

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Dae-Young Kim
U.S. Patent No.: 10,469,119 Attorney Docket No. 50095-0305IP1
Issue Date: November 5, 2019
Appl. Serial No.: 15/989,033
Filing Date: May 24, 2018
Title: MAGNETIC MOUNT FOR ELECTRONIC DEVICES

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PETITION FOR *INTER PARTES* REVIEW
OF UNITED STATES PATENT NO. 10,469,119
PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

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LIST OF EXHIBITS

- EX1001 U.S. Patent No. 10,469,119 (“’119 Patent”)
- EX1002 U.S. Patent No. 10,469,119 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 Data Sheet, 3M Double Coated Tape 9448A (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: https://www.uscourts.gov/sites/default/files/document/fcms_na_distpr_ofile0630.2026.pdf
EX1023	Petitioner’s Stipulation
EX1024	Declaration of Expert Librarian June Munford
EX1025	Declaration of Internet Archive Representative
EX1026	RESERVED
EX1027	RESERVED
EX1028	RESERVED
EX1029	System Description Wireless Power Transfer, Vol. 1, Pt. 1, v. 1.0.1 (October 2010)
EX1030	RESERVED

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 hard protective cover constructed to receive the electronic device therein wherein the hard protective cover has a recess which faces the electronic device and the hard protective cover is external with respect to the electronic device; and
[1b]	a metal plate constructed to be received in the recess of the hard protective cover,
[1c]	wherein the metal plate is constructed to enable magnetic retention or attachment of the case to a support having a magnet,
[1d]	wherein the metal plate has a rounded concave edge,
[1e]	wherein the metal plate received in the recess is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary.
Claim 2	
[2]	The case of claim 1, wherein 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.
Claim 3	
[3]	The case of claim 1, wherein the inner boundary and the outer boundary are substantially circular.

Claim 4	
[4]	The case of claim 1, 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 the rounded concave edge,
[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 hard protective cover by an adhesive.
Claim 11	
[11]	The case of claim 1, wherein the hard protective cover further comprises a surrounding recess which surrounds the recess and slopes away from a flat surface of the hard protective cover towards the recess forming a cavity.

Claim 12	
[12]	The case of claim 1, further comprising a soft protective cover which comprises a back panel to cover a back portion of the electronic device, and a side wall extending from a top surface of the back panel along edges of the back panel, wherein the hard protective cover is constructed to removably mount over the soft protective cover.
Claim 13	
[13pre]	A metal plate for magnetically mounting an electronic device or a case with an electronic device installed therein 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 metal plate comprising:
[13a]	a rounded concave edge,
[13b]	wherein the metal plate is constructed to be attachable to the electronic device or the case,
[13c]	wherein the metal plate is constructed to enable magnetic retention or attachment of the electronic device to a support having a magnet,
[13d]	wherein the metal plate attached to the electronic device or the case is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary.
Claim 14	
[14]	The case of claim 13, wherein 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.
Claim 15	
[15]	The case of claim 13, wherein the inner boundary and the outer boundary are substantially circular.

Claim 16	
[16]	The case of claim 13, wherein the rounded concave edge, the inner boundary, and the outer boundary are substantially symmetrical with respect to a same line.
Claim 18	
[18]	The case of claim 16, 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 19	
[19a]	The case of claim 13, wherein the metal plate is substantially rectangular with a first side having the rounded concave edge, and
[19b]	the metal plate has rounded corners,
[19c]	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.

I. INTRODUCTION

Apple Inc. (“Apple” or “Petitioner”) petitions for IPR of claims 1-4, 6-8, 10-16, and 18-19 (“Challenged Claims”) of U.S. Patent No. 10,469,119 (“’119 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

Petitioner certifies that the ’119 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 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, ¶¶32-182.

Ground	'119 Patent Claims	Basis for Rejection
1	1-4, 6-8, 10, 13-16, 18-19	§103: Wojcik-Franklin
2A	1-4, 6-8, 10-11, 13-16, 18-19	§103: Spigen-Partovi
2B	12	§103: Spigen-Partovi-Fathollahi

The '119 Patent was filed May 24, 2018, and claims priority to U.S. Provisional Patent Application No. 62/511,280, which was filed May 25, 2017 ("Critical Date"). EX1001, Cover. As shown below, each prior art reference that forms the basis of the Grounds of this Petition pre-dates the '119 Patent's earliest proclaimed priority date, which Petitioner does not concede.

Reference	Date(s)	Basis
Wojcik	Filed February 8, 2016 Published October 6, 2016	§102(a)(1)-(2)
Franklin	Filed July 8, 2015 Published January 7, 2016	§102(a)(1)-(2)
Spigen	Publicly available at least by March 3, 2016	§102(a)(1)
Partovi	Filed April 28, 2010 Published March 3, 2011	§102(a)(1)-(2)
Fathollahi	Filed May 30, 2014 Published September 18, 2014	§102(a)(1)-(2)

Spigen qualifies as prior art under 35 U.S.C. § 102(a)(1) as it was publicly available more than 1 year before the '119 Patent's earliest proclaimed priority date because it was publicly available at least by March 3, 2016. EX1024;

EX1025; EX1006; EX1003, ¶110.

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:” (Claims 1-4, 6-8, 10-12)	The preamble is limiting.
“A metal plate for magnetically mounting an electronic device or a case with an electronic device installed therein 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 metal plate comprising:” (Claims 13-16, 18-19)	The preamble is limiting.

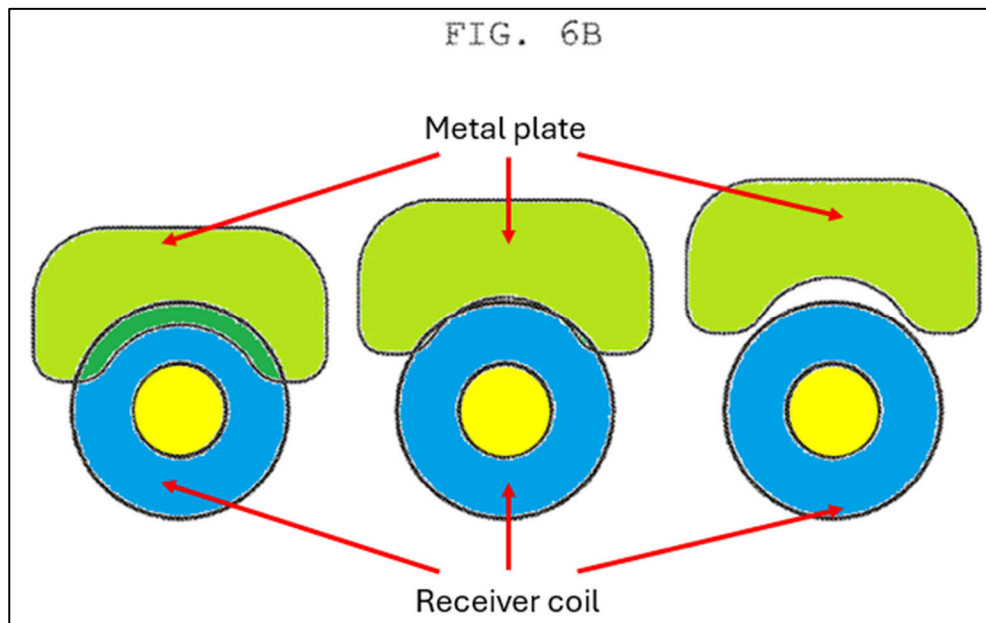
Petitioner respectfully submits that no other claim terms need be construed to resolve issues of controversy in the present Petition. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). Petitioner reserves the right to respond to any constructions offered by Patent Owner or adopted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

III. SUMMARY OF THE '119 PATENT

A. Brief Description

The '119 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 has a recess which faces the electronic device; and a metal plate constructed to be received in the recess.” EX1001, Abstract.

The '119 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.

Figure 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, 2:54-55, 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, 4:26-29. In the middle, the “rounded concave edge [] [of the metal plate] may overlap with the outer boundary” of the receiver coil. EX1001, 4:29-31. At right, the “rounded concave edge [] [of the metal plate] may be placed outside the outer boundary” of the receiver coil. EX1001, 4:31-32.

With respect to the benefits of such a configuration, the '119 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, 6:31-39.

B. Prosecution History Summary

The '119 Patent issued November 5, 2019, from U.S. Patent Application No. 15/989,033, filed May 24, 2018. EX1001, Cover.

During prosecution, Examiner Trandai issued a non-final Office action rejecting most claims as obvious over a combination of Partovi (EX1007) and Partovi '636 (EX1013), and the remaining claims as obvious over Partovi and Partovi '636 further in view of Cheung (EX1016) or Richardson (EX1017).

EX1002, 81-92.

In response, Applicant argued alleged distinctions, and the Examiner issued a final Office action rejecting the claims based at least on a new combination of Kaynar (EX1014) and Rothbaum (EX1015). EX1002, 113-125, 127-137.

Applicant subsequently argued that the identified prior art failed to teach or

suggest “wherein the metal plate has a rounded concave edge, wherein the metal plate received in the recess is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary.” EX1002, 156-171. The Examiner allowed the claims without offering an express statement of reasons for allowance. EX1002, 180-184.

