



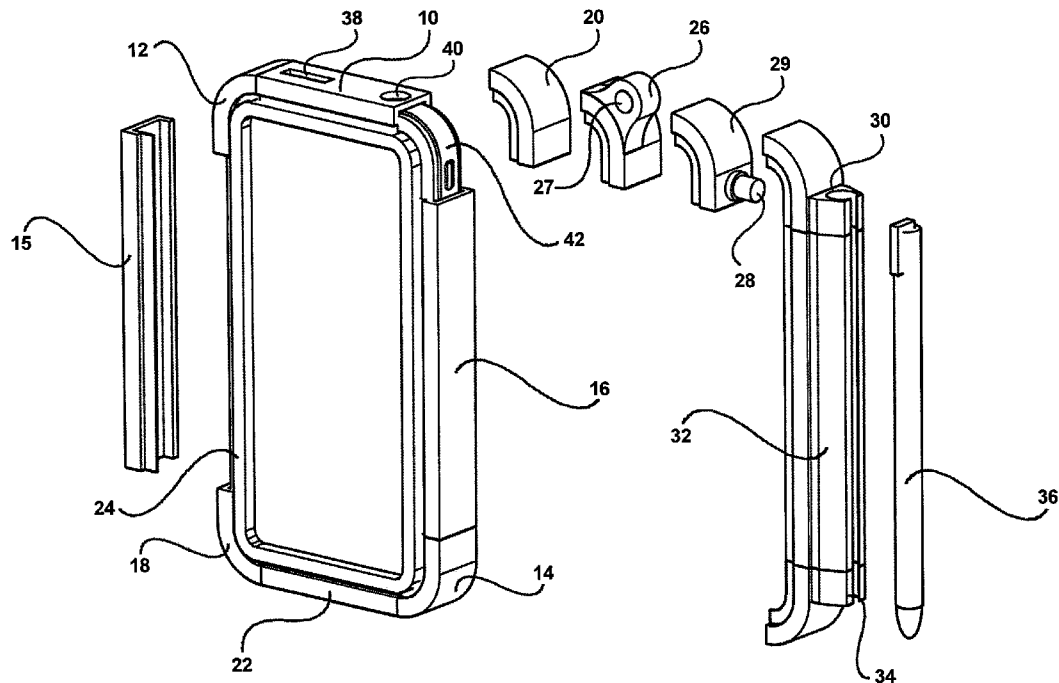
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Bong et al.(10) **Pub. No.: US 2014/0138265 A1**(43) **Pub. Date: May 22, 2014**(54) **PROTECTIVE CASES FOR MOBILE DEVICES****Publication Classification**(71) Applicants: **Hendra Bong**, Hayward, CA (US);
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B65D 85/00 (2006.01)
(52) **U.S. Cl.**
CPC **B65D 85/00** (2013.01)
USPC **206/37**(72) Inventors: **Hendra Bong**, Hayward, CA (US);
Djuliadi Herlanto, Diamond Bar, CA (US); **San-san Wardojo**, San Diego, CA (US)(57) **ABSTRACT**

This invention relates to protective cases for mobile devices. The case includes a main body covering part of a major surface of the mobile device that is integral and/or secured to sidewall enclosures. The main body includes spoke(s) integral and/or secured to sidewall enclosures. The sidewall enclosures are corner sidewall enclosures and non-corner side enclosures that protect the surfaces of the mobile device from dropping damage. The sidewall enclosures can be assembled by users.

(21) Appl. No.: **14/043,849**(22) Filed: **Oct. 2, 2013****Related U.S. Application Data**

(60) Provisional application No. 61/708,654, filed on Oct. 2, 2012.



