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RING ATTACHMENT FOR MOBILE DEVICE

TECHNICAL FIELD

[0001] The present disclosure relates to mobile device attachments and cases. More specifically, the disclosure relates to a mobile device ring attachment, mobile device assembly with ring, and process for incorporation of the mobile device ring attachment into the mobile device assembly with ring. The ring serves to engage a mobile device user's finger to prevent accidental damage to a mobile device.

BACKGROUND

[0002] Mobile devices are ubiquitous in current society. The advent of smart devices and touchscreens have made mobile devices more and more susceptible to damage through unintentional ground impact when a user accidentally drops his or her mobile device. As a result, costly repairs to, or replacement of, a user's mobile device is a common occurrence after one or more such events.

[0003] Accessories such as protective cases protect mobile devices from damage due to accidental droppage. However, oftentimes the mobile device graphical user interface (GUI), such as a touchscreen, is left unprotected by a protective case and the electronic circuitry within the mobile device may still be damaged by the force of ground impact. Further, mobile devices may accidentally be dropped into an environment (body of water, storm drains, etc.), wherein the mobile device (and protective case) is lost and must be replaced at significant expense and trouble.

[0004] Accordingly, there is a need for an accessory to mobile devices that can prevent a mobile device from being dropped or lost even when a user loses his or her grip on the mobile device.

BRIEF DESCRIPTION

[0005] In a first aspect, the present disclosure offers advantages and alternatives over the prior art by providing an attachment for a mobile device assembly comprising an anchor and a ring. The anchor has a height and width sized to fit within an inner cavity

of a mobile device case. The anchor has a thickness sized to fit between the inner cavity of the mobile device case and a back surface of the mobile device when the mobile device is secured within the inner cavity of the mobile device case. The ring is secured to the anchor and sized to receive a finger of a user. The ring is comprised of a resilient material such that inner surfaces of the ring may be compressed together when squeezed and the ring may return to an original shape when released.

[0006] In a second aspect, the present disclosure provides a mobile device assembly comprising a mobile device, a mobile device case, and a substantially circular ring. The mobile device includes a first bottom edge and a first top edge. The mobile device case includes a second bottom edge and a second top edge, wherein the second bottom edge of the mobile device case aligns with the mobile device first bottom edge when the mobile device is encased in the mobile device case. The second bottom edge of the mobile device case includes an aperture. The substantially circular ring is attached to a bottom edge of the mobile device assembly via a connector connected to an anchor that is sandwiched between the mobile device and the mobile device case. The connector traverses the aperture of the second bottom edge of the mobile device case. The substantially circular ring is substantially orthogonal to a plane parallel to a mobile device screen of the mobile device and is sized to receive a finger of a user.

[0007] In a third aspect, the present disclosure provides a mobile device case comprising a mobile device case having a first bottom edge and a first top edge. The first bottom edge of the mobile device case aligns with a mobile device second bottom edge when the mobile device is encased in the mobile device case. A substantially circular ring is attached to the first bottom edge of the mobile device case. The substantially circular ring is substantially orthogonal to a plane parallel to a mobile device screen of the mobile device when the mobile device is encased in the mobile device case. The substantially circular ring is sized to receive a finger of a user.

DRAWINGS

[0008] The disclosure will be more fully understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0009] **FIG. 1** depicts a perspective view of a mobile device assembly according to an exemplary embodiment of the present invention.

[0010] **FIG. 2** depicts a perspective view of a first mobile device ring attachment according to an exemplary embodiment of the present invention.

[0011] **FIG. 3** depicts a top view of the first mobile device ring attachment according to an exemplary embodiment of the present invention.

[0012] **FIG. 4** depicts a side view of the first mobile device ring attachment according to an exemplary embodiment of the present invention.

[0013] **FIG. 5** depicts a perspective view of the first mobile device ring attachment partially inserted into a mobile device case according to an exemplary embodiment of the present invention.

[0014] **FIG. 6** depicts a perspective view of a mobile device as inserted into the mobile device case with the first mobile device ring attachment completely inserted according to an exemplary embodiment of the present invention.

[0015] **FIG. 7** depicts a top view of a precursor to a second mobile device ring attachment according to an exemplary embodiment of the present invention.

[0016] **FIG. 8** depicts a side view of the second mobile device ring attachment after assembly according to an exemplary embodiment of the present invention.

[0017] **FIG. 9** depicts a side view of the second mobile device ring attachment after assembly according to an exemplary embodiment of the present invention.

[0018] **FIG. 10** depicts a perspective view of a mobile device as inserted into a mobile device case with the assembled second mobile device ring attachment inserted into a mobile device case according to an exemplary embodiment of the present invention.

[0019] **FIG. 11** depicts a perspective view of a mobile device assembly with a decorative ring ornament according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

[0020] Certain examples will now be described to provide an overall understanding of the principles of the structure, function, manufacture, and use of the methods, systems, and devices disclosed herein. One or more examples are illustrated in the accompanying

drawings. Those skilled in the art will understand that the methods, systems, and devices specifically described herein and illustrated in the accompanying drawings are non-limiting examples and that the scope of the present disclosure is defined solely by the claims. The features illustrated or described in connection with one example may be combined with the features of other examples. Such modifications and variations are intended to be included within the scope of the present disclosure.

[0021] The terms "substantially", "approximately", "about", "relatively," or other such similar terms that may be used throughout this disclosure, including the claims, are used to describe and account for small fluctuations, such as due to variations in processing from a reference or parameter. Such small fluctuations include a zero fluctuation from the reference or parameter as well. For example, they can refer to less than or equal to $\pm 10\%$, such as less than or equal to $\pm 5\%$, such as less than or equal to $\pm 2\%$, such as less than or equal to $\pm 1\%$, such as less than or equal to $\pm 0.5\%$, such as less than or equal to $\pm 0.2\%$, such as less than or equal to $\pm 0.1\%$, such as less than or equal to $\pm 0.05\%$.

[0022] Referring to **FIG. 1**, a perspective view of a mobile device assembly **100** is depicted according to an exemplary embodiment of the present invention. Mobile device assembly **100** includes mobile device **190** and ring **110**. In some embodiments, ring **110** protrudes from mobile device case **130** through bottom aperture **120**. In some of these embodiments, aperture **120** also serves as an energy portal opening for mobile device **190**. As depicted in **FIG. 1**, ring **110** receives a user's finger when said user grips mobile device assembly **100** thereby preventing damage through droppage should the user lose his or her grip on mobile device assembly **100**. In an embodiment, ring **110** further includes an ornamental design (described more fully as ring **1110** in **FIG. 11**) for user enjoyment and personalization. Such ornamental designs include, but are not limited to: color, imprint, texturization, sculpted three-dimensional characters, etc.

[0023] Although **FIG. 1** depicts ring **110** as engaging the user's little finger when the user is holding the mobile device assembly **100** for a portrait view of mobile device screen **140**, other embodiments of the present invention include ring **110** engaging the user's other fingers depending on how the user decides to hold mobile device assembly **100**. It is understood that a user's preference will dictate which of the user's fingers will engage ring **110** and those preferences may depend on factors such as the user's

preferred way to grip mobile device assembly **100** when viewing mobile device screen **140** both in portrait mode or landscape mode. In general, ring **110** may engage any of the user's fingers in a variety of scenarios.