The features argued by Applicant, 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, but were apparently overlooked by the Examiner. *See, e.g.*, EX1002, 91 (citing Wojcik and Franklin), 93 (citing Wojcik), 94 (citing Franklin). And, as demonstrated below with reference to Dr. Zane’s testimony, a POSITA would have found the subject matter of at least the ’119 Patent’s independent claims obvious over their predictably combined disclosures. EX1003, ¶¶46-84, 97-101. Thus, Petitioner respectfully submits that the ’119 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 ’119 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,

¶29. Additional graduate education could substitute for professional experience, and *vice versa*. *Id.*

V. THE CHALLENGED CLAIMS ARE UNPATENTABLE

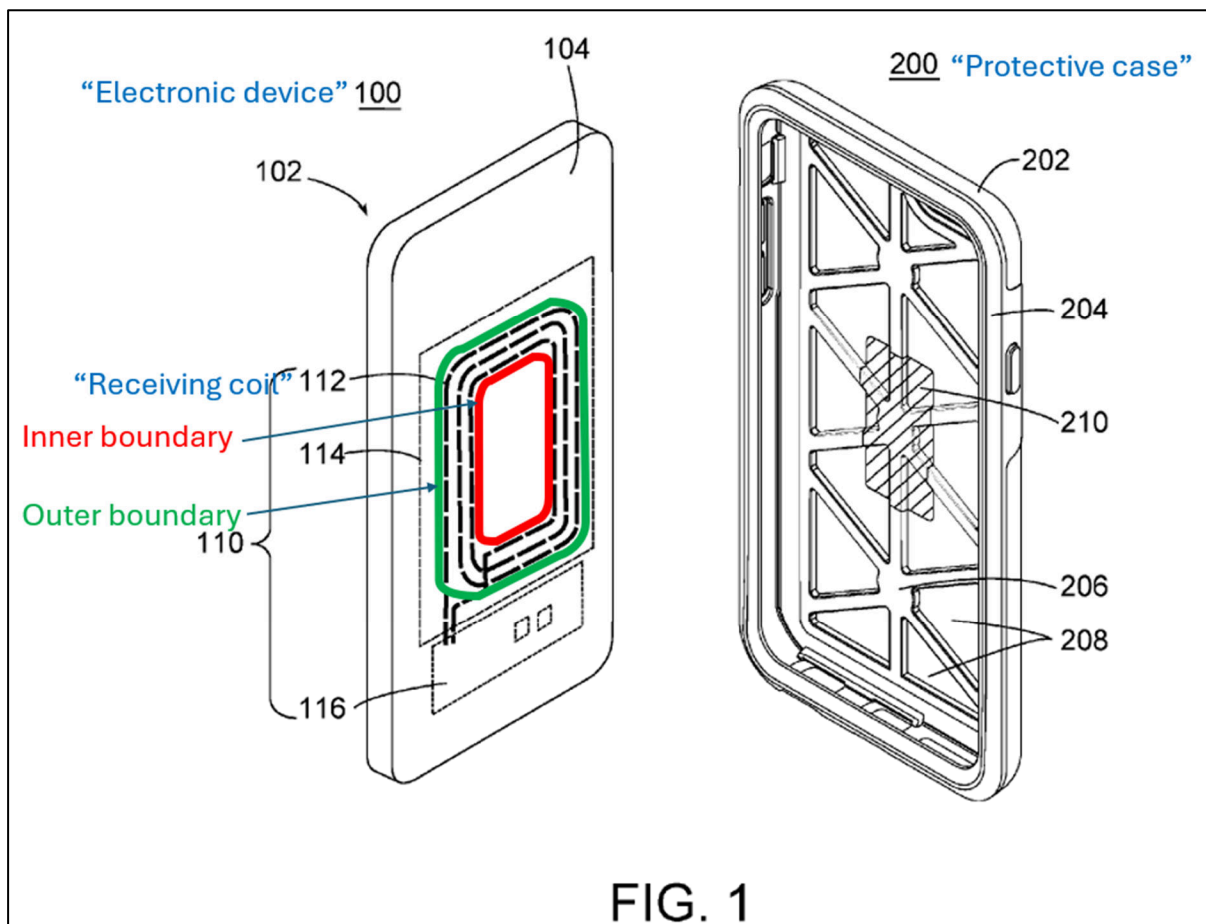
A. GROUND 1: Wojcik-Franklin Renders Obvious Claims 1-4, 6-8, 10, 13-16, and 18-19

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).

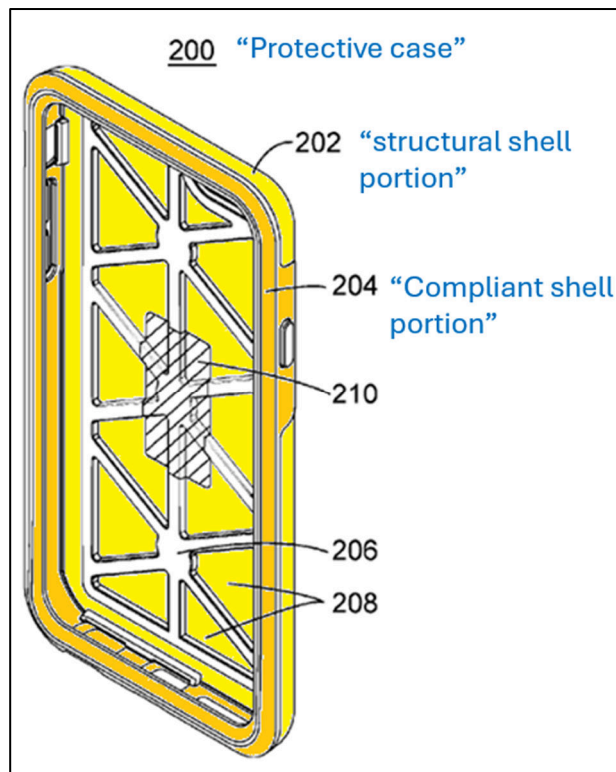


EX1004, FIG. 1 (annotated, highlighted).

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

Wojcik’s “protective case 200” further includes a “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

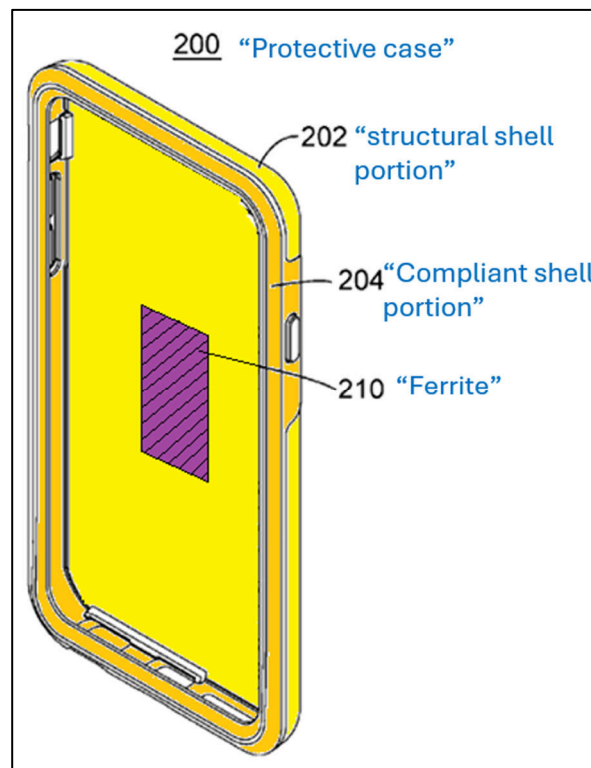
magnetic permeability material, such as a ferrite (or another material having ferromagnetic properties), may thus be applied as a sheet backing to the antenna/coil in a wireless power transfer circuit to prevent effects of the magnetic field on other circuitry, and vice versa.” EX1004, [0016]. “[A] ferrite 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*,”¹ 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*

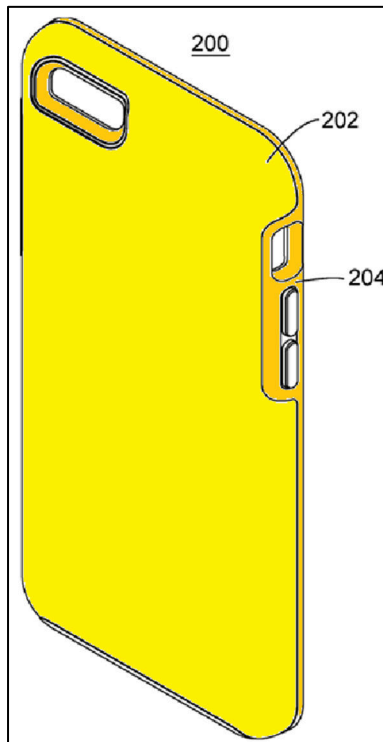
¹ Unless otherwise indicated, emphases throughout this Petition are added.

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 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, FIG. 1 (annotated excerpt, modified per Wojcik at [0023]).



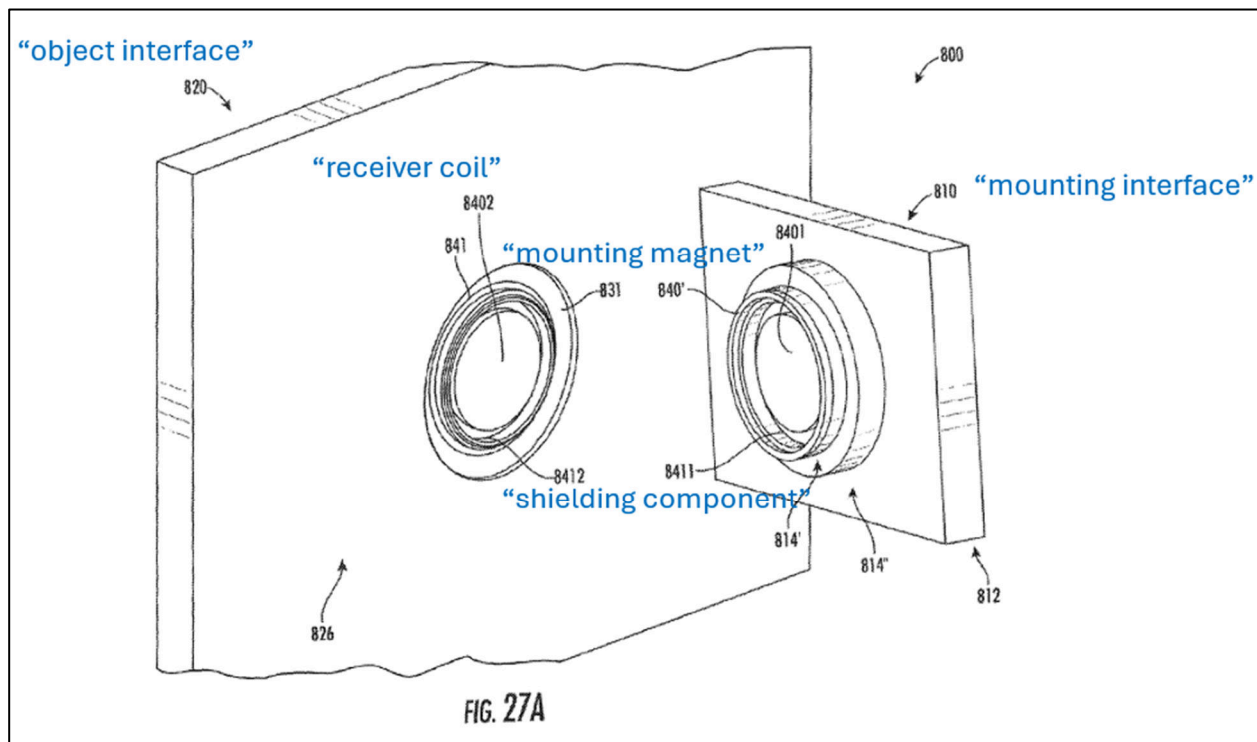
EX1004, FIG. 3 (annotated, highlighted, modified).

