

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent of: Dae-Young Kim  
U.S. Patent No.: 11,863,223 Attorney Docket No. 50095-0306IP1  
Issue Date: January 2, 2024  
Appl. Serial No.: 17/443,183  
Filing Date: July 22, 2021  
Title: MAGNETIC MOUNT FOR ELECTRONIC DEVICES

**Mail Stop Patent Board**

Patent Trial and Appeal Board  
U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PETITION FOR *INTER PARTES* REVIEW**  
**OF UNITED STATES PATENT NO. 11,863,223**  
**PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

**TABLE OF CONTENTS**

|       |                                                                         |    |
|-------|-------------------------------------------------------------------------|----|
| I.    | INTRODUCTION .....                                                      | 1  |
| II.   | REQUIREMENTS FOR IPR UNDER 37 C.F.R. § 42.104.....                      | 1  |
|       | A. Grounds for Standing Under 37 C.F.R. § 42.104(a).....                | 1  |
|       | B. Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested .....     | 1  |
|       | C. Claim Construction .....                                             | 3  |
| III.  | SUMMARY OF THE '223 PATENT .....                                        | 3  |
|       | A. Brief Description.....                                               | 3  |
|       | B. Prosecution History Summary .....                                    | 5  |
| IV.   | LEVEL OF ORDINARY SKILL IN THE ART .....                                | 7  |
| V.    | THE CHALLENGED CLAIMS ARE UNPATENTABLE.....                             | 7  |
|       | A. GROUND 1: Wojcik-Franklin Renders Obvious Claims 1-4, 6-8, and 10 .. | 7  |
|       | .....                                                                   | 7  |
|       | 1. Wojcik .....                                                         | 7  |
|       | 2. Franklin.....                                                        | 14 |
|       | 3. The Wojcik-Franklin Combination .....                                | 18 |
|       | 4. Analysis of Claims .....                                             | 30 |
|       | B. GROUND 2: Spigen-Partovi Renders Obvious Claims 1-4, 6-8, and 10 ..  | 53 |
|       | .....                                                                   | 53 |
|       | 1. Spigen.....                                                          | 53 |
|       | 2. Partovi.....                                                         | 55 |
|       | 3. The Spigen-Partovi Combination.....                                  | 56 |
|       | 4. Analysis of Claims .....                                             | 67 |
| VI.   | PAYMENT OF FEES – 37 C.F.R. § 42.103.....                               | 83 |
| VII.  | CONCLUSION.....                                                         | 83 |
| VIII. | MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1).....                      | 84 |
|       | A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....             | 84 |
|       | B. Related Matters Under 37 C.F.R. § 42.8(b)(2) .....                   | 84 |
|       | C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....           | 84 |
|       | D. Service Information .....                                            | 84 |

**LIST OF EXHIBITS**

- EX1001 U.S. Patent No. 11,863,223 (“’223 Patent”)
- EX1002 U.S. Patent No. 11,863,223 File History (“File History”)
- EX1003 Declaration and Curriculum Vitae of Expert Dr. Regan Zane
- EX1004 U.S. Patent Pub. No. 2016/0294427 (“Wojcik”)
- EX1005 U.S. Patent Pub. No. 2016/0003270 (“Franklin”)
- EX1006 MOBILEREVIEWS.EH, *Spigen Thin Fit Hybrid Review* (YouTube, Feb. 28, 2016), <https://www.youtube.com/watch?v=fzymdpDZ1kc> (“Spigen”)
- EX1007 U.S. Patent Pub. No. 2011/0050164 (“Partovi”)
- EX1008 WIKIPEDIA CONTRIBUTORS, *Neodymium* (Wikipedia, Mar. 11, 2016), <https://web.archive.org/web/20160311013603/https://en.wikipedia.org/wiki/Neodymium>
- EX1009 3M Double Coated Tape 9448A Data Sheet (2013)
- EX1010 U.S. Patent Pub. No. 2014/0265767 (“Fathollahi”)
- EX1011 U.S. Provisional Patent Application No. 62/511,280
- EX1012 U.S. Patent Pub. No. 2013/0093388 (“Partovi ’388”)
- EX1013 U.S. Patent Pub. No. 2012/0235636 (“Partovi ’636”)
- EX1014 U.S. Patent Pub. No. 2014/0354218 (“Kaynar”)
- EX1015 U.S. Patent Pub. No. 2011/0192857 (“Rothbaum”)

|        |                                                                                                                                                                                                                                                                                                                     |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EX1016 | U.S. Patent Pub. No. 2012/0151973 (“Cheung”)                                                                                                                                                                                                                                                                        |
| EX1017 | U.S. Patent Pub. No. 2011/0228458 (“Richardson”)                                                                                                                                                                                                                                                                    |
| EX1018 | RESERVED                                                                                                                                                                                                                                                                                                            |
| EX1019 | RESERVED                                                                                                                                                                                                                                                                                                            |
| EX1020 | Feb. 19, 2026 Complaint, <i>Magnova LLC v. Apple Inc.</i> , 7-26-cv-00056 (W.D. Tex.)                                                                                                                                                                                                                               |
| EX1021 | Jun. 5, 2026 Scheduling Order, <i>Magnova LLC v. Apple Inc.</i> , 7-26-cv-00056 (W.D. Tex.)                                                                                                                                                                                                                         |
| EX1022 | Combined Civil and Criminal Federal Court Management Statistics (Jun. 30, 2026)   United States Courts, available at: <a href="https://www.uscourts.gov/sites/default/files/document/fcms_na_distpr_ofile0630.2026.pdf">https://www.uscourts.gov/sites/default/files/document/fcms_na_distpr_ofile0630.2026.pdf</a> |
| EX1023 | Petitioner’s Stipulation                                                                                                                                                                                                                                                                                            |
| EX1024 | Declaration of Expert Librarian June Munford                                                                                                                                                                                                                                                                        |
| EX1025 | Declaration of Internet Archive Representative                                                                                                                                                                                                                                                                      |
| EX1026 | U.S. Patent Pub. No. 2009/0096219 (“Annis”)                                                                                                                                                                                                                                                                         |
| EX1027 | U.S. Patent No. 4,151,431 (“Johnson”)                                                                                                                                                                                                                                                                               |
| EX1028 | U.S. Patent No. 6,342,746 (“Flynn”)                                                                                                                                                                                                                                                                                 |
| EX1029 | System Description Wireless Power Transfer, Vol. 1, Pt. 1, v. 1.0.1 (October 2010)                                                                                                                                                                                                                                  |
| EX1030 | U.S. Patent No. 10,469,119 (“119 Patent”)                                                                                                                                                                                                                                                                           |
| EX1031 | U.S. Patent No. 10,469,119 File History                                                                                                                                                                                                                                                                             |

**LISTING OF CLAIMS**

| Claim 1 |                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1pre]  | A case for an electronic device wherein the electronic device has a receiver coil for wireless charging constructed within the electronic device and the receiver coil is formed in between an inner boundary and an outer boundary, the case comprising: |
| [1a]    | a protective cover constructed to receive the electronic device therein;<br>and                                                                                                                                                                           |
| [1b]    | a metal plate constructed to be received in between the protective cover and the electronic device,                                                                                                                                                       |
| [1c]    | wherein the metal plate is made of a magnet which produces magnetic flux,                                                                                                                                                                                 |
| [1d]    | wherein the metal plate received in between the protective cover and the electronic device is positioned to substantially allow magnetic waves to pass through an area formed by the inner boundary of the receiver coil,<br>and                          |
| [1e]    | wherein the metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary of the receiver coil.                                                                                                          |
| Claim 2 |                                                                                                                                                                                                                                                           |
| [2]     | The case of claim 1, wherein the inner boundary and the outer boundary are substantially circular.                                                                                                                                                        |
| Claim 3 |                                                                                                                                                                                                                                                           |
| [3]     | The case of claim 1, wherein the metal plate has a rounded concave edge.                                                                                                                                                                                  |

| Claim 4  |                                                                                                                                                                                                                                   |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [4]      | The case of claim 3, wherein the rounded concave edge substantially symmetrically aligns to respective orthographic parallel projections of the inner boundary and the outer boundary onto a projection plane of the metal plate. |
| Claim 6  |                                                                                                                                                                                                                                   |
| [6]      | The case of claim 4, wherein the rounded concave edge is placed outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate.                                                     |
| Claim 7  |                                                                                                                                                                                                                                   |
| [7a]     | The case of claim 1, wherein the metal plate is substantially rectangular with a first side having a rounded concave edge, and                                                                                                    |
| [7b]     | wherein the metal plate has third and fourth sides that are substantially parallel to each other and has a second side that is substantially parallel to the first side.                                                          |
| Claim 8  |                                                                                                                                                                                                                                   |
| [8]      | The case of claim 7, wherein the metal plate has rounded corners.                                                                                                                                                                 |
| Claim 10 |                                                                                                                                                                                                                                   |
| [10]     | The case of claim 1, wherein the metal plate is attached to the protective cover by an adhesive.                                                                                                                                  |

## **I. INTRODUCTION**

Apple Inc. (“Apple” or “Petitioner”) petitions for IPR of claims 1-4, 6-8, and 10 (“Challenged Claims”) of U.S. Patent No. 11,863,223 (“the ’223 Patent”).

Compelling evidence presented in this Petition demonstrates at least a reasonable likelihood that Petitioner will prevail with respect to at least one of the Challenged Claims. Accordingly, Petitioner respectfully submits that an IPR should be instituted, and that the Challenged Claims should be canceled as unpatentable.

## **II. REQUIREMENTS FOR IPR UNDER 37 C.F.R. § 42.104**

### **A. Grounds for Standing Under 37 C.F.R. § 42.104(a)**

Petitioner certifies that the ’223 Patent is available for IPR. The present petition is being filed within one year of service of a complaint against Apple. Petitioner is not barred or estopped from requesting IPR of the Challenged Claims on the below-identified grounds.

### **B. Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested**

Petitioner requests an IPR of the Challenged Claims on the grounds set forth in the table below, and requests that each of the Challenged Claims be found unpatentable for the reasons described within the Petition and in EX1003, the Declaration of Dr. Regan Zane (“Expert Declaration”). EX1003, ¶¶30-143.

| Ground   | '223 Patent Claims | Basis for Rejection   |
|----------|--------------------|-----------------------|
| Ground 1 | 1-4, 6-8, 10       | §103: Wojcik-Franklin |
| Ground 2 | 1-4, 6-8, 10       | §103: Spigen-Partovi  |

The '223 Patent was filed on July 22, 2021, and claims priority to U.S. Provisional Patent Application No. 62/511,280, which was filed on May 25, 2017 (“Critical Date”). EX1001, 1:7-14. As explained below, each prior art reference that forms the basis of the Grounds of this Petition pre-dates the '223 Patent’s earliest proclaimed priority date, which Petitioner does not concede.

Wojcik qualifies as prior art under 35 U.S.C. § 102(a)(1)-(2). Specifically, Wojcik (EX1004) is a patent application publication that was filed February 8, 2016, and published October 6, 2016.

Franklin qualifies as prior art under 35 U.S.C. § 102(a)(1)-(2). Specifically, Franklin (EX1005) is a patent application publication that was filed July 8, 2015, and published January 7, 2016.

Spigen qualifies as prior art under 35 U.S.C. § 102(a)(1) as it was publicly available more than 1 year before the '223 Patent’s earliest proclaimed priority date. EX1024, EX1025; EX1003, ¶95. Specifically, Spigen (EX1006) was publicly available at least by March 3, 2016. *Id.*

Partovi qualifies as prior art under 35 U.S.C. § 102(a)(1)-(2). Specifically, Partovi (EX1007) is a patent application publication that was filed April 28, 2010

and published March 3, 2011.

### **C. Claim Construction**

All claim terms should be construed according to the *Phillips* standard.

*Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100.

The instant Petition demonstrates obviousness of the Challenged Claims consistent with Petitioner's district court constructions (reproduced below), which Petitioner presents and applies within this Petition:

| Claim Term                                                                                                                                                                                                                                                                               | Construction              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| “A case for an electronic device wherein the electronic device has a receiver coil for wireless charging constructed within the electronic device and the receiver coil is formed in between an inner boundary and an outer boundary, the case comprising:”<br><br>(Claims 1-4, 6-8, 10) | The preamble is limiting. |

Petitioner respectfully submits that no other claim terms need be construed to resolve issues of controversy in the present Petition. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). Petitioner reserves the right to respond to any constructions offered by Patent Owner or adopted by the Board.

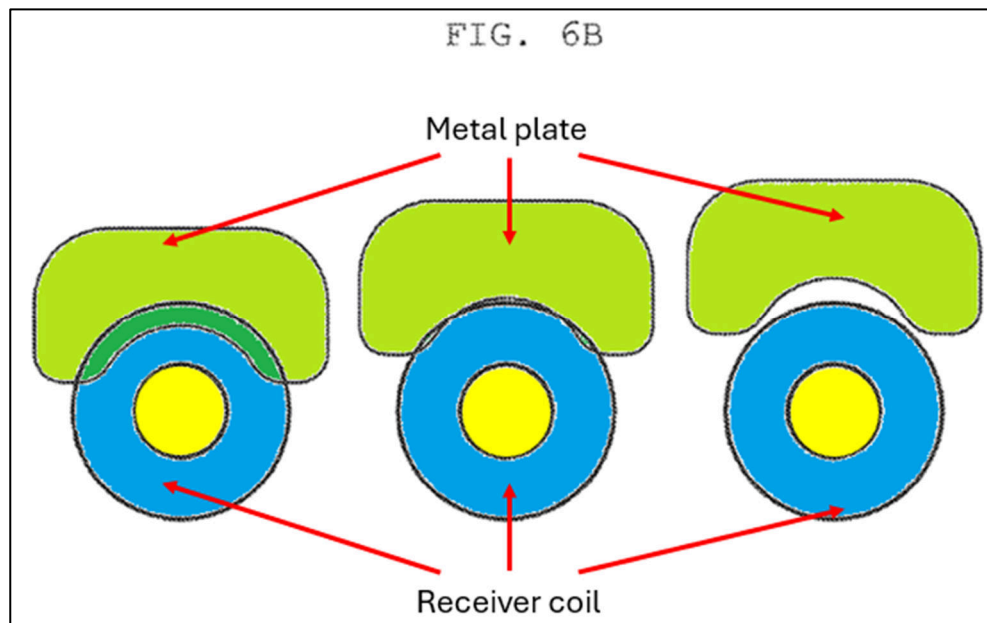
## **III. SUMMARY OF THE '223 PATENT**

### **A. Brief Description**

The '223 Patent purportedly provides “a case for an electronic device

wherein the electronic device has a receiver coil for wireless charging and the receiver coil is formed in between an inner circle and an outer circle, the case including “a hard protective frame constructed to receive the electronic device therein wherein the hard protective frame faces the electronic device; and a metal plate constructed to be received in the recess.” EX1001, Abstract.

The '223 Patent explains that the “metal plate is constructed to enable magnetic retention or attachment of the case to a support having a magnet.” EX1001, Abstract. Various configurations of the metal plate, including its shape and position relative to the receiver coil of the electronic device, are contemplated. EX1001, Abstract, FIGs. 1A-1D, 2A-2B, 3A-3C, 4A-4C, 6B, 12, 15, 16, 18.



EX1001, FIG. 6B.

FIG. 6B, as highlighted above, shows three possible metal plate-receiver coil

configurations where the metal plate is highlighted light green, the receiver coil is highlighted blue, and the interior of the receiver coil is highlighted yellow.

EX1001, 2:57-58, FIG. 6B. At left, a rounded concave edge of the metal plate “may be placed in between the inner boundary [] and the outer boundary []” of the receiver coil. EX1001, 4:31-34. In the middle, the “rounded concave edge [] [of the metal plate] may overlap with the outer boundary” of the receiver coil.

EX1001, 4:34-36. At right, the “rounded concave edge [] [of the metal plate] may be placed outside the outer boundary” of the receiver coil. EX1001, 4:36-37.

With respect to the benefits of such a configuration, the '223 Patent explains:

The metal plate [] of the present invention helps a case with an electronic device installed therein that is magnetically attracted and retained by the support having a magnet, and at the same time, the case having the metal plate [] does not substantially impede or prevent wireless charging of the electronic device. In addition, the metal plate does not substantially impede or prevent wireless charging of the electronic device, and thus a user does not have to remove the metal plate for wireless charging.

EX1001, 6:36-44.

## **B. Prosecution History Summary**

The '223 Patent issued January 2, 2024, from U.S. Patent Application No.

17/443,183 (“the ’183 application”), which was filed July 22, 2021. *See* EX1002.

During prosecution, Examiner Trandai issued a single Office action on February 2, 2023, rejecting all claims based on a combination of U.S. Patent Publication No. 2016/0294427 (“Wojcik”) and U.S. Patent Publication No. 2016/0056664 (“Partovi ’664”). EX1002, 111-117. Responsive to the rejection, the Applicant amended independent claim 1 to add “wherein the metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary of the receiver coil,” and argued that the combination of Wojcik and Partovi ’664 does not render obvious this additional feature. EX1002, 156-165. Following the Applicant filing a terminal disclaimer (EX1002, 173-174, 177) on August 10, 2023, Examiner Trandai subsequently allowed the claims on August 21, 2023. EX1002, 180-184. In doing so, Examiner Trandai failed to offer an express statement of reasons for allowance. EX1002, 180-184.

Notably, however, the features that the Applicant added to the claims, which apparently provided the basis for the unexplained allowance, are plainly disclosed by U.S. Patent Application Publication No. 2016/0003270A1 (“Franklin”).

Both Wojcik and Franklin were of record during prosecution. *See, e.g.*, EX1002, 113-117. Specifically, Examiner Trandai relied on Wojcik for a rejection (EX1002, 113-117), and Franklin was cited to Examiner Trandai during the earlier prosecution of related U.S. Patent No. 10,469,119 (EX1031, 91, 94). *See also*

EX1030, 2; MPEP § 609.02 (“The examiner of the continuing application will consider information which has been considered by the Office in the parent application”). Despite that, the Examiner apparently overlooked the relevance to the ’223 Patent’s claims of Wojcik and Franklin’s combined teachings. And, as demonstrated below with reference to Dr. Zane’s testimony, a POSITA would have found the subject matter of at least the ’223 Patent’s independent claim obvious over their predictably combined disclosures. EX1003, ¶¶44-78.

For at least that reason, Petitioner respectfully submits that the ’223 Patent issued as a consequence of material error.

#### **IV. LEVEL OF ORDINARY SKILL IN THE ART**

A person of ordinary skill in the art (“POSITA”) relating to the subject matter of the ’223 Patent as of the Critical Date would have had (1) at least a bachelor’s degree in electrical engineering or a related field, and (2) at least two years of industry experience in consumer electronics or similar systems. EX1003, ¶27. Additional graduate education could substitute for professional experience, and *vice versa*. *Id.*

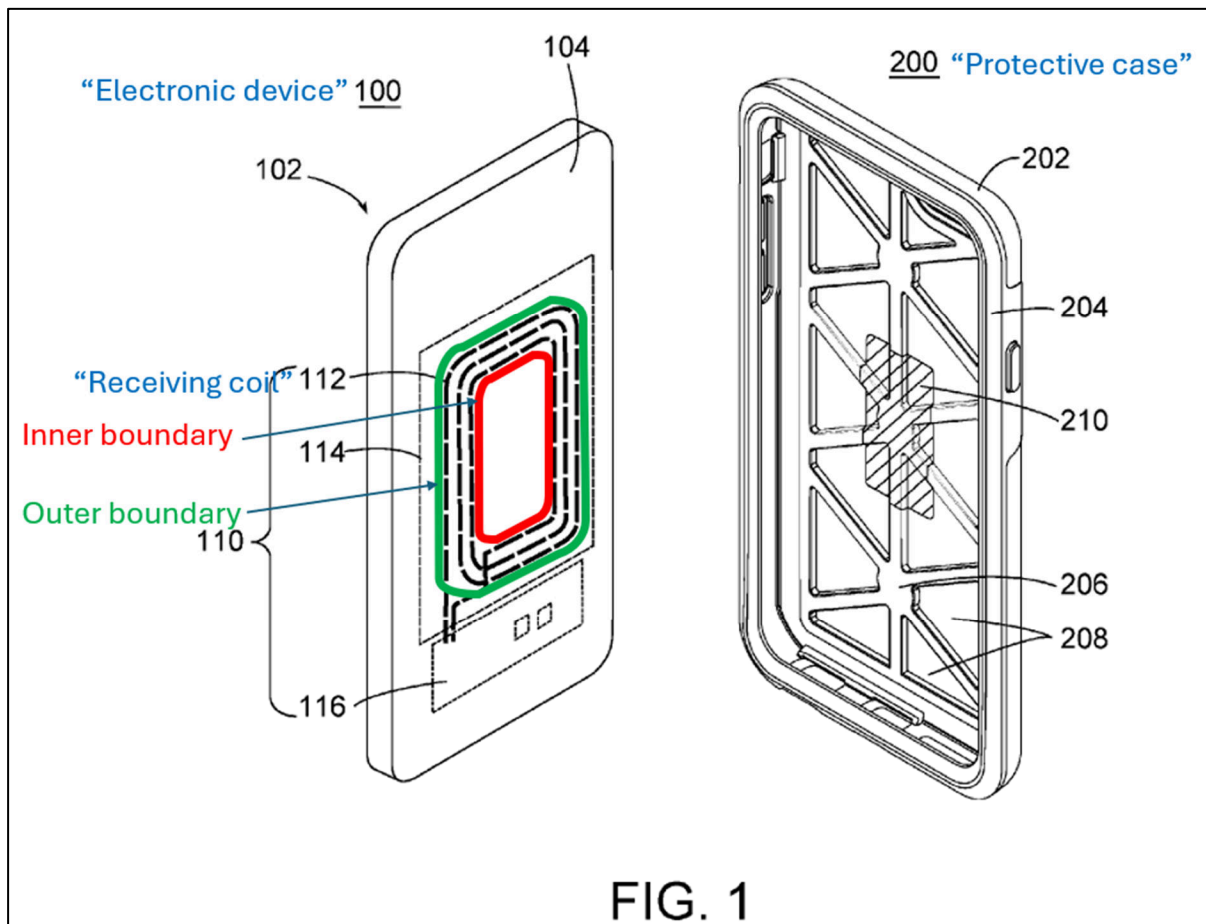
#### **V. THE CHALLENGED CLAIMS ARE UNPATENTABLE**

##### **A. GROUND 1: Wojcik-Franklin Renders Obvious Claims 1-4, 6-8, and 10**

##### **1. Wojcik**

Wojcik discloses an “[e]lectronic [d]evice [c]ase with [i]nductive [c]oupling [f]eatures.” EX1004, Title. Specifically, Wojcik describes a “protective case” that “includes a shell for receiving and at least partially covering an electronic device.” EX1004, Abstract; *see id.*, claim 1, [0022], [0023], FIGs. 1, 4A. Wojcik explains that the case includes a core that “is affixed to the back portion of the shell at a location that coincides with a center region of the wireless charging coil of the wireless charging circuitry of the installed electronic device.” EX1004, Abstract; *see id.*, claim 1 (“protective case for an electronic device having wireless charging circuitry and a wireless charging coil proximate a back surface of the electronic device”).