[0024] As used herein, "portrait mode," "portrait," etc. indicates that graphics displayed, pictures taken, etc. are viewed by the mobile device **190** user wherein the shorter edges of mobile device screen **140**, i.e., screen edges **150** and **160**, are the top and bottom boundaries, respectively, of the displayed graphic. In this mode of operation, the longer edges of mobile device screen **140**, i.e., screen edges **170** and **180**, are the right and left boundaries, respectively, of the displayed graphic.

[0025] As used herein, "landscape mode," "landscape," etc. indicates that graphics displayed, pictures taken, etc. are viewed by the mobile device **190** user wherein the longer edges of mobile device screen **140**, i.e., screen edges **170** and **180**, are the top or bottom boundaries of the displayed graphic. In this mode of operation, the shorter edges of mobile device screen **140**, i.e., screen edges **150** and **160**, are the right or left boundaries of the displayed graphic.

[0026] As used herein and when referring to mobile device assembly **100** and its features/components (i.e., mobile device case **130** and mobile device **190**), "top" refers to edges of the rectangular mobile device case **130** and the rectangular mobile device **190** that are closest to screen edge **150**. "Bottom" refers to edges of the rectangular mobile device case **130** and the rectangular mobile device **190** that are closest to screen edge **160**. "First side" or "right side" refers to the edge of the rectangular mobile device case **130** and the rectangular mobile device **190** that are closest to screen edge **170**. "Second side" or "left side" refers to the edge of the rectangular mobile device case **130** and the rectangular mobile device **190** that are closest to screen edge **180**. Thus, as depicted in FIG. 1, aperture **120** and ring **110** reside at the bottom of mobile device assembly **100**, mobile device case **130**, and mobile device **190**. In addition, the shown thumb of the user rests against the second side or left side of mobile device assembly **100**, mobile device case **130**, and encased mobile device **190**. Further, as depicted in FIG. 1, the user's index, middle, and ring finger are partially seen protruding from the first side or right side of mobile device assembly **100**, mobile device case **130**, and encased mobile device **190**. "Top," "bottom," "first side," "right side," "second side,"

and “left side” as defined in this paragraph apply to mobile device assembly **100** and its hardware features/components regardless of whether a user is viewing graphics in portrait or landscape mode as described above.

[0027] As used herein, “front side,” “front face” or “front” refers to the side or portion of mobile device assembly **100** that includes mobile device screen **140**. “back side” or “back” refers to the opposite side of mobile device assembly **100** from front side, front face or front, i.e., the side of mobile device assembly **100** that is in the most contact with the user’s palm as depicted in FIG. 1.

[0028] In an embodiment, ring **110** is attached to mobile device assembly **100** via an anchor as described *infra*. In another embodiment, ring **110** is a permanent part of mobile device case **130**, i.e., ring **110** and mobile device case **130** are manufactured as a mobile device case with a permanently attached ring, wherein mobile device **190** is optional. In yet another embodiment, ring **110** is a permanent part of the mobile device **190**, i.e., ring **110** and mobile device **190** are manufactured as a mobile device with a permanently attached ring, wherein mobile device case **130** is optional. In embodiments where ring **110** is attached to mobile device assembly **100** via an anchor, the anchor may be adhered to mobile device **190**, mobile device case **130**, or both. In these embodiments, well-known methods of adhesion include adhesive glues, screws, etc. Alternatively, the anchor along with ring **110** may be attached and removed non-destructively by disassembling mobile device assembly **100** as described below. In this scenario, the anchor and ring **110** are secured because the anchor is sandwiched between mobile device **190** and an inner cavity of mobile device case **130** as described *infra*.

[0029] As shown in FIG. 1, embodiments of the present invention include a positioning of ring **110** that is substantially orthogonal to a plane of mobile device assembly **100** that is coplanar with mobile device screen **140**, the front face of mobile device assembly **100**, and the back side of mobile device assembly **100**. In embodiments, ring **110** is substantially orthogonal to the plane of mobile device assembly **100** but is readily twisted to become substantially coplanar to the plane of mobile device assembly **100**.

[0030] In some embodiments, ring **110** is comprised of a resilient material such that inner surfaces of ring **110** may be compressed together when squeezed and ring **110** may return to an original shape when released. In these embodiments, ring **110** may be composed of materials selected from one or more of the following non-limiting examples: natural rubber, synthetic rubber, nitrile rubber, silicone rubber, urethane rubber, chloroprene rubber, neoprene rubber, ethylene vinyl acetate rubber, isobutylene isoprene rubber, thermoplastic elastomer, chlorosulfonated polyethylene rubber, epichlorohydrin rubber, styrene butadiene rubber, thermoplastic vulcanizates rubber, ethylene propylene diene monomer rubber, natural gum, fluoropolymer elastomers, etc.

[0031] In some embodiments, ring **110** is comprised of a rigid material such that inner surfaces of the ring may not be compressed together without deforming or damaging the rigid ring. In these embodiments, ring **110** may be composed of materials selected from one or more of the following non-limiting examples: nylon, acrylic, polyvinyl chloride, polythene, polypropylene, polycarbonate, polyoxybenzylmethyleneglycolanhydride, epoxy resin, melamine, metal, etc.

[0032] In some embodiments, ring **110** is a substantially circular ring. As used herein a “substantially circular ring” refers to a ring that has a substantially similar diameter regardless of where a line that traverses the ring center is drawn. In other words, any straight line that is drawn, which passes from a first inner border point of the ring to a second inner border point of the ring that also passes through a central point within the ring is substantially the same length no matter which first and second inner border point is chosen. In other embodiments, ring **110** has a non-circular shape such as oval-shaped, waterdrop shaped, square, triangle, etc.

[0033] In various embodiments, ring **110** varies in size depending on a user's finger thickness. For example, a user selects the size of ring **110** depending on factors such as ring size of one or more of the user's fingers. In an embodiment, ring **110** is adjustable by a user to suit user comfort and finger size requirement.

[0034] Referring to **FIG. 2**, a perspective view of first ring attachment **200** is depicted according to an exemplary embodiment of the present invention. First ring attachment **200** includes anchor **210**, ring **110**, and ring-anchor connector **220**.

[0035] In various embodiments, anchor **210** is composed of materials selected from one or more of the following non-limiting examples: wire, metal, plastic, silicone, rubber, wood, tape, fabric, laminated cardboard, etc.

[0036] Ring-anchor connector **220** employs any connection motif that serves to secure ring **110** to anchor **210**. In an embodiment and as shown in FIGs 2-4, ring-anchor connector **220** is a loop linking ring **110** to anchor **210**. However, many other motifs are envisioned that would secure ring **110** to anchor **210** without departing from the scope of the present invention. In an embodiment, ring **110** and anchor **210** are molded together during manufacture out of one or more suitable compositions using materials as described above for ring **110** and anchor **110**.