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, 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 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-27B. EX1005, [0344]. Franklin adds that “[s]ubstantially 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, ¶44 (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 '119 Patent

Wojcik and Franklin are analogous art to the '119 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, 1:13-19 (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 ’119 Patent, at least insofar as they both describe magnetically mounting a case/apparatus with an installed electronic device to support wireless charging of the installed electronic device. EX1003, ¶49; *Graham v. John Deere Co.*, 383 U.S. 1 (1966). And, for at least that reason, Wojcik and Franklin are analogous art to the ’119 Patent.

Moreover, Wojcik and Franklin are also reasonably pertinent to the problem the ’119 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, 1:20-44; *see also id.*, 1:44 (“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, ¶50; 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 ’119 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, ¶51.

(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

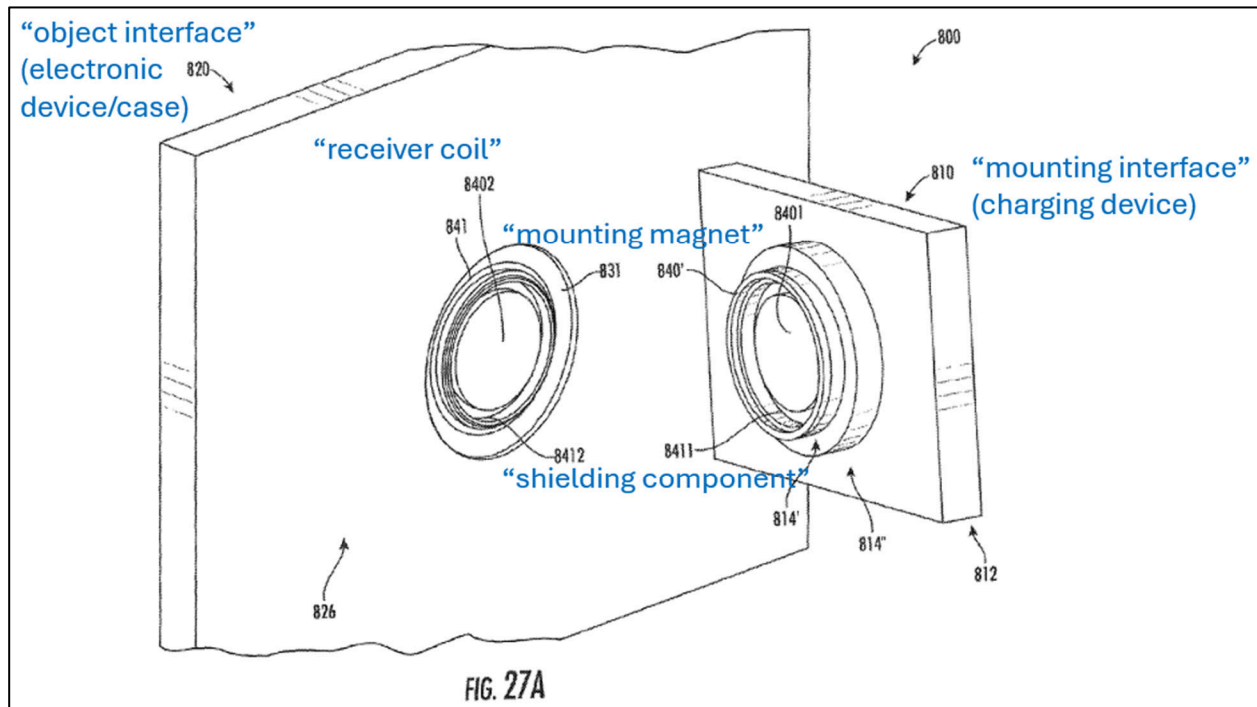
understood a “coil object” to include, for example, a cell phone with a receiver coil for wireless charging, like the electronic device of Wojcik’s FIG. 1. EX1005, [0057] (“The term “coil object” refers to an object (as defined above) that comprises a wireless charging component that is configured to 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, ¶53.

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, ¶54; 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, ¶54; 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, ¶55.

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, ¶56; 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, ¶57. The resulting combination would improve wireless charging through two complementary mechanisms. EX1003, ¶¶58-59. 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, ¶58. 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, ¶59.

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, ¶60.

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], [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*”); EX1003, ¶61.

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, ¶62.

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 placed to a ... charging surface.” EX1004, [0022], [0017] (“The thickness of case material between the wireless

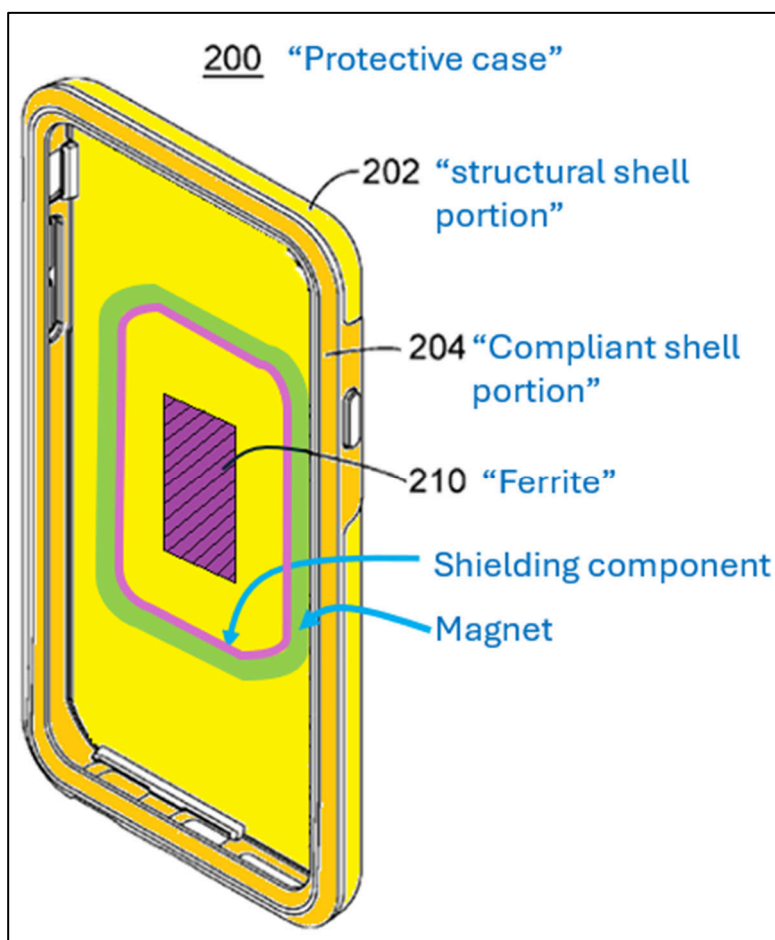
power transfer antenna or coil and any wireless power transmitter can reduce the efficiency or even prevent the power transfer from taking place. In addition, the case material may cause a shielding or blocking effect and further limit the power transfer between the devices.”); EX1003, ¶63.

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, ¶64; 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).

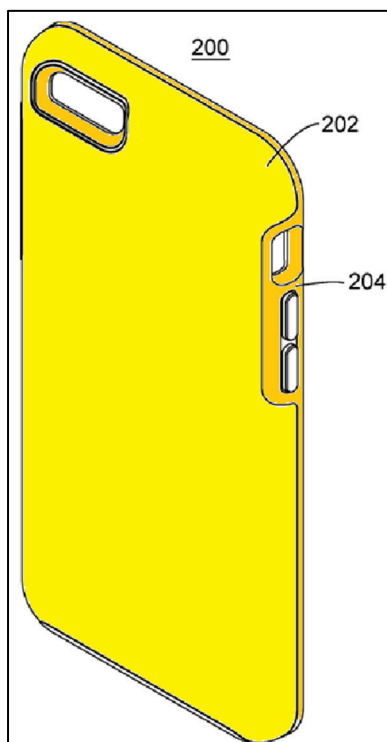
A POSITA would have been further motivated to modify Wojcik’s case so that the magnets do not “interfere with the wireless charging field” created by the receiver coil of Wojcik’s electronic device 100, which Franklin highlights as a potential concern when ferromagnetic components are included in the case. EX1005, [0344], [0349]; EX1003, ¶65. 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, ¶65. 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, ¶65; EX1005, [0344]; EX1004, [0038].

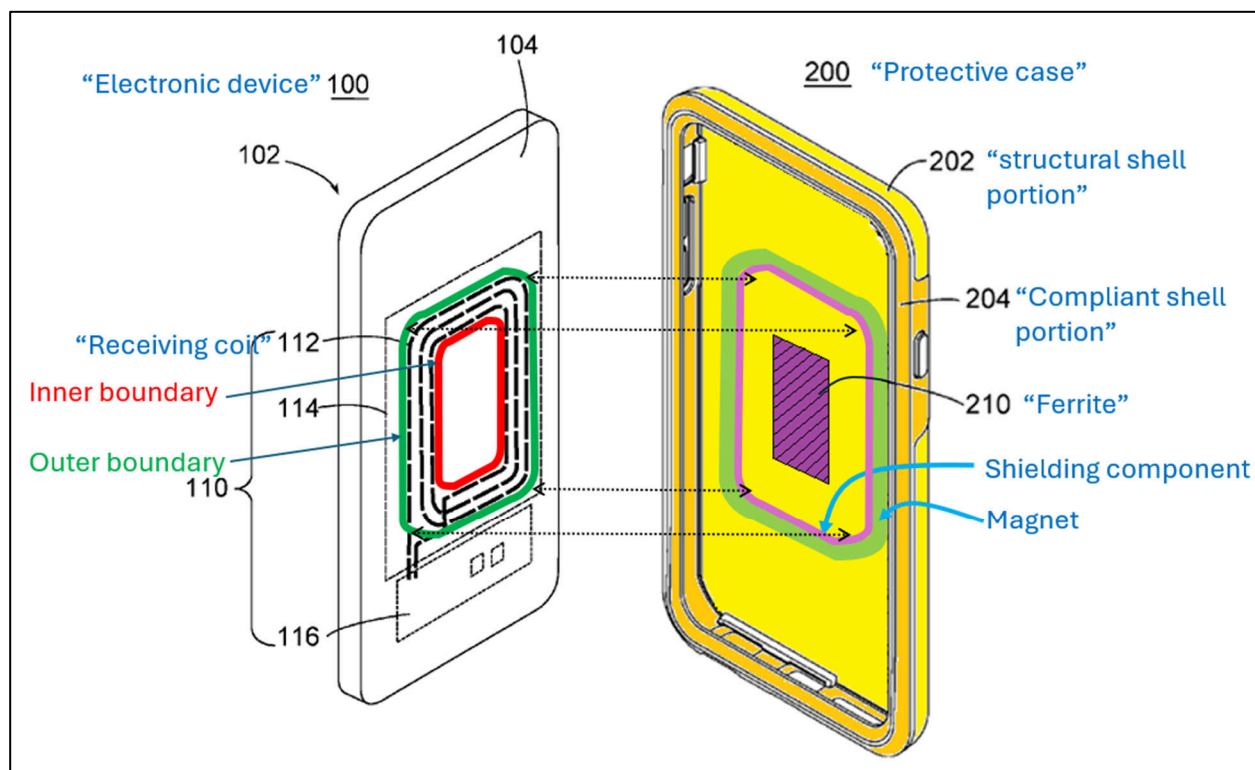
Thus, as enhanced based on Franklin’s teachings, and as shown below in modified FIGs. 1 and 3, Wojcik’s case would retain the advantages of protection and resistance to abrasion and “increasing the magnetic coupling efficiency or the efficiency of the magnetic induction power transfer, between the transmitting 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, ¶66.