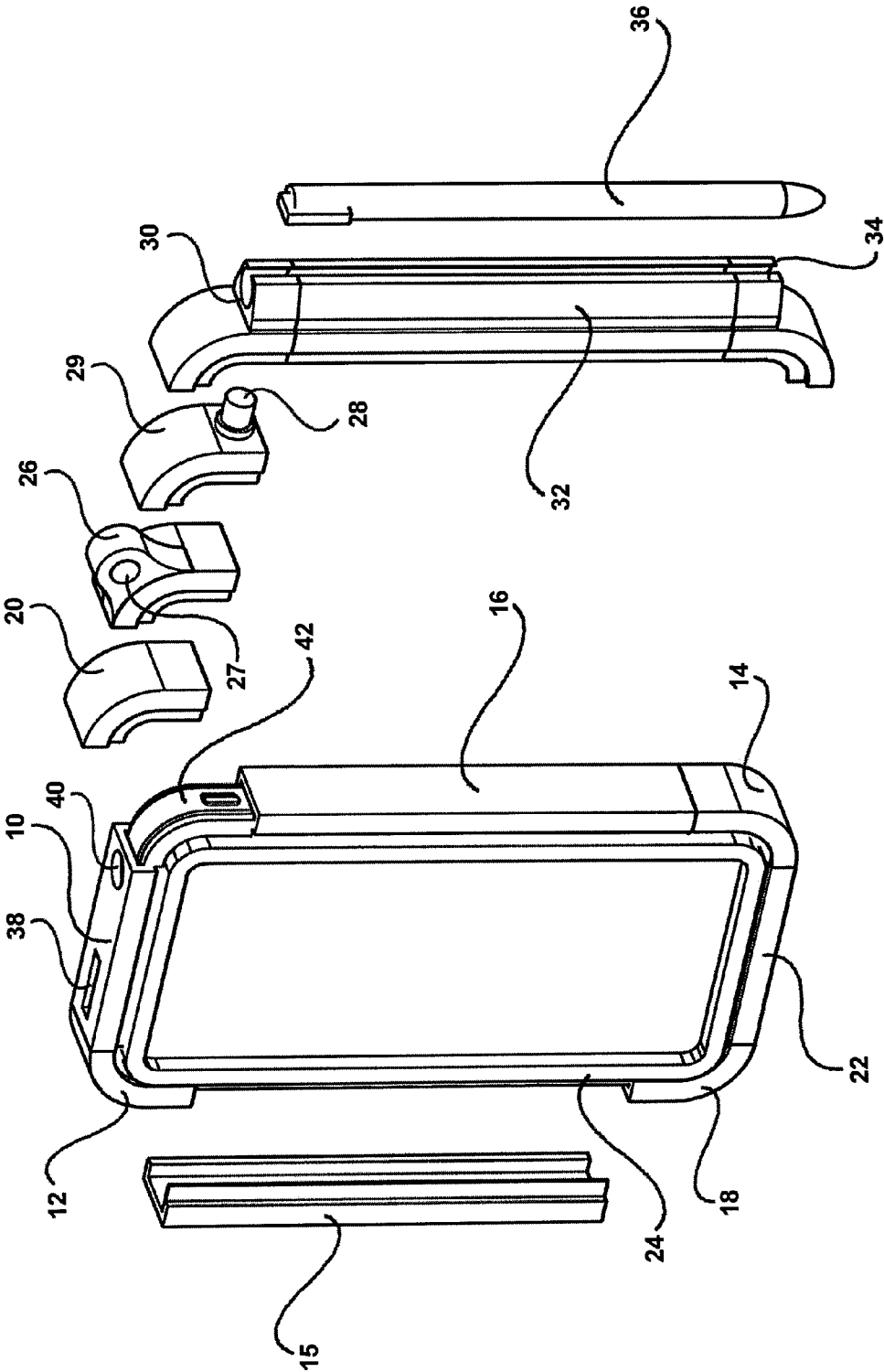
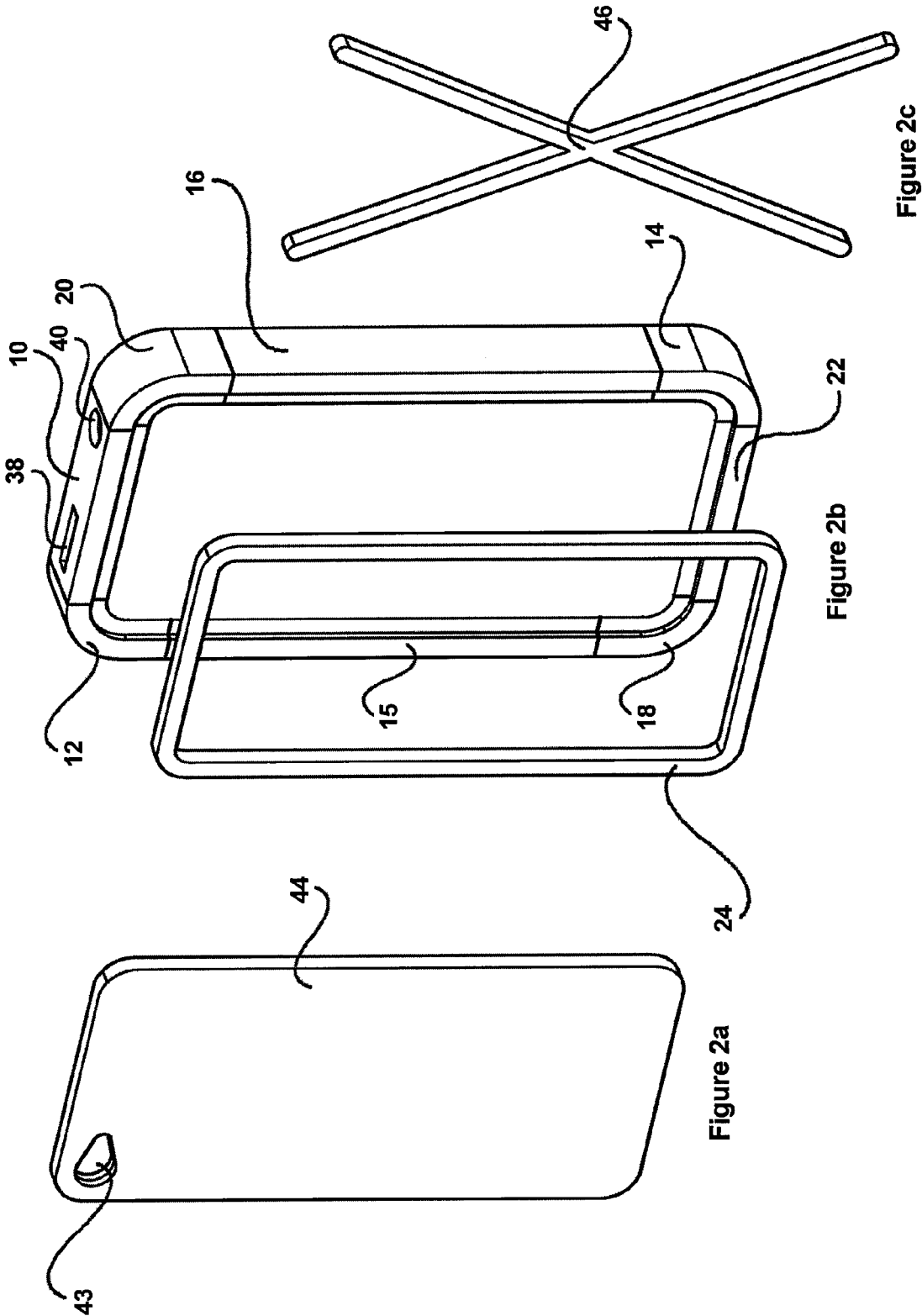