[0037] Referring to **FIG. 3**, a top view of first ring attachment **200** is depicted according to an exemplary embodiment of the present invention. In principle, height **h** of anchor **210** is any height accommodated within mobile device case **130** when first ring attachment **200** is installed as described below. In embodiments, height **h** ranges between approximately 0.5 inches to approximately 5 inches, approximately 0.5 inches to approximately 4.5 inches, approximately 0.5 inches to approximately 4 inches, approximately 0.5 inches to approximately 3.5 inches, approximately 0.5 inches to approximately 3 inches, approximately 0.5 inches to approximately 2.5 inches, approximately 0.5 inches to approximately 2 inches, approximately 0.5 inches to approximately 1.5 inches, approximately 0.5 inches to approximately 1 inch, approximately 1 inch to approximately 5 inches, approximately 1 inch to approximately 4.5 inches, approximately 1 inch to approximately 4 inches, approximately 1 inch to approximately 3.5 inches, approximately 1 inch to approximately 3 inches, approximately 1 inch to approximately 2.5 inches, approximately 1 inch to approximately 2 inches, approximately 1 inch to approximately 1.5 inches, approximately 1.5 inches to approximately 5 inches, approximately 1.5 inches to approximately 4.5 inches, approximately 1.5 inches to approximately 4 inches, approximately 1.5 inches to approximately 3.5 inches, approximately 1.5 inches to approximately 3 inches, approximately 1.5 inches to approximately 2.5 inches, approximately 1.5 inches to approximately 2 inches, approximately 2 inches to approximately 5 inches, approximately 2 inches to approximately 4.5 inches,

approximately 2 inches to approximately 4 inches, approximately 2 inches to approximately 3.5 inches, approximately 2 inches to approximately 3 inches, approximately 2 inches to approximately 2.5 inches, approximately 1.5 inches to approximately 5 inches, approximately 1.5 inches to approximately 4.5 inches, approximately 1.5 inches to approximately 4 inches, approximately 1.5 inches to approximately 3.5 inches, approximately 1.5 inches to approximately 3 inches, approximately 1.5 inches to approximately 2.5 inches, approximately 1.5 inches to approximately 2 inches, approximately 2 inches to approximately 5 inches, approximately 2 inches to approximately 4.5 inches, approximately 2 inches to approximately 4 inches, approximately 2 inches to approximately 3.5 inches, approximately 2 inches to approximately 3 inches, approximately 2 inches to approximately 2.5 inches, approximately 2.5 inches to approximately 5 inches, approximately 2.5 inches to approximately 4.5 inches, approximately 2.5 inches to approximately 4 inches, approximately 2.5 inches to approximately 3.5 inches, approximately 2.5 inches to approximately 3 inches, approximately 3 inches to approximately 5 inches, approximately 3 inches to approximately 4.5 inches, approximately 3 inches to approximately 4 inches, approximately 3 inches to approximately 3.5 inches, approximately 3.5 inches to approximately 5 inches, approximately 3.5 inches to approximately 4.5 inches, approximately 3.5 inches to approximately 4 inches, approximately 4 inches to approximately 5 inches, approximately 4 inches to approximately 4.5 inches, and approximately 4.5 inches to approximately 5 inches.

[0038] In principle, width **w** of anchor **210** is any width accommodated within mobile device case **130** when first ring attachment **200** is installed as described below. In embodiments, width **w₁** ranges between approximately 0.2 inches to approximately 3 inches, approximately 0.2 inches to approximately 2.5 inches, approximately 0.2 inches to approximately 2 inches, approximately 0.2 inches to approximately 1.5 inches, approximately 0.2 inches to approximately 1 inch, approximately 0.5 inches to approximately 3 inches, approximately 0.5 inches to approximately 2.5 inches, approximately 0.5 inches to approximately 2 inches, approximately 0.5 inches to approximately 1.5 inches, approximately 0.5 inches to approximately 1 inch,

approximately 1 inch to approximately 3 inches, approximately 1 inch to approximately 2.5 inches, approximately 1 inch to approximately 2 inches, approximately 1 inch to approximately 1.5 inches, approximately 1.5 inches to approximately 3 inches, approximately 1.5 inches to approximately 2.5 inches, approximately 1.5 inches to approximately 2 inches, approximately 2 inches to approximately 3 inches, approximately 2 inches to approximately 2.5 inches, approximately 2.5 inches to approximately 3 inches.

[0039] Referring to **FIG. 4**, a side view of first ring attachment **200** is depicted according to an exemplary embodiment of the present invention. Thickness **t** of anchor **210** is of any thickness accommodatable by a space it occupies between mobile device case **130** and mobile device **190** when assembled to provide mobile device assembly **100**. As shown in FIGs 2-6, anchor **210** is substantially flat in order to fit between mobile device case **130** and mobile device **190** when mobile device assembly **100** is assembled. In some embodiments, the thickness **t** of anchor **210** is variable and allows for compression during assembly to provide mobile device assembly **100**. In embodiments, thickness **t** ranges between approximately 1 mm to approximately 5 mm, approximately 1 mm to approximately 4 mm, approximately 1 mm to approximately 3 mm, approximately 1 mm to approximately 2 mm, approximately 2 mm to approximately 5 mm, approximately 2 mm to approximately 4 mm, approximately 2 mm to approximately 3 mm, approximately 3 mm to approximately 5 mm, approximately 3 mm to approximately 4 mm, and approximately 4 mm to approximately 5 mm.

[0040] In principle, diameter **d** of ring **110** is any distance that allows the user to securely hold mobile device assembly **100** when the user's finger engages ring **110**. As described *supra*, diameter **d** may be varied to customize a fit for a given user's fingers. In embodiments, diameter **d** ranges between approximately 1 cm to approximately 3 cm, approximately 1 cm to approximately 2.5 cm, approximately 1 cm to approximately 2 cm, approximately 1 cm to approximately 1.5 cm, approximately 1.5 cm to approximately 3 cm, approximately 1.5 cm to approximately 2.5 cm, approximately 1.5 cm to approximately 2 cm, approximately 2 cm to approximately 3 cm, approximately 2 cm to approximately 2.5 cm, and approximately 2.5 cm to approximately 3 cm.

[0041] Referring to **FIG. 5**, a perspective view of mobile device case-first ring attachment partial assembly **500** is depicted according to an exemplary embodiment of the present invention. In this depicted partial assembly, ring **110** is comprised of a resilient material as described above thereby allowing a user to compress ring **110** so that ring **110** may pass through aperture **120**. When the inner surfaces of ring **110** are completely compressed together, a distance between opposing outer surfaces of ring **110** is within a range of approximately 1 mm to approximately 10 mm. In embodiments, a distance between opposing outer surfaces of compressed ring **110** ranges between approximately 2 mm to approximately 9 mm, approximately 3 mm to approximately 8 mm, approximately 4 mm to approximately 7 mm, and approximately 5 mm to approximately 6 mm. After ring **110** has completely passed through aperture **120** (see **FIG. 6**), mobile device **190** may be inserted into mobile device case inner cavity **510** to provide an embodiment of mobile device assembly **100**.

[0042] It is understood that the mechanism for installation of first ring attachment **200** shown in **FIG. 5** is only one possible mode for assembly of mobile device assembly **100**. In other embodiments, anchor **210** is flexible enough and/or small enough to traverse aperture **120**. Thus, first ring attachment **200** may be attached to mobile device case **130** by sliding anchor **210** through aperture **120**. Alternatively, ring **110** may be connected to anchor **210** without requiring either ring **110** or anchor **210** to pass through aperture **120**. These modes of installation are particularly useful when ring **110** is made of rigid material as described *supra*.