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, ¶67. 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, ¶67.

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, ¶68. 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, ¶68.

4. Analysis of Claims

(a) *Claim 1*

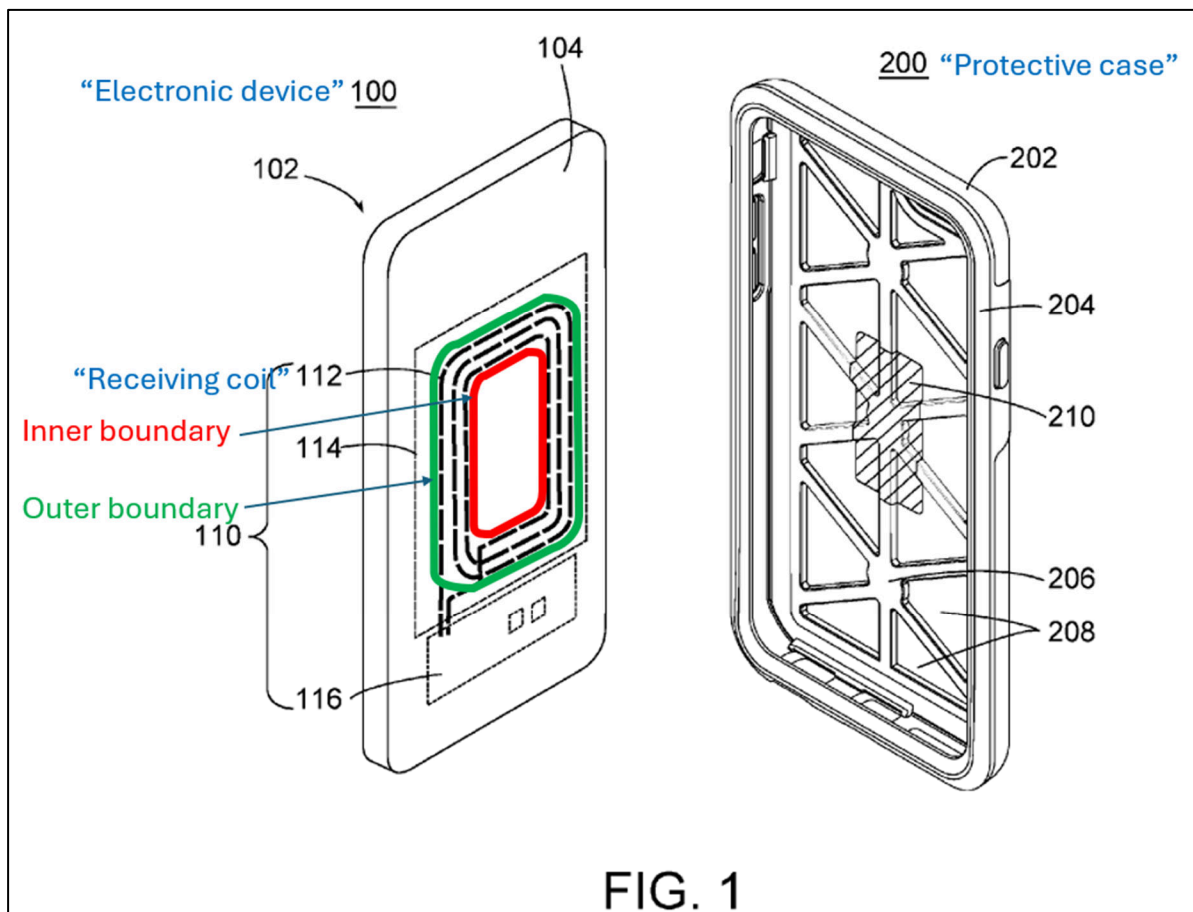
[1pre] *A case for an electronic device wherein the electronic device has a receiver coil for wireless charging constructed within the electronic device and the receiver coil is formed in between an inner boundary and an outer boundary, the case comprising:*

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, ¶69.

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”); EX1003, ¶70.

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)

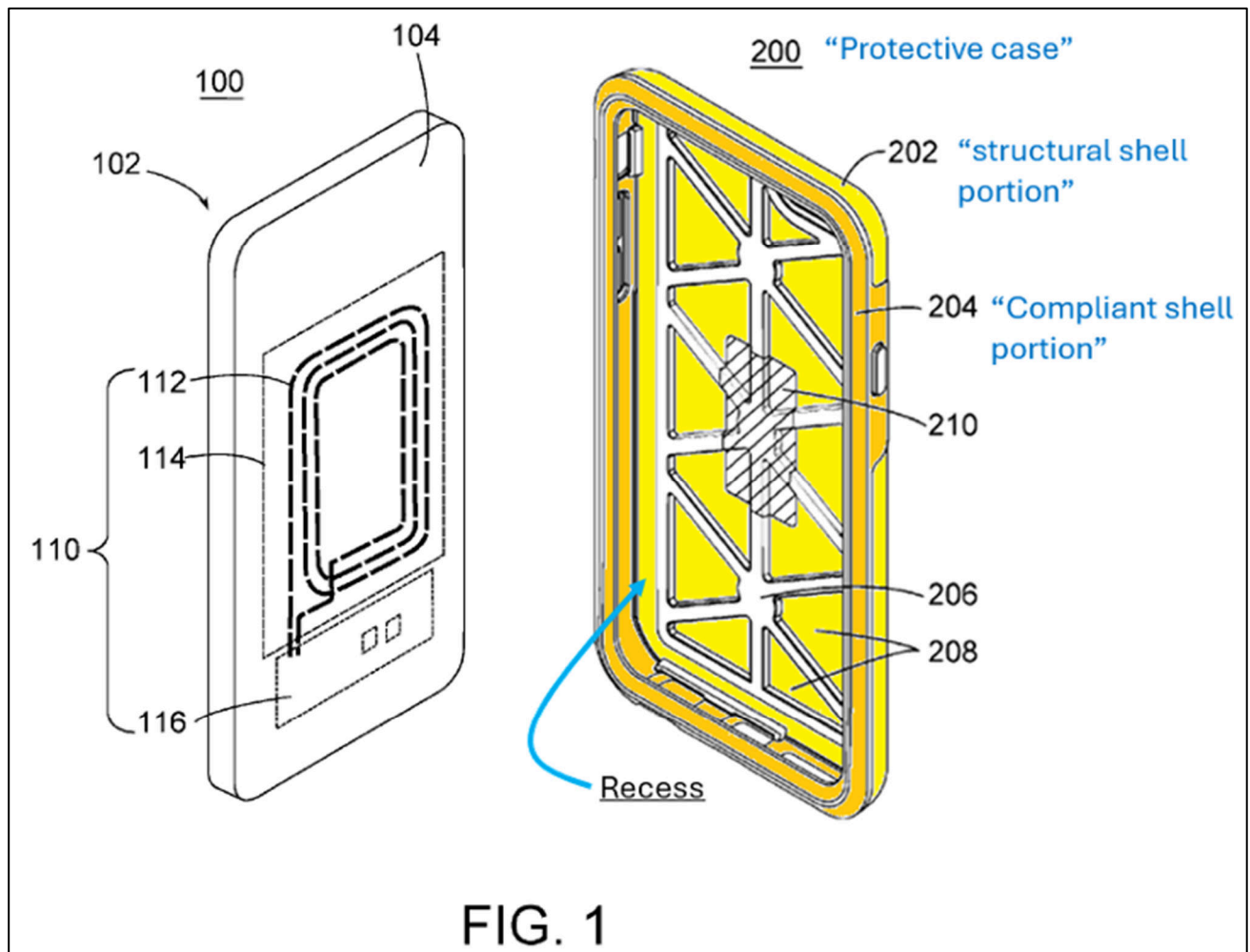
and an outer boundary (shown in green). EX1004, FIG. 1. The “receiving coil 112” is part of a “wireless charging circuit 110” that “allows electronic device 100 to be charged and/or powered from an external device (not pictured) without having to attach a cable or other type of electromechanical connector 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); EX1003, ¶71.



EX1004, FIG. 1 (annotated).

[1a] *a hard protective cover constructed to receive the electronic device therein wherein the hard protective cover has a recess which faces the electronic device and the hard protective cover is external with respect to the electronic device; 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, ¶72.