As shown in Wojcik’s FIG. 1 (reproduced below), the “electronic device 100” has a “receiving coil 112” that is formed in between an inner boundary (shown in red) and an outer boundary (shown in green). EX1004, FIG. 1. The “receiving coil 112” is part of a “wireless charging circuit 110” that “allows electronic device 100 to be charged and/or powered from an external device (not pictured) without having to attach a cable or other type of electromechanical connector between electronic device 100 and the external device.” EX1004, [0022] (Wireless charging circuit 110 may include a receiving coil 112 having a ferrite backing 114, and a printed circuit board 116 inside a housing 102 of electronic device 100).

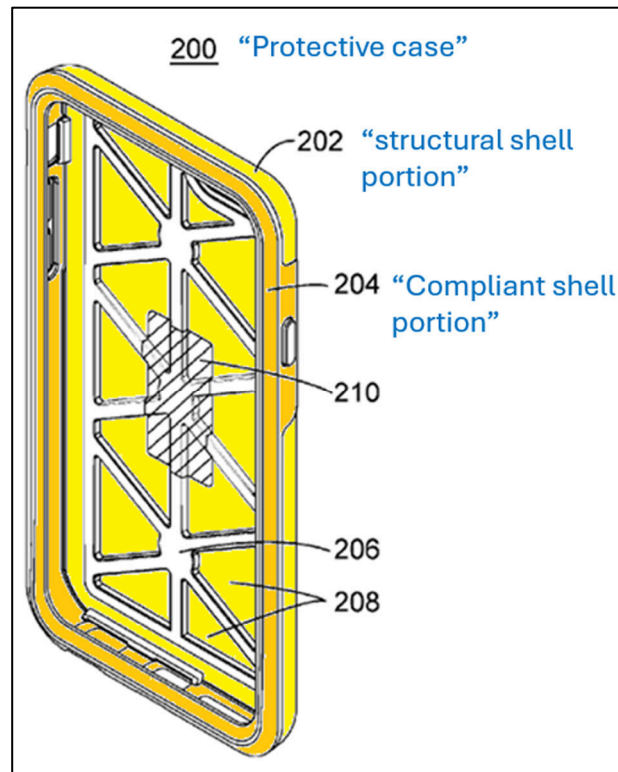


EX1004 (Wojcik), FIG. 1 (annotated, highlighted).

The “protective case 200” includes a “structural shell portion 202 and a compliant shell portion 204,” where the shell portion 202 “provide[s] some degree of stiffness or rigidity to protective case 200 and may also provide some resistance to abrasion,” as illustrated below in excerpted FIG. 1. EX1004, [0023].

“Protective case 200 may further include, but does not require, an internal cushion layer 206 which may provide a softer or more compliant surface against one or

more surfaces of the electronic device 100 rests when electronic device 100 is inserted in protective case 200.” EX1004, [0023].



EX1004 (Wojcik), FIG. 1 (annotated, highlighted, excerpted); *see also id.*, FIG. 2.

Wojcik’s “protective case 200” further includes “a high magnetic permeability material, such as ferrite 210, disposed to correspond to a center of the receiving coil 112.” EX1004, [0025], FIG. 1. Wojcik explains that “[a] high magnetic permeability material, such as a ferrite (or another material having ferromagnetic properties), may thus be applied as a sheet backing to the antenna/coil in a wireless power transfer circuit to prevent effects of the magnetic field on other circuitry, and vice versa.” EX1004, [0016]. “[A] ferrite material

may also be used as a core (e.g., in or near the center of) a power transmitting coil”; this “placement concentrates, and to a degree directs or steers the magnetic flux, increasing the magnetic coupling efficiency or the efficiency of the magnetic induction power transfer, between the transmitting and receiving coils.” EX1004, [0016].

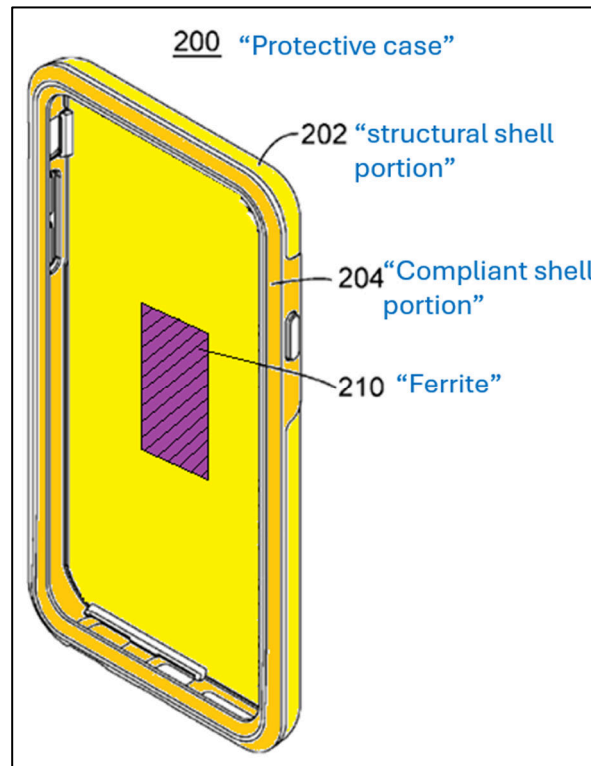
Wojcik explains that, “[i]n FIG. 1, ferrite 210 is implemented in part of the rigid shell portion 202 and in part of cushion layer 206,” such that the ferrite is received in between the protective cover (rigid shell portion 202) and the electronic device. EX1004, [0027], FIG. 1. Wojcik further explains that “[f]errite 210 may be affixed to, adhered to, attached to, and/or *embedded in any portion of protective case 200*,”<sup>1</sup> adding that “[i]n some situations, ferrite 210, or another material having high magnetic permeability relative [to] other components of protective case 200, may be molded into, molded with, or *molded inside of one of the components of protective case 200 such that it is not externally visible on protective case 200*.” EX1004, [0028].

Thus, as modified by Wojcik’s own description of its alternative embodiment, ferrite 210 is molded inside one of the components of the protective case (e.g., the rigid shell portion 202), “such that it is not externally visible on

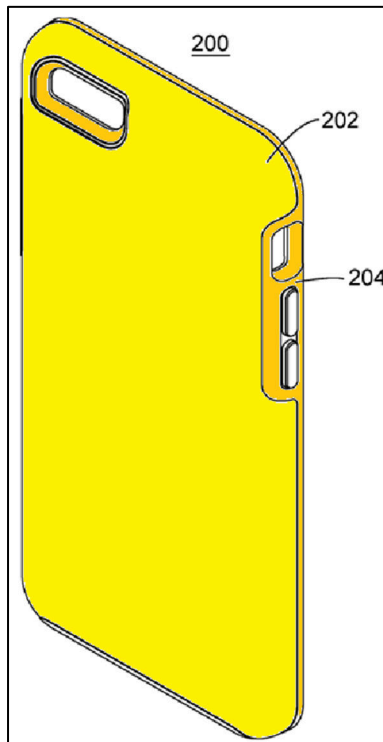
---

<sup>1</sup> Unless otherwise indicated, emphases throughout this Petition are added.

protective case 200.” *Id.* This is illustrated below, where optional cushion layer 206 is not shown (or not included), per Wojcik. EX1004, [0023] (“Protective case 200 may further include, but does not require, an internal cushion layer 206”).



EX1004 (Wojcik), FIG. 1 (annotated, highlighted, excerpted, modified to omit optional cushion layer 206), [0023]; *see also id.*, FIG. 2.



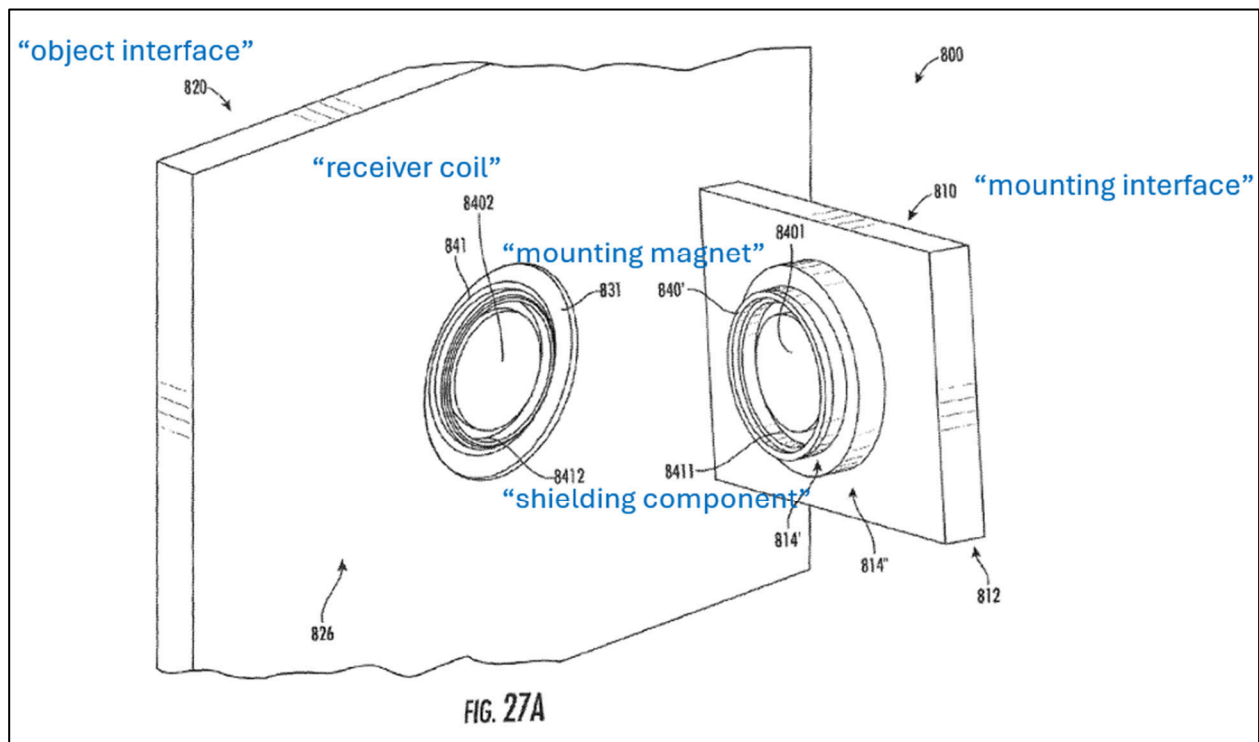
EX1004 (Wojcik), FIG. 3 (annotated, highlighted, modified).

Wojcik further invites the inclusion of additional magnetic material within its protective case to enhance magnetic coupling for wireless charging, stating for example that the “protective case may also include a ferrite core, *or other high magnetic permeability material insert*, core, material, or region *co-molded or otherwise formed in a back wall of the protective case to enhance magnetic coupling of the wireless charging circuitry.*” EX1004, [0038]; *see also id.*, [0039] (“The central ferrite, or other high magnetic permeability material, and/or side portion ferrites may also *enhance magnetic coupling with such external device by increasing the magnetic coupling factor...*”), [0040] (“The central ferrite, or other high magnetic permeability material, and/or side portion ferrites may also enhance

magnetic coupling with such external device by increasing the magnetic coupling factor, concentrating the magnetic flux, and/or constraining or steering the magnetic field”).

## 2. Franklin

Franklin describes an apparatus for mounting an electronic device that allows for wireless charging through the mount. EX1005, Abstract, [0184]. As illustrated in FIGs. 27A-27B (FIG. 27A reproduced below), Franklin discloses (1) an object interface 820 with magnets 831, 841 and receiver coil 8402 and (2) a mounting interface 810 with magnet 840' and transmitter coil 8401. EX1005, [0336]-[0338], [0342]-[0344], FIGs. 27A-27B.



EX1005 (Franklin), FIG. 27A (annotated); *see also id.*, FIG. 27B.

Like Wojcik, Franklin describes a system that allows for wireless charging of an electronic device using a receiver coil included within the device. EX1005, [0334]-[0336], [0342] (describing “an inductive charging relationship” established between the transmitter coil 8401 and the receiver coil 8402, with “an engagement force produced between the [magnets]” maintaining the position of the receiver coil 8402 “within the charging range of the transmitter coil” 8401), [0054] (“The term ‘magnet’ refers to any material or component that responds to a magnetic field”); EX1004, Abstract (“The core is affixed to the back portion of the shell at a location that coincides with a center region of the wireless charging coil of the wireless charging circuitry of the installed electronic device,” which “increases magnetic coupling between the wireless charging coil of the installed electronic device and a source charging coil when the protective case is placed in proximity to the source charging coil”), [0038] (“The protective case may also include a ferrite core, or other high magnetic permeability material insert, core, material, or region co-molded or otherwise formed in a back wall of the protective case to enhance magnetic coupling of the wireless charging circuitry”), [0039], [0040]. Franklin further describes simultaneously using magnets to adhere and promote correct alignment between the electronic device and a charger. EX1005, [0334]-[0336], [0342], [0054].

Franklin expresses a concern, however, that “ferromagnetic components ... may interfere with the wireless charging field.” EX1005, [0344]; *see also id.*, [0349] (“a mounting apparatus and/or an object interface may be configured (e.g., via the configuration of shielding materials, flux guides, caps, etc.) so that interference from ferromagnetic components and/or magnetic fields comprised by the mounting apparatus and/or the object interface may be substantially prevented”).

To address this concern, Franklin explains that both the object interface 820 and the mounting interface 810 include respective magnets to achieve an engagement force and respective shielding components 8412, 8411 that are “configured so that the enclosure comprised by the second shielding component 8412 and the first shielding component 8411 may be configured to guide, block, divert, etc. magnetic fields and/or lines of flux associated with ferromagnetic components of the mounting apparatus (e.g., a mounting magnet, etc.) that may interfere with the wireless charging field” between the receiver coil 8402 of the object interface 820 and the mounting interface 810. EX1005, [0344].

Franklin describes, for example, that “the second shielding component 8412 may be configured to agree with the first shielding component 8411 so that the receiver coil component 8402 and the transmitter coil component 8401 may be substantially fully enclosed by the second shielding

component 8412 and the first shielding component 8411 when the object interface 820 is fully engaged with the mounting apparatus 810,” as shown in FIGS. 27A and 27B. EX1005, [0344]. “Substantially fully enclosing the receiver coil component 8402 and the transmitter coil component 8401 within an enclosure comprised by the second shielding component 8412 and the first shielding component 8411 may isolate a wireless charging field (e.g., a magnetic field) that is associated with the wireless charging relationship relative to other ferromagnetic components and/or magnetic fields supported by or associated with the mounting apparatus 810 and/or the object interface 820.” EX1005, [0344].

This solution isolates the wireless charging fields from the additional components for mounting, and the design and shielding components not only avoid interference, they directly support flux paths by shaping and enhancing the coupling of fields for wireless charging, consistent with Wojcik. EX1003, ¶42 (citing EX1004, [0016], [0038]-[0040]).

“Thus, the enclosure comprised by the second shielding component 8412 and the first shielding component 8411 may protect the integrity of the wireless charging field associated with the wireless charging relationship.” EX1005, [0344], [0349] (explaining that components can be configured relative to a charging device “so that the wireless charging field is undisturbed” and “[a]lternatively or additionally, a mounting apparatus and/or an object interface

may be configured (e.g., via the configuration of shielding materials, flux guides, caps, etc.) so that interference from ferromagnetic components and/or magnetic fields comprised by the mounting apparatus and/or the object interface may be substantially prevented.”).

### **3. The Wojcik-Franklin Combination**

#### *(a) Wojcik and Franklin are Analogous Art to the '223 Patent*

Wojcik and Franklin are analogous art to the '223 Patent, which is generally directed to “a case having a metal plate for magnetically mounting the case with an electronic device installed therein to a support having a magnet, and more particularly, to a metal plate having a rounded concave edge.” EX1001, 1:16-22 (Field of the Invention).

Wojcik discloses an “[e]lectronic [d]evice [c]ase with [i]nductive [c]oupling [f]eatures.” EX1004, Title. Specifically, Wojcik describes a “protective case” that “includes a shell for receiving and at least partially covering an electronic device,” and that includes a core that “is affixed to the back portion of the shell at a location that coincides with a center region of the wireless charging coil of the wireless charging circuitry of the installed electronic device.” EX1004, Abstract; *see also id.*, claim 1 (“protective case for an electronic device having wireless charging circuitry and a wireless charging coil proximate a back surface of the electronic device”), [0022], [0023], FIGS. 1, 4A.

Similar to Wojcik, Franklin describes an apparatus for mounting an electronic device that allows for wireless charging through the mount using a receiver coil included within the device, while simultaneously using magnets to adhere and promote correct alignment between the electronic device and a charger. EX1005, Abstract, [0038], [0039], [0040], [0054], [0334]-[0336], [0342]-[0344]; FIGS. 27A-27B.

Accordingly, Wojcik and Franklin are both directed to the same field of endeavor as the '223 Patent, at least insofar as they both describe magnetically mounting a case/apparatus with an installed electronic device. EX1003, ¶47; *Graham v. John Deere Co.*, 383 U.S. 1 (1966). And, for at least that reason, Wojcik and Franklin are analogous art to the '223 Patent.

Moreover, Wojcik and Franklin are also reasonably pertinent to the problem the '223 Patent purports to solve, for example, that a “metal plate may impede or prevent wireless charging of a cell phone because the metal plate blocks electromagnetic field for wireless charging.” EX1001, 1:26-48; *see also id.*, 1:48 (“This invention is directed to solve this problem”). For example, both Wojcik and Franklin disclose systems that enable wireless charging of a cell phone or other electronic device in which the electromagnetic field is not blocked by a metal plate. EX1003, ¶48; EX1004, Abstract; *see also id.*, claim 1 (“protective case for an electronic device having wireless charging circuitry and a wireless charging coil

proximate a back surface of the electronic device”), [0022], [0023], FIGS. 1, 4A; EX1005, Abstract, [0038], [0039], [0040], [0054], [0334]-[0336], [0342]-[0344]; FIGS. 27A-27B.

And, for at least that additional reason, Wojcik and Franklin are analogous art to the ’223 Patent. *Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015) (“Prior art is analogous...if it is reasonably pertinent to the particular problem the inventor is trying to solve”); *see also Comaper Corporation v. Antec, Inc.*, 596 F.3d 1343, 1351 (Fed. Cir. 2010); EX1003, ¶¶48-49.

(b) *A POSITA would have been Motivated to Combine Wojcik and Franklin*

Franklin explains that “mounting interface 810 may comprise a wireless charging device” that “may comprise a transmitter coil component 8401,” and “object interface 820 may be a case for a mobile electronic device (e.g., a tablet computer, etc.) that is not configured to participate in a wireless charging relationship.” EX1005, [0336], [0338].