Figure 1



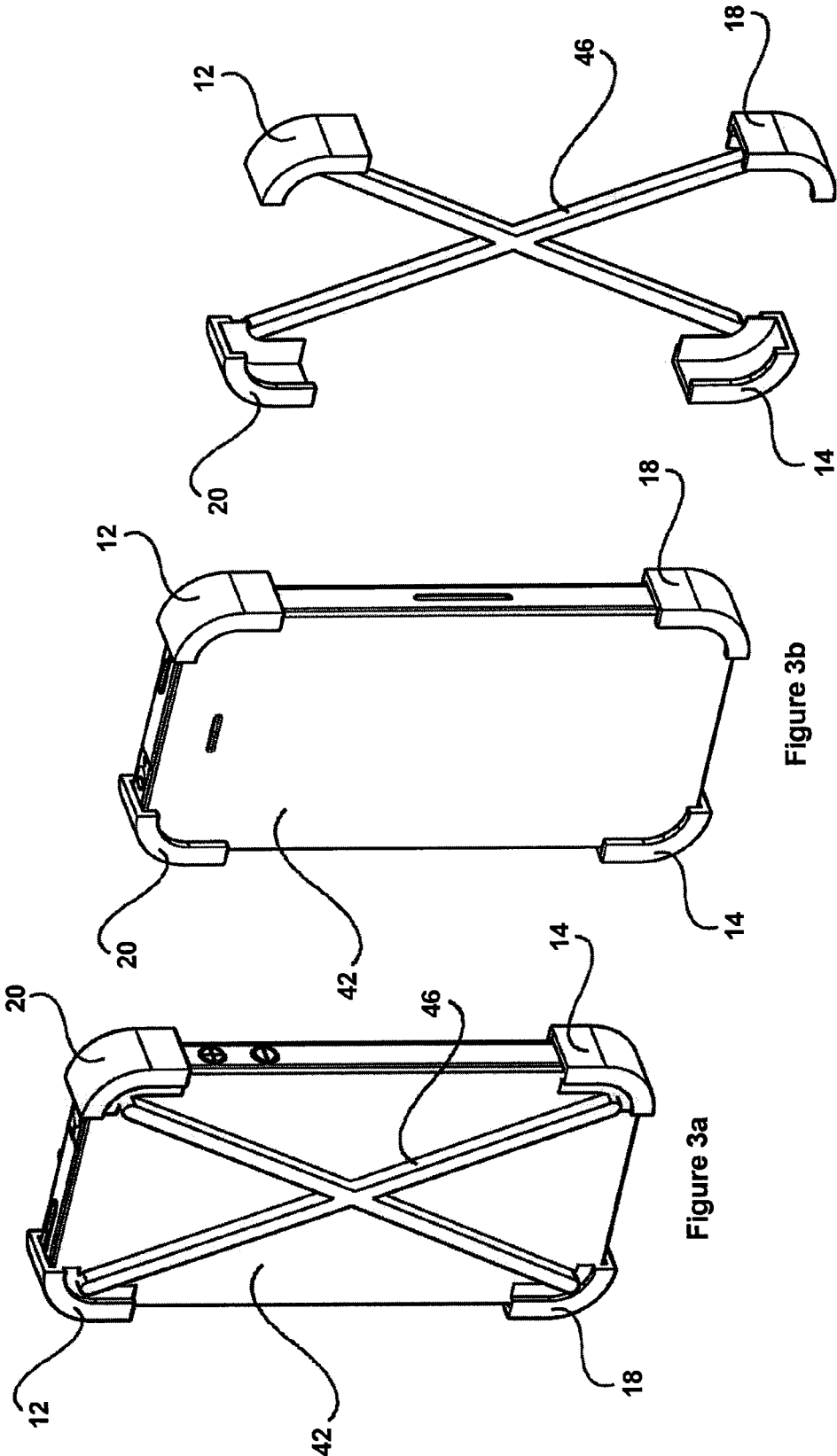


Figure 3c

Figure 3b

Figure 3a

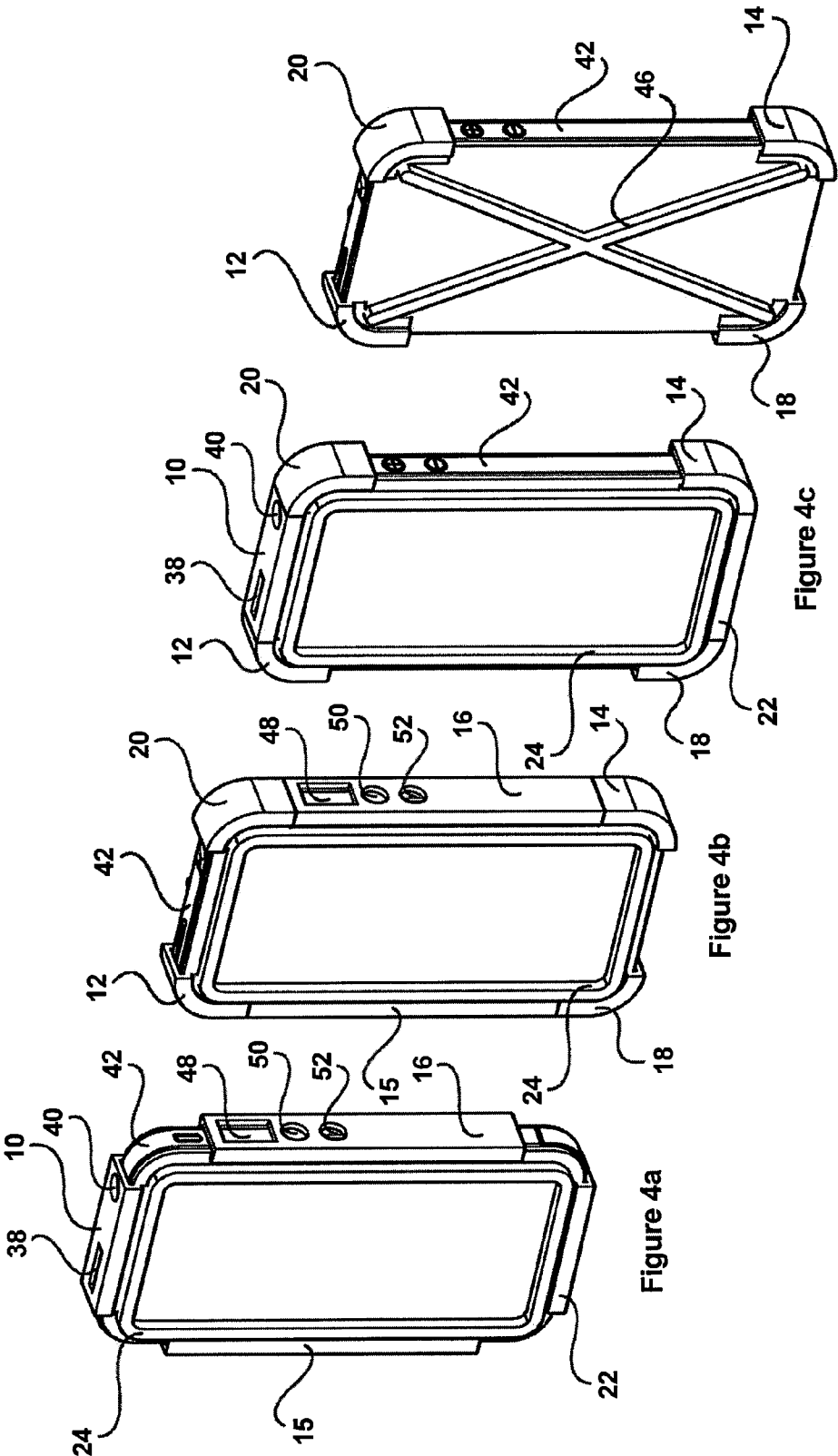


Figure 4d

Figure 4c

Figure 4b

Figure 4a