[0043] Referring to **FIG. 6**, a perspective view of first ring attachment **200**, as completely assembled into mobile device case **130** to provide mobile device case-first ring attachment complete assembly **600**, is depicted according to an exemplary embodiment of the present invention. As shown, mobile device **190** is inserted into inner cavity **510**. Anchor **210** is consequently secured between a back surface of mobile device **190** and inner cavity **510** of mobile device case **130** to provide, after insertion, an embodiment of mobile device assembly **100**.

[0044] **FIG. 7** depicts a top view of a precursor **700** to a second mobile device ring attachment according to an exemplary embodiment of the present invention. Precursor **700** includes a semi-soft, flexible, strong and durable strip of material that is coated on

at least one of a first and second end portion (**710** in FIG. 7) with an adhesive. Middle portion **720** is uncoated with adhesive. In other embodiments, first and second end portions **710** are not coated with an adhesive but are fused together as described below by other means, e.g. VELCRO.

[0045] As shown in FIG. 7, first and second end portions **710** are wedge-shaped. In some embodiments, first and second end portions **710** are of substantially similar dimensions as described above for anchor **210**. In embodiments, the distance between the edges of first and second end portions **710** bordering middle portion middle portion **720** is between approximately 3 cm and approximately 10 cm, approximately 4 cm and approximately 9 cm, and approximately 5 cm and approximately 8 cm.

[0046] **FIGs 8 and 9** depict a side view and top view of the second mobile device ring attachment **800** after assembly of precursor **700** according to an exemplary embodiment of the present invention. In this embodiment, first and second end portions **710** are adhered together to form anchor **710A** and ring **720R**. It should be noted that second ring attachment **800** is distinguished from first ring attachment **200** in that connector **220** is not necessary for second ring attachment **800** since ring **720R** and anchor **710A** are fused at the precursor **700** stage.

[0047] As shown in FIG. 9, anchor **710A** is wedge-shaped. In some embodiments, anchor **710A** is of substantially similar dimensions as described above for anchor **210**. In embodiments, ring **720**, as shown in FIG. 8, is of substantially similar dimensions as described above for ring **110**.

[0048] **FIG. 10** depicts a perspective view **1000** of mobile device **190** inserted into mobile device case **130** with the assembled second ring attachment **800** pre-inserted into mobile device case **130** according to an exemplary embodiment of the present invention. Analogously to FIG. 6, mobile device **190** is inserted into inner cavity **510**. Anchor **710A** is consequently secured between the back surface of mobile device **190** and the inner cavity of mobile device case **130** to provide, after insertion, a second embodiment of mobile device assembly **100**.

[0049] **FIG. 11** depicts a perspective view of mobile device assembly **1100** with ring **1110** that includes decorative ring ornament **11** according to an exemplary embodiment of the present invention. As shown in FIG. 11, ring ornament **11** is an example of

artwork that can be molded, printed, etc. onto the ring portion of both first ring attachment **200** (as shown) or second ring attachment **800** in order to personalize the ring attachments.

[0050] It should be appreciated that all combinations of the foregoing concepts and additional concepts discussed in greater detail herein (provided such concepts are not mutually inconsistent) are contemplated as being part of the inventive subject matter disclosed herein. In particular, all combinations of claimed subject matter appearing at the end of this disclosure are contemplated as being part of the inventive subject matter disclosed herein.

[0051] Although the invention has been described by reference to specific examples, it should be understood that numerous changes may be made within the spirit and scope of the inventive concepts described. Accordingly, it is intended that the disclosure not be limited to the described examples, but that it have the full scope defined by the language of the following claims.

CLAIMS

What is claimed is:

1. A ring attachment for a mobile device assembly, the mobile device assembly including a mobile device and a mobile device case, the mobile device case having sidewalls defining an inner cavity sized to receive the mobile device therein, the ring attachment comprising:
 - an anchor having a height, width and thickness, wherein:
 - the height and the width are sized to fit within the inner cavity, and
 - the thickness is sized to fit between the inner cavity of the mobile device case and a back surface of the mobile device when the mobile device is secured within the inner cavity; and
 - a ring secured to the anchor, wherein:
 - the ring is sized to receive a finger of a user, and
 - the ring is comprised of a resilient material such that inner surfaces of the ring may be compressed together when squeezed and the ring may return to an original shape when released.
2. The ring attachment of claim 1, wherein the height of the anchor ranges between approximately 0.5 inches to approximately 5 inches.
3. The ring attachment of claim 1, wherein the width of the anchor ranges between approximately 0.5 inches to approximately 3 inches.
4. The ring attachment of claim 1, wherein the anchor is substantially flat with a compressible thickness.
5. The ring attachment of claim 1, wherein the ring is secured substantially orthogonally to a plane of the anchor defined by the anchor's height and width.
6. The ring attachment of claim 1, wherein the ring fits through an aperture in the mobile device case when compressed.
7. The ring attachment of claim 6, wherein the aperture is located at a bottom edge of the mobile device case.

8. The ring attachment of claim 6, wherein the aperture is sized to receive a charging connector for the mobile device therethrough.

9. The ring attachment of claim 1, wherein, when the ring is uncompressed, the ring is substantially circular and has an inner diameter between approximately 1 cm to approximately 3 cm.

10. The ring attachment of claim 1, wherein the ring is attached to the anchor through a loop secured to the anchor.

11. The ring attachment of claim 1, wherein the ring attachment is capable of being removed non-destructively from the mobile device-mobile device case assembly and redeployed in a second mobile device-mobile device case assembly.

12. The ring attachment of claim 1, wherein when inner surfaces of the ring are compressed together, a distance between opposing outer surfaces of the ring is within a range of approximately 1 mm to approximately 10 mm.

13. A mobile device assembly comprising:

- a mobile device having a first bottom edge and a first top edge;

- a mobile device case having a second bottom edge and a second top edge, wherein the second bottom edge of the mobile device case aligns with the mobile device first bottom edge when the mobile device is encased in the mobile device case, and wherein the second bottom edge of the mobile device case includes an aperture;

- a substantially circular ring attached to a bottom edge of the mobile device assembly, wherein:

- the substantially circular ring is connected to an anchor via a connector, wherein the anchor is sandwiched between the mobile device and the mobile device case, and wherein the connector traverses the aperture of the second bottom edge of the mobile device case;

- the substantially circular ring is substantially orthogonal to a plane parallel to a mobile device screen of the mobile device; and

- the substantially circular ring is sized to receive a finger of a user.

14. The mobile device case of claim 13, wherein the substantially circular ring has an inner diameter between approximately 1 cm to approximately 3 cm.

15. The mobile device case of claim 13, wherein the substantially circular ring is comprised of a resilient material such that inner surfaces of the ring may be compressed together when squeezed and the ring may return to an original shape when released.

16. The mobile device case of claim 13, wherein the substantially circular ring is capable of being removed non-destructively from the mobile device case and be replaced by a second substantially circular ring.