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

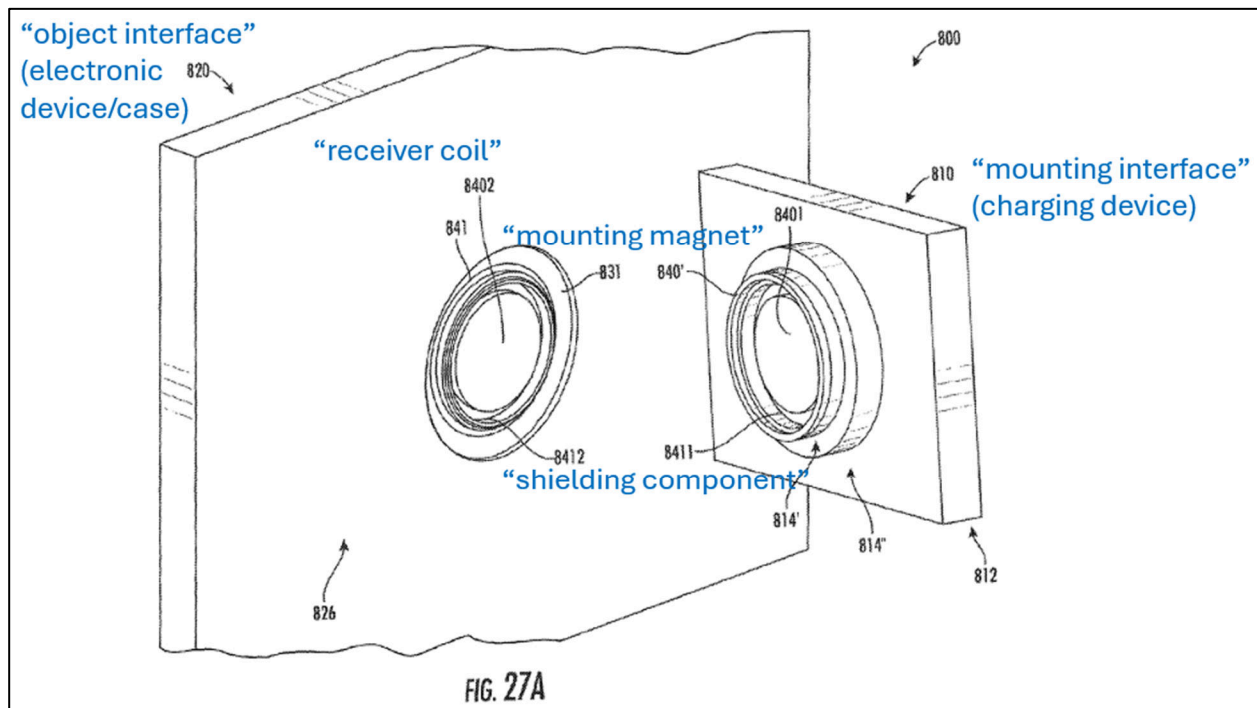
Wojcik explains that the structural shell portion 202 “may provide some degree of stiffness or rigidity to protective case 200 and may also provide some resistance to abrasion.” EX1004, [0023]. Wojcik further explains that “the term ‘compliant’, when referring to shell material, is to be interpreted as referring to the comparative rigidity of the material with respect to the term ‘rigid.’” EX1004, [0030] (“A compliant shell material may be formed from one or more substances having a shore A hardness less than about 50. In some protective cases, a

compliant shell portion may have a shore A hardness in the range of about 15 to 30, about 10 to 35 or about 10 to 45.”); EX1003, ¶73.

Moreover, as shown in FIG. 1 (above), protective case 200 has a recess that faces electronic device 100 that it covers and protects the device 100 when in use. EX1004, FIG. 1, [0025] (“electronic device 100 typically fits into protective case 200 snugly”) (“electronic device 100 is installed in protective case 200”). The hard protective cover (e.g., structural shell portion 202) is external with respect to the electronic device, as shown in FIG. 1. EX1004, FIG. 1; EX1003, ¶74.

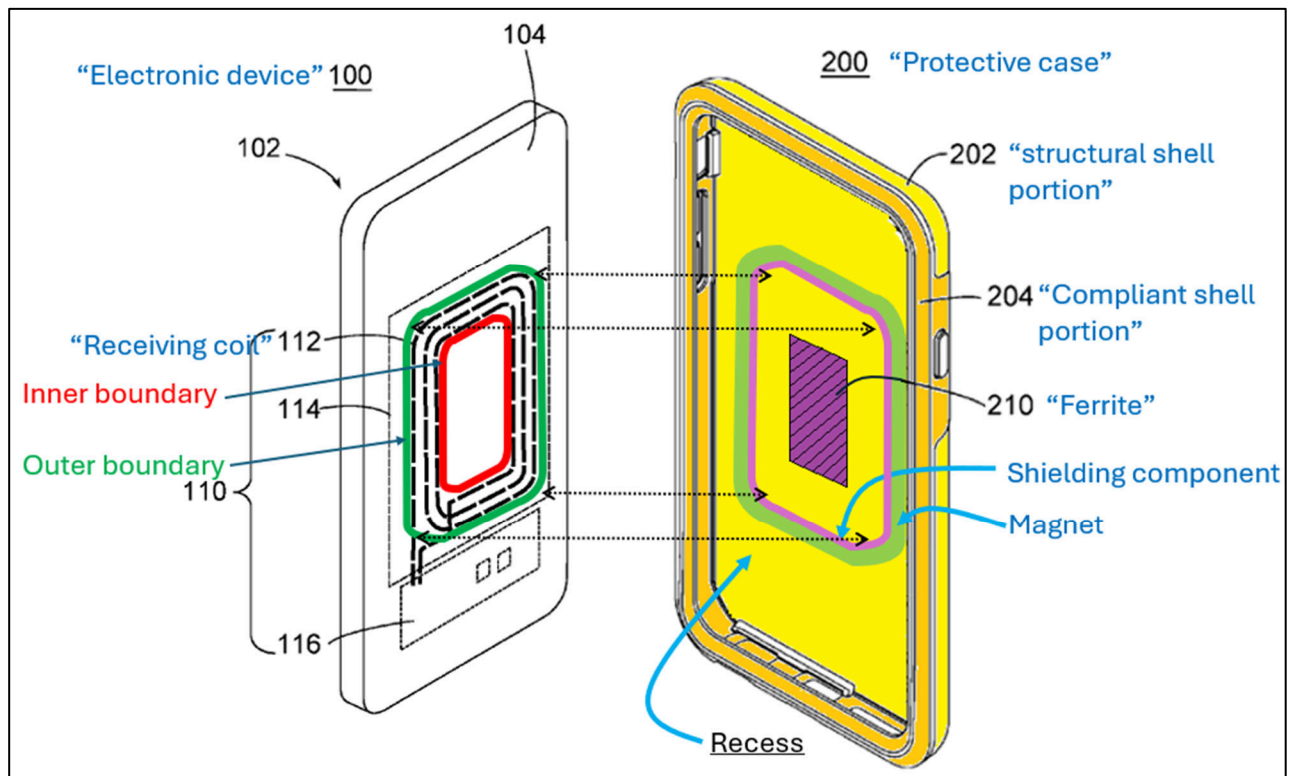
[1b] *a metal plate constructed to be received in the recess of the hard protective cover,*

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, ¶75. In this way, the mounting magnet is a metal plate. EX1003, ¶75. 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 (§V.A.3) and shown below, in the Wojcik-Franklin Combination, the magnet (metal plate) is received in the recess of the protective cover. This is illustrated in the image below.



Wojcik-Franklin Combination.

Moreover, a POSITA would have found it obvious for the Wojcik-Franklin Combination case to include a magnet embedded in the recess of 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, ¶77.

[1c] *wherein the metal plate is constructed to enable magnetic retention or attachment of the case to a support having a magnet,*

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

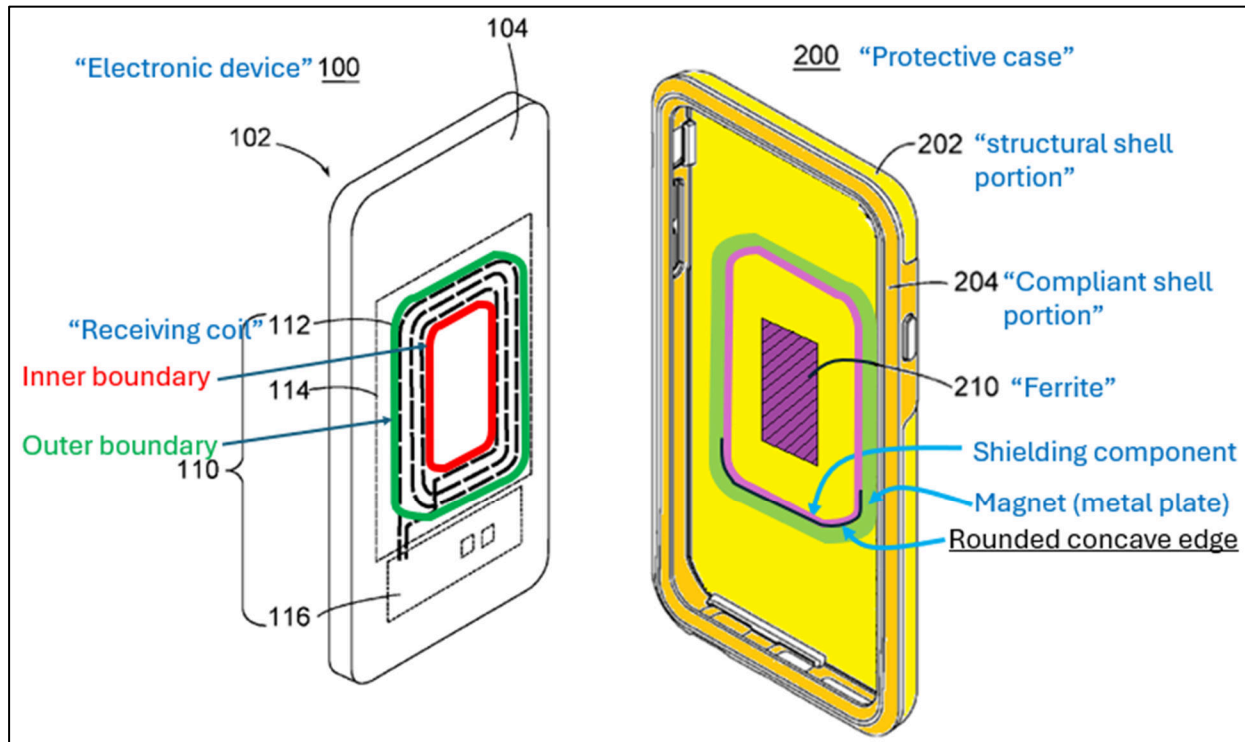
attached to the ferrous metal plate.” EX1005, [0338]. As such, a POSITA would have understood and/or found obvious that the mounting magnet (combination of magnet 831 and magnet 841) comprises a metal plate that comprises a permanent magnet and thus constructed to enable magnetic retention or attachment of the case to a support having a magnet. EX1003, ¶78. That is, with the magnet 831/841 in the recess of the case, the case would be magnetically retained or attached to a support that also has a magnet. EX1003, ¶78.