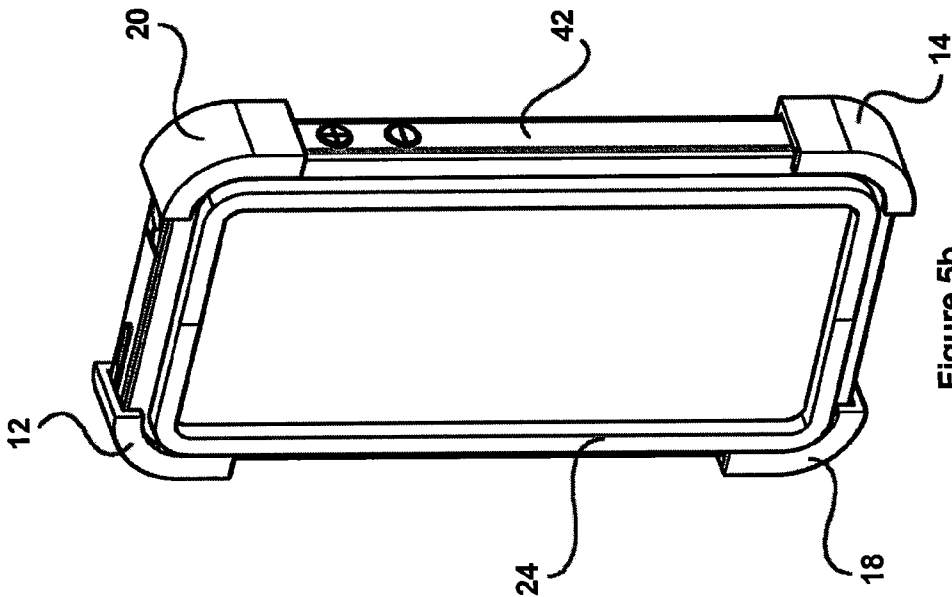


Figure 5b

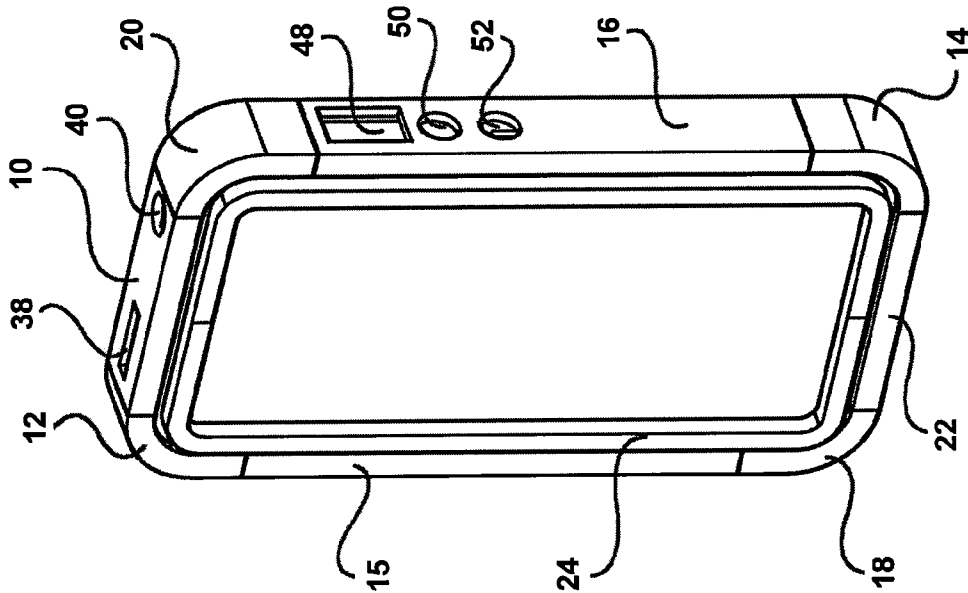
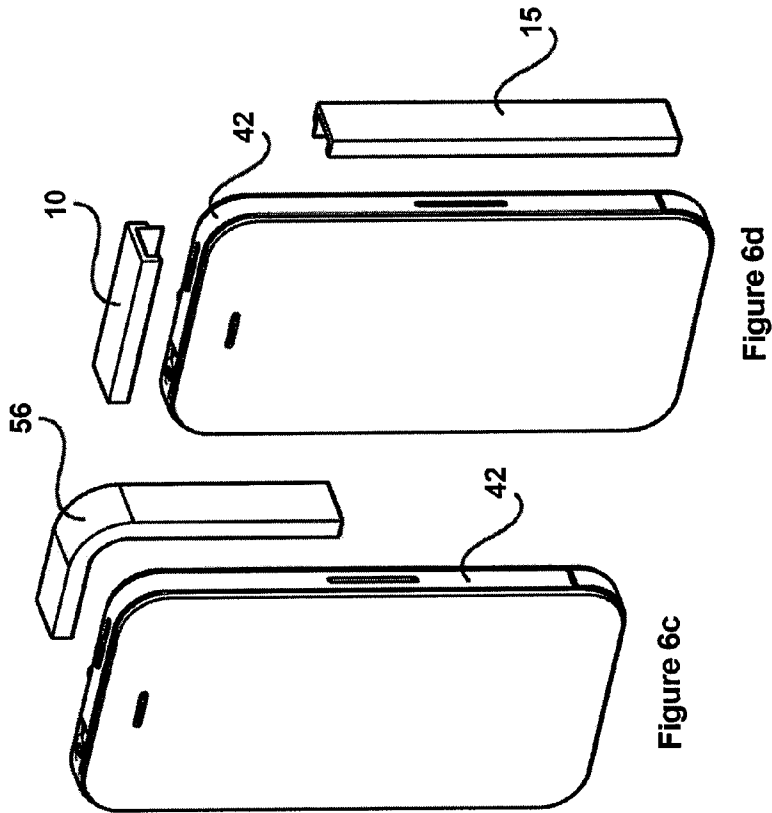
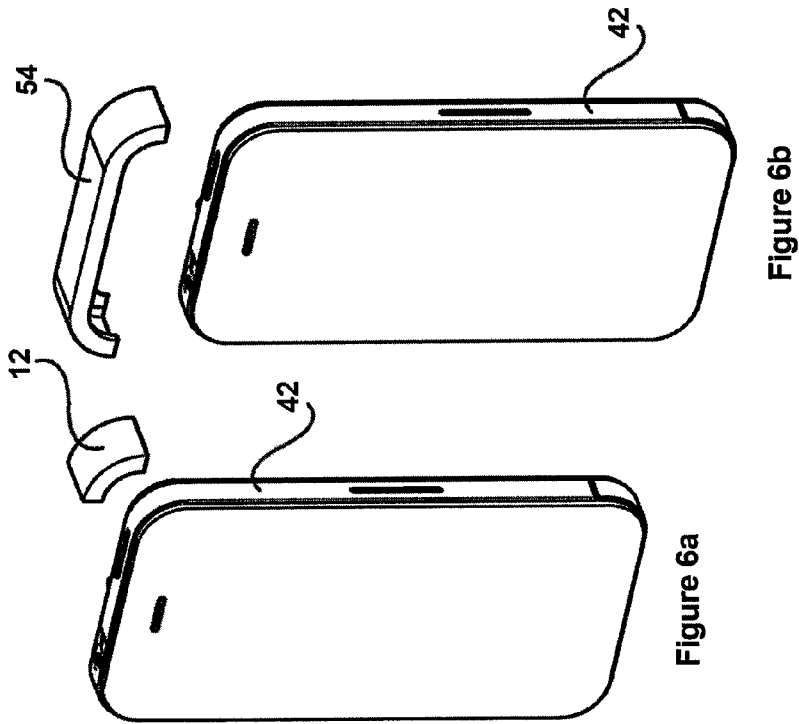