17. A mobile device case comprising:

- a mobile device case having a first bottom edge and a first top edge, wherein the first bottom edge of the mobile device case aligns with a mobile device second bottom edge when the mobile device is encased in the mobile device case;

- a substantially circular ring attached to the first bottom edge of the mobile device case, wherein:

- the substantially circular ring is substantially orthogonal to a plane parallel to a mobile device screen of the mobile device when the mobile device is encased in the mobile device case; and

- the substantially circular ring is sized to receive a finger of a user.

18. The mobile device case of claim 17, wherein the substantially circular ring has an inner diameter between approximately 1 cm to approximately 3 cm.

19. The mobile device case of claim 17, wherein the substantially circular ring is comprised of a resilient material such that inner surfaces of the ring may be compressed together when squeezed and the ring may return to an original shape when released.

20. The mobile device case of claim 17, wherein the substantially circular ring is comprised of a rigid material such that inner surfaces of the ring may not be compressed together without deforming or damaging the rigid ring.

FIG. 1

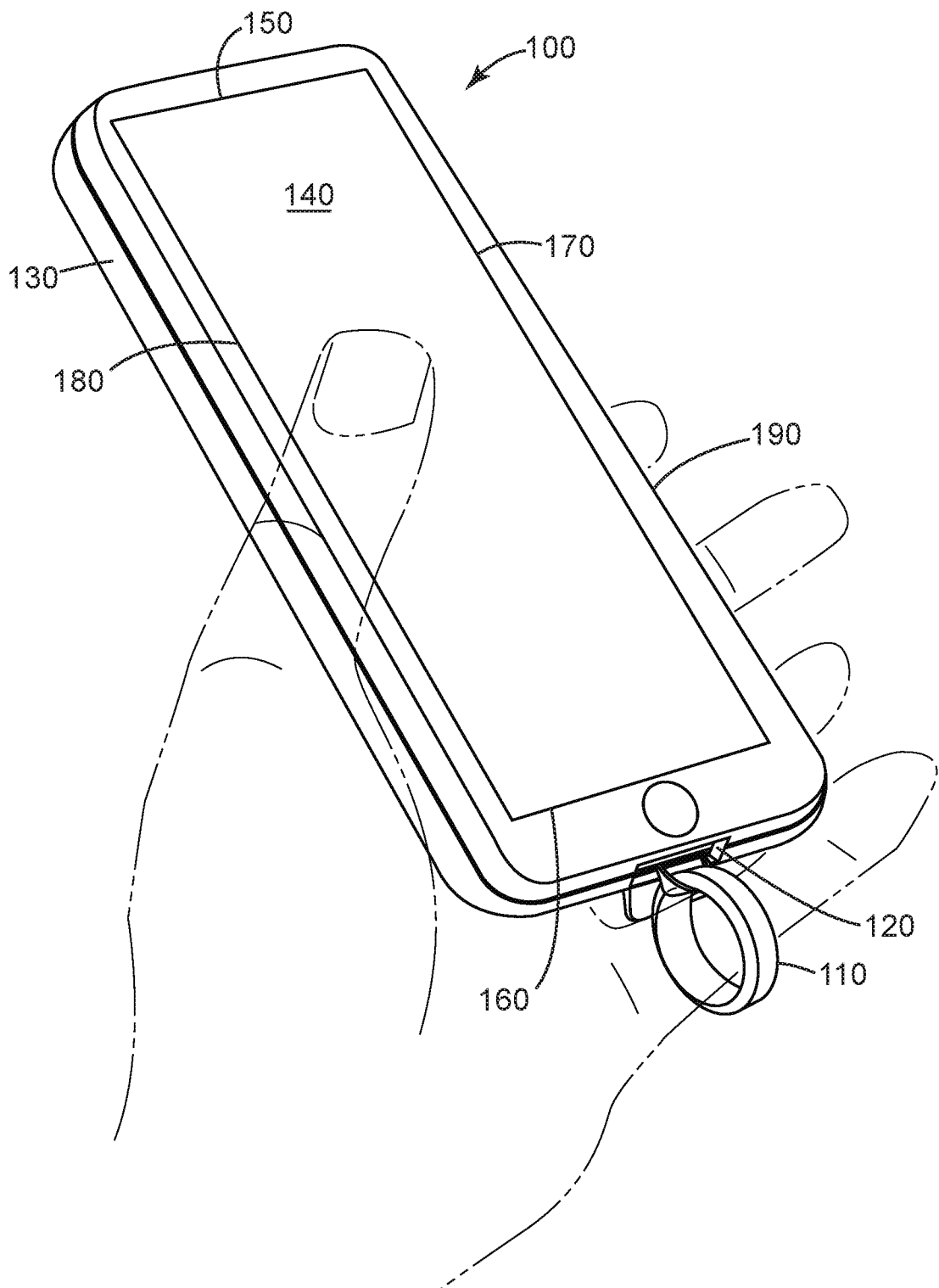


FIG. 2

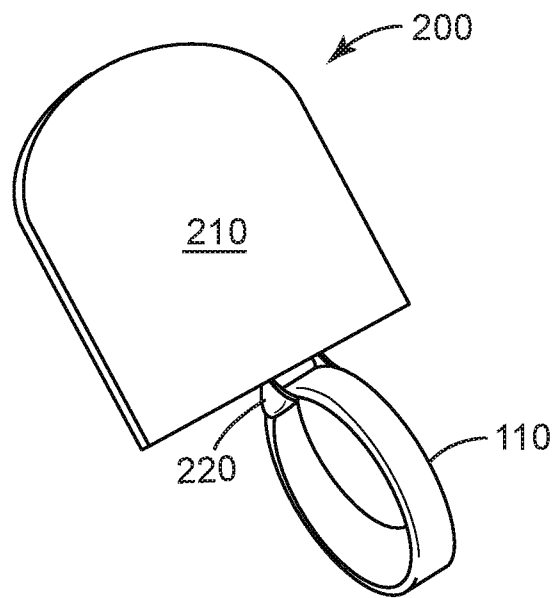


FIG. 3

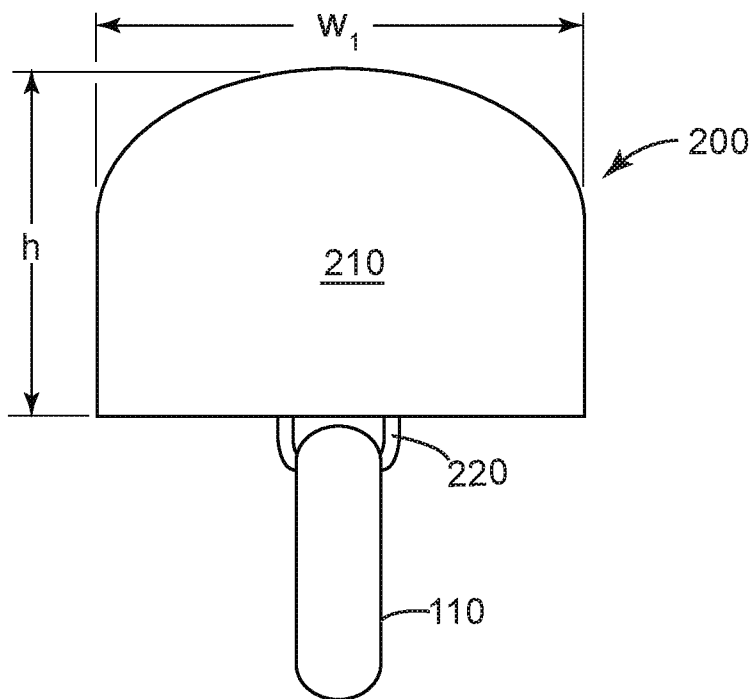


FIG. 4

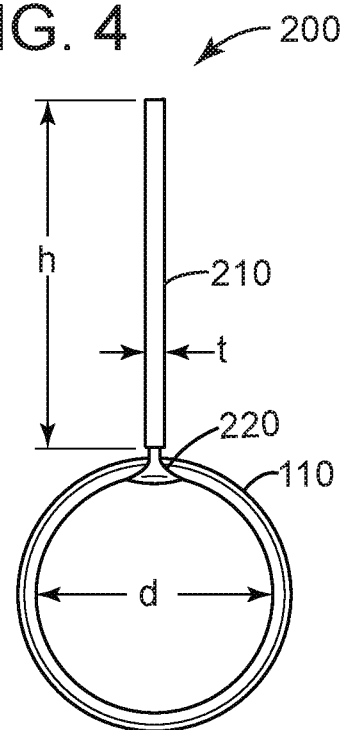


FIG. 5

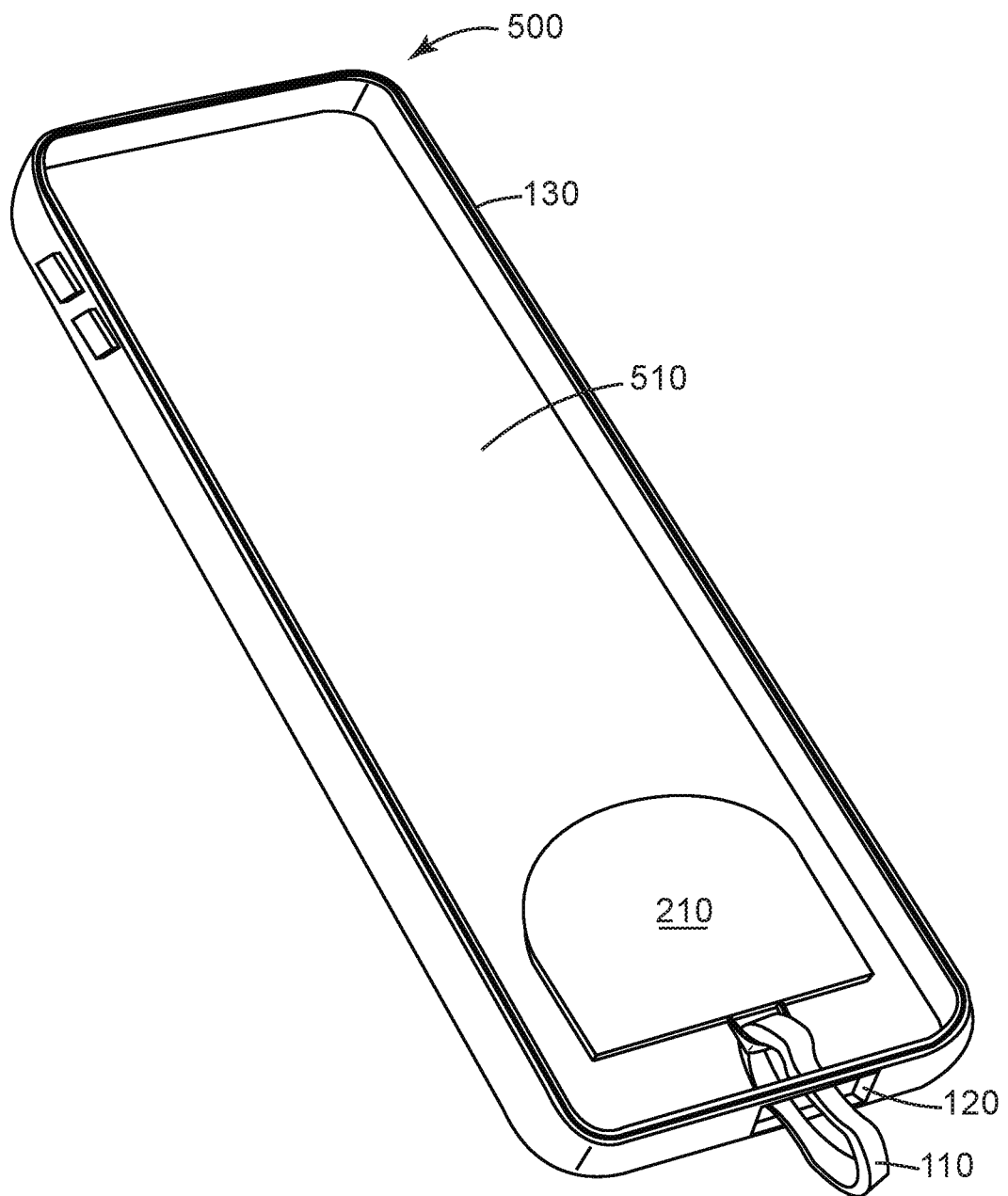


FIG. 6

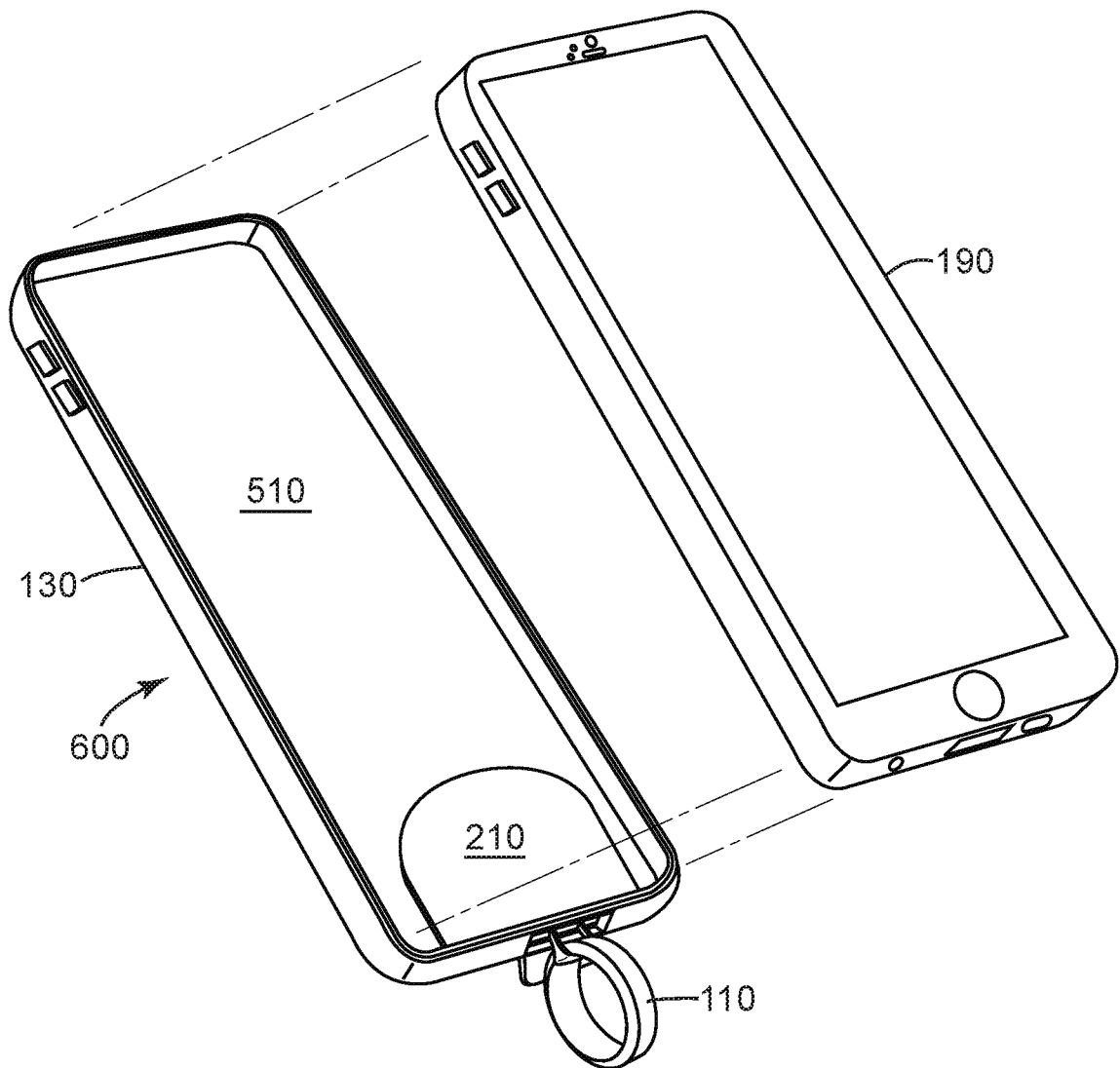


FIG. 7

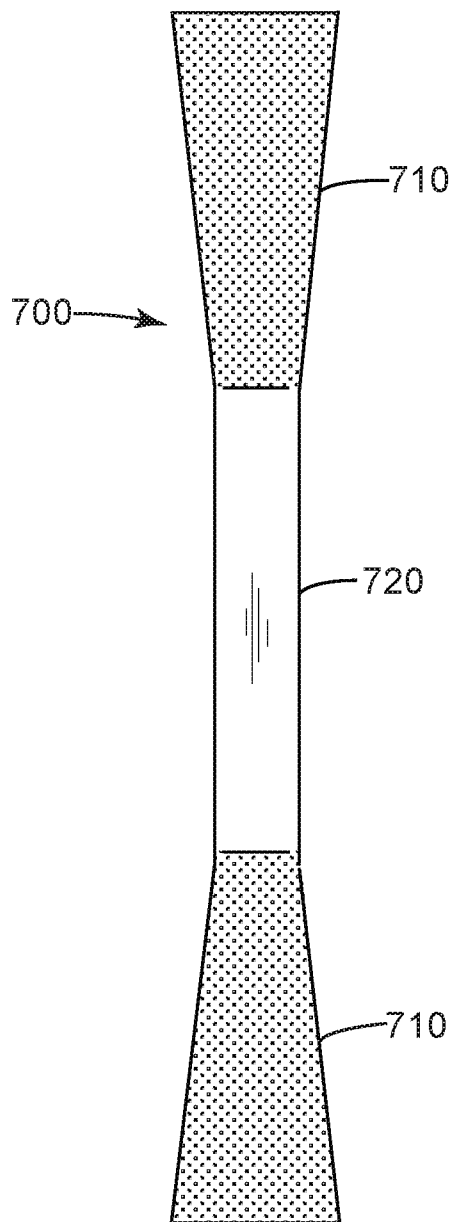