This is further disclosed in Franklin, which explains that “[m]agnet 831 may be configured relative to magnets 830 and magnets 840” so that an attraction force may be produced between magnet 831 and magnets 830 and 840” when the object interface 820 is brought into proximity with the mounting apparatus 810, and magnet 841 may be configured relative to magnet 840’ so that an attraction force may be produced between magnet 841 and magnet 840’ when the object interface 820 is brought into proximity with the mounting apparatus 810,” as shown in FIG. 27B. EX1005, [0342] (“Therefore, as shown in FIG. 27B, an attraction force produced between the second mounting magnet 840’ (one of a plurality of second mounting magnets in this embodiment) and the third mounting magnet (specifically, magnet 841 in this embodiment) may cause engagement between the second mounting magnet 840’ and the third mounting magnet, and a depth defined by the engagement member 814’ may be configured relative to a charging range

defined by the transmitter coil component 8401 so that the receiver coil component 8402 may be within the charging range of the transmitter coil component 8401 when the second mounting magnet 840' and the third mounting magnet are engaged.”); EX1003, ¶79.

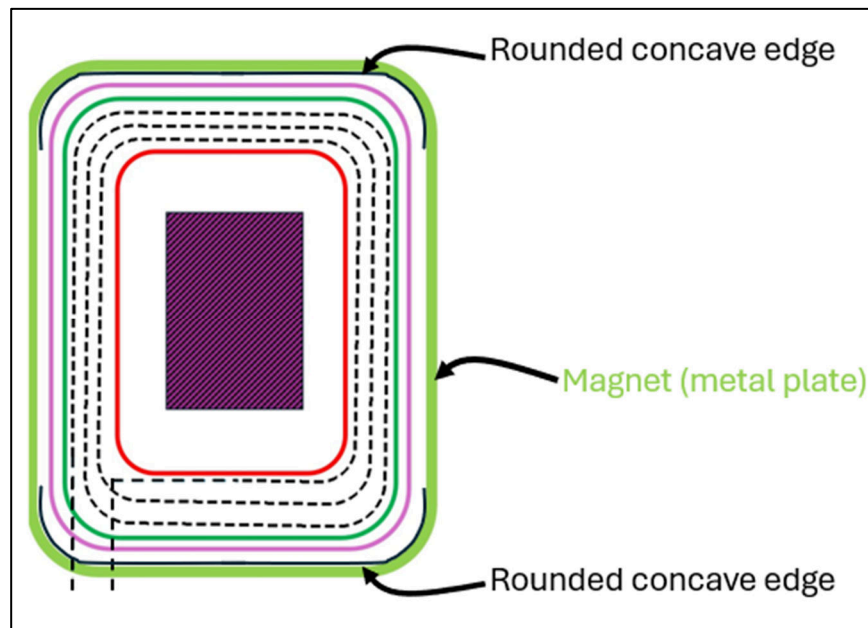
[1d] *wherein the metal plate has a rounded concave edge,*

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, ¶80.



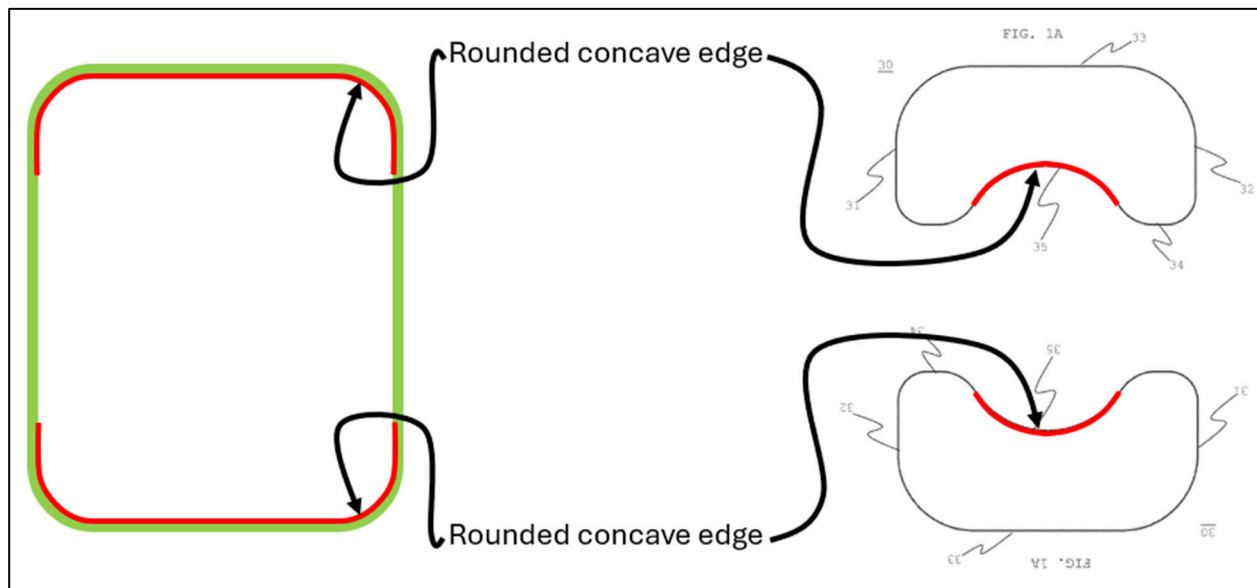
Wojcik-Franklin Combination.

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 obvious that one natural inclusion of Franklin’s mounting magnet in Wojcik’s case would be to use a mounting magnet that matches the shape of Wojcik’s receiver coil. EX1003, ¶81. 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, ¶81. 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/corners. EX1003, ¶81.



EX1003, ¶81.

Either of these rounded concave edges is consistent at least with the '119 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 '119 Patent's example metal plate (in either its original or vertically flipped configuration). EX1003, ¶81.



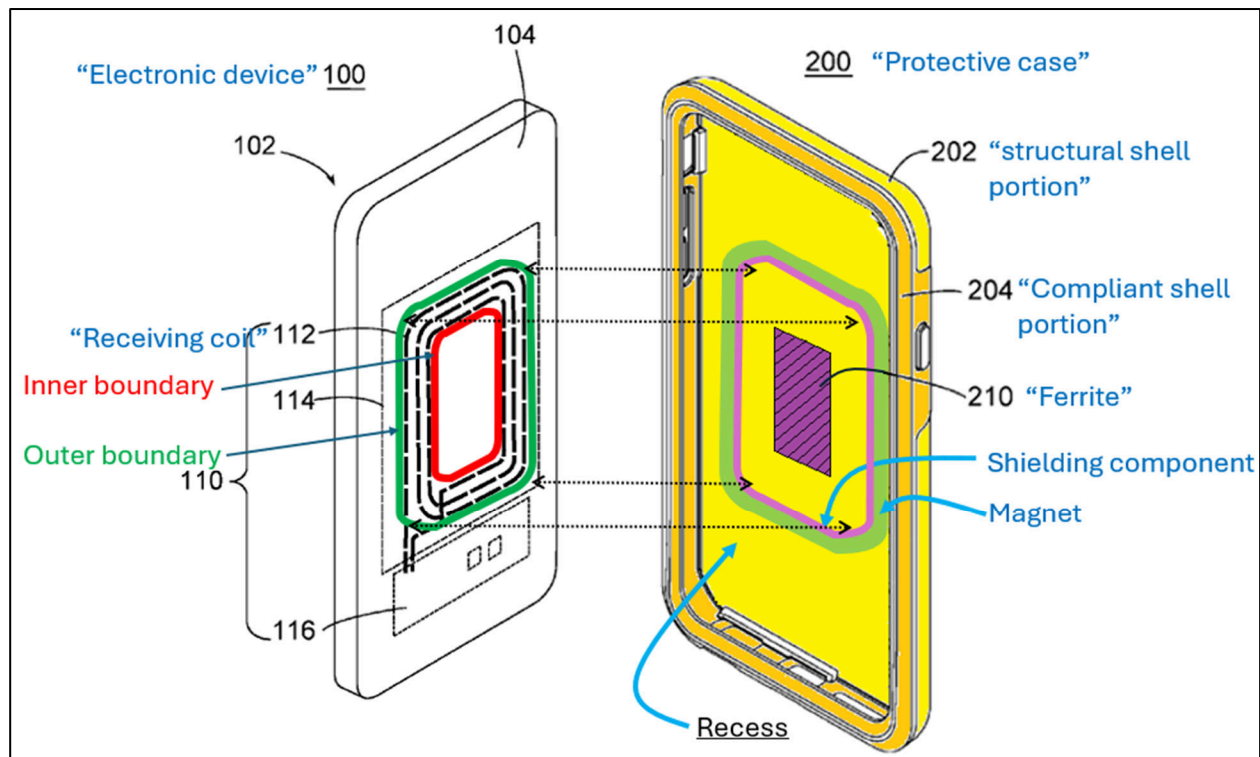
EX1003, ¶81 (comparison to EX1001, FIG. 1A (highlighted, rotated)).

[1e] *wherein the metal plate received in the recess is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary.*

As discussed and shown in the combination section above, in the Wojcik-Franklin Combination, the metal plate (magnet) received in the recess 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, ¶82.

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 associated with” ferrite to “protect the integrity of the wireless charging field associated with the wireless charging relationship,” per Franklin. EX1003, ¶83; EX1005, [0344]. Thus, Franklin’s

solution isolates the wireless charging fields from the additional components for mounting. EX1003, ¶83; 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, ¶83; EX1005, [0344].