Figure 5a



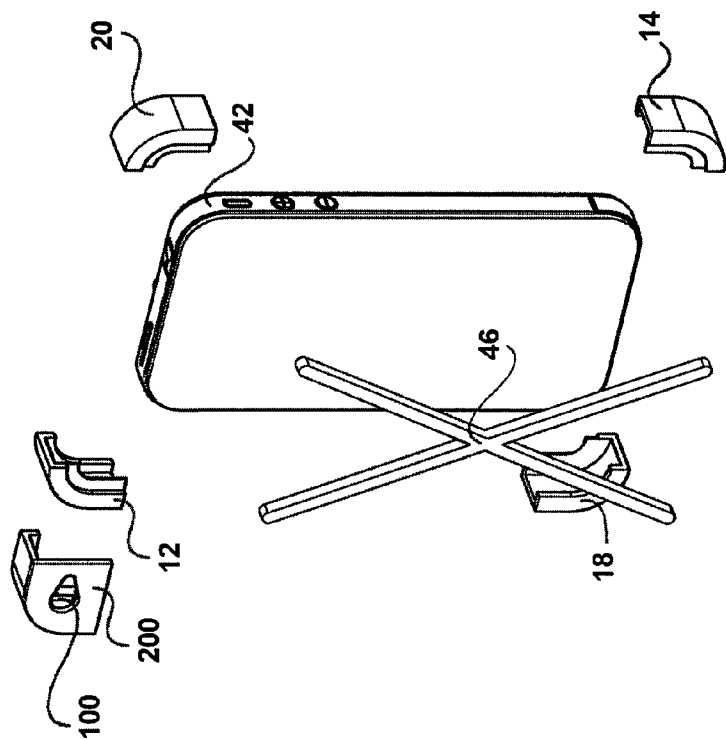


Figure 8

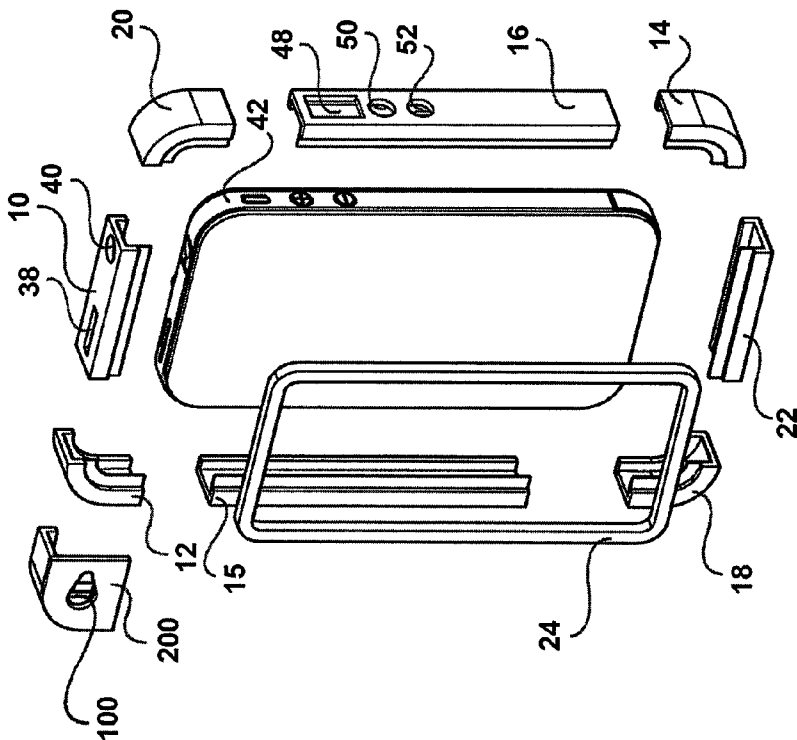


Figure 7

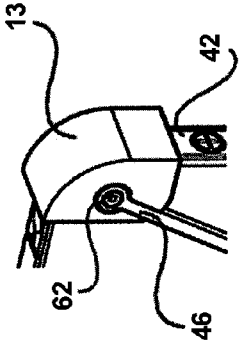


Figure 9a

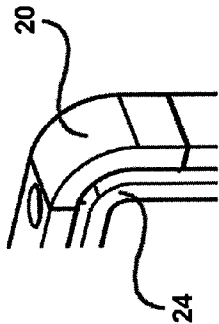


Figure 9b

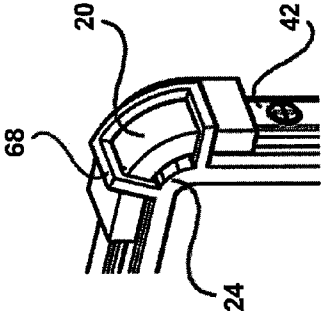


Figure 9c

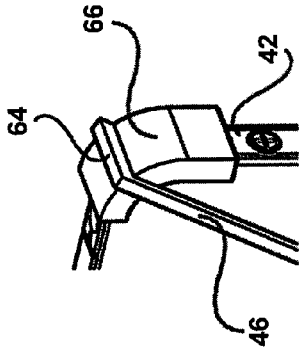


Figure 9d

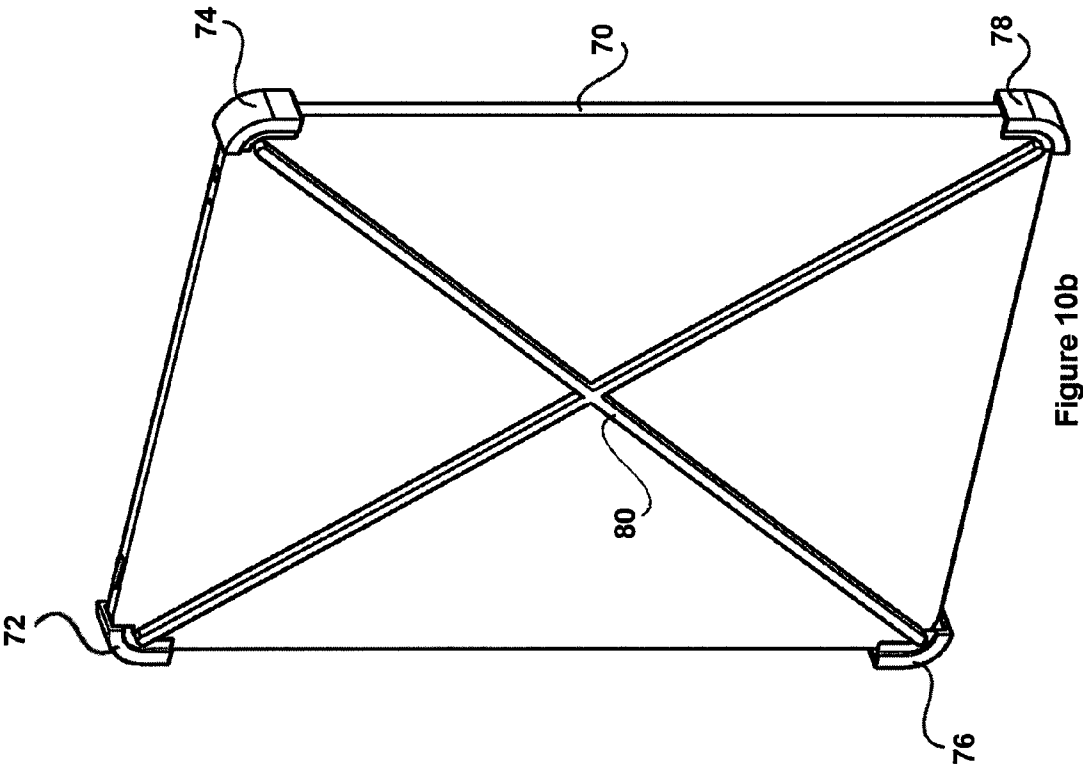


Figure 10b

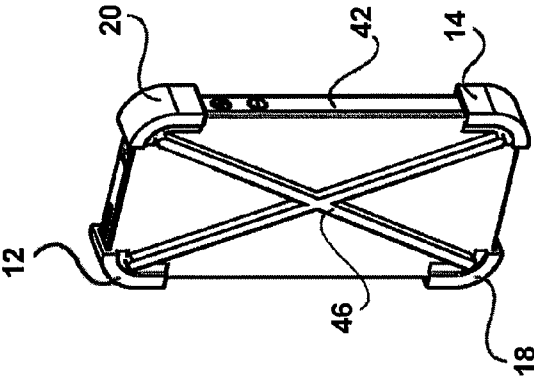
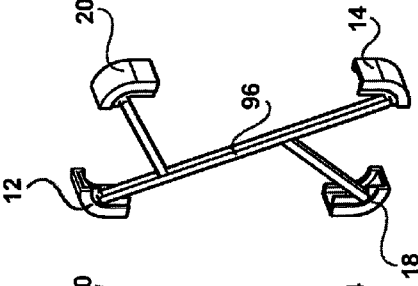
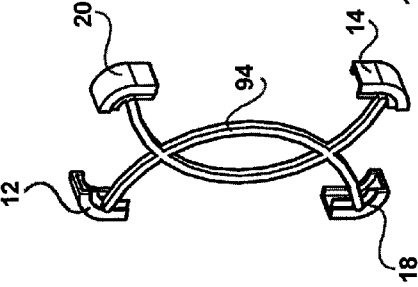
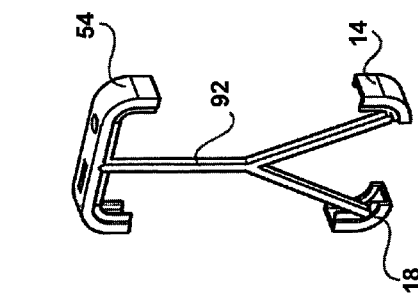
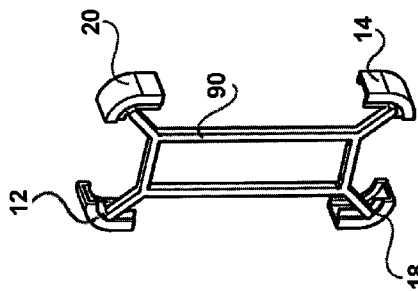
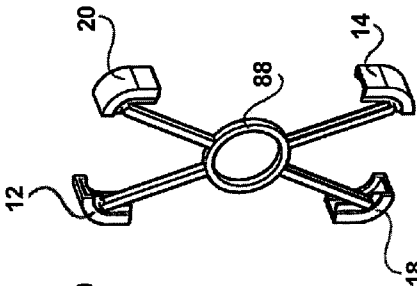
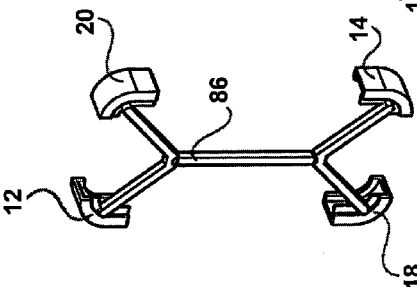
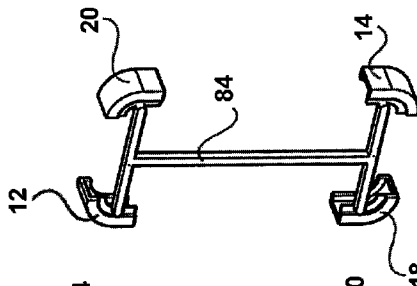
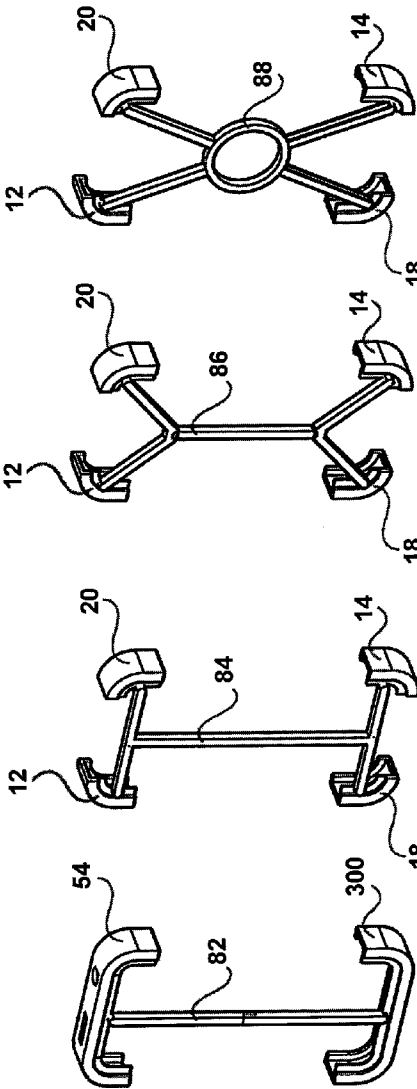


Figure 10a



PROTECTIVE CASES FOR MOBILE DEVICES

BACKGROUND

[0001] This application claims the benefit of U.S. Provisional Application No. 61/708,654, filed on Oct. 2, 2012, which is incorporated by reference herein.

[0002] This invention relates to a protective case for mobile devices such as cell phones, e-readers, music players, and tablets.

[0003] As mobile devices have evolved to offer advanced features, the replacement cost for damaged devices has grown. Unfortunately, if a mobile device hits a hard surface, it may damage it. It may be a dent or scratch, but sometimes the damage may require purchasing a new mobile device. If we are talking about a cell phone, the user may pay dearly, because the warranty may have expired or simply not cover the damage and carrier contracts for reduced prices may not be available. Thus, many users have bought protective cases for cell phones. Some cases may wrap protective material around the entire cell phone except for the display. Such an approach may protect the cell phone from shocks, dents and scratches but something is lost—the beauty of the cell phone design. The inventors recognized these problems and sought to identify what surfaces of the mobile device are susceptible to damage and protect those surfaces in a less bulky fashion that reveals much of the cell phone design.

SUMMARY OF THE INVENTION

[0004] This invention relates to protective cases for mobile devices.

[0005] In a feature, the case includes a main body covering only part of a major surface of the mobile device that is integral and/or secured to sidewall enclosures that protect the mobile device.

[0006] In another feature, the case includes a main body that includes one or more spokes that are integral and/or secured to sidewall enclosures protecting the mobile device.

[0007] In another feature, the sidewall enclosures are corner sidewall enclosures and non-corner sidewall enclosures that protect the mobile device on the surfaces susceptible to dropping damage.