Additionally, Franklin explains that “an object interface may be configured to attach to a coil object ... so that a compatible wireless charging component comprised by the object may be positioned within a charging range of ... the mounting apparatus.” EX1005, [0057]. Further, a POSITA would have understood a “coil object” to include, for example, a cell phone with a receiver coil for wireless charging, like the electronic device of Wojcik’s FIG. 1. EX1005,

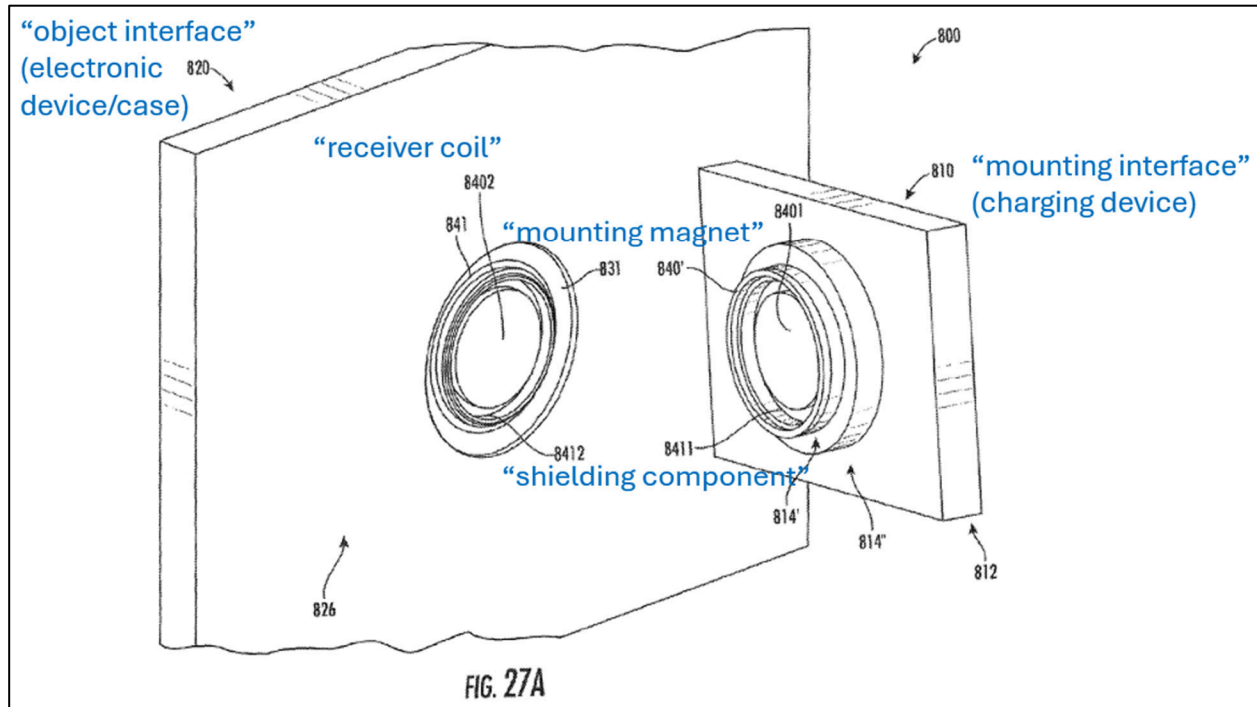
[0057] (“The term “coil object” refers to an object (as defined above) that comprises a wireless charging component that is configured to participate in a wireless charging relationship (i.e., a wireless charging device, such as a wireless charging base station, a mobile device capable of being charged wirelessly, etc.).”), [0346]; EX1003, ¶51.

A POSITA would have further noted the similarities between Wojcik and Franklin. For example, FIGS. 1-3 of Wojcik depicting a receiver coil in a phone and FIG. 4 of Wojcik show nearly identical coil designs in a case, offering an option for the coil in both the phone and the case. EX1003, ¶52; EX1004, FIGS. 1-4. Similarly, Franklin describes options for the coil to reside in a case or in a coil object attached to the case. EX1003, ¶51; EX1005, [0332]-[0352].

As such, a POSITA would have been motivated to combine Wojcik with Franklin to apply Franklin’s solutions to Wojcik’s similar system in order to be compatible with a cell phone that includes wireless charging. EX1003, ¶53.

In such a configuration, a POSITA would have understood that the object interface 820 of Franklin may comprise, for instance, Wojcik’s protective case 200 when electronic device 100 is installed in protective case 200, such that object interface 820 comprises a mobile electronic case with mounting magnets and a shielding component and a receiver coil attached to the case (e.g., a cell phone with

a receiver coil for wireless charging installed in the case). EX1003, ¶54; EX1004, [0023], EX1005, [0336], [0338].



EX1005, FIG. 27A (annotated).

Consistent with the teachings of both references, a POSITA would have been motivated by Franklin to modify Wojcik's case to include additional mounting magnets (e.g., magnets "including a ferrous metal") surrounding areas corresponding to the electronic device's receiver coil. EX1003, ¶55. The resulting combination would improve wireless charging through two complementary mechanisms. EX1003, ¶¶56-57. First, the added mounting magnets, as taught by Franklin, would provide an engagement force that maintains alignment of the electronic device's receiver coil within charging range of an external transmitter

coil. EX1004, [0019], [0022]; EX1005, [0342]; EX1003, ¶56. Second, the inclusion of the high magnetic permeability material (i.e., Wojcik's ferrite) would concentrate and steer the magnetic flux between the coils. EX1004, [0016], [0025], [0043]; EX1003, ¶57.

These mechanisms would increase the magnetic coupling between the receiver and transmitter coils and, consequently, the efficiency of the magnetic induction power transfer between the coils. EX1004, [0016], [0025]; EX1003, ¶58.

Regarding the flux concentration mechanism, *see* EX1004, [0005] (“The coupling region increases or improves magnetic inductive coupling between the wireless charging coil of the installed electronic device and a source charging coil that is external to the cover when the cover with the installed electronic device is placed in proximity to the source charging coil”), [0016] (noting that magnetic material placed “in or near the center of” a “power transmitting coil” may “increase[] the magnetic coupling efficiency or the efficiency of the magnetic induction power transfer, between the transmitting and receiving coils”), [0038] (the “*protective case may also include a ... high magnetic permeability material insert ... co-molded or otherwise formed in a back wall of the protective case to enhance magnetic coupling of the wireless charging circuitry*”), [0039] (“*The central ... high magnetic permeability material ... may also enhance magnetic*

*coupling with such external device* by increasing the magnetic coupling factor...”), [0040] (“The central ... high magnetic permeability material ... may also enhance magnetic coupling with such external device by increasing the magnetic coupling factor, concentrating the magnetic flux, and/or constraining or steering the magnetic field”); EX1005, [0054], [0334]-[0336]. Regarding the alignment mechanism, *see* EX1005, [0342] (“The wireless charging relationship established between the transmitter coil component 8401 and the receiver coil component 8402 may be an inductive charging relationship, and *an engagement force produced between the [magnets] may maintain the position of the receiver coil component 8402 within the charging range of the transmitter coil component 8401*”).

In particular, while it is desirable to have a case to protect the electronic device, the case is positioned between the electronic device (and its receiver coil) and a charging device (and its transmitter coil), which could, in the absence of one or more mounting magnets (per Franklin) in the case, limit the adherence and alignment of the electronic case to the charging device. EX1003, ¶60.

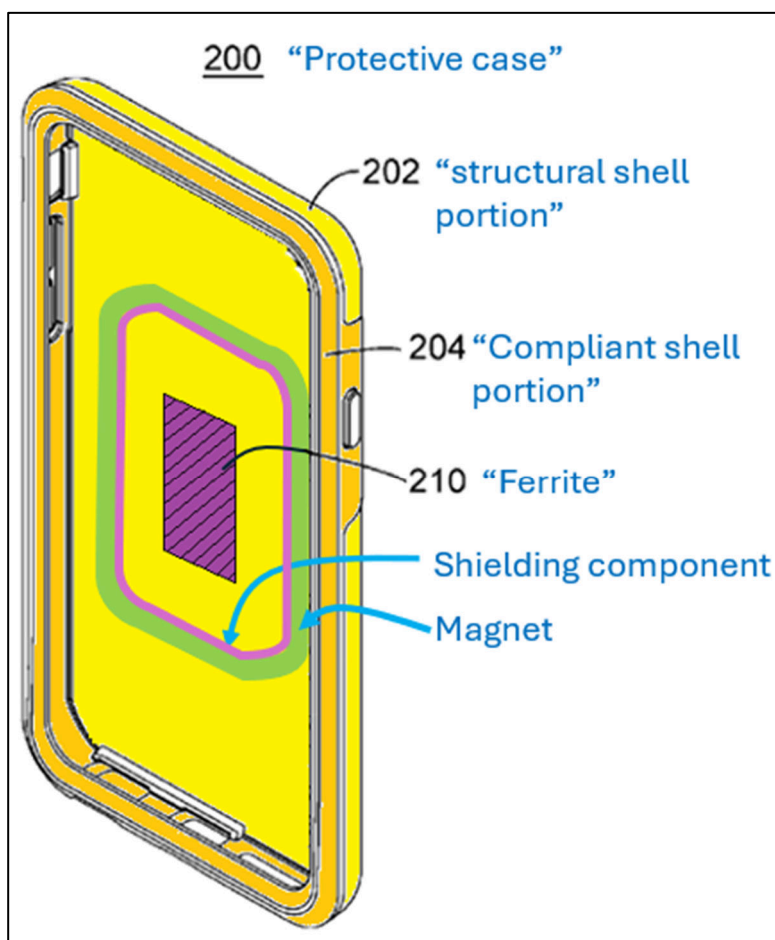
Moreover, Wojcik itself recognizes that an electronic device may have separate magnets for alignment and notes that “the thickness of the case often limits how closely the electronic device can be places to a ... charging surface.” EX1004, [0022], [0017] (“The thickness of case material between the wireless

power transfer antenna or coil and any wireless power transmitter can reduce the efficiency or even prevent the power transfer from taking place. In addition, the case material may cause a shielding or blocking effect and further limit the power transfer between the devices.”). As such, a POSITA would have been motivated to apply the teachings of Franklin to maintain the magnetic coupling relationship between the device and its charger by preserving the closeness between the electronic device and the charger and further helping to align the receiver and transmitter coils. EX1003, ¶61; EX1004, [0022] (discussing “magnets or other structures for attaching/aligning the rear surface 104 [of the case] to/with the wireless power charger”); EX1005, [0336] (discussing a wireless charging device as the mounting apparatus).

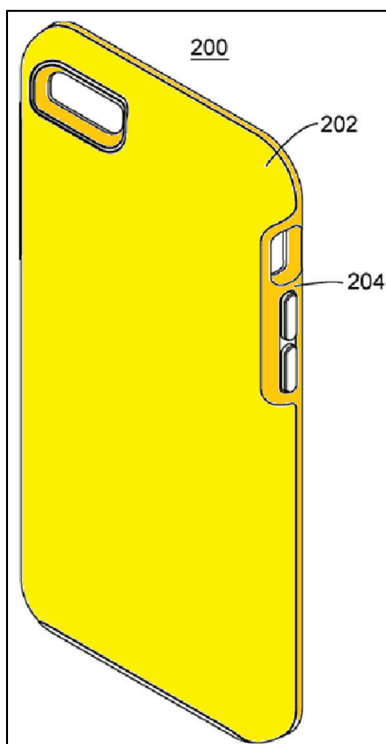
A POSITA would have been further motivated to modify Wojcik’s case so that the magnets do not “interfere with the wireless charging field” created by the receiver coil of Wojcik’s electronic device 100, which Franklin highlights as a potential concern when ferromagnetic components are included in the case. EX1005, [0344], [0349]; EX1003, ¶62. In particular, a POSITA would have been motivated to modify Wojcik’s case to add a magnet and shielding component to “guide, block, divert, etc. magnetic fields and/or lines associated with ferromagnetic components” of Wojcik’s protective case (i.e., magnet). EX1005, [0344], EX1003, ¶62. A POSITA, reviewing Franklin, would have found obvious

that the modification to include the magnet and shielding component would “protect the integrity of the wireless charging field associated with the wireless charging relationship,” per Franklin (i.e., with the shielding component), while retaining the protective functionality of Wojcik’s case and furthering Wojcik’s goal of “enhancing magnetic coupling of the wireless charging circuitry” (i.e., with the magnet). EX1003, ¶62; EX1005, [0344]; EX1004, [0038].

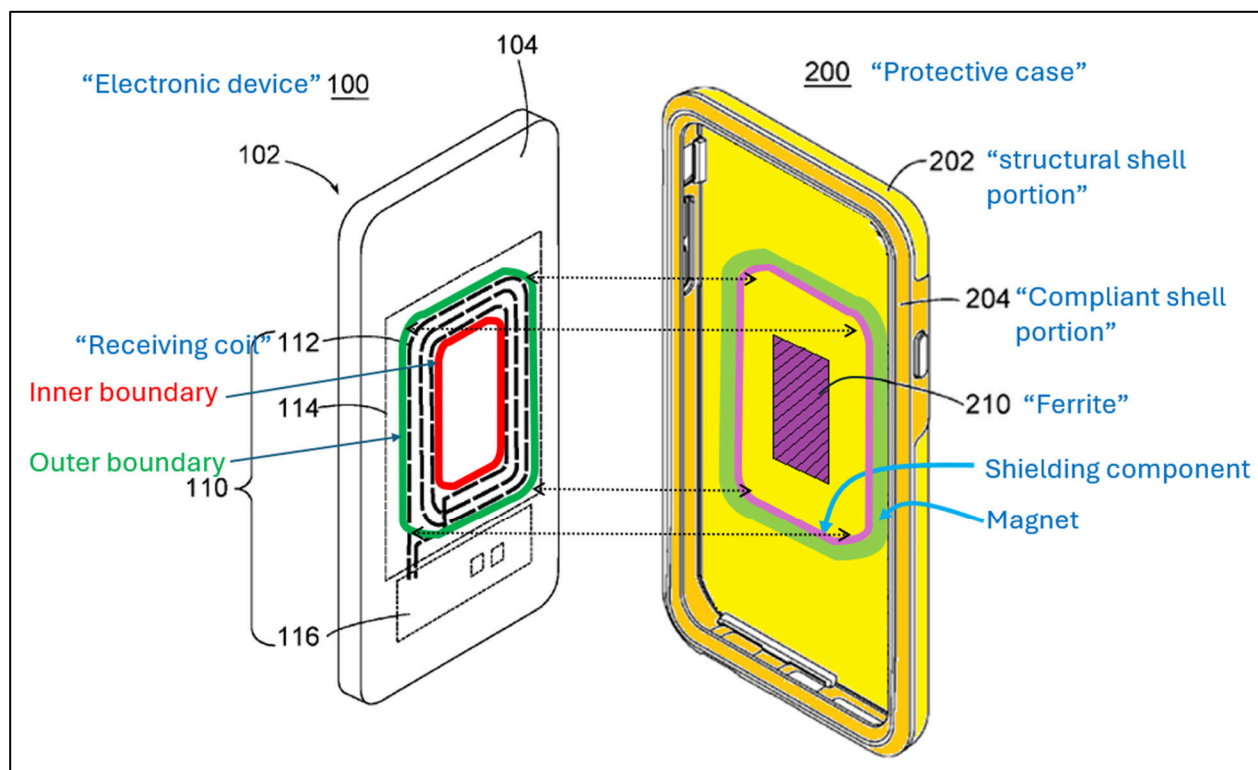
Thus, as enhanced based on Franklin’s teachings, and as shown below in modified FIGs. 1 and 3, Wojcik’s case would retain the advantages of protection and resistance to abrasion and “increasing the magnetic coupling efficiency or the efficiency of the magnetic induction power transfer, between the transmitting and receiving coils” offered by Wojcik’s ferrite core, while further benefitting from an additional “engagement force produced between” magnets on the protective case with magnets on a charging device (e.g., mounting interface) that help to “maintain the position of the receiver coil” of the electronic device within charging range of a respective transmitter coil, without interfering with electromagnetic power transfer. EX1004, [0016], [0023], [0038]; EX1005, [0342], [0344]; EX1003, ¶63.



EX1004, FIG. 1 (annotated, highlighted, excerpted, modified to omit optional cushion layer 206 and add Franklin's shielding component and magnet); *see also* EX1005, FIG. 27A.



EX1004, FIG. 3 (annotated, highlighted, modified).



Wojcik-Franklin Combination.

(c) *A POSITA would have Reasonably Expected Success when Combining Wojcik and Franklin*

Modifying Wojcik's case and electronic device to leverage Franklin's teachings would have required only routine knowledge well within the skill of a POSITA prior to the earliest effective filing date. EX1003, ¶64. Indeed, the modification would have amounted to nothing more than the use of a known technique to improve similar devices – in each instance an electronic device employing induction charging with another device (case or mount) – in a similar way, combining prior art elements to known methods to yield the predictable results described above. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); EX1003, ¶64.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination – electronic device 100 would continue to perform the function of inductive charging and protective case 200 would continue to employ the functions of partially covering and protecting electronic device 100 without interfering with the magnetic field employed for induction charging, but, as taught by Franklin, would leverage mounting magnets and shielding components to promote adherence and correct alignment between electronic device 100 and its charger without interfering with the wireless charging field. EX1003, ¶65. Accordingly, a POSITA would have

more than reasonably expected success when incorporating Franklin's teachings into Wojcik to achieve the motivating advantages described above. EX1003, ¶65.

#### 4. Analysis of Claims

##### (a) *Claim 1*

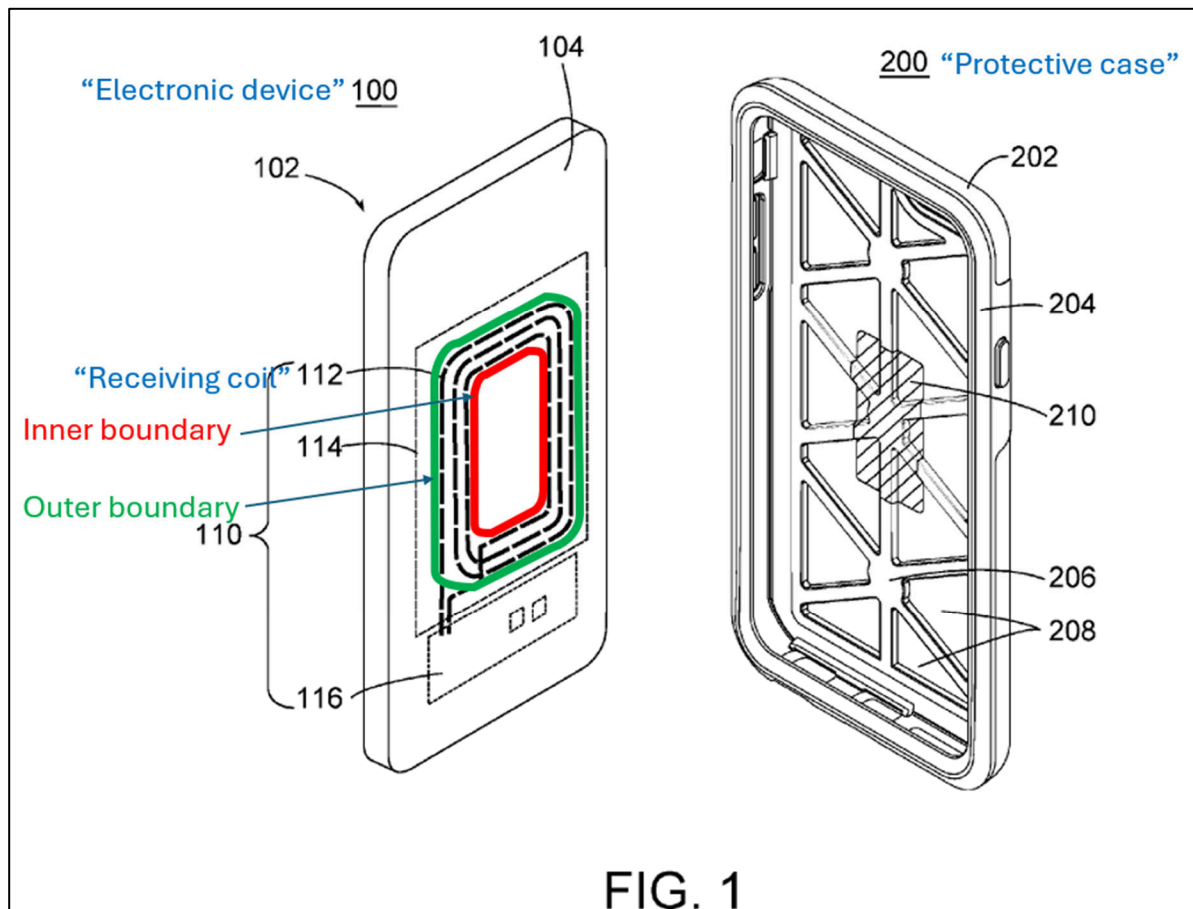
[1pre] *A case for an electronic device wherein the electronic device has a receiver coil for wireless charging constructed within the electronic device and the receiver coil is formed in between an inner boundary and an outer boundary, the case comprising:*

Wojcik discloses an “[e]lectronic [d]evice [c]ase with [i]nductive [c]oupling [f]eatures.” EX1004, Title. Specifically, Wojcik describes a “protective case includes a shell for receiving and at least partially covering an electronic device.” EX1004, Abstract; *see id.*, claim 1, [0022], [0023], FIGs. 1, 4A; EX1003, ¶¶66-68.

Wojcik explains that the case includes a core that “is affixed to the back portion of the shell at a location that coincides with a center region of the wireless charging coil of the wireless charging circuitry of the installed electronic device.” EX1004, Abstract; *see id.*, claim 1 (“protective case for an electronic device having wireless charging circuitry and a wireless charging coil proximate a back surface of the electronic device”).