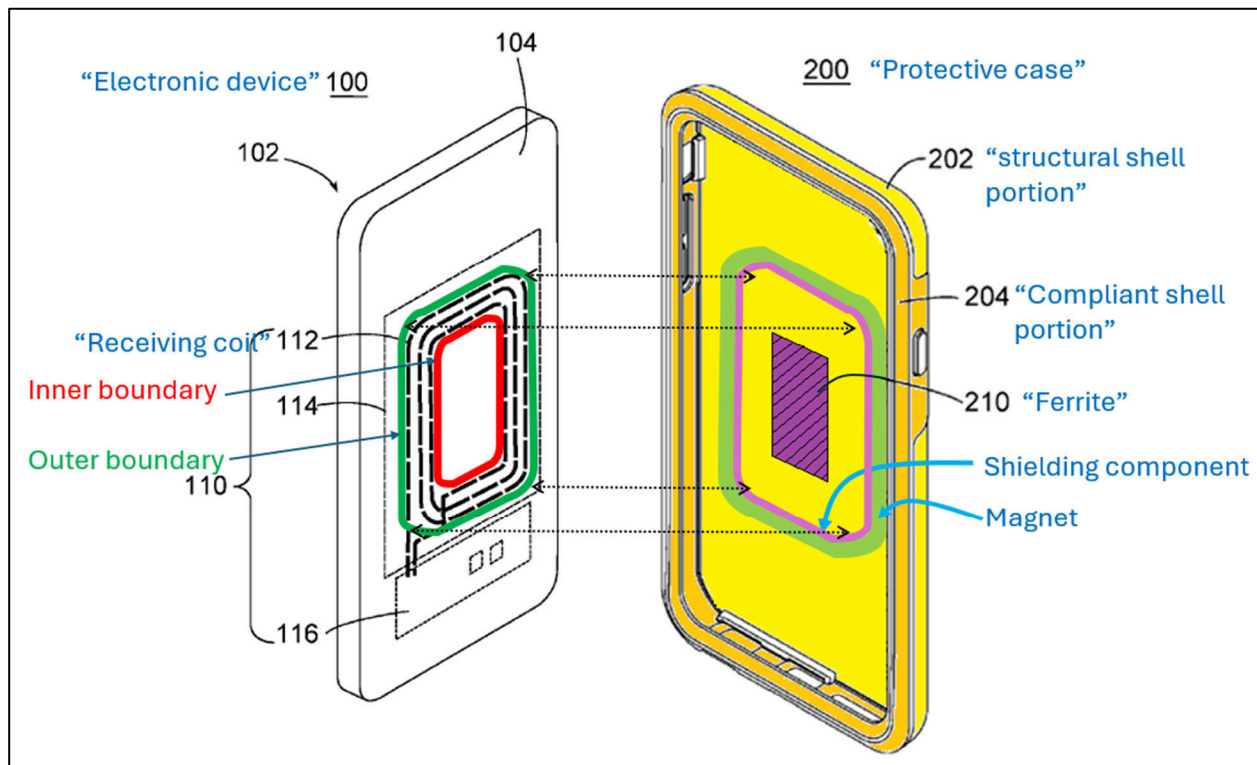
Wojcik-Franklin Combination.

For at least these reasons, a POSITA would have understood that the metal plate received in the recess in the Wojcik-Franklin Combination is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary. EX1003, ¶84.

(b) *Claim 2*

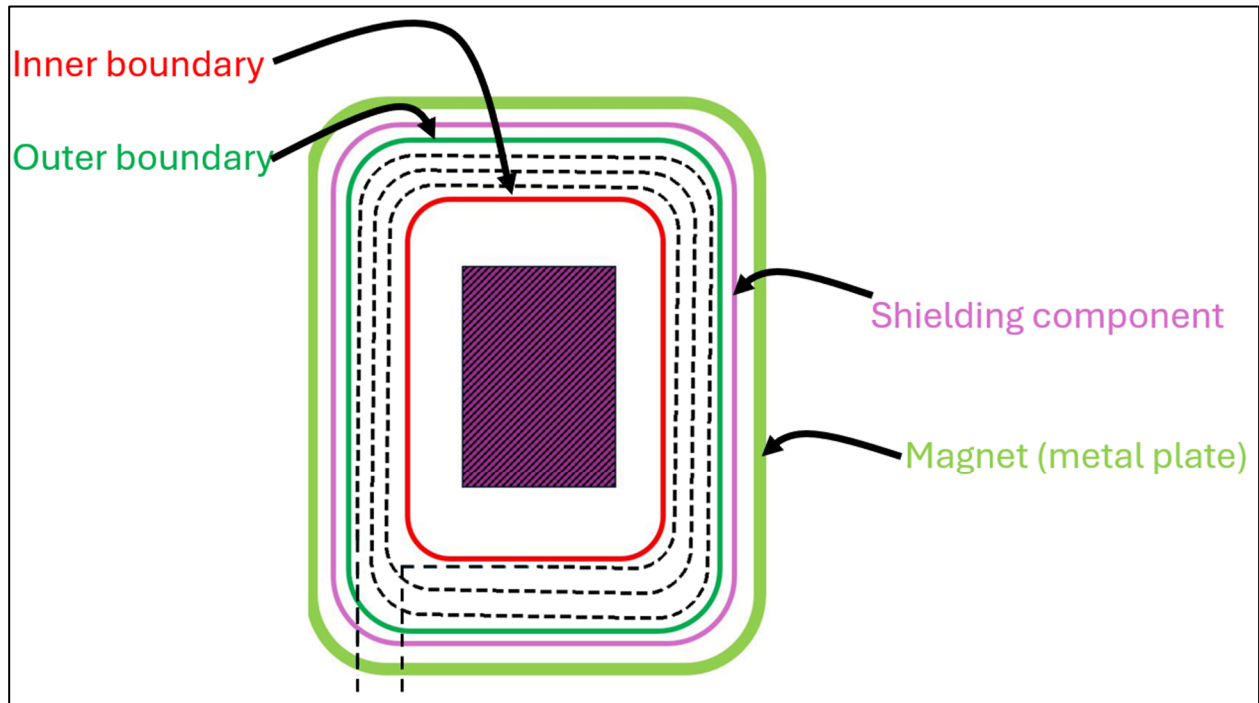
[2] *The case of claim 1, wherein the metal plate does not overlap with an orthographic parallel projection of the area formed by the inner boundary onto a projection plane of the metal plate.*

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, ¶85.



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, ¶86.



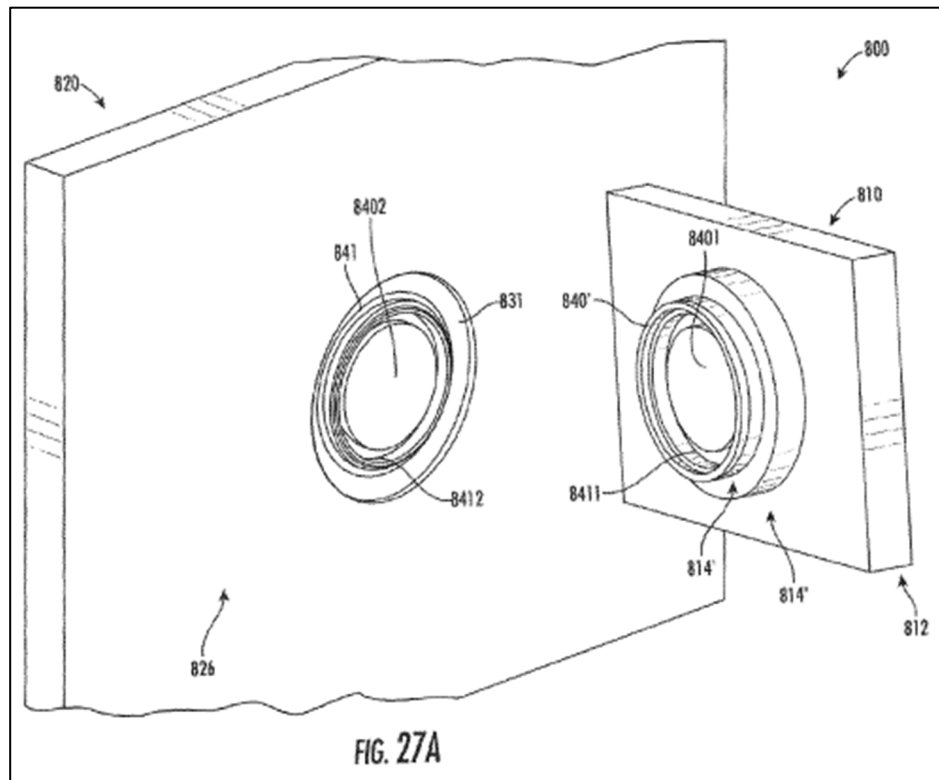
EX1003, ¶86.

(c) *Claim 3*

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

As illustrated in FIGs. 27A-27B, Franklin discloses (1) 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, ¶87.

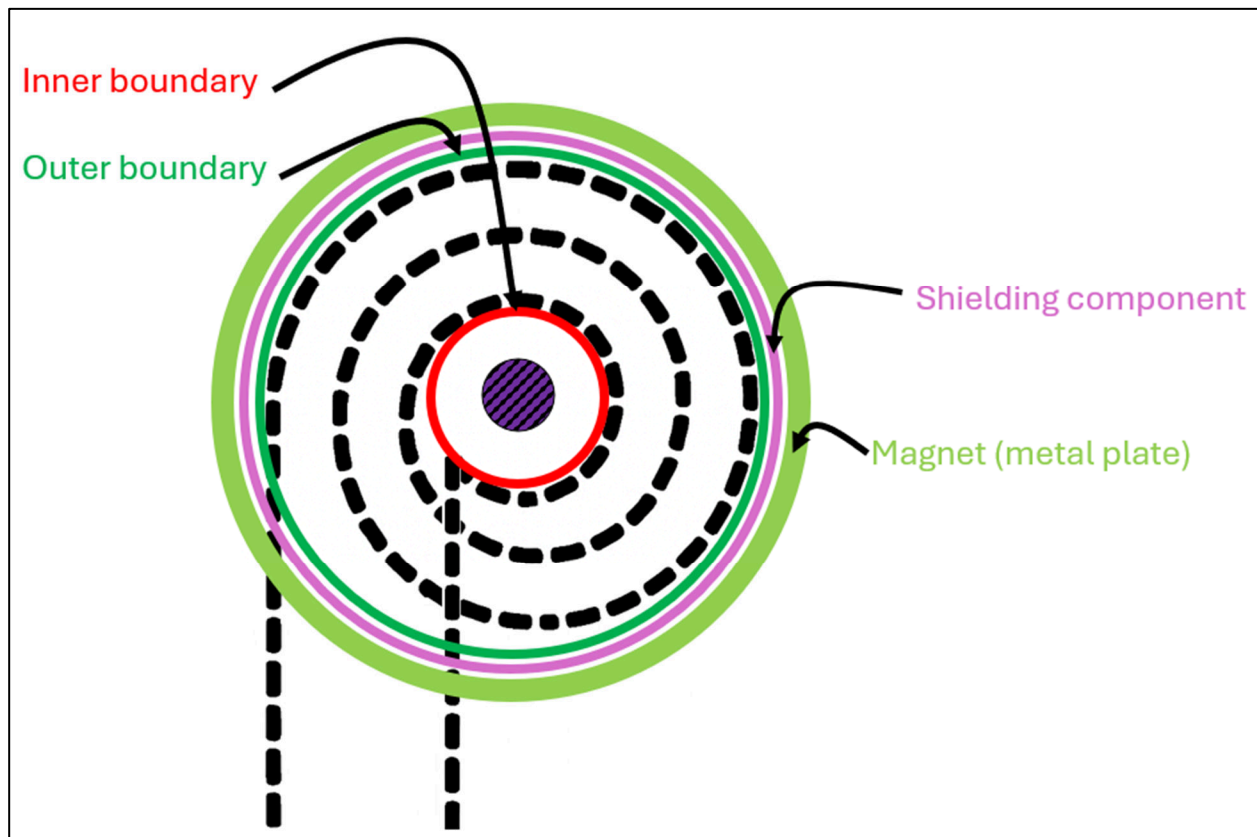


EX1005, FIG. 27A

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, ¶88; 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, ¶89. 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, ¶89.