[0008] In another feature, the protective case includes a variety of sidewall enclosures that are separable parts that can be assembled for customization by users.

[0009] In other features, the sidewall enclosures are molded, machined, and/or shaped to enclose at least part of the perimeter of the mobile device and are integral with and/or secured to the main body. When the sidewall enclosures are assembled to the main body, they form a case that encloses at least part of the perimeter of the mobile device, and part of the back of the mobile device.

[0010] In other features, the case particularly encloses certain parts of the mobile device such as the corners where it is more susceptible to damage. The corner and non-corner sidewall enclosures can be minimal with molded interior shapes conforming to the mobile device to preferably form a snug fit or relatively large and robust to have more coverage and an extra level of protection.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a partially exploded view of a protective case for a mobile device.

[0012] FIG. 2*a* illustrates a planar shaped main body of a protective case.

[0013] FIG. 2*b* is an exploded view of an open frame shaped main body and the rest of a protective case.

[0014] FIG. 2*c* illustrates an X-shaped main body.

[0015] FIG. 3*a* illustrates a protective case that includes an X-shaped main body integral with and/or secured to the corner sidewall enclosures.

[0016] FIG. 3*b* illustrates a protective case that includes corner sidewall enclosures without the main body.

[0017] FIG. 3*c* illustrates a protective case that includes an X-shaped main body integral with and/or secured to the corner sidewall enclosures.

[0018] FIGS. 4*a-4d* illustrate the modular nature of the protective case that allows for customization.

[0019] FIG. 5*a* illustrates a protective case that includes an open frame shaped main body and sidewall enclosures.

[0020] FIG. 5*b* illustrates a protective case that includes an open frame shaped main body with corner sidewall enclosures.

[0021] FIGS. 6*a-6d* illustrate various corner and non-corner sidewall enclosures.

[0022] FIG. 7 is an exploded view of a protective case that includes an open frame shaped main body, corner sidewall enclosures and non-corner sidewall enclosures.

[0023] FIG. 8 is an exploded view of a protective case that includes an X-shaped main body, corner sidewall enclosures, and sidewall enclosures.

[0024] FIG. 9*a* illustrates a corner sidewall enclosure of a protective case integral with and/or secured to an open frame shaped main body.

[0025] FIG. 9*b* illustrates a spoke of the main body secured by a screw to the corner sidewall enclosure.

[0026] FIG. 9*c* illustrates a spoke of the main body secured in a slot of the corner sidewall enclosure.

[0027] FIG. 9*d* illustrates an open frame shaped main body that includes an extension that wraps around a corner sidewall enclosure.

[0028] FIG. 10*a* illustrates a protective case for a cell phone using an X-shaped main body integral with and/or secured to four corner sidewall enclosures.

[0029] FIG. 10*b* illustrates a protective case for a tablet using an X-shaped main body integral with and/or secured to four corner sidewall enclosures.

[0030] FIG. 11*a* illustrates an embodiment of a main body that includes a spoke integral with and/or secured to two corner sidewall enclosures to protect four corners of a mobile device.

[0031] FIG. 11*b* illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0032] FIG. 11*c* illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0033] FIG. 11*d* illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0034] FIG. 11*e* illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0035] FIG. 11f illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0036] FIG. 11g illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

[0037] FIG. 11h illustrates another embodiment of a main body that includes spokes integral with and/or secured to four corner sidewall enclosures to protect four corners of a mobile device.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0038] The following description includes the best mode of carrying out the invention, illustrates the principles of the invention, uses illustrative values, and should not be taken in a limiting sense. The scope of the invention is determined by reference to the claims. Each part or step is assigned its own number in the specification and drawings. The drawings are not to scale and do not reflect the relative size of the parts.

[0039] FIG. 1 is a partially exploded and perspective view of a case that can protect a mobile device (e.g., cell phone, tablet, and e-reader). The mobile device can be a cell phone such as Apple's iPhone, an iPad, iPod, and other firms' tablets, a computer, an e-reader such as Amazon's Kindle, and other mobile devices such as the Android OS mobile devices.

[0040] The protective case includes a main body 24 that is integral with and/or secured to secondary portions that fully or partly enclose the perimeter or edges of the mobile device 42 to eliminate or reduce damage to the mobile device when it collides with a hard surface.

[0041] For brevity, the application uses the phrase "integral with" to refer to adjacent "parts" that are structurally a single part. The application uses "secured" to refer to adjacent parts held together mechanically by, for example, a screw, a rivet, a fastener and/or adhesive.

[0042] The secondary portions include corner sidewall enclosures 12, 14, 18, and 20 and non-corner sidewall enclosures 10, 15, 16, and 22. In the embodiment of FIG. 1, the non-corner sidewall enclosures 10, 22 enclose the top sidewall and the bottom sidewall of the mobile device 42. The non-corner sidewall enclosures 15, 16 enclose the right sidewall and the left sidewall of the mobile device 42. Corner sidewall enclosures 12, 14, 18, and 20 protect the corners of the mobile device 42. In another embodiment, instead of corner sidewall enclosure 20, the protective case includes a corner sidewall enclosure 26 with an opening 27 for a lanyard, a strap or another purpose. In another embodiment, instead of the corner sidewall enclosure 20, the protective case includes a corner sidewall enclosure 29 that includes a button 28 for activating a function (e.g., camera shutter) of the mobile device 42.

[0043] In another embodiment, a corner sidewall enclosure 30 includes an opening 30 at the top and a closed bottom enclosure 34 to hold an input tool, such as a stylus or pen 36. The sidewall enclosures are integral with and/or secured to the open frame shaped main body 24.

[0044] In the embodiment of FIG. 1, the main body 24 is an open frame shaped, which is on the periphery of the mobile device 42 with an opening in the center. The main body 24 can be rigid or elastic and a singular object or include multiple-pieces assembled together.

[0045] The open frame shaped main body 24 that holds the corner sidewall enclosures and the non-corner sidewall enclosures together has center opening in the main body 24 so it can be disposed on the back or even the front (i.e., display side) of the mobile device 42.

[0046] The corner sidewall and non-corner sidewall enclosures are made of rigid or non-rigid materials such as aluminum, other metals, plastic, rubber, polyurethane, carbon fiber, or other composite materials.

[0047] FIG. 2a illustrates a planar shaped main body 44, including an opening 43, that covers and protects the back of the mobile device.

[0048] FIG. 2b is an exploded view of an open frame shaped main body and the rest of a protective case. As shown, the protective case includes an open frame shaped main body 24, non-corner sidewall enclosures 10, 15, 16, and 22, and corner sidewall enclosures 12, 14, 18, and 20. The non-corner sidewall enclosure 10 includes a rectangular shaped opening 38 and a circular opening 40 to access the mobile device's functions (e.g., camera, flash, microphone and other controls or for exposing the mobile device's graphics, name, on/off/sleep button, mute button, and volume buttons).