As shown in FIG. 1 (reproduced below), the “electronic device 100” has a “receiving coil 112” that is formed in between an inner boundary (shown in red)

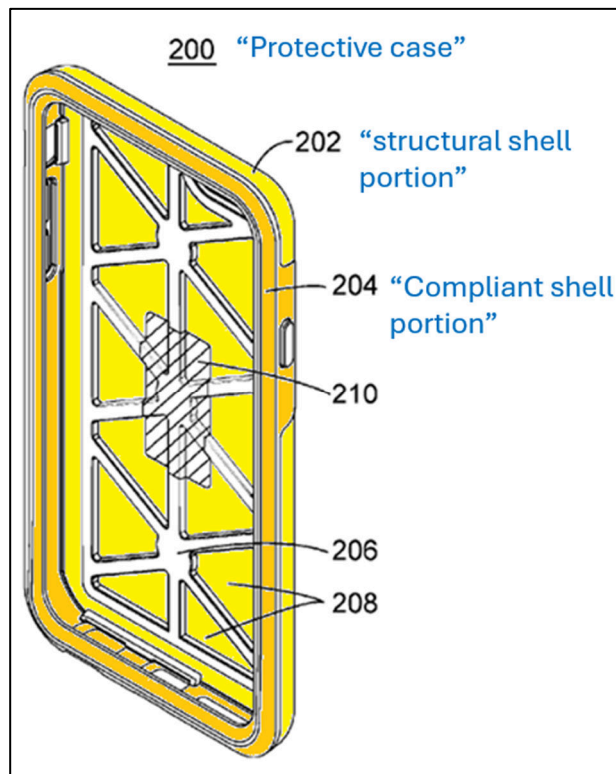
and an outer boundary (shown in green). EX1004, FIG. 1. The “receiving coil 112” is part of a “wireless charging circuit 110” that “allows electronic device 100 to be charged and/or powered from an external device (not pictured) without having to attach a cable or other type of electromechanical connector between electronic device 100 and the external device.” EX1004, [0022] (Wireless charging circuit 110 may include a receiving coil 112 having a ferrite backing 114, and a printed circuit board 116 inside a housing 102 of electronic device 100.).



EX1004, FIG. 1 (annotated).

*[1a] a protective cover constructed to receive the electronic device therein; and*

Wojcik explains that “protective case 200” includes a “structural shell portion 202 and a compliant shell portion 204,” where the shell portion 202 “provide[s] some degree of stiffness or rigidity to protective case 200 and may also provide some resistance to abrasion.” EX1004, [0023]. “Protective case 200 may further include, but does not require, an internal cushion layer 206 which may provide a softer or more compliant surface against one or more surfaces of the electronic device 100 rests when electronic device 100 is inserted in protective case 200.” EX1004, [0023]. Thus, the case includes a protective cover (structural shell portion 202 alone or in combination with compliant shell portion 204) constructed to receive the electronic device 100 therein. EX1003, ¶69.

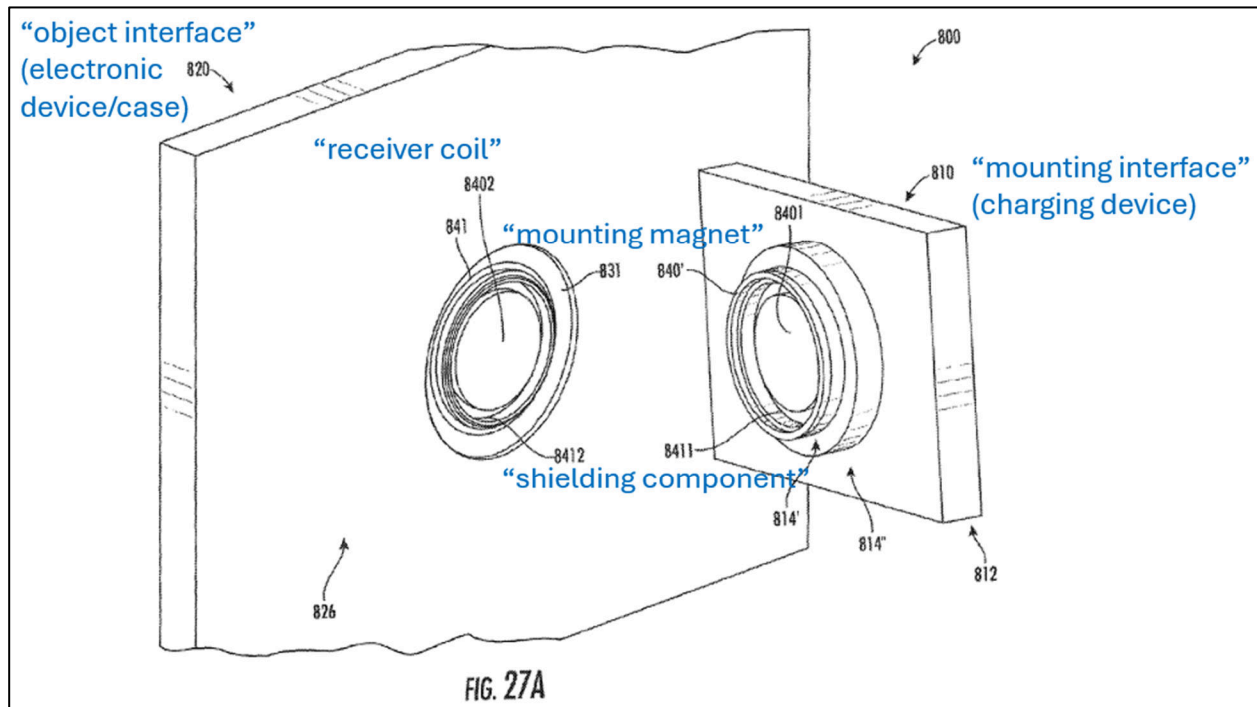


EX1004, FIG. 1 (annotated, highlighted, excerpted); *see also id.*, FIG. 2.

[1b] *a metal plate constructed to be received in between the protective cover and the electronic device,*

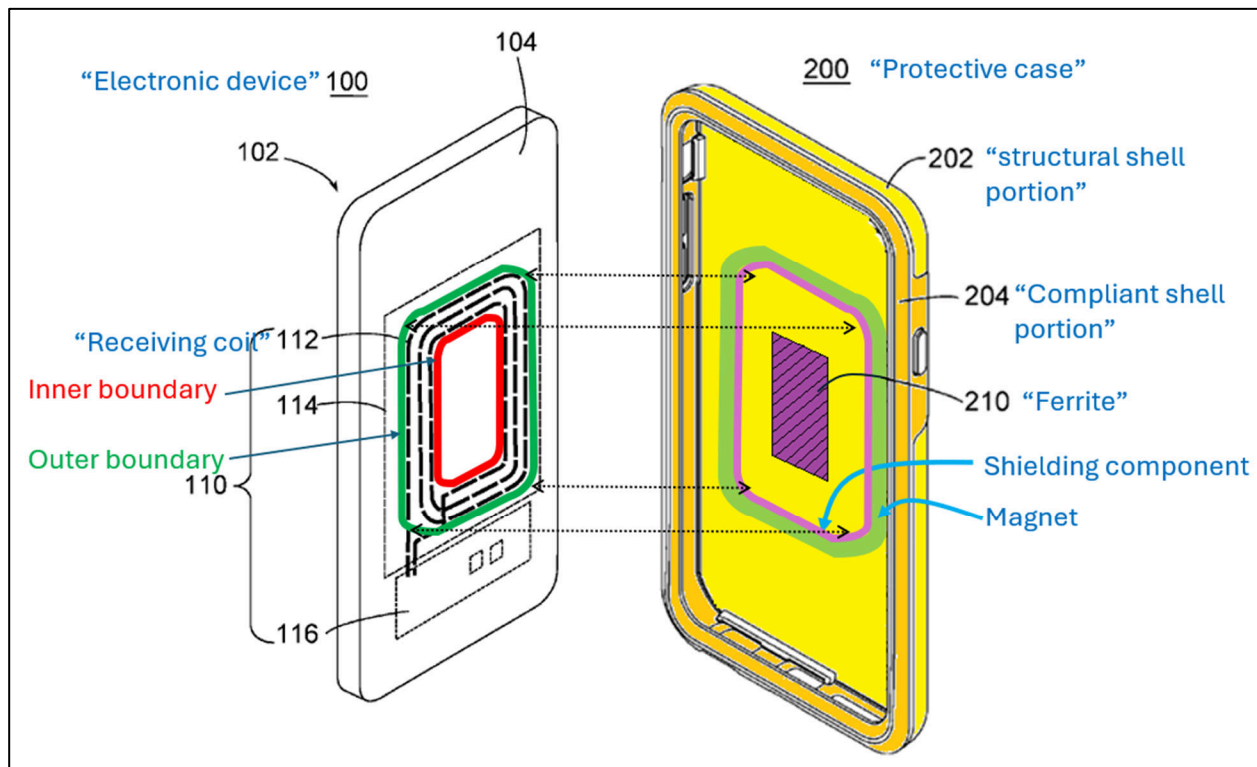
Franklin teaches that mounting magnet, which is a combination of magnet 831 and magnet 841, is included in object interface 820. EX1005, [0338] (“the third mounting magnet may comprise a plurality of magnets, 831 and 841”), [0342], FIGs. 27A-27B; EX1003, ¶¶70-72. In this way, the mounting magnet is a metal plate. EX1003, ¶70. Franklin further explains that “[m]agnet 831 may comprise a round, ferrous **metal plate** with a center opening (i.e., a hole in the

center of the plate),” and “magnet 841 may be a permanent ring magnet that is configured to be attached to the ferrous metal plate.” EX1005, [0338] (emphasis added).



EX1005, FIG. 27A (annotated).

As discussed and shown in the combination section above, in the Wojcik-Franklin Combination, the magnet (metal plate) is received in between the protective cover and the electronic device.



Wojcik-Franklin Combination.

Moreover, a POSITA would have found it obvious for the Wojcik-Franklin Combination case to include a magnet embedded in the case at least in view of Wojcik's teaching that its ferrite could be "affixed to, adhered to, attached to, and/or **embedded in** any portion of protective case." EX1004, [0028]; EX1003, ¶72.

[1c] wherein the metal plate is made of a magnet which produces magnetic flux,

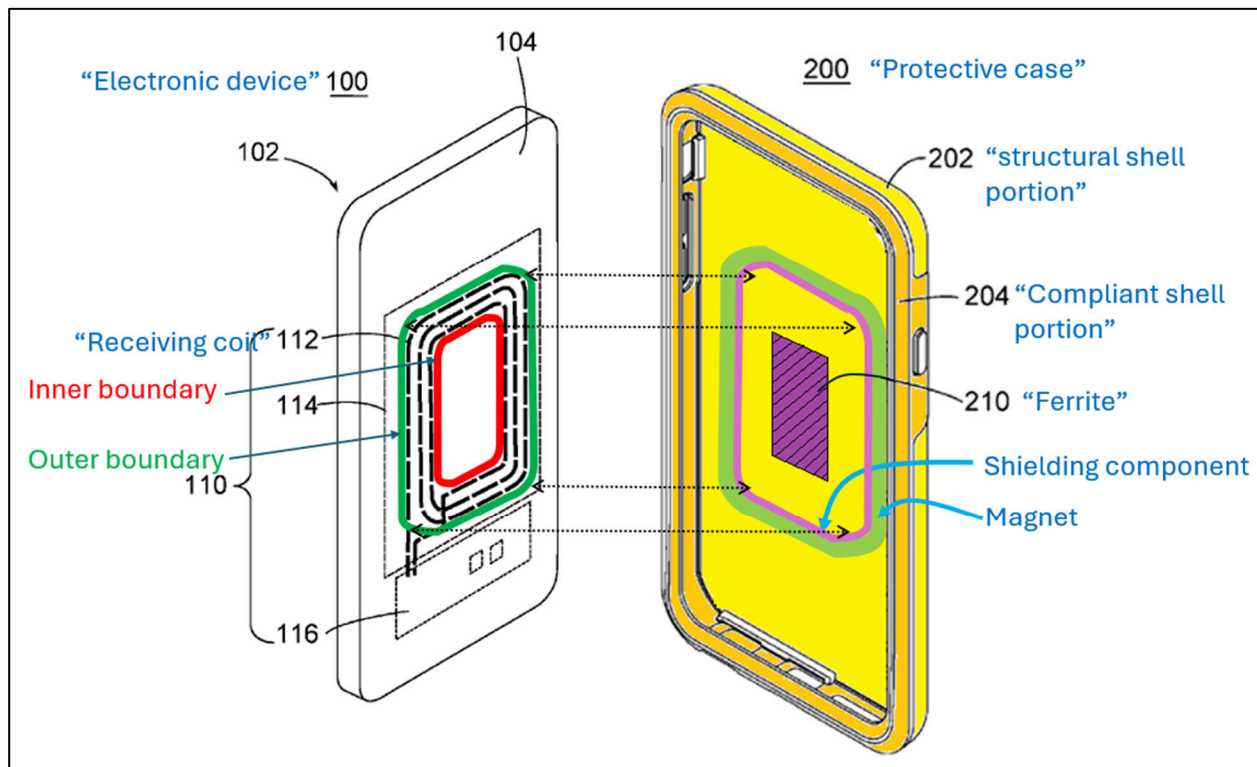
Franklin explains that "[m]agnet 831 may comprise a round, ferrous metal plate," and "magnet 841 may be a permanent ring magnet that is configured to be

attached to the ferrous metal plate.” EX1005, [0338]. A POSITA would have understood that the mounting magnet (combination of magnet 831 and magnet 841) is a metal plate made of a magnet. EX1003, ¶73. Moreover, a POSITA would have understood that a “permanent magnet” would necessarily produce magnetic flux because magnets produce magnetic fields, and magnetic flux is a measure of the total magnetic field through a surface. EX1003, ¶73; EX1005, [0344] (“magnetic fields and/or lines of flux associated with ferromagnetic components”); *see, e.g.*, EX1026, Abstract (“at least one permanent magnet generates flux”); EX1027 (“the magnetic flux created by the magnets”); EX1028 (“magnetic flux from a permanent magnet”).

[1d] *wherein the metal plate received in between the protective cover and the electronic device is positioned to substantially allow magnetic waves to pass through an area formed by the inner boundary of the receiver coil, and*

As discussed and shown in the combination section above, in the Wojcik-Franklin Combination, the metal plate (magnet) received in between the protective cover and the electronic device is positioned such that it does not overlap with an orthographic parallel projection of the receiver coil of an electronic device positioned in the case. EX1003, ¶74.

Further, a shielding component is positioned in the Wojcik-Franklin Combination case on the inside boundary of the magnet that further acts to “guide, block, divert, etc. magnetic fields and/or lines of flux associated with” ferrite to “protect the integrity of the wireless charging field associated with the wireless charging relationship,” per Franklin. EX1003, ¶75; EX1005, [0344]. Thus, Franklin’s solution isolates the wireless charging fields from the additional components for mounting. EX1003, ¶75; EX1005, [0344]. In the Wojcik-Franklin Combination, application of Franklin’s teaching results in a design and shielding components that not only avoid interference, but further directly support flux paths that maintain and, as would be understood from the teachings of Wojcik, channel and enhance coupling of fields for wireless charging. EX1003, ¶75; EX1005, [0344].



Wojcik-Franklin Combination.

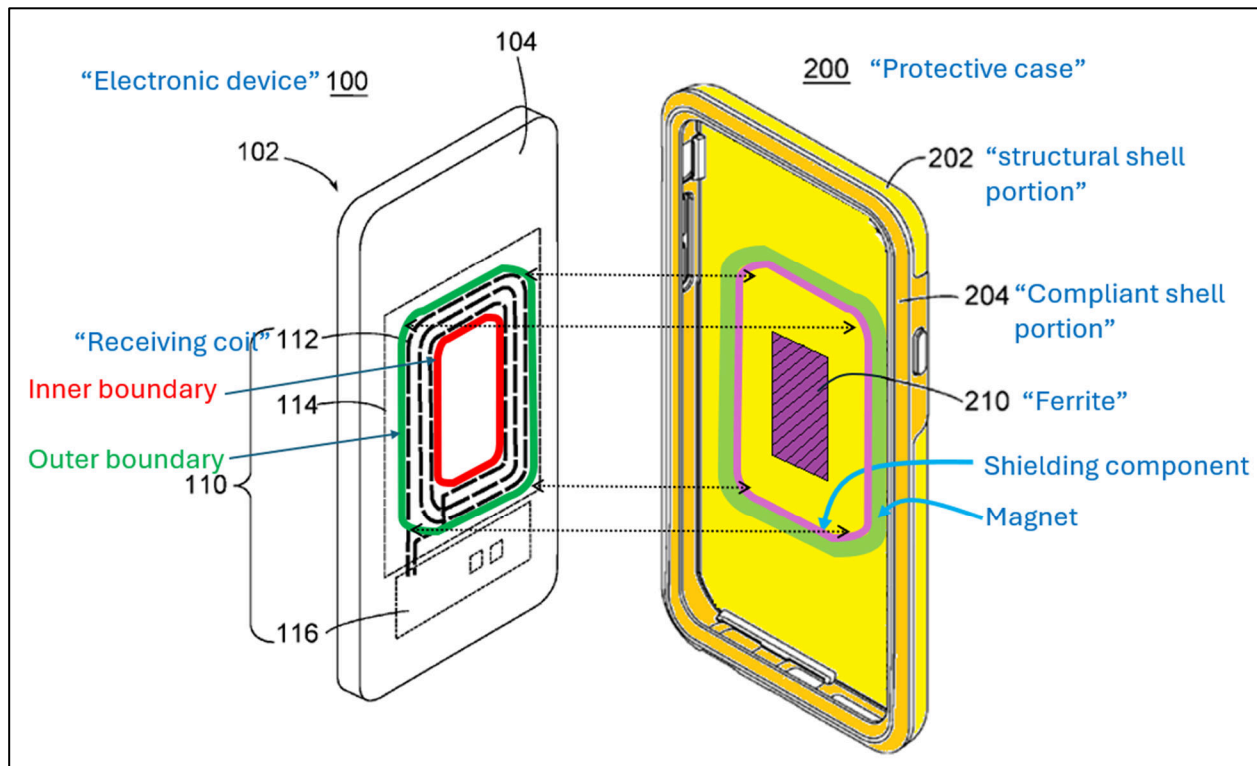
For at least these reasons, a POSITA would have understood that the metal plate received between the protective cover and the electronic device in the Wojcik-Franklin Combination is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary of the receiver coil.

EX1003, ¶76.

[1e] *wherein the metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary of the receiver coil.*

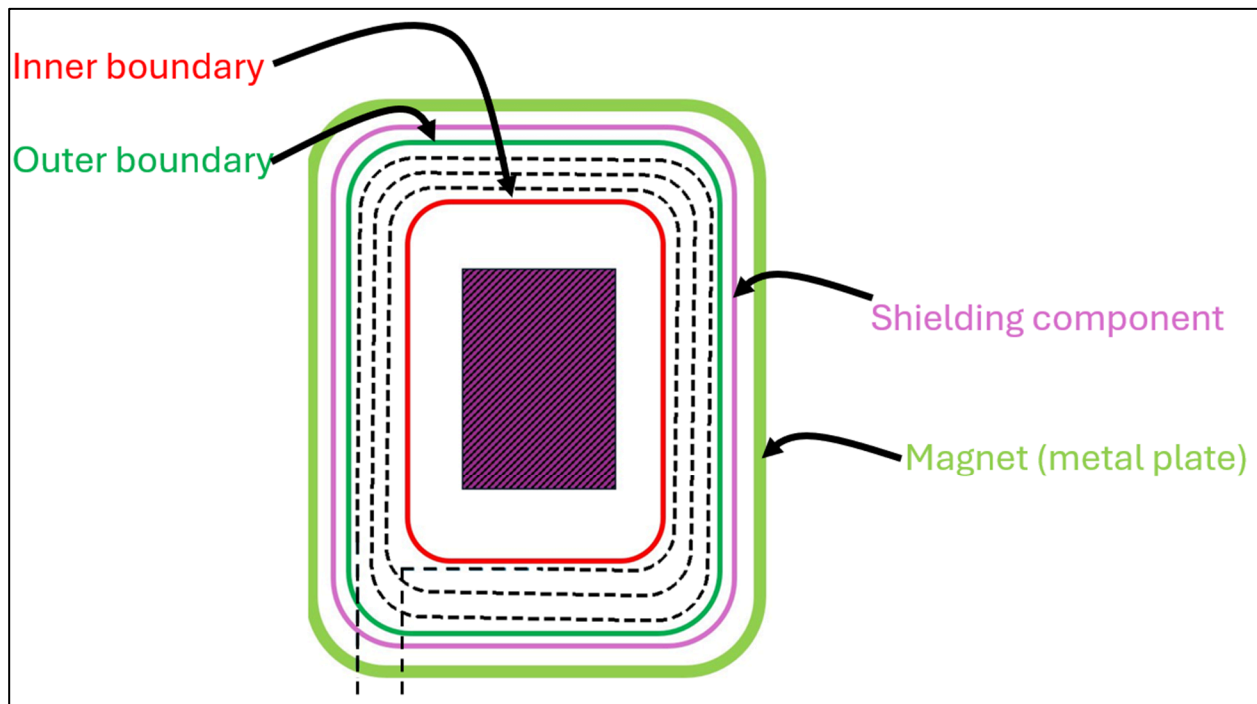
As discussed and shown in the combination section, in the Wojcik-Franklin Combination the magnet (metal plate) received in between the protective cover and

the electronic device is positioned such that it does not overlap with an orthographic parallel projection of the receiver coil of an electronic device positioned in the case. EX1003, ¶77.



Wojcik-Franklin Combination.

This is shown in the image below illustrating a representation of a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil. EX1003, ¶78.

