal of device grip **190** for purposes of wireless charging, the improvements herein are also equally applicable to temporary removal of device grip **190** for other reasons.

[0027] Protective case **100** also includes a device grip storage tether **164** attached to an attachment point **183**. Attachment point **183** may be a hole or aperture. Attachment point **183** may also be or include another mechanical attachment mechanism or feature. As illustrated in FIG. **1**, protective case **100** may include more than one attachment point **183**. Device grip storage tether **164** is attached, permanently or temporarily, to protective case **100** at a first end. Device grip storage tether **164** may be flexible, rigid, or semi-rigid. Device grip storage tether **164** is attached to storage pendant **166** at a second end. Device grip storage tether **164** may also be configured or sized to fit around the wrist of a user and/or another object. In some examples, device grip storage tether **164** may also have another element for adjusting or controlling a size of the wrist opening.

[0028] Storage pendant **166** provides a convenient, alternative, and/or temporary storage location for device grip **190**. Storage pendant **166** includes a receiver hub **168** which is configured to temporarily receive device grip **190** using a fastener or mechanical interface which is compatible with a fastener or mechanical interface of device grip **190**. Storage of device grip **190** on storage pendant **166** may be convenient or necessary when an accessory, such as a wireless charging device, is used with protective case **100** and/or with an electronic device installed in protective case **100**. Storage of device grip **190** on storage pendant **166** is beneficial when device grip **190** is removed from protective case **100** because it reduces the chances that a user will lose, misplace, and/or forget device grip **190**.

[0029] FIG. **2** illustrates an alternative view of protective case **100**, device grip **190**, and device grip storage tether **164**. In FIG. **2**, a receiver hub **118** of protective case **100** is visible. Receiver hub **118** is similar to or the same as receiver hub **168** and allows device grip **190** to be removably attached to protective case **100**.

[0030] FIG. **3** illustrates the protective case **100**, device grip **190**, and device grip storage tether **164** of FIG. **1** with device grip **190** attached to the device grip storage tether **164**. A user may choose this configuration when using a wireless charging device or a wireless charging stand which may be placed on or near a back of protective case **100** near receiver hub **118** for purposes of charging or interacting with the installed electronic device. Moving device grip **190** to the location illustrated in FIG. **3** enables the wireless charging device to be positioned closer to a back surface of the installed electronic device.

[0031] FIG. **4** illustrates a front side perspective view of the configuration of FIG. **1**. FIG. **4** illustrates an inside surface **120** of protective case **100** which is configured to receive the electronic device. Inside surface **120** may be or may include one or more cushioning members. In FIG. **4**, device grip **190** is not visible because it is attached to the opposite side of protective case **100**.

[0032] FIG. **5** illustrates a protective case **200** with a storage location **268** for use with device grip **190**. Protective case **200** may include any of the elements, features, functions, and/or characteristics of protective case **100**. As illustrated in FIG. **6**, device grip **190** may be stored at storage location **268** when it is removed from receiver hub **118** to achieve the same benefits and conveniences discussed above with respect to protective case **100**. Storage location **268** may include any of the elements, features, functions, and/or characteristics of receiver hub **118**. Storage location **268** may be located in a location different than that illustrated.

[0033] FIG. **7** illustrates a close up view of the device grip storage features of FIGS. **1-2**. Receiver hub **168** may have a different shape or features depending of the attachment interface or mechanical interface features of device grip **190**.

[0034] FIG. **8** illustrates an alternative device grip storage pendant **266** attached to device grip storage tether **164**. Device grip storage pendant **266** may be used as an alternative to storage pendant **166**. Device grip storage pendant **266** may include a ring which holds a storage pendant **269** having an instance of receiver hub **168**. Other configurations are possible.

[0035] FIG. **9** illustrates another alternative device grip storage pendant **366** attached to device grip storage tether **164**. Device grip storage pendant **366** may be used as an alternative to storage pendant **166** and/or to device grip storage pendant **266**. Device grip storage pendant **366** includes a flexible arm or clip **368** for temporarily attaching or holding device grip **190**.