[0049] FIG. 2c illustrates a main body that includes spokes that is integral with and/or secured to the corner sidewall enclosures. As shown in FIG. 2c, the X-shaped main body 46 is a four-spoke body in the shape of an "X" or two "V"s that are integral with and/or secured to each other where one "V" is inverted with respect to the other "V."

[0050] FIG. 3a illustrates a protective case that includes an X-shaped main body integral with and/or secured to the corner sidewall enclosures. The corner sidewall enclosures portion 12, 14, 18, and 20 enclose the corners of the mobile device 42, and are held together by the X-shaped main body 46 on the back of the mobile device 42. Together when assembled with the mobile device 42 within, the corner sidewall enclosures 12, 14, 18, and 20 and the X-shaped main body 46 form a snug fit case to contain the mobile device 42. This embodiment allows a minimal amount of material to cover the mobile device 42 while protecting the corners of the mobile device 42, which are most susceptible to damage due to a fall or drop, as well as the back of the mobile device 42.

[0051] FIG. 3b illustrates a protective case that includes corner sidewall enclosures 12, 14, 18, 20 secured to the mobile device 42 without the main body 46. FIG. 3c illustrates a protective case that includes an X-shaped main body integral with and/or secured to the corner sidewall enclosures without the mobile device 42.

[0052] FIG. 4a illustrates another embodiment of a protective case for a mobile device 42 that includes an open frame shaped main body 24 that is integral with and/or secured to top sidewall enclosure 10 with openings 38 and 40, the non-corner sidewall enclosures 15, 16, and the bottom sidewall enclosure 22. Non-corner sidewall enclosure 16 includes a set of openings 48, 50, and 52 to access functions of the mobile device 42.

[0053] FIG. 4b illustrates another embodiment of a protective case for a mobile device 42 that includes an open frame shaped main body 24 that is integral with and/or secured to corner sidewall enclosures 12, 14, 18, and 20 and non-corner sidewall enclosures 15, 16. Non-corner sidewall enclosure 16 includes openings 48, 50, and 52 to access functions of the mobile device 42.

[0054] FIG. 4c illustrates another embodiment of a protective case for a mobile device 42 that includes an open frame

shaped main body **24** that is integral and/or secured to corner sidewall enclosures **12** and **20** along with top non-corner sidewall **10** with openings **38** and **40**, corner sidewall enclosures **14** and **18** along with bottom non-corner sidewall **22**.

[0055] FIG. **4d** illustrates another embodiment of a protective case for a mobile device **42** that includes an X-shaped main body **46** that is integral and/or secured to corner sidewall enclosures **12**, **14**, **18**, and **20**.

[0056] FIG. **5a** illustrates the assembled protective case shown as an exploded view in FIG. **1**. FIG. **5a** illustrates the corner sidewall enclosures **12**, **14**, **18**, and **20**, and non-corner sidewall enclosures **10**, **15**, **16**, and **22** enclose the edges around the perimeter of the mobile device. The non-corner sidewall enclosures **15**, **16** are integral with and/or secured to the open frame shaped main body **24**. FIG. **5b** illustrates a case that includes an open frame shaped main body **24** with corner sidewall enclosures **12**, **14**, **18**, and **20** to protect corners of mobile device **42**.

[0057] FIG. **6a** illustrates a corner sidewall enclosure **12** that protects the corner of mobile device **42**. FIG. **6b** illustrates a sidewall enclosure **54** that protects two corners and the top of the mobile device **42**. FIG. **6c** illustrates a sidewall enclosure **56** that encloses the corner and the non-corner of the mobile device **42**. FIG. **6d** illustrates non-corner sidewall enclosures **10**, **15** that protect the non-corner perimeter of the mobile device **42**.

[0058] FIG. **7** is an exploded view of the protective case shown assembled in FIG. **5a**. The only new part added to the case of FIG. **5a** is a corner sidewall **200** with an opening **100**.

[0059] FIG. **8** is an exploded view of protective case shown assembled in FIG. **4d**. The only part added to the case of FIG. **5a** is a corner sidewall **200** with an opening **100**.

[0060] FIG. **9a** illustrates a corner sidewall enclosure **20** of a protective case integral with and/or secured to an open frame shaped main body **24**.

[0061] FIG. **9b** illustrates a spoke of the main body **46** secured by a screw **62** to the corner sidewall enclosure **13** of the mobile device **42**.

[0062] FIG. **9c** illustrates a spoke of the main body **46** secured in a slot of the corner sidewall enclosure **66** of the mobile device **42**.

[0063] FIG. **9d** illustrates an open frame shaped main body **24** that includes an extension **68** that wraps around a corner sidewall enclosure **20** of the mobile device **42**.

[0064] FIG. **10a** illustrates a protective case for a cell phone using an X-shaped main body **46** secured to four corner sidewall enclosures **12**, **14**, **18**, and **20**.

[0065] FIG. **10b** illustrates a protective case for a tablet **70** using an X-shaped main body **80** secured to four corner sidewall enclosures **72**, **74**, **76**, and **78**.

[0066] FIG. **11a** illustrates an embodiment of a main body **82** that includes spokes that are integral with and/or secured to two corner sidewall enclosures **54**, **300** to protect four corners of a mobile device.

[0067] FIG. **11b** illustrates another embodiment of a main body **84** that includes spokes that are integral with and/or

secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0068] FIG. **11c** illustrates another embodiment of a main body **86** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0069] FIG. **11d** illustrates another embodiment of a main body **88** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0070] FIG. **11e** illustrates another embodiment of a main body **90** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0071] FIG. **11f** illustrates another embodiment of a main body **92** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0072] FIG. **11g** illustrates another embodiment of a main body **94** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

[0073] FIG. **11h** illustrates another embodiment of a main body **96** that includes spokes that are integral with and/or secured to four corner sidewall enclosures **12**, **14**, **18**, and **20** to protect four corners of a mobile device.

We claim:

1. A protective case for a mobile device, comprising:
 - sidewall enclosure(s) that cover at least part of the perimeter of a mobile device; and
 - a main body that covers a part of the back of the mobile device, including one or more spokes integral with and/or secured to the sidewall enclosures.
2. The protective case of claim **1**, wherein the sidewall enclosures are four corner sidewall enclosures to protect four corners of the mobile device.
3. The protective case of claim **1**, wherein the sidewall enclosures can be detached from the main body and replaced with other sidewall enclosures.
4. The protective case of claim **1**, wherein the main body is X-shaped with spokes that are integral with and/or secured to the corner sidewall enclosures.
5. The protective case of claim **1**, wherein the corner sidewall enclosures are secured to the main body by screws, pins, or mating parts.
6. The protective case of claim **1**, wherein the main body holds the sidewall enclosures against the mobile device to protect the mobile device.
7. The protective case of claim **1**, wherein the sidewall enclosure portions are interchangeable to access mobile device functions.
8. The protective case of claim **1**, wherein main body is one of the following shapes a plus sign, a vertical line, V-shaped, diamond-shaped, and open frame shaped.

* * * * *