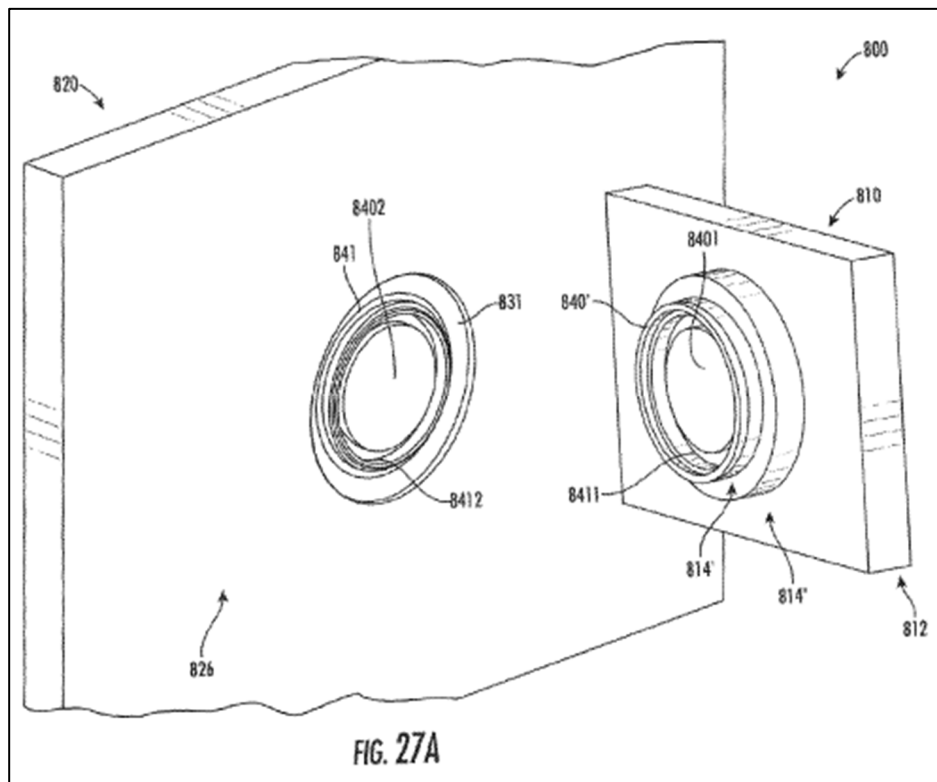


EX1003, ¶78.

(b) *Claim 2*

[2] *The case of claim 1, wherein the inner boundary and the outer boundary are substantially circular.*

As illustrated in FIGs. 27A-27B, Franklin discloses an object interface 820 (e.g., phone device) with magnet 831/841 and receiver coil 8402, where the inner boundary and the outer boundary of the receiver coil 8402 are substantially circular. EX1003, ¶79.



EX1005, FIG. 27A.

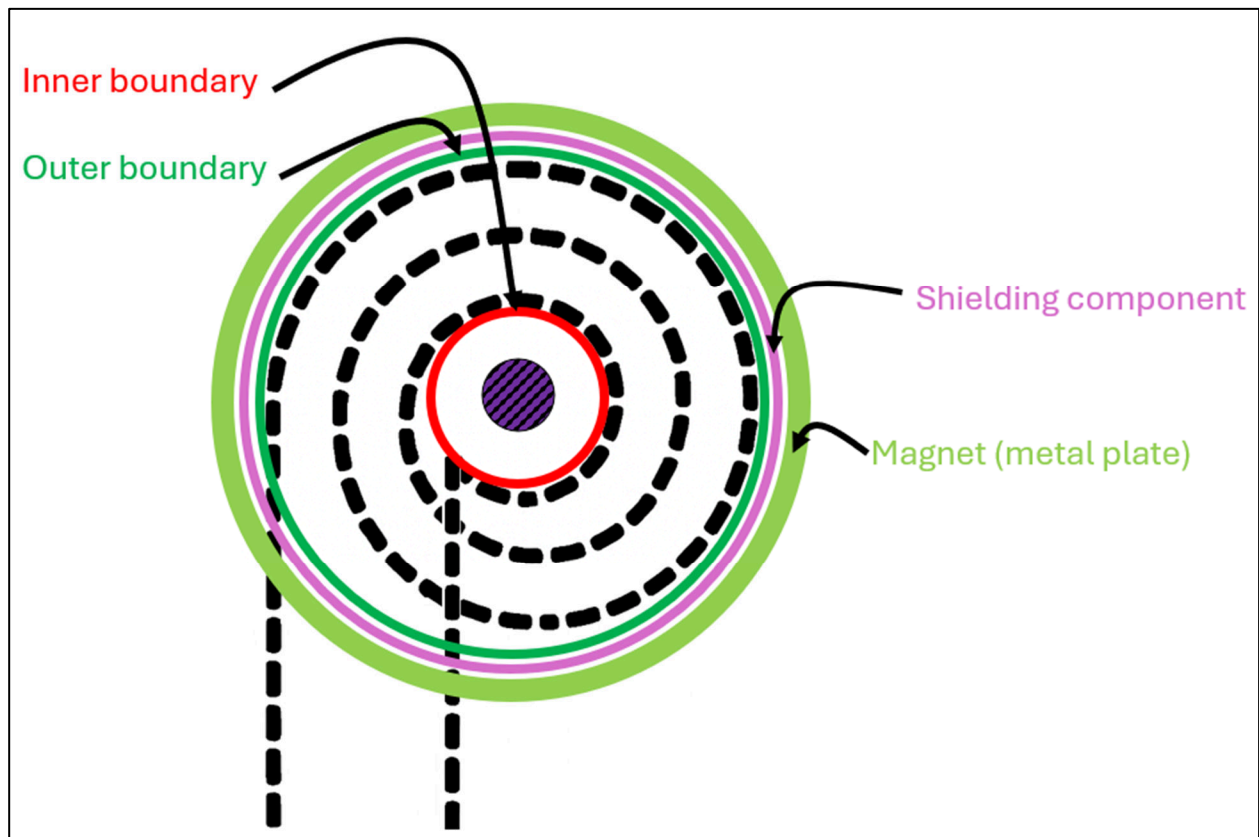
While the receiver coil of the electronic device described in Wojcik is shown to be substantially rectangular, a POSITA would have recognized that other shapes, such as square and circle, would also be useful for the receiver coil.

EX1003, ¶80; EX1004, [0015] (“wireless transfer of electrical power is accomplished using electromagnetic induction techniques. Wireless power transfer circuitry and antennae may utilize one or standard or proprietary wireless power transfer protocols, such as those published and promoted by Qi, PMA (Power Matters Alliance), A4WP (Alliance for Wireless Power), and/or others.”); EX1005, [0340] (“For example, each wireless charging device may be configured according

to a wireless charging specification (e.g., Qi, Powermat, etc.) to ensure compatibility.”). The Qi standard establishes a number of different power receiver configurations, including a rectangular shape and a circular shape. EX1029, 69, 72.

For instance, Franklin discloses a circular receiver coil 8402, with correspondingly-shaped surrounding shielding components and magnets. EX1005, FIG. 27A.

Thus, it would have at least been obvious to include, in the electronic device, a circular receiver coil, which would therefore have substantially circular inner and outer boundaries. EX1003, ¶¶81-82. This is shown in the image below illustrating a representation of a plan view of the metal plate (magnet) of this variation of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil. EX1003, ¶82.

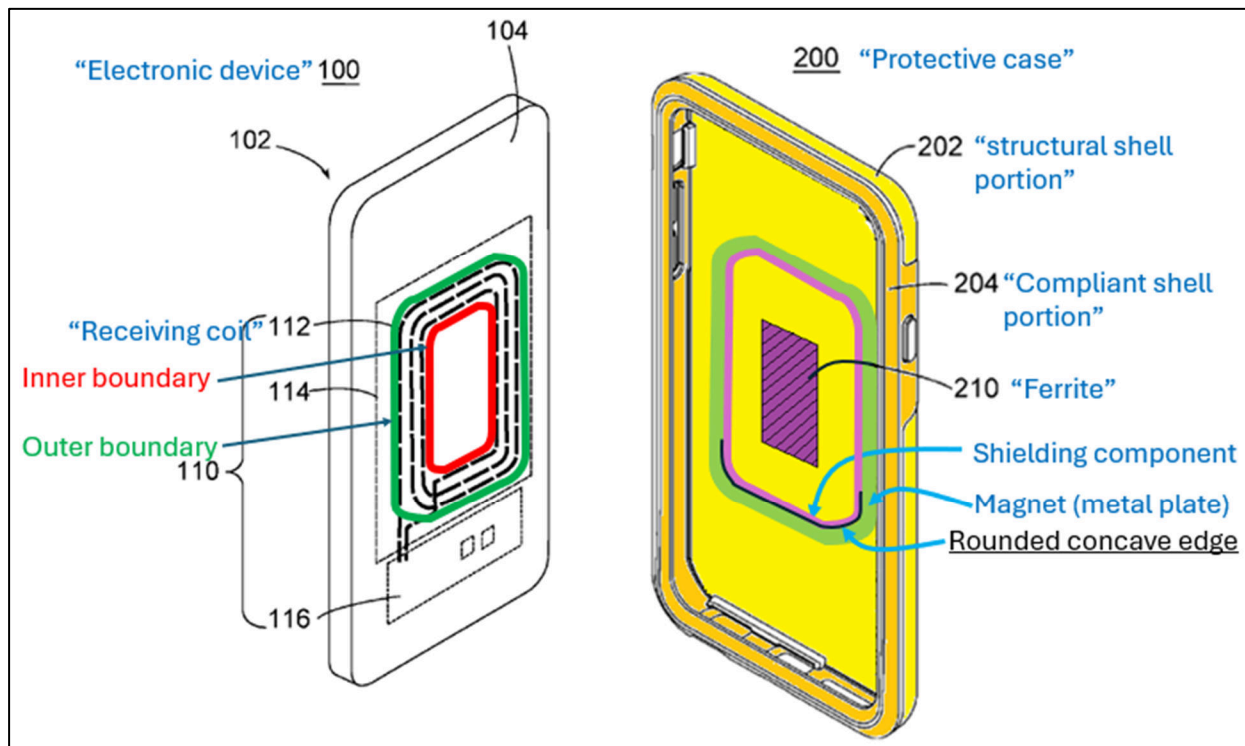


EX1003, ¶82.

(c) *Claim 3*

[3] *The case of claim 1, wherein the metal plate has a rounded concave edge.*

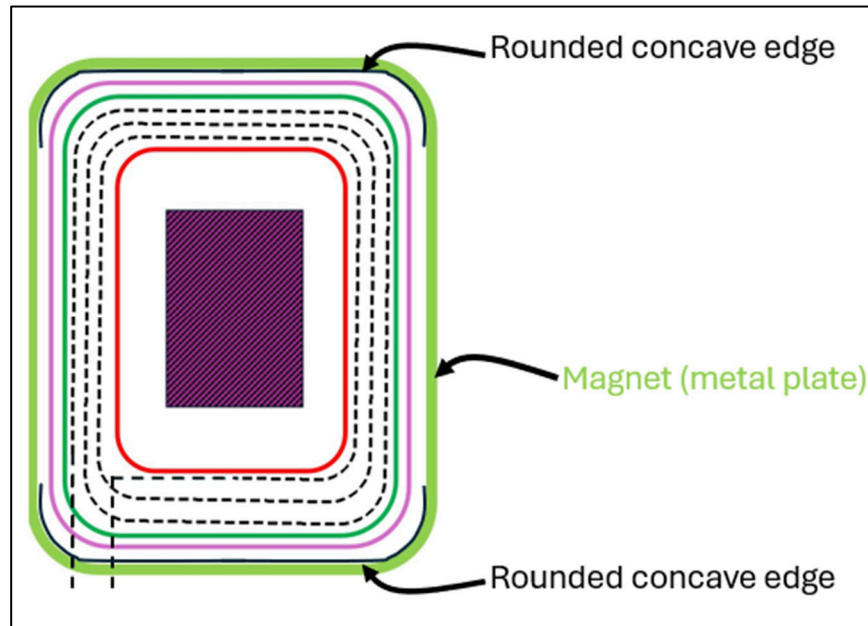
As illustrated below, a POSITA would have found it obvious to implement the magnet (metal plate) of the Wojcik-Franklin Combination with a rounded concave edge. EX1003, ¶83.



### Wojcik-Franklin Combination.

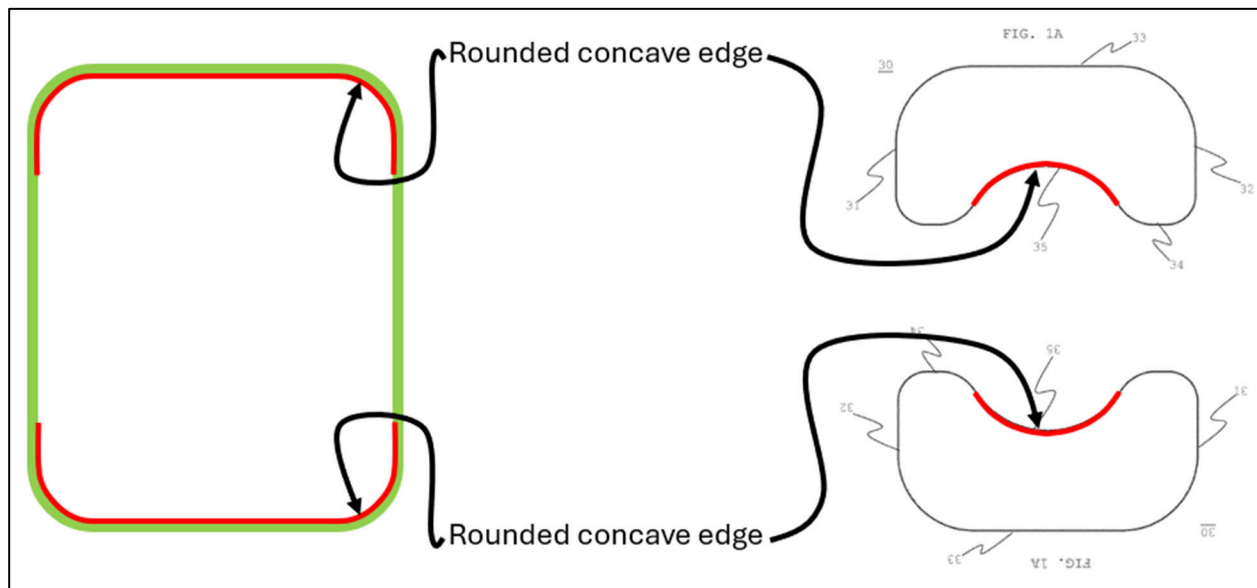
For instance, the mounting magnet disclosed in Franklin is a hollow ring that is shaped to fit the outer boundary of the coil. EX1005, FIG. 27A, [0338]. In particular, Franklin discloses a circular magnet that matches the outer boundary of the circular receiver coil. *Id.*, FIG. 27A, [0338] (“Magnet 831 may comprise a round, ferrous metal plate with a center opening (i.e., a hole in the center of the plate)”). A POSITA would have found it obvious, as one natural inclusion of Franklin’s mounting magnet in Wojcik’s case, to use a mounting magnet that matches the shape of Wojcik’s receiver coil. EX1003, ¶84. The image below illustrates a representation of a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer

boundaries of the receiver coil and the receiver coil, where the metal plate (magnet) has rounded concave edges/corners. EX1003, ¶84. As can be seen in the image below, the metal plate is shaped to match the outer boundary of the receiver coil, and in that regard features rounded concave edges. EX1003, ¶84.



EX1003, ¶84.

Either of these rounded concave edges is consistent at least with the '223 Patent's example of an alleged rounded concave edge on its metal plate, as shown below in the side-by-side comparison of the Wojcik-Franklin Combination's metal plate and the '223 Patent's example metal plate (in either its original or vertically flipped configuration). EX1003, ¶85.

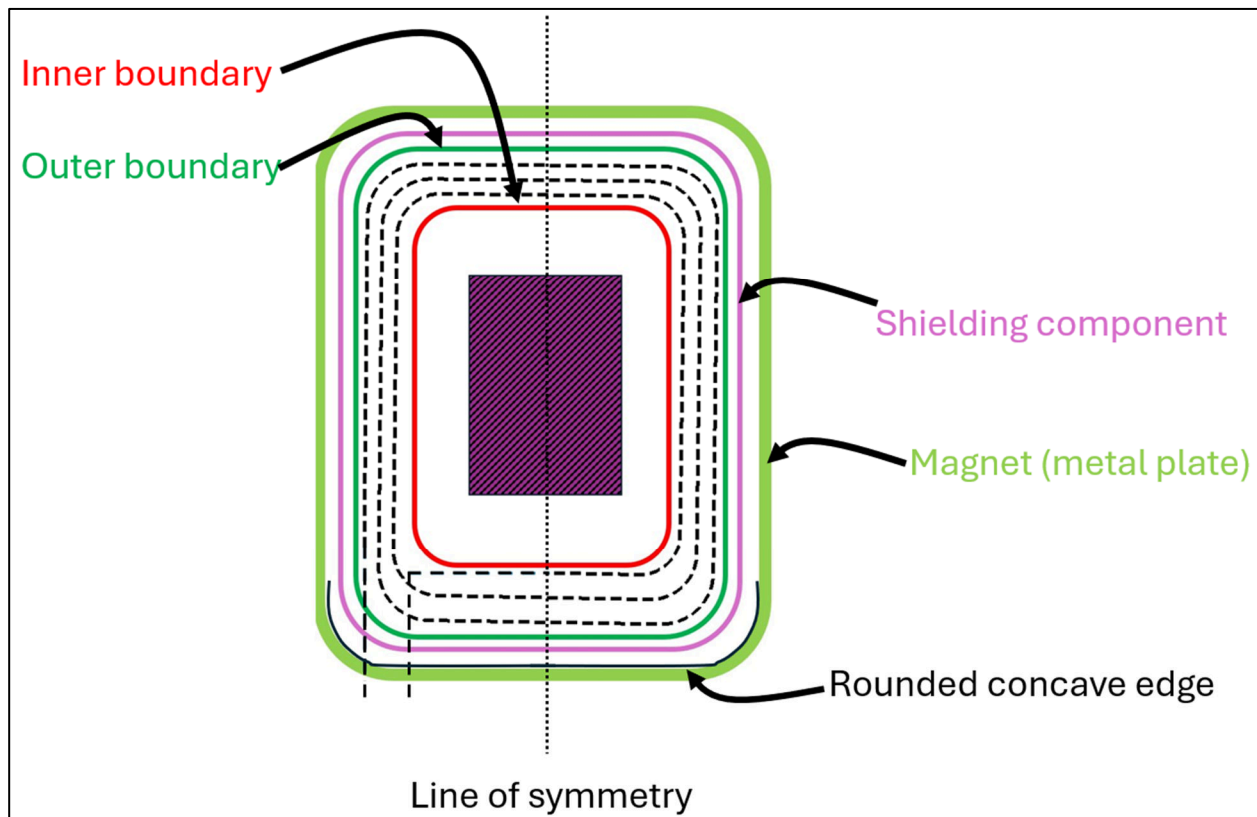


EX1003, ¶85 (comparison to EX1001, FIG. 1A (highlighted, rotated)).

(d) *Claim 4*

[4] *The case of claim 3, wherein the rounded concave edge substantially symmetrically aligns to respective orthographic parallel projections of the inner boundary and the outer boundary onto a projection plane of the metal plate.*

As shown in the image below illustrating a representation of a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, the rounded concave edge substantially symmetrically aligns to respective orthographic parallel projections of the inner boundary and the outer boundary onto a projection plane of the metal plate. EX1003, ¶86.



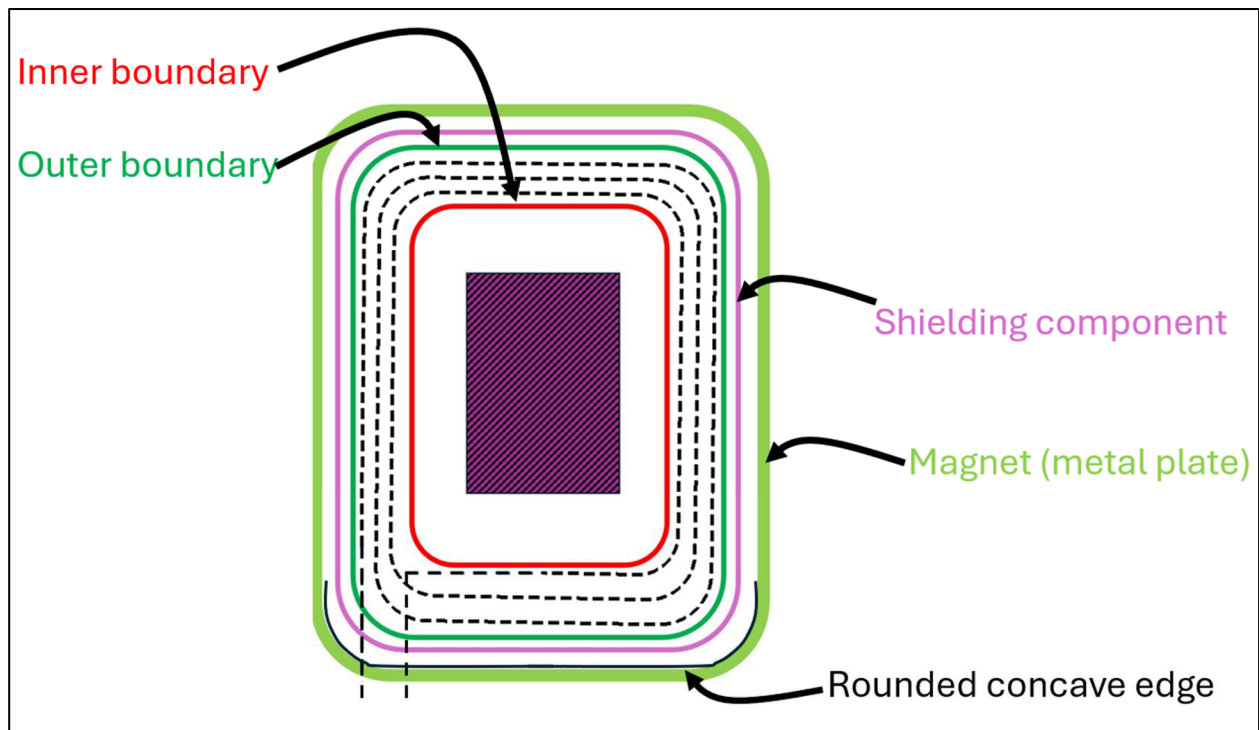
EX1003, ¶87.