[0036] FIG. **10** illustrates a protective case **300** with a device grip mounting platform **390** in a docked position on a back surface of protective case **300**. Protective case **300** may include any of the elements, features, functions, and/or characteristics of protective case **100** and/or protective case **200**. Device grip mounting platform **390** may be removably or temporarily attached to the back surface of protective case **300** such that it is selectively removable. Device grip **190** is attached, permanently or removably, to device grip mounting platform **390**. Device grip **190** may be extended to an unstowed position or a use position similar to that illustrated in FIG. **2**.

[0037] Device grip mounting platform **390** may be adhered, attached, or docked to protective case **300** as illustrated in FIG. **10** using one or more magnets and/or metallic elements. The magnets or metallic elements of device grip mounting platform **390** may be attracted to one or more magnets and/or metallic elements in one or more of protective case **300** and/or the installed electronic device. In this way, device grip mounting platform **390** stays in place for use but can be optionally removed by a user when a sufficient force is applied to overcome the magnetic force. Alternatively, other attachment methods may be used including mechanical attachment features or a temporary adhesive.

[0038] As illustrated in FIG. **11**, device grip mounting platform **390** may be selectively detached, removed, or undocked from the back surface of protective case **300**. Even though device grip mounting platform **390**, as well as attached device grip **190**, are detached, removed, or undocked they may remain attached or tethered to protective case **300** with tether **164**. Similar to other examples discussed herein, undocking of device grip mounting platform **390** as illustrated in FIG. **11** may be convenient or necessary when an accessory, such as a wireless charging device, is used with protective case **300** and/or with an electronic device installed in protective case **300**. The undocking may permit the wireless charging device, or other accessory, to be

in closer proximity to the installed electronic device. The tethered attachment of device grip mounting platform **390** and device grip **190** to protective case **300** may be beneficial because it reduces the chances that a user may lose, misplace, and/or forget these items when they are undocked as illustrated in FIG. **11**.

[0039] FIG. **11** also illustrates that protective case **300** may optionally include a mounting recess **302** that corresponds to an optional mounting shoulder **393** of device grip mounting platform **390**. Mounting recess **302** may also be referred to as a cavity or a cutout. Mounting shoulder **393** extends or protrudes from a back surface of device grip mounting platform **390** and is sized to fit into mounting recess **302**. The interaction of mounting shoulder **393** and mounting recess **302** increases the engagement between grip mounting platform and protective case **300** by supplementing the magnetic attraction and attachment to protective case **300** with a mechanical engagement. In particular, the interaction between mounting shoulder **393** and mounting recess **302** provides mechanical resistance against a sheer or lateral force which may otherwise tend to detach device grip mounting platform **390** from protective case **300**. In other words, the interaction between mounting shoulder **393** and mounting recess **302** provides additional protection against device grip mounting platform **390** being detached from protective case **300** due to a sideways or lateral force, even if the sideways or lateral force may be sufficient to overcome the magnetic attraction alone. Mounting recess **302** may be sized to receive one or more other accessories, such as a wireless charging device.

[0040] In some examples, any of the configurations disclosed herein may include or be supplemented with a screen protector configured to cover some or all of a display screen of the electronic device. The screen protector may be made of glass or a flexible film. The screen protector may be configured or adapted to match or fit within the opening of the protective case.

[0041] Various components described herein may be manufactured, configured, provided, or sold in the form of a system or a kit. The system or kit may include any combination of: a protective case or cover having any combination of the features described, a compatible device grip, a tether, and/or any of the other components disclosed herein. The system or kit need not include every component or feature described herein.

[0042] The elements, components, and steps described herein are meant to exemplify some types of possibilities. In no way should the aforementioned examples limit the scope of the invention, as they are only exemplary embodiments.