FIG. 8

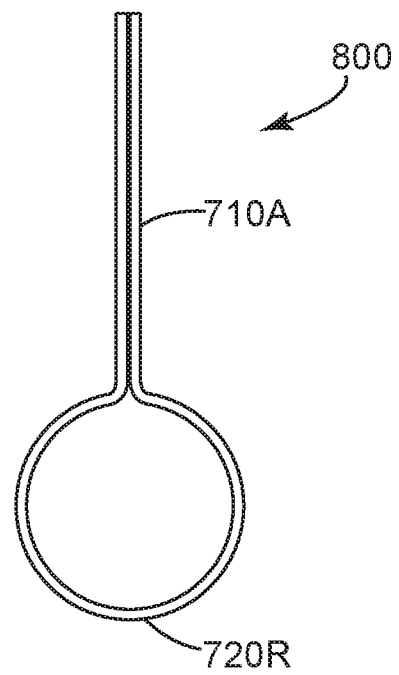


FIG. 9

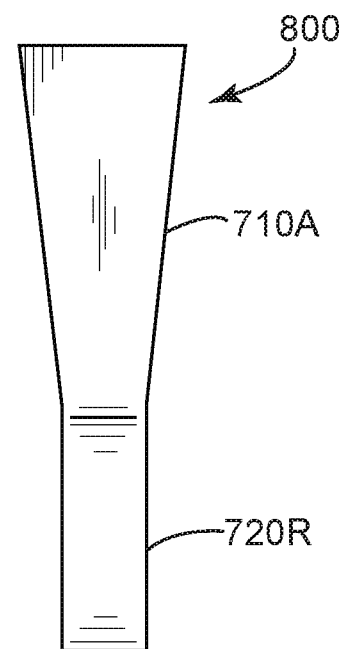


FIG. 10

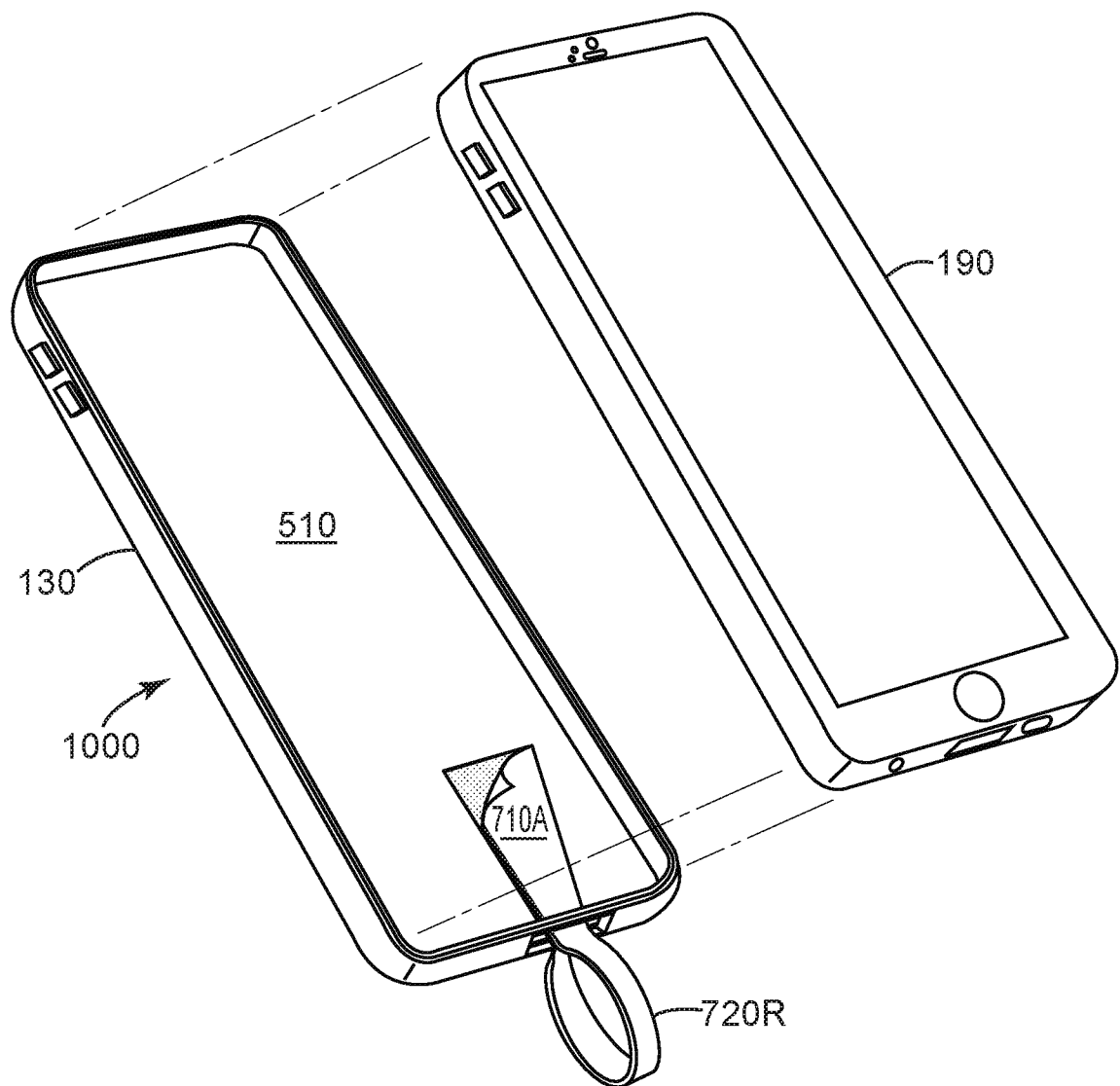
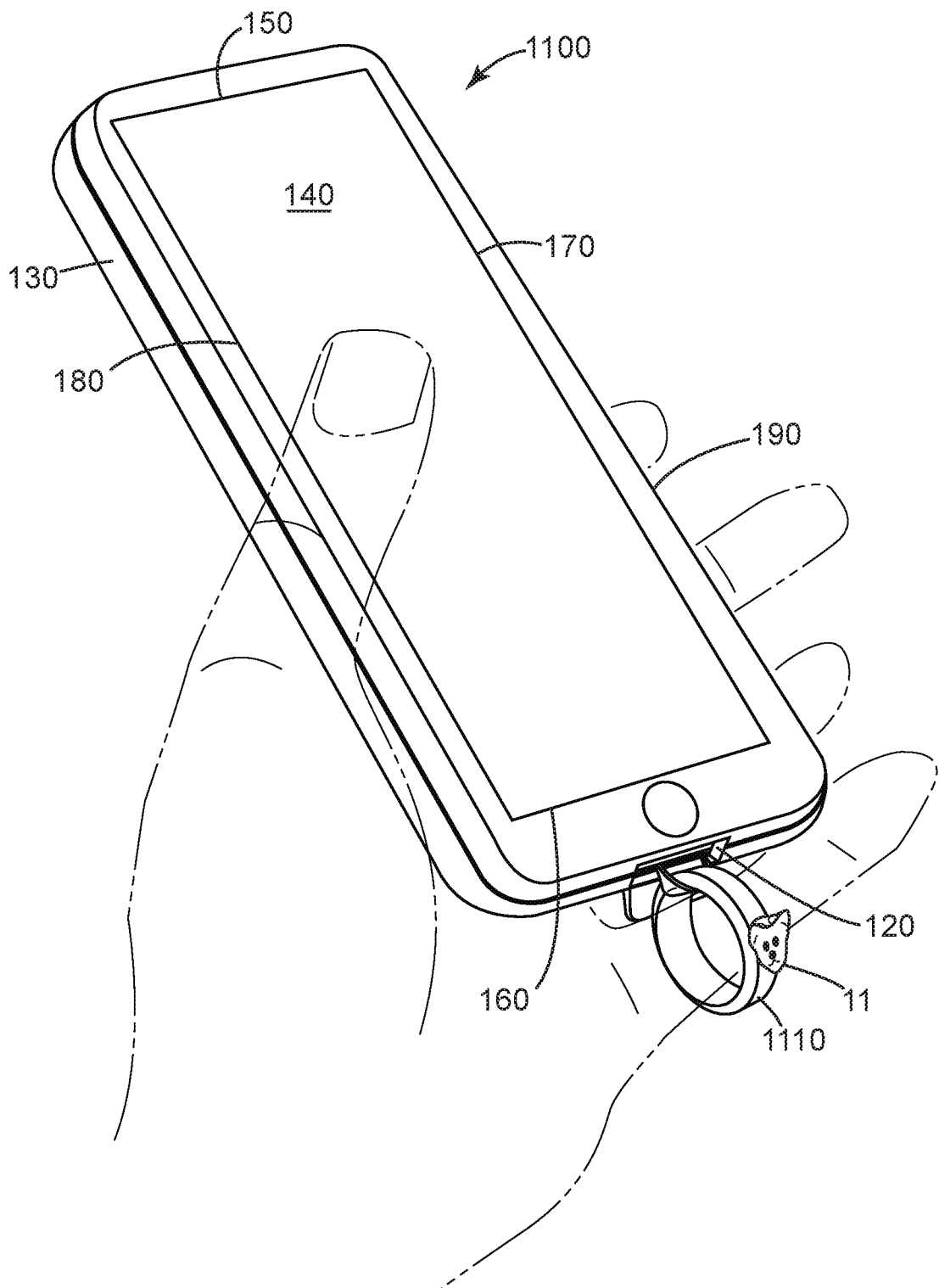


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/060476**A. CLASSIFICATION OF SUBJECT MATTER****H04M 1/04(2006.01)i**

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

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
H04M 1/04; A45C 11/00; A45F 5/00; A45F 5/10; B25G 3/00; H04B 1/3888; H04W 88/02Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: ring, mobile, case, cavity, finger**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2018-0294830 A1 (NITE IZE, INC.) 11 October 2018 paragraphs [0017]–[0053] and figure 4	1–20
Y	US 2018-0271265 A1 (JEAN-PHILIPPE ROUSSEAU) 27 September 2018 paragraphs [0014]–[0083], claims 14, 21 and figure 1	1–20
A	US 2017-0231373 A1 (JAMES THOMAS KOREN) 17 August 2017 paragraph [0087] and figures 1, 3	1–20
A	US 2016-0344437 A1 (BRUCE GORDON) 24 November 2016 paragraph [0044] and figure 5	1–20
A	KR 20-0458570 Y1 (KMCREBIZ INC.) 06 March 2012 paragraph [0028] and figure 1	1–20



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

09 April 2020 (09.04.2020)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

International Application Division

Korean Intellectual Property Office

189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea



Facsimile No. +82-42-481-8578

Authorized officer

JANG, Gijeong

Telephone No. +82-42-481-8364



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2019/060476

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