(e) *Claim 6*

[6] *The case of claim 4, wherein the rounded concave edge is placed outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate.*

As shown in the image below illustrating a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, the rounded concave edge is outside an orthographic parallel projection of the outer boundary onto a

projection plane of the metal plate. EX1003, ¶87. Franklin explicitly discloses such a configuration where the object interface 820 with mounting magnet 831/841 has a rounded concave edge that is outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate (i.e., the rounded edge of mounting magnet 831/841 is outside of the receiver coil 8402). EX1005, FIGs. 27A-27B.

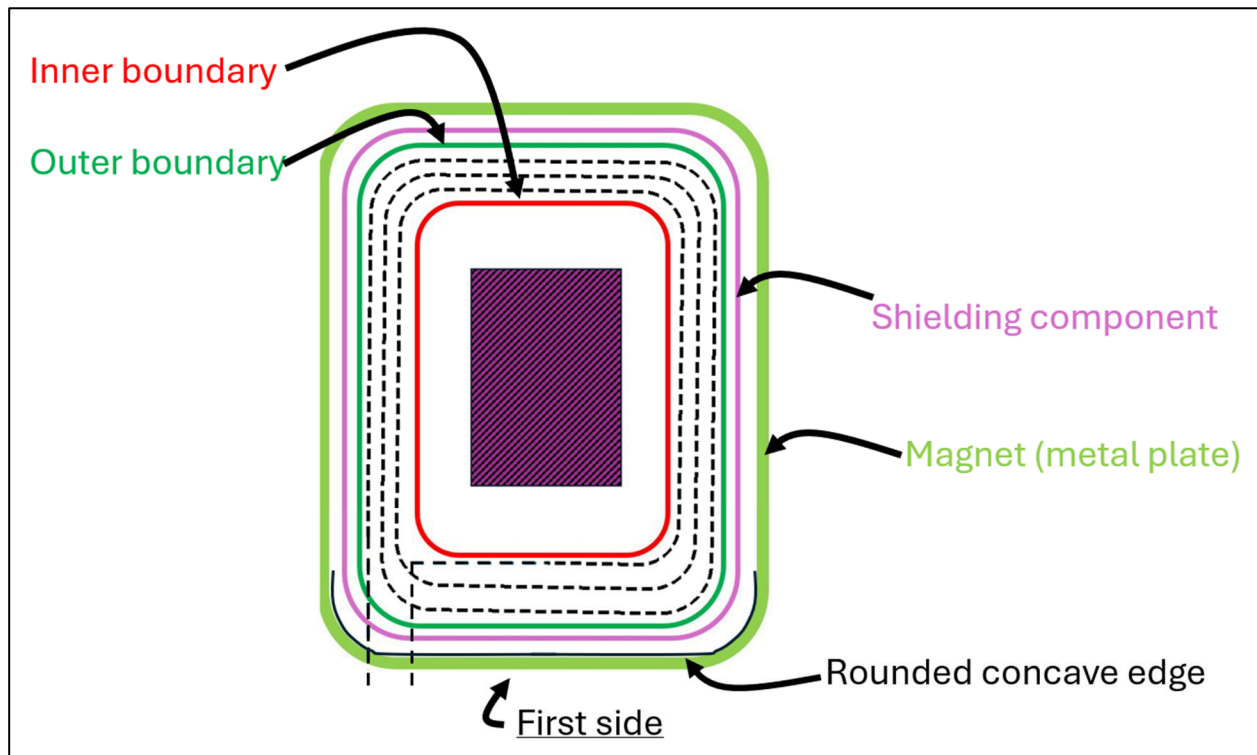


EX1003, ¶88.

(f) *Claim 7*

[7a] *The case of claim 1, wherein the metal plate is substantially rectangular with a first side having a rounded concave edge, and*

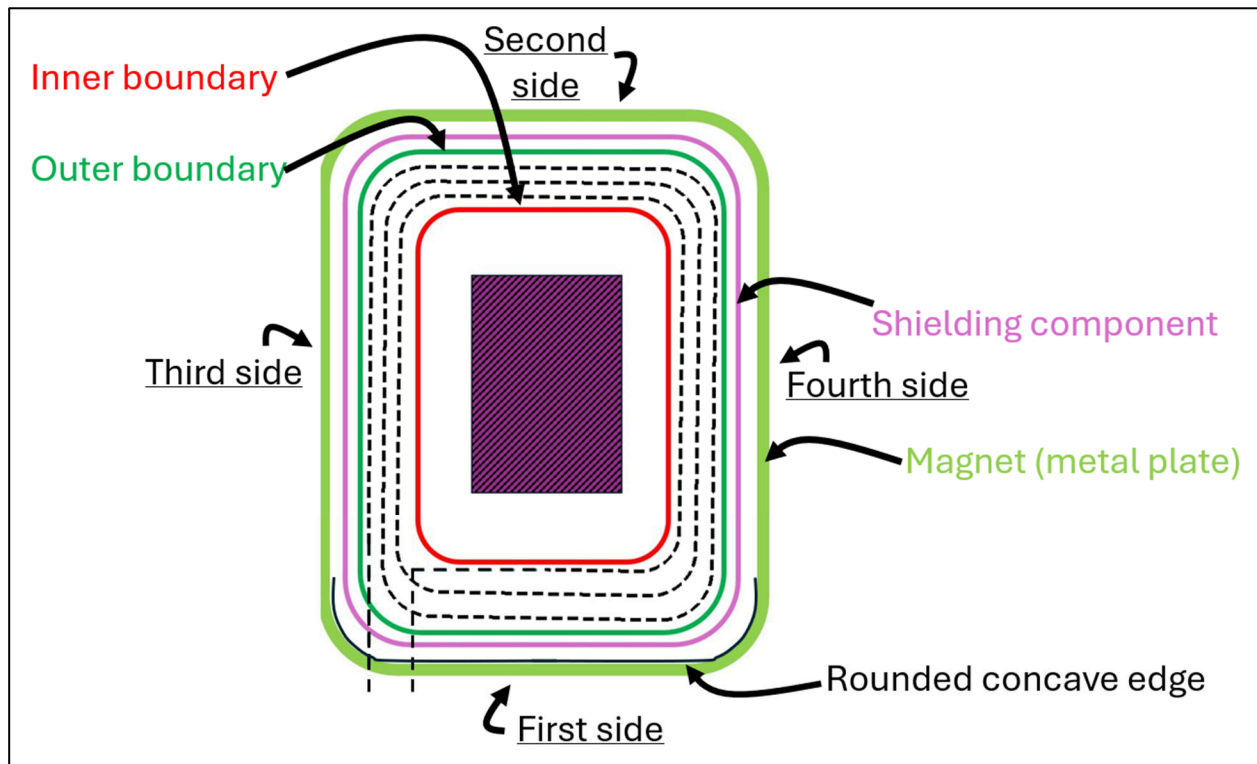
As shown in the image below illustrating a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, the metal plate (magnet) is substantially rectangular and has a first side having a rounded concave edge. EX1003, ¶89; *see also* discussion of claim [8], *infra*.



EX1003, ¶89.

[7b] wherein the metal plate has third and fourth sides that are substantially parallel to each other and has a second side that is substantially parallel to the first side.

As shown in the image below illustrating a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, the metal plate (magnet) has third and fourth sides that are substantially parallel to each other and a second side that is substantially parallel with the first side. EX1003, ¶90.



EX1003, ¶90.

(g) *Claim 8*

[8] *The case of claim 7, wherein the metal plate has rounded corners.*

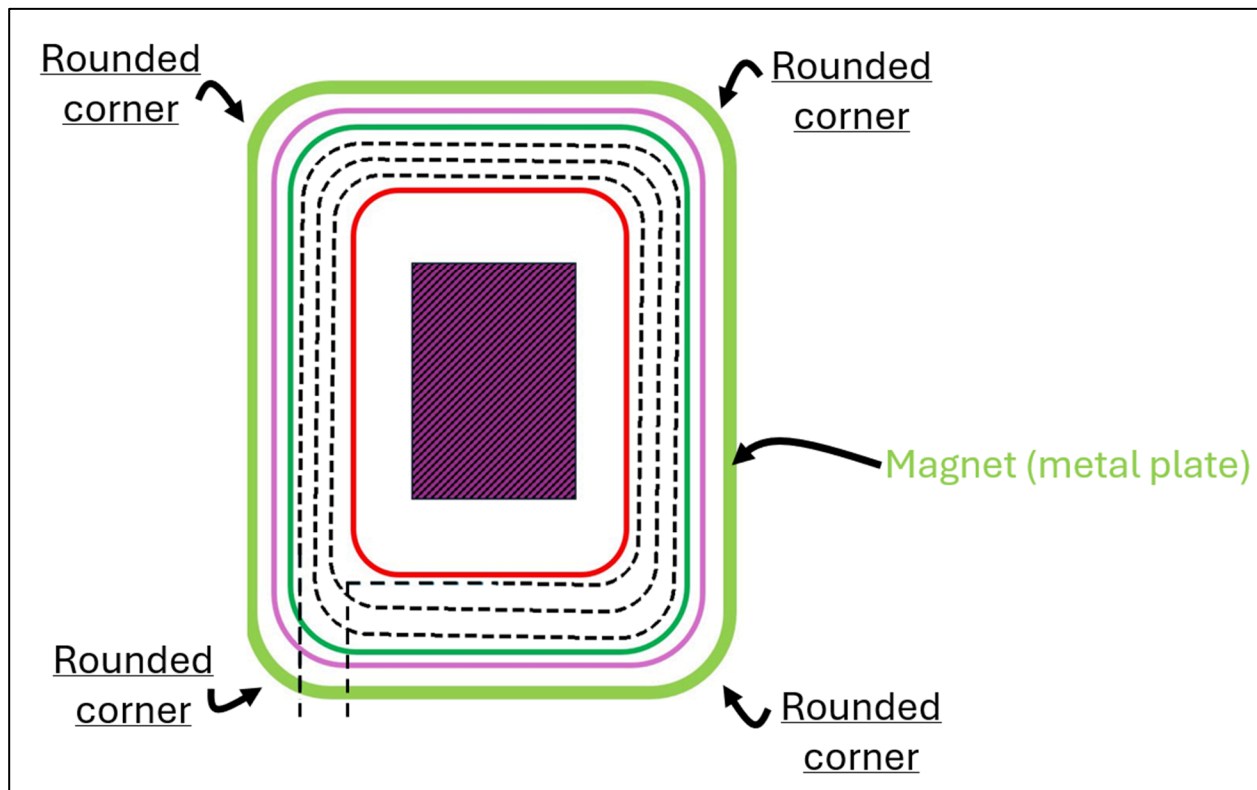
A POSITA would have found obvious to include, in the Wojcik-Franklin Combination, a metal plate with rounded corners. EX1003, ¶91. The mounting

magnet disclosed in Franklin is a hollow ring that is shaped to fit the outer boundary of the coil. EX1005, FIG. 27A. In particular, Franklin discloses a circular magnet that matches the outer boundary of the circular receiver coil. *Id.*

A POSITA would have found obvious, as a natural inclusion of Franklin's mounting magnet<sup>2</sup> in Wojcik's case, to use a mounting magnet that matches the shape of Wojcik's receiver coil. EX1003, ¶92. The image below illustrates a representation of a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, where the metal plate (magnet) has rounded corners. EX1003, ¶92. As can be seen in the image below, the metal plate is shaped to match the outer boundary of the receiver coil. EX1003, ¶92.

---

<sup>2</sup> A POSITA would have found that another natural inclusion of Franklin's mounting magnet in Wojcik's case would be to leverage Franklin's teaching of a circular receiver coil and its corresponding circular mounting magnet and shielding component, as shown and discussed regarding claim 2 above. EX1003, ¶92 n.3.



EX1003, ¶92.

(h) *Claim 10*

[10] *The case of claim 1, wherein the metal plate is attached to the protective cover by an adhesive.*

Franklin does not explicitly describe how the mounting magnets are attached to the protective cover. However, Franklin explains that mounting magnets may be removable, replaceable, or modular. EX1005, [0058] (describing “modular components” that are “removable, detachable, and/or replaceable”), [0364] (“second mounting magnet 940 may be removable”), [0366] (the first mounting magnet 930 may be removable via the first top opening 991, and, correspondingly,

the first mounting magnet 930 may be configured to be a modular component of the mounting apparatus 910”). A POSITA would have therefore considered other references, such as Wojcik, to gain further implementation details that allow the magnets to be mechanically supported and fixed relative to the device structure. EX1003, ¶93. For example, Wojcik explains that its “[f]errite 210 may be affixed to, **adhered to**, attached to, and/or embedded in any portion of protective case.” EX1004, [0028]. Thus, it would have been obvious to a POSITA to similarly adhere mounting magnets to the protective case in a similar fashion – that is, using an adhesive to provide adherence, at least because both Wojcik’s ferrite 210 and Franklin’s mounting magnets (e.g., mounting magnet 831/841) comprise ferrous/magnetic materials that are attached to the device. EX1003, ¶93; EX1005, [0338] (“Magnet 831 may comprise a round, ferrous metal plate with a center opening”).

**B. GROUND 2: Spigen-Partovi Renders Obvious Claims 1-4, 6-8, and 10**

**1. Spigen**

Spigen discloses a protective case (“Thin Fit Hybrid” case) for a mobile device that includes an embedded metal plate to facilitate magnetic mounting.

EX1006, 0:15-1:15; EX1024<sup>3</sup> (Appendix YouTube4); EX1003, ¶¶94-95. Spigen's case includes a rear housing having an inner recess that receives a rectangular metal plate. *Id.*, 1:15-2:10.



EX1006, 0:38 and 1:57 (annotated).

When seated within the recess of the case, the metal plate facilitates mounting of the mobile device within the protective case to an external magnetic base, such as a magnetic car mount. *Id.*; EX1003, ¶94. The solid, rectangular metal plate spans across a portion of the central rear face of the mobile device when the mobile device is received by the case. EX1006, 1:40-2:01; EX1003, ¶94.

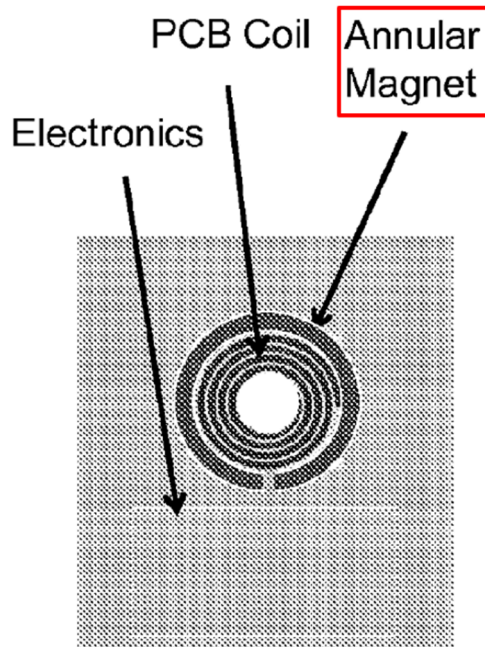
---

<sup>3</sup> Appendix YouTube4 to the Declaration of June Munford is a transcript of the Spigen audio. For convenience, parallel citations to Appendix YouTube4 are provided for particular aspects of the analysis.

## 2. Partovi

Partovi describes systems for wireless power transfer that utilize magnetic elements to facilitate alignment and securement between a mobile device or its case and a charging station, and to enhance transfer of wireless power. EX1007, Abstract, [0003], [0078], [0081], [0155] (“Use of the magnets is especially beneficial in cases where the charger and/or power supply is integrated or attached to a moving platform such as in a car where it is important to keep the mobile device stationary while the car is moving.”), [0195] (“skin” or “case”); FIGS. 5, 10; EX1003, ¶96. Partovi describes the receiver coil is located within the mobile device and interacts with a charger coil external to the mobile device. *See, e.g.*, EX1007, [0077], FIGs. 7, 10, 19, 20, 44-45.

To prevent interference with the inductive charging field while still securely mounting the device, Partovi teaches shaping these magnetic elements (for example, plates or alignment magnets) to accommodate the mobile device’s receiver coil and a complementary charge coil. *Id.*, [0081]-[0082]. For example, Partovi discloses utilizing magnetic elements having a “ring” shape or “arc magnets, square magnets, or one or more magnetic discs or other shapes” to allow the magnetic plate to be positioned proximate the coil to “provide minimal or no effect on performance of a wireless charger” while securing the device in place. EX1007, [0081], [0182]; *see also id.*, [0155], [0201]; EX1003, ¶97.



EX1007, FIG. 10 (partial, annotated), FIG. 4.

### 3. The Spigen-Partovi Combination

#### (a) *Spigen and Partovi are Analogous Art to the '223 Patent*

Spigen and Partovi are analogous art to the '223 patent, which is generally directed to “a case having a metal plate for magnetically mounting the case with an electronic device installed therein to a support having a magnet, and more particularly, to a metal plate having a rounded concave edge.” EX1001, 1:16-22 (Field of the Invention); EX1003, ¶98.

Spigen discloses a protective case for a mobile device that includes an embedded metal plate to facilitate magnetic mounting. EX1006, 0:15-2:10; EX1003, ¶99; *see also* EX1024 (Appendix YouTube4). Partovi similarly describes systems for wireless power transfer that utilize magnetic elements to facilitate

alignment and securement between a mobile device and a charging station, with enhanced wireless power transfer. EX1007, Abstract, [0003], [0078], [0081]-[0082], [0155], [0201]; FIGS. 5, 7, 10; EX1003, ¶99.

Accordingly, Spigen and Partovi are both directed to the same field of endeavor as the '223 Patent, at least insofar as Spigen describes a protective case featuring a metal plate for magnetic mounting of an electronic device, and Partovi describes magnetic mounting and alignment between an electronic device and a charger. EX1003, ¶100; *Graham v. John Deere Co.*, 383 U.S. 1 (1966). For at least that reason, Spigen and Partovi are analogous art to the '223 Patent.

Both references are also reasonably pertinent to a common core engineering problem that the '223 Patent purports to solve: that a “metal plate may impede or prevent wireless charging of a cell phone because the metal plate blocks electromagnetic field for wireless charging.” EX1001, 1:26-48; *see also id.*, 1:48 (“This invention is directed to solve this problem”); *supra*, §V.B.1-2, *infra*, §V.B.4 (Application of Spigen and Partovi); EX1003, ¶101.