[0043] The phrases "in some embodiments," "according to some embodiments," "in the embodiments shown," "in other embodiments," "in some examples," "in other examples," "in some cases," "in some situations," "in one configuration," "in another configuration," and the like generally mean that the particular technique, feature, structure, or characteristic following the phrase is included in at least one embodiment of the present invention and/or may be included in more than one embodiment of the present invention. In addition, such phrases do not necessarily refer to the same embodiments or to different embodiments.

[0044] The foregoing disclosure has been presented for purposes of illustration and description. Other modifications and variations may be possible in view of the above teachings. The embodiments described in the foregoing disclosure were chosen to explain the principles of the concept and its practical application to enable others skilled in the art to best utilize the invention. It is intended that the claims be construed to include other alternative embodiments of the invention except as limited by the prior art.

What is claimed is:

1. A protective case system for use with an electronic device, the protective case system comprising:
- a protective case comprising a shell configured for receiving and removably retaining the electronic device when the electronic device is installed in the protective case;
- a flexible tether having a first end and a second end, wherein the first end of the tether is attached to the protective case;
- a device grip mounting platform attached to the second end of the tether; and
- a device grip configured to be removably attachable to the protective case and to the device grip mounting platform, alternatively.

2. The protective case system of claim **1** wherein the device grip includes a mounting interface.

3. The protective case system of claim **2** wherein each of the protective case and the device grip mounting platform includes a receiver configured for removably receiving the mounting interface of the device grip.

4. The protective case system of claim **1** wherein the device grip has an extended position and a stowed or compressed position.

5. The protective case system of claim **4** wherein the device grip is configured to assist a user in holding the protective case when the device grip is attached to the protective case and the device grip is in the extended position.

6. The protective case system of claim **4** wherein the device grip includes a collapsible structure enabling movement between extended position and the stowed or compressed position.

7. The protective case system of claim **6** wherein the collapsible structure is an accordion structure.

8. The protective case system of claim **1** wherein the device grip is magnetically removably attachable, alternatively, to the protective case and to the device grip mounting platform.

9. The protective case system of claim **1** wherein the protective case includes a first attachment point at which the first end of the tether is attached to the protective case.

10. The protective case system of claim **9** wherein the protective case includes a second attachment point, wherein the first end of the tether is removable from the first attachment point and removably attachable to the second attachment point.

11. The protective case system of claim **1** wherein device grip mounting platform is removable from the second end of the tether.

12. A protective case system for use with a portable electronic device, the protective case system comprising:
- a protective case comprising a shell adapted for receiving and removably retaining the portable electronic device when the portable electronic device is installed in the protective case, wherein the protective case includes a device grip mounting interface;
- a tether having a first end and a second end, wherein the first end of the tether is attached to the protective case;

a device grip mounting platform attached to the second end of the tether, wherein the device grip mounting platform includes a device grip mounting interface; and

a device grip adapted to be alternatively attachable to each of the device grip mounting interface of the protective case and the device grip mounting interface of the device grip mounting platform.

13. The protective case system of claim **12** wherein the protective case includes a first attachment point at which the first end of the tether is attached to the protective case.

14. The protective case system of claim **13** wherein the protective case includes a second attachment point, wherein the first end of the tether is removable from the first attachment point and also removably attachable to the second attachment point.

15. The protective case system of claim **12** wherein device grip mounting platform is removable from the second end of the tether.

16. The protective case system of claim **12** wherein the device grip has an extended position and a compressed position.

17. The protective case system of claim **16** wherein the device grip is adapted to assist in holding the protective case when the device grip is attached to the protective case and the device grip is in the extended position.

18. The protective case system of claim **16** wherein the device grip includes a collapsible structure enabling movement between extended position and the compressed position.

19. The protective case system of claim **12** further comprising a wireless charging device adapted for wirelessly charging the installed portable electronic device through the back surface of the protective case when the device grip is not attached to the device grip mounting interface of the protective case.

20. The protective case system of claim **12** wherein the device grip mounting platform is removably dockable on a back surface of the protective case.

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