For at least that additional reason, Spigen and Partovi are analogous art to the '223 Patent. *Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015); EX1003, ¶102

(b) *A POSITA would have been Motivated to Combine Spigen and Partovi*

A POSITA would have enhanced Spigen’s mobile device case based on

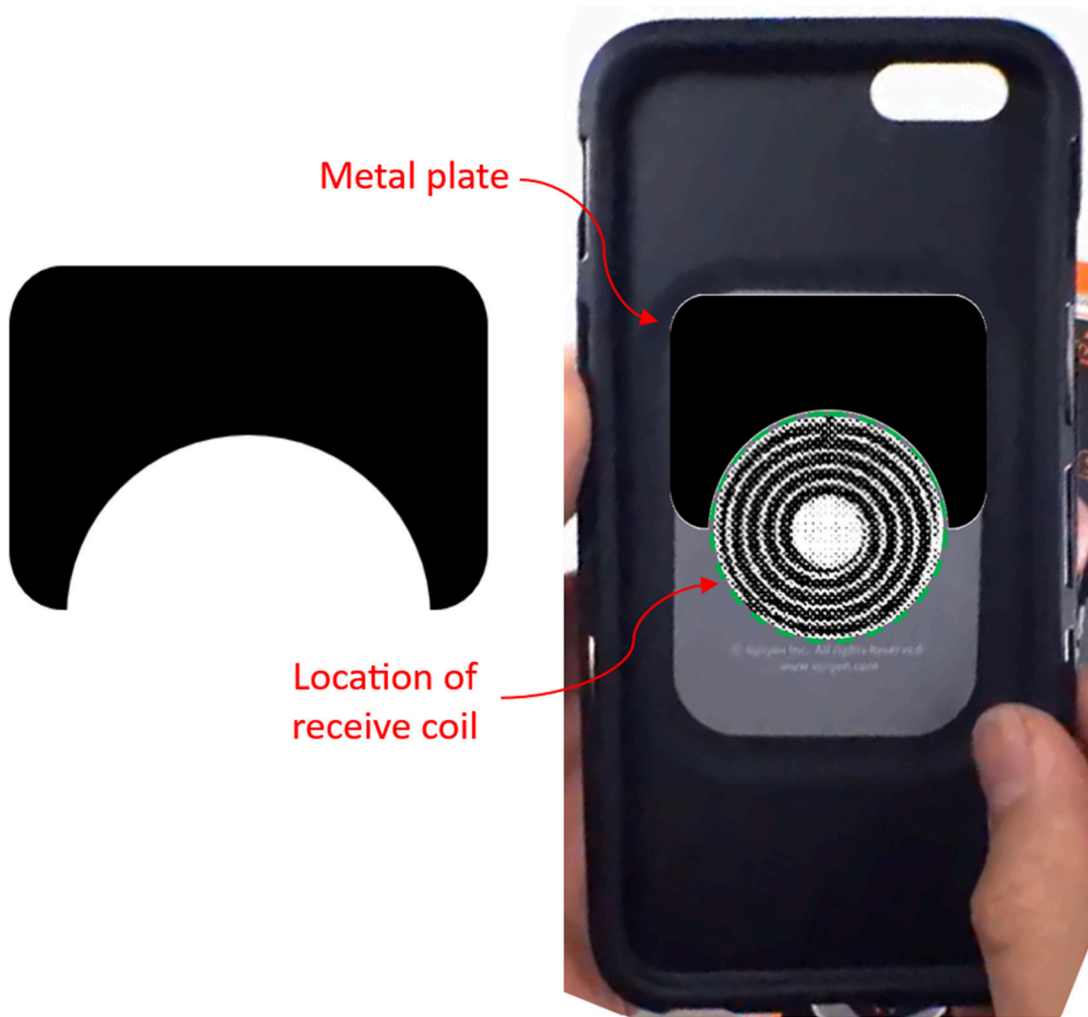
Partovi's teachings to, among other things, accommodate wireless inductive charging while providing secure attachment to a mount. EX1003, ¶103.

In that regard, Spigen notably already provides a mobile device case featuring a rectangular metal plate that is positioned in a recess within the case to facilitate magnetic mounting (e.g., to a magnetic car mount), and a POSITA would have found obvious that Spigen's metal plate could be shaped to accommodate inductive mobile phone charging. EX1006, 0:35-0:41, 1:05-1:20, 1:50-2:05; EX1003, ¶104.

For example, Partovi discloses known techniques for configuring magnetic elements to accommodate and follow the perimeter of a receiver coil, so as not to interfere with inductive charging. EX1007, [0182], [0201]. In more detail, Partovi discloses utilizing magnetic elements having a "ring," "arc," or annular shape to allow the magnetic plate to be positioned proximate the coil to "provide minimal or no effect on performance of a wireless charger" while securing the device in place. EX1007, [0081], [0155], [0182], [0201], FIG. 10 (illustrating an annular magnet surrounding a PCB coil), FIG. 44; EX1003, ¶105.

In accordance with Partovi's teachings, the POSITA would have shaped Spigen's metal plate to accommodate a mobile device utilizing wireless/inductive charging, by including a curved edge corresponding to the curvature of the receiving coil of the mobile device. EX1003, ¶106; EX1007, [0077] ("the receiver

shown in FIGS. 1-4 can be built into . . . a mobile device such as a mobile phone.”), [0149] (“the [r]eceiver in the mobile device . . . can be integrated by the manufacturer in to the device.”), [0206], FIG. 20). In that regard, the curvature of the lower edge would feature a profile that mimics the arcuate shape of the receiver coil such that the plate would be positioned proximate the coil when the mobile device is received in the case, thereby facilitating alignment and promoting wireless charging performance without meaningful interference from the metal plate. *Id.* (citing EX1007, [0155], [0201]).



EX1003, ¶106.

For example, to achieve those aims, the POSITA would have found it obvious to shape the Spigen-Partovi Combination's metal plate to include a concave lower edge, as shown above. EX1003, ¶107. Indeed, a POSITA would have been prompted, in at least some implementations, to maintain the overall generally rectangular shape of Spigen's original metal plate, promoting magnetic holding strength consistent with Spigen's mounting objectives while avoiding

impact to the receiver coil and wireless power transfer. *Id.* A POSITA would have recognized from Partovi's description that the material in the upper rectangular section (e.g., of Spigen's original plate shape) would not interfere with wireless power transfer and would promote the magnetic mounting objective. *Id.*

As another example, and as an alternative to the concave lower edge shown above, a POSITA would have similarly found it obvious to shape the Spigen-Partovi Combination's metal plate as a ring with a cutout, as expressly described and shown within Partovi. EX1003, ¶108; EX1007, [0178] ("The ring is used here as an example and other geometries of thin magnets such as a square, rectangle, triangle, etc. shape can also be used."), FIGS. 5, 10-11, 19, 20, 43-45.

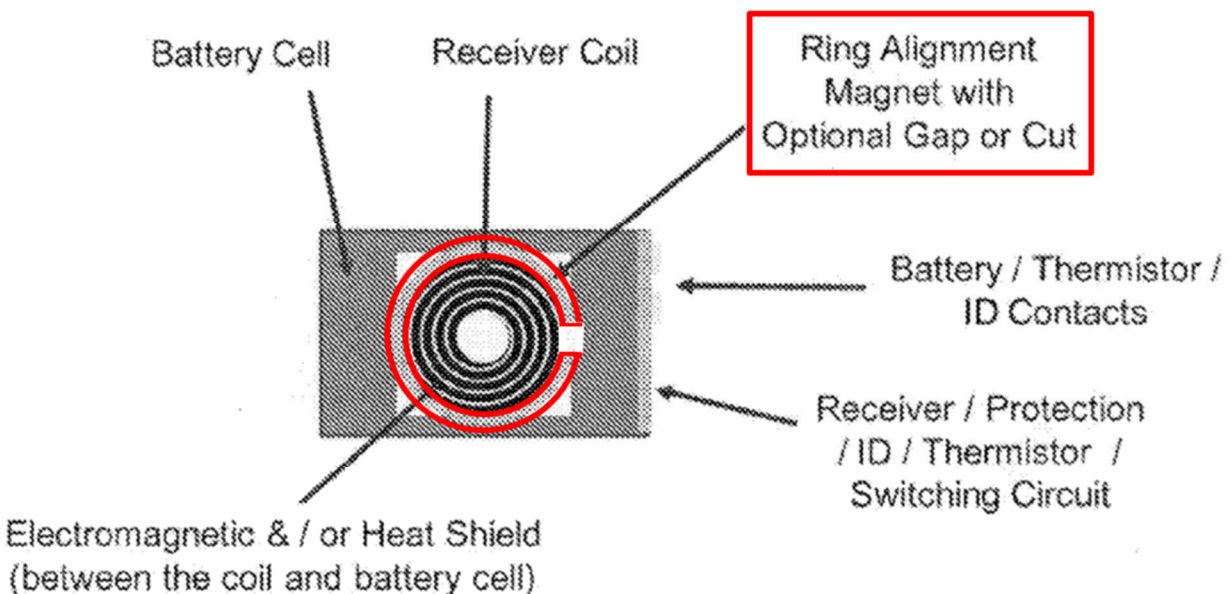
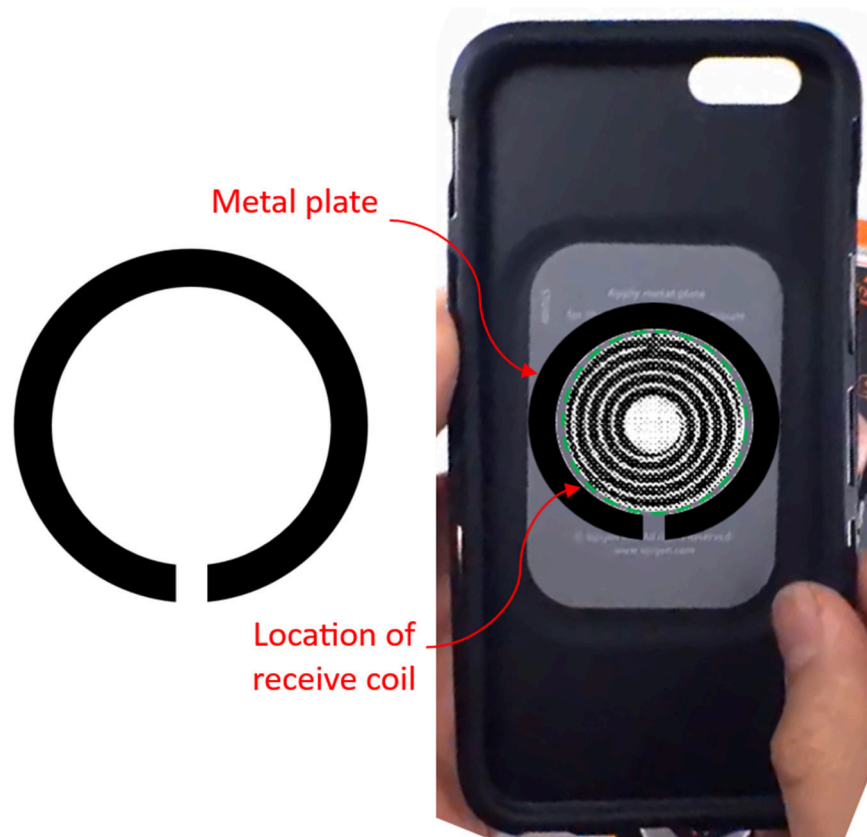


**Figure 44**

EX1003, ¶108.

For instance, a POSITA would have utilized a ring shape to facilitate magnetic engagement with a support, and alignment of receiving and charging coils, in scenarios in which it would have been further beneficial to accommodate rotation of the device relative to a support/charger. EX1003, ¶109; EX1007, [0152] (“The magnets can be mounted such that they allow rotation of the receiver coil and thus the mobile device and/or battery with respect to the charger and/or power supply while maintaining charging capability.”); [0178] (“rotationally invariant alignment”). In that regard, the POSITA would have found it obvious to implement the Spigen-Partovi Combination’s metal plate with a ring shape that surrounds or nearly surrounds a projection of the mobile device receiver coil. EX1003, ¶109.



EX1003, ¶109.

A POSITA would have readily implemented the metal plate to package in a space-efficient manner and limiting potential interference with wireless charging. EX1003, ¶110. For example, a POSITA would have predictably configured the metal plate such that the metal plate does not overlap with a projection of the area formed by the inner boundary onto the metal plate, does not overlap with a projection of the area formed by the outer boundary on the metal plate, or overlaps slightly with a projection of the area formed by the outer boundary on the metal plate, promoting space-efficiency and without meaningful impact to wireless

charging. EX1003, ¶110; EX1007, FIGs. 5, 10, 11, 20, 43-45; *id.*, FIG. 19 (illustrating slight overlap).

A POSITA would have been motivated to utilize a metal plate having a curved edge in accordance with Partovi's suggestions in Spigen's mobile device case for multiple reasons. EX1003, ¶111.

For instance, a POSITA would have been motivated to enhance functionality and applicability of Spigen's case by accommodating a device that utilizes wireless charging. EX1003, ¶112. Prior to the time of the '223 patent, mobile devices utilized wireless charging. *Id.* (EX1007, Abstract, [0077], FIG. 20). And mobile devices, regardless of charging mechanism, benefited from the protection of case like that disclosed by Spigen. *Id.* A POSITA would have recognized, based on Partovi, that adjusting the shape of the metal plate would promote wireless charging without interference, facilitating use of Spigen's case with mobile devices that utilize wireless charging, such as mobile devices described by Partovi. EX1003, ¶112; EX1007, [0178], [0196].

Toward that end, a POSITA would further recognized that Partovi's teachings as applied in Spigen would promote wireless charging efficiency through alignment of the receiver coil and the charging coil. EX1003, ¶113; EX1007, [0080] ("maximum efficiency and power transfer"), [0152], [0155]. Partovi expressly describes and illustrates a magnetic element having a curved edge that

mimics the curved profile of the receiver coil, promoting alignment with a corresponding magnetic component in a support/charger. EX1007, [0178], [0196], FIGS. 5, 10-11, 19, 20, 43-45. Applying a curved profile, in accordance with Partovi, to the plate described by Spigen, would have predictably promoted precise magnetic alignment between the device and the charger, enhancing charging efficiency (e.g., when the mobile device positioned in the case is positioned on a support/charger). EX1003, ¶113.

And a POSITA would have recognized that utilizing a plate having a concave edge, based on Partovi's suggestions, would promote a compact, space-efficient geometry. EX1003, ¶114. Partovi addressed spatial constraints using a curved edge of the plate that mimics the curved profile of the receiver coil for positioning proximate the coil without interference. EX1007, [0178]; EX1003, ¶114. Based on Partovi's description, a POSITA would have implemented a similar geometry in the metal plate to efficiently utilize the limited physical footprint on the rear of the mobile device, positioning the plate in close proximity around a portion of the perimeter of the coil, thereby effectuating its mounting function in a space-efficient geometry. *Id.*

Additionally, in some implementations, a POSITA would have been motivated to combine the references to utilize a ring shape to promote rotationally invariant alignment. EX1003, ¶115. Partovi expressly teaches that utilizing “a

ring” shape for the magnetic alignment element serves to promote “rotationally invariant alignment.” EX1007, [0196]. A POSITA would have recognized the functional benefit and enhanced flexibility and convenience for magnetically mounting the device to a charger mount to facilitate effective alignment for charging regardless of its orientation, and/or to facilitate positioning of the phone screen in a desired orientation (e.g., portrait, landscape, or an intermediate orientation). EX1003, ¶115

(c) *A POSITA would have Reasonably Expected Success when Combining Spigen and Partovi*

Modifying Spigen’s case to leverage Partovi’s teachings would have required only routine knowledge well within the skill of a POSITA prior to the earliest effective filing date. EX1003, ¶116. Indeed, the modification would have amounted to the use of a known technique (per Partovi, curving magnetic alignment components to magnetically secure a device with a charger/mount) to improve a known system (Spigen’s phone case mounting system) ready for improvement to yield predictable results (including the benefits articulated above). *KSR v. Teleflex*, 550 U.S. 398, 417 (2007) (“[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.”); EX1003, ¶116.

A POSITA would have had a reasonable expectation of success in making the proposed modifications, especially based on the similarity of the systems, and the simplicity of adjusting the shape of the existing metal plate of Spigen.

EX1003, ¶117. Indeed, as described by Partovi, the use of magnetic components of a variety of shapes was known and predictably implemented. A POSITA would have readily utilized the same materials and manufacturing techniques as Spigen's original solution to implement the metal plate of the Spigen-Partovi Combination, with minimal or no additional cost. *Id.*

A POSITA would have recognized from Spigen and Partovi that modifying the shape of the Spigen plate to include a curved edge or ring shape is readily included in the mobile device case without hindering Spigen's intended functionality in attaching with a mount. EX1003, ¶118. The Spigen-Partovi Combination case retains Spigen's functionality of providing a metallic component for secure magnetic mounting, while simultaneously facilitating the passage of inductive charging fields, in accordance with Partovi. *Id.*

#### **4. Analysis of Claims**

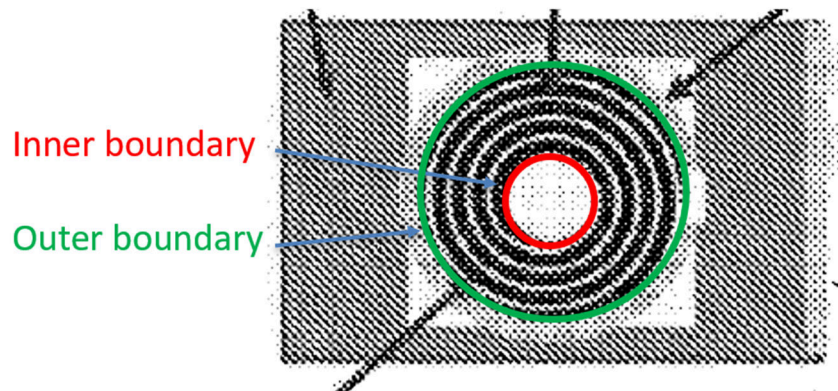
##### **(a) Claim 1**

[1pre] *A case for an electronic device wherein the electronic device has a receiver coil for wireless charging constructed within the electronic device and the receiver coil is formed in between an inner boundary and an outer boundary, the case comprising:*

The Spigen-Partovi Combination renders obvious this limitation. Spigen

discloses a case for an electronic device (e.g., mobile phone). EX1006, Title (“iPhone 6(s+) cases”), 0:00-0:15 (“one of the best two-piece cases”); EX1003, ¶119; *see also* EX1024 (Appendix YouTube4, 0:00).

And, as explained above, the POSITA would have included a receiver coil within the Spigen-Partovi Combination electronic device for wireless charging. EX1003, ¶120. For instance, as shown in Partovi’s FIG. 44 (reproduced below), Partovi describes a mobile phone having a “receiver coil” that is formed in between an inner boundary and an outer boundary. EX1007, Abstract, [0003], [0077]-[0078], FIGs. 7, 10, 19, 20, 44-45.



EX1003, ¶120 (EX1007, FIG. 44 (partial, annotated))

Consistent with Partovi’s teachings, the POSITA would have formed the Spigen-Partovi Combination receiver coil in between an inner boundary and an outer boundary and positioned in the mobile device. EX1003, ¶121; EX1007, Abstract, [0003], [0077]-[0078], FIGs. 7, 10, 19, 20, 44-45.

[1a] *a protective cover constructed to receive the electronic device therein; and*

Consistent with Spigen, the Spigen-Partovi Combination case, which is external with respect to the electronic device, includes a protective cover constructed to receive the electronic device therein. EX1003, ¶122.

Spigen discloses a case having a “dual-layered structure for extra protection.” that includes a hard protective cover and an inner cushion portion. EX1006, 0:17-0:22 (text shown on box); EX1003, ¶123.<sup>4</sup>

---

<sup>4</sup> Notably, the hard protective cover and relatively softer inner cushion disclosed by Spigen is just like that described by the ’223 Patent. EX1003, ¶123 n.4; EX1001, 8:31-32 (“The soft protective cover (10) is made of soft material and the hard protective frame (20) is made of hard material.”); EX1006, 0:17-0:22.



EX1006, [0:19] (annotated).

[1b] *a metal plate constructed to be received in between the protective cover and the electronic device,*

The Spigen-Partovi Combination includes a metal plate (e.g., Spigen’s “neodymium” plate) constructed to be received in between the protective cover and the electronic device. EX1003, ¶124. In particular, Spigen describes the metal plate is received in a recess of the hard protective cover such that the metal plate is between the protective cover and the electronic device. EX1006, 1:42-1:50 (“the back plate area has an area that’s recessed that allows you to fit the Quad Neo dynamin dynamin [sic] [neodymium] magnet easily”); EX1024 (Appendix YouTube4, 1:42-1:50); EX1003, ¶124 (citing EX1006, 0:17 (“Apply metal plate”

text in case recess); EX1008 (“metal”)); EX1001, 9:18-26.



EX1006, 0:38 and 1:57(annotated).

[1c] *wherein the metal plate is made of a magnet which produces magnetic flux,*

The metal plate in the Spigen-Partovi Combination is made of a magnet which produces magnetic flux. For example, Spigen describes that the metal plate is made of a “neodymium” magnet. EX1006, 1:42-1:50 (“the back plate area has an area that’s recessed that allows you to fit the Quad Neo dynamin dynamin [sic] [neodymium] magnet easily”); EX1024 (Appendix YouTube4, 1:42-1:50); EX1003, ¶125 (citing EX1006, 0:17 (“Apply metal plate” text in case recess)); EX1008 (“metal”)).

As such, POSITA would have recognized and found obvious from Spigen’s

description of a “neodymium” metal plate produces magnetic flux because magnets produce magnetic fields, and magnetic flux is a measure of the total magnetic field through a surface. EX1003, ¶126; EX1005, [0344] (“magnetic fields and/or lines of flux associated with ferromagnetic components”); *see, e.g.*, EX1026, Abstract (“at least one permanent magnet generates flux”); EX1027 (“the magnetic flux created by the magnets”); EX1028 (“magnetic flux from a permanent magnet”); EX1008 (used in applications where “strong magnetic fields are required”).

[1d] *wherein the metal plate received in between the protective cover and the electronic device is positioned to substantially allow magnetic waves to pass through an area formed by the inner boundary of the receiver coil, and*

Consistent with Partovi’s express teachings, the POSITA would have found it obvious to position the metal plate received in the Spigen-Partovi recess to substantially allow magnetic waves to pass through the area formed by the inner boundary. EX1003, ¶127; *supra*, §V.B.3 (Spigen-Partovi Combination).

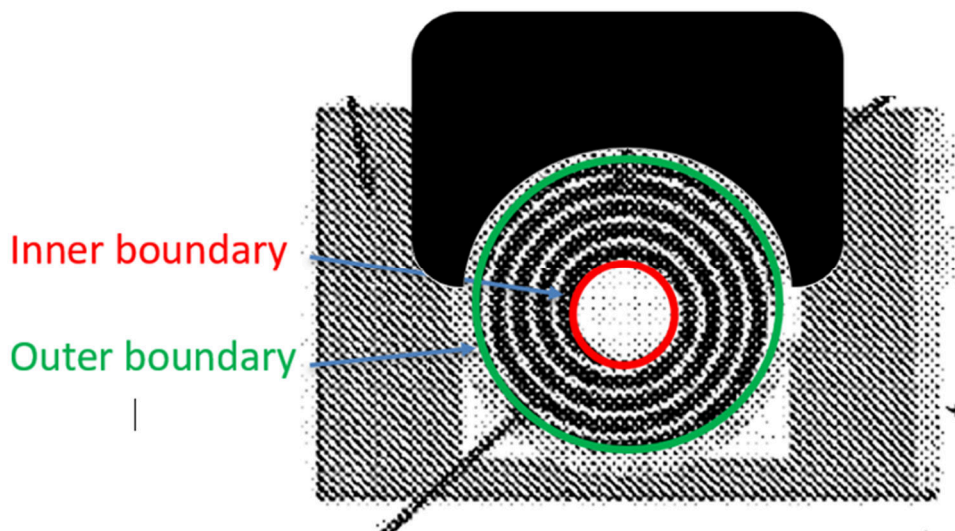
For instance, Partovi expressly indicates magnet configurations that “provide minimal or no effect on performance of a wireless charger.” EX1007, [0178]; *see also* EX1007, [0183], [0195]-[0197] (placed “around the coil,” magnet geometries can include “arc magnets” or “other shapes.”); EX1003, ¶128; *see also, infra*,

Analysis of Claims 2 and 6.

[1e] *wherein the metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary of the receiver coil.*

As discussed above (§V.B.3 – Spigen-Partovi Combination), in the Combination, the metal plate is positioned in accordance with Partovi's suggestions such that it does not overlap with an orthographic parallel projection of the area formed by the inner boundary of the receiver coil of an electronic device positioned in the case. EX1003, ¶129; EX1007, FIGs. 5, 10, 11, 20, 43-45.

Indeed, the concave edge of the metal plate has a curvature that tracks near an outer boundary of the receiver coil and spaced apart from an inner boundary of the receiver coil. *Id.*



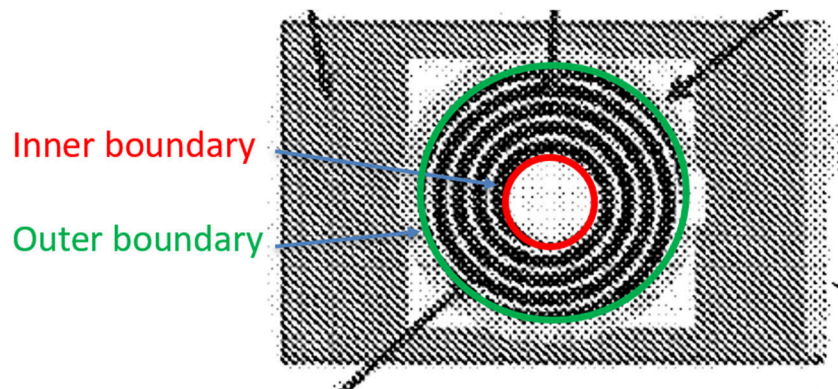
EX1003, ¶129

Likewise, according to the second example predictable implementation in which the metal plate is implemented in the form of a ring (*supra*, §V.B.3 (Spigen-Partovi Combination)), the concave edge of the metal plate has a curvature that tracks near an outer boundary of the receiver coil and spaced apart from an inner boundary of the receiver coil. EX1003, ¶130. The metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary onto a projection plane of the metal plate such that the plate provides “minimal or no effect on performance of a wireless charger.” EX1007, [0178]; EX1003, ¶130.

(b) *Claim 2*

*[2] The case of claim 1, wherein the inner boundary and the outer boundary are substantially circular.*

In the combined system, the inner boundary and the outer boundary of the “receiver coil” are substantially circular, in accordance with Partovi’s suggestions. EX1003, ¶131; EX1007, FIG. 44; *see also*, EX1007, FIGS. 5, 7-13, 19-25, 36-37, 41, 43-47.



EX1003, ¶131 (EX1007, FIG. 44 (partial, annotated))

(c) *Claim 3*

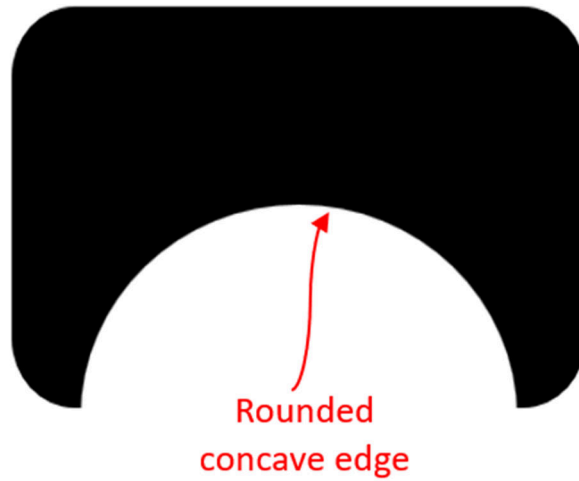
*[3] The case of claim 1, wherein the metal plate has a rounded concave edge.*

The Spigen-Partovi Combination features a metal plate that has a rounded concave edge, in accordance with Partovi's suggestions. EX1003, ¶132; *supra*, §V.B.3 (Spigen-Partovi Combination).

As described above, a POSITA would have found obvious multiple shapes for the metal plate, each of which includes a rounded concave edge that mimics and accommodates the profile of the receiver coil of the mobile device housed within the protective case. EX1003, ¶133. Partovi explains that an “example of a type of magnet that can be used for this purpose is a ring or arc magnet that will provide minimal or no effect on performance of a wireless charger.” EX1007, [0178]; *see also* EX1007, [0183], [0195]-[0197] (placed “around the coil,” magnet geometries can include “arc magnets” or “other shapes.”). The magnets are mounted to “maintain[] charging capability” by not interfering with the inductive charging of the coils. *Id.*

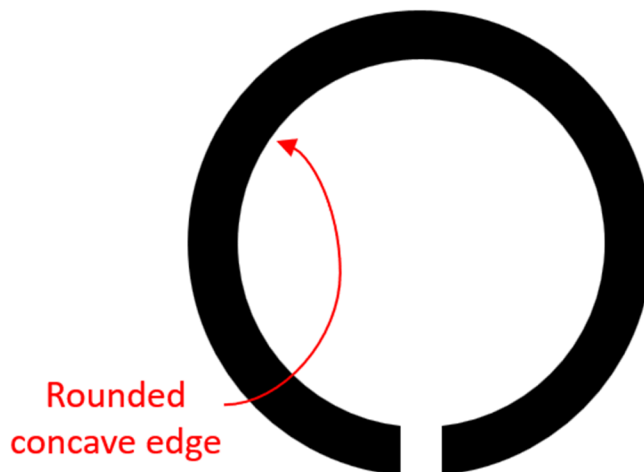
According to a first example predictable implementation, an arc shape cutout is provided in the rectangular metal plate disclosed by Spigen, to accommodate the geometry of a circular receiver coil described by Partovi. *Supra*, §V.B.3 (Spigen-

Partovi Combination); EX1003, ¶134.



EX1003, ¶134

According to a second example predictable implementation, the metal plate is shaped in the form of a ring (e.g., such as a ring having a cutout), in accordance with Partovi's suggestions. *See, e.g.*, EX1007, FIG. 44; EX1003, ¶135.



EX1003, ¶135

To be clear, a POSITA would have recognized and found obvious, from

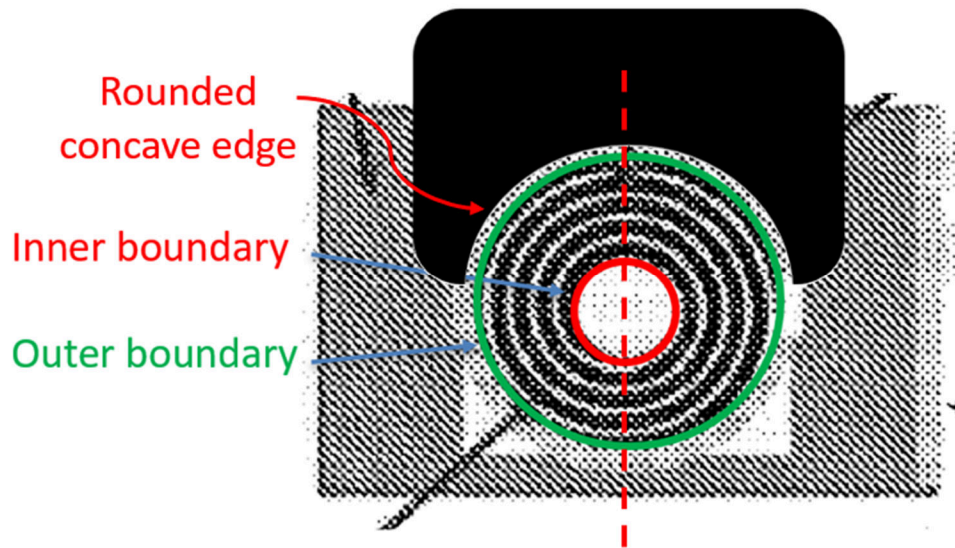
Spigen and Partovi, that the geometry of the cavity that accommodates the metal plate in the case has a geometry compatible with the metal plate. EX1003, ¶136.

A POSITA would have nested the modified plate within the existing cavity, and/or similarly modified the geometry of the cavity to accommodate the shape of the Spigen-Partovi Combination's plate. *Id.*

(d) *Claim 4*

*[4] The case of claim 3, wherein the rounded concave edge substantially symmetrically aligns to respective orthographic parallel projections of the inner boundary and the outer boundary onto a projection plane of the metal plate.*

In the combination, the rounded concave edge substantially symmetrically aligns to respective orthographic parallel projections of the inner boundary and the outer boundary onto a projection plane of the metal plate. EX1003, ¶137; *see also* EX1001, 4:23-30; 5:26-32.



EX1003, ¶137

(e) *Claim 6*

*[6] The case of claim 4, wherein the rounded concave edge is placed outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate.*

As shown below, in the Spigen-Partovi Combination, the rounded concave edge is placed outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate. EX1003, ¶138; EX1007, FIGs. 5, 10, 11, 20, 43-45; *see also, supra*, §V.B.3 (Spigen-Partovi Combination).

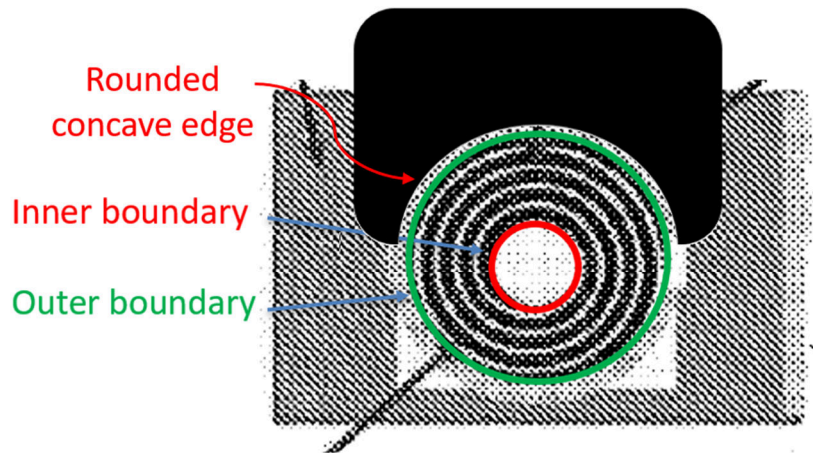


FIG. 6B

EX1003, ¶138

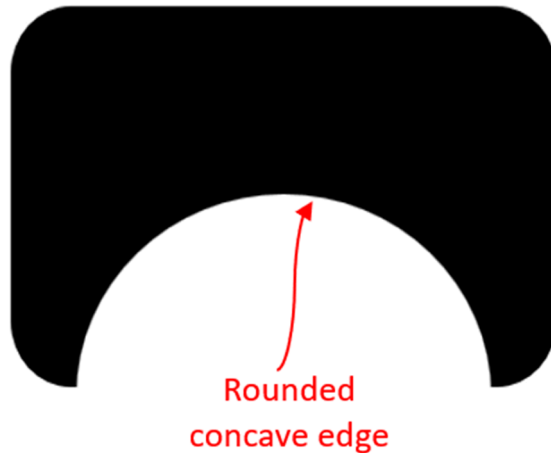
Likewise, according to the second example predictable implementation in which the metal plate is implemented in the form of a ring (*supra*, Analysis of Element [1e]), the metal plate is positioned similarly relative to the receiver coil such that the rounded concave edge is outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate, for the reasons discussed above. EX1003, ¶139.

(f) *Claim 7*

[7a] *The case of claim 1, wherein the metal plate is substantially rectangular with a first side having a rounded concave edge, and*

As shown below, in the first example predictable implementation of the Spigen-Partovi Combination, the metal plate is substantially rectangular and has a

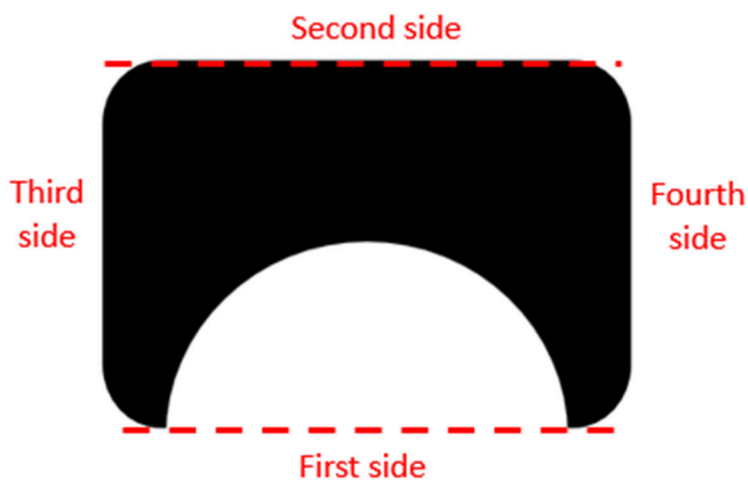
first side having a rounded concave edge. EX1003, ¶140; *see also* discussion of claim [8], *infra*.



EX1003, ¶140.

*[7b] wherein the metal plate has third and fourth sides that are substantially parallel to each other and has a second side that is substantially parallel to the first side.*

In the first example predictable implementation of the Spigen-Partovi Combination, the metal plate has third and fourth sides that are substantially parallel to each other and a second side that is substantially parallel with the first side. EX1003, ¶141.



EX1003, ¶141

Here again, the Spigen-Partovi Combination's metal plate is like the example depicted by the '223 Patent. EX1003, ¶141.

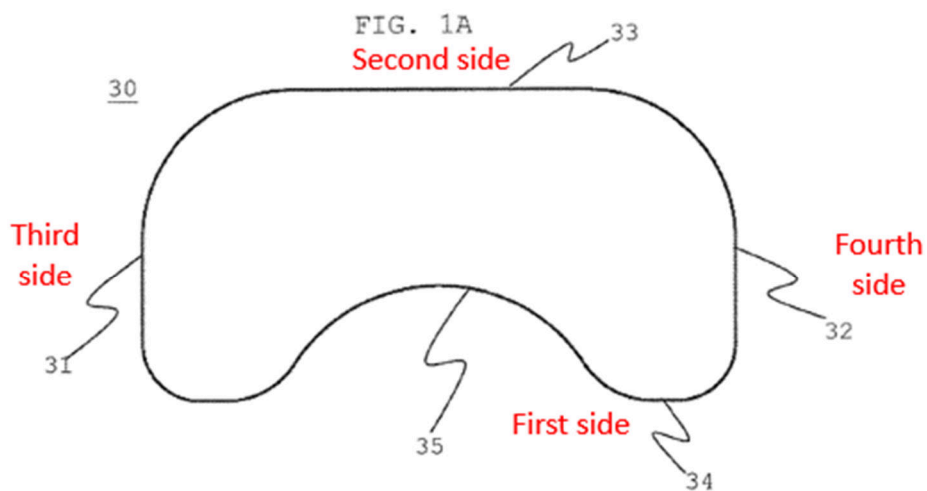


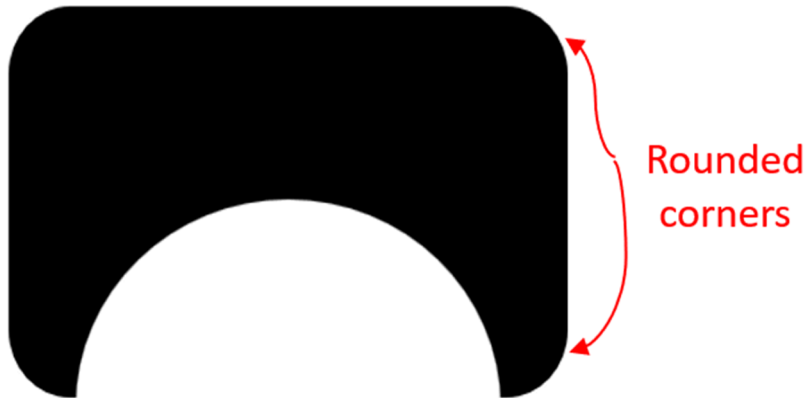
FIG. 1B

EX1003, ¶141

(g) *Claim 8*

[8] *The case of claim 7, wherein the metal plate has rounded corners.*

In the combination, the metal plate has rounded corners, in accordance with Spigen and Partovi's suggestions. EX1003, ¶142 (EX1006, 1:50-2:02).



EX1003, ¶142

(h) *Claim 10*

[10] *The case of claim 1, wherein the metal plate is attached to the protective cover by an adhesive.*

In the Spigen-Partovi Combination, the metal plate is attached to the protective cover by an adhesive. For example, Spigen discloses an adhesive tape on a surface of the metal plate that adheres the metal plate to the hard protective cover. EX1006, 1:57-2:03; EX1003, ¶143 (citing EX1009).



EX1003, ¶143 (EX1006, 1:58 (annotated))

## **VI. PAYMENT OF FEES – 37 C.F.R. § 42.103**

Petitioner authorizes the Patent and Trademark Office to charge any fees to Deposit Account No. 06-1050.

## **VII. CONCLUSION**

Petitioner respectfully requests institution of an IPR on the grounds presented herein.

## **VIII. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(A)(1)**

### **A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)**

Apple Inc. is the petitioner and the real party-in-interest.

### **B. Related Matters Under 37 C.F.R. § 42.8(b)(2)**

Petitioner is not aware of any disclaimers, reexamination certificates or petitions for inter partes review for the '223 Patent.

The '223 patent is the subject of *Magnova LLC v. Apple Inc.* 7-26-cv-00056 (WDTX), filed on February 19, 2026.

### **C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)**

Petitioner provides the following designation of counsel.

| <b>Lead Counsel</b>                                                                                                                                                                                                                              | <b>Backup counsel</b>                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W. Karl Renner, Reg. No. 41,265<br>Fish & Richardson P.C.<br>60 South Sixth Street, Suite 3200<br>Minneapolis, MN 55402<br>Tel: 202-783-5070<br>Fax: 877-769-7945<br>Email: <a href="mailto:IPR50095-0306IP1@fr.com">IPR50095-0306IP1@fr.com</a> | Andrew B. Patrick, Reg. No. 63,471<br>Jennifer J. Huang, Reg. No. 64,297<br>Craig A. Deutsch, Reg. No. 69,264<br>Fish & Richardson P.C.<br>60 South Sixth Street, Suite 3200<br>Minneapolis, MN 55402<br>Tel: 202-783-5070<br>Fax: 877-769-7945<br>Email: <a href="mailto:IPR50095-0306IP1@fr.com">IPR50095-0306IP1@fr.com</a> |

### **D. Service Information**

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at [IPR50095-0306IP1@fr.com](mailto:IPR50095-0306IP1@fr.com).

Respectfully submitted,

Dated: September 18, 2026

/W. Karl Renner/

W. Karl Renner, Reg. No. 41,265  
Andrew B. Patrick, Reg. No. 63,471  
Jennifer J. Huang, Reg. No. 64,297  
Craig A. Deutsch, Reg. No. 69,264  
Fish & Richardson P.C.  
60 South Sixth Street, Suite 3200  
Minneapolis, MN 55402  
T: 202-783-5070  
F: 877-769-7945

(Control No. IPR2026-00492)

*Counsel for Petitioner*

**CERTIFICATION UNDER 37 CFR § 42.24**

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 11,869 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: September 18, 2026

/W. Karl Renner/

W. Karl Renner, Reg. No. 41,265  
Andrew B. Patrick, Reg. No. 63,471  
Jennifer J. Huang, Reg. No. 64,297  
Craig A. Deutsch, Reg. No. 69,264  
Fish & Richardson P.C.  
60 South Sixth Street, Suite 3200  
Minneapolis, MN 55402  
T: 202-783-5070  
F: 877-769-7945

(Control No. IPR2026-00492)

*Counsel for Petitioner*

**CERTIFICATE OF SERVICE**

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on September 18, 2026, a complete and entire copy of this Petition for *Inter partes* Review, Power of Attorney, and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

Bridgeway IP Law Group, PLLC  
11350 Random Hills Rd.  
Suite 800  
Fairfax, VA 22030  
Tel: (703) 349-6700

/Crena Pacheco/  
Crena Pacheco  
Fish & Richardson P.C.  
60 South Sixth Street  
Suite 3200  
Minneapolis, MN 55402  
[pacheco@fr.com](mailto:pacheco@fr.com)