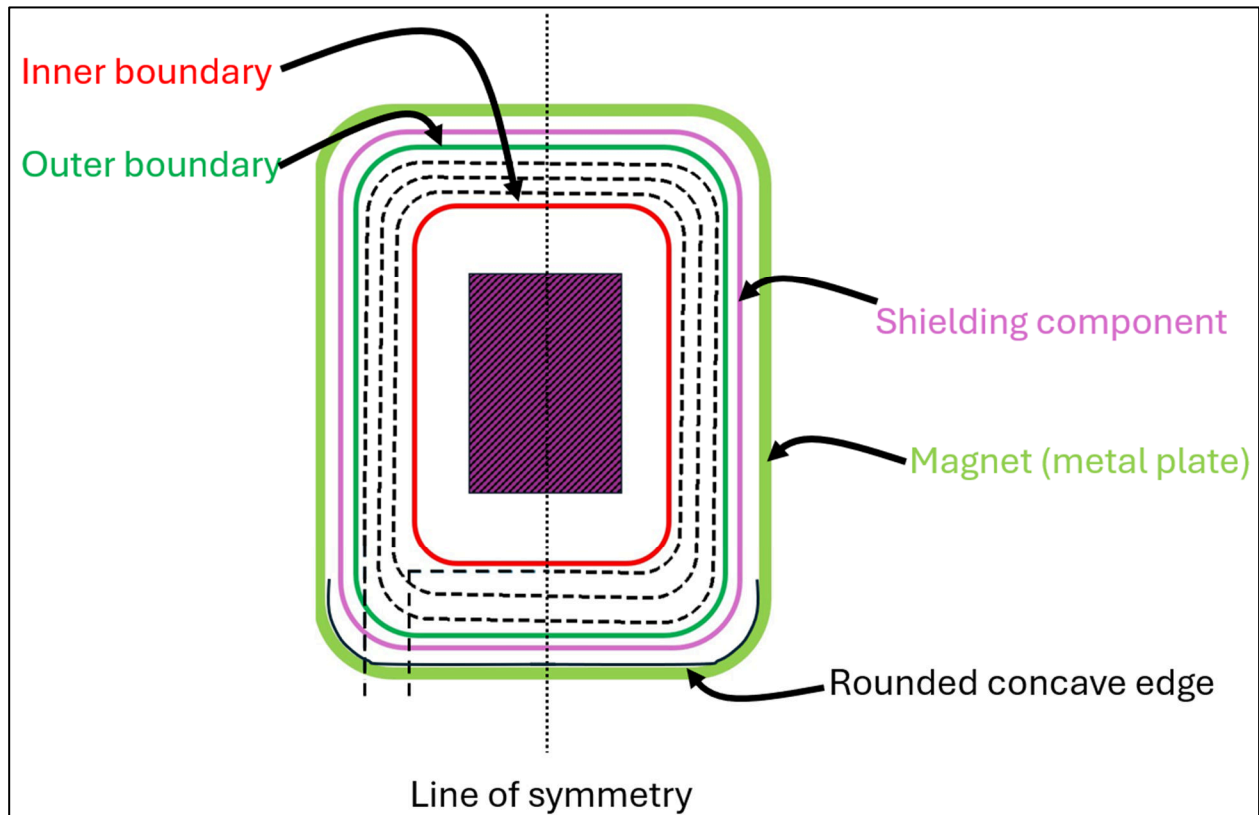
EX1003, ¶89.

(d) *Claim 4*

[4] The case of claim 1, 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, ¶90.



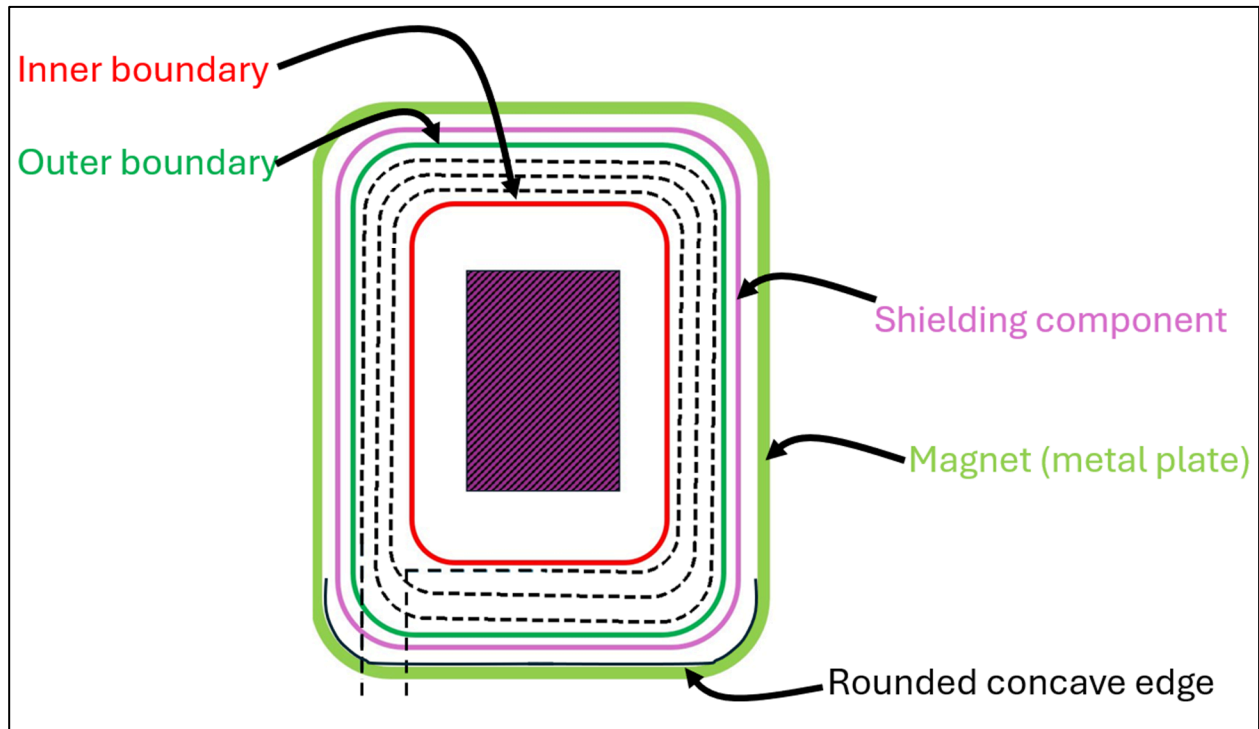
EX1003, ¶90.

(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 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 is outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate. EX1003, ¶91. 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.

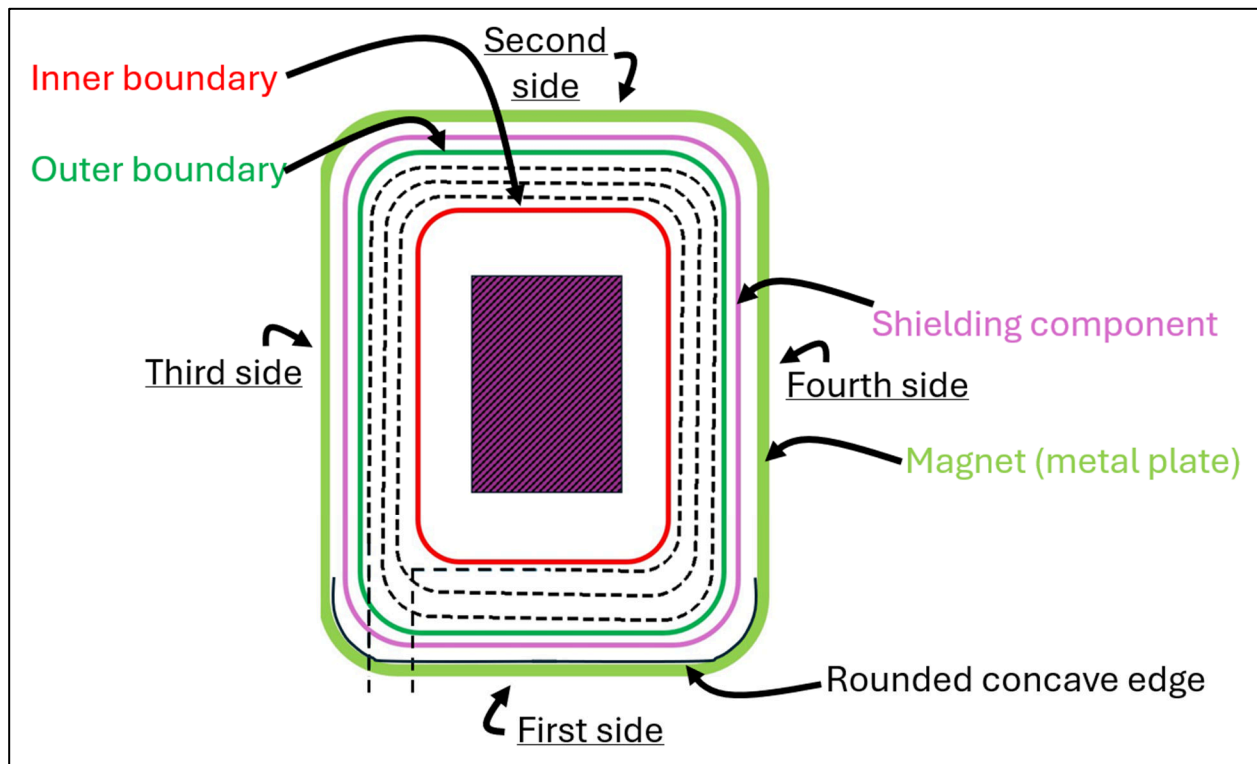


EX1003, ¶91.

(f) *Claim 7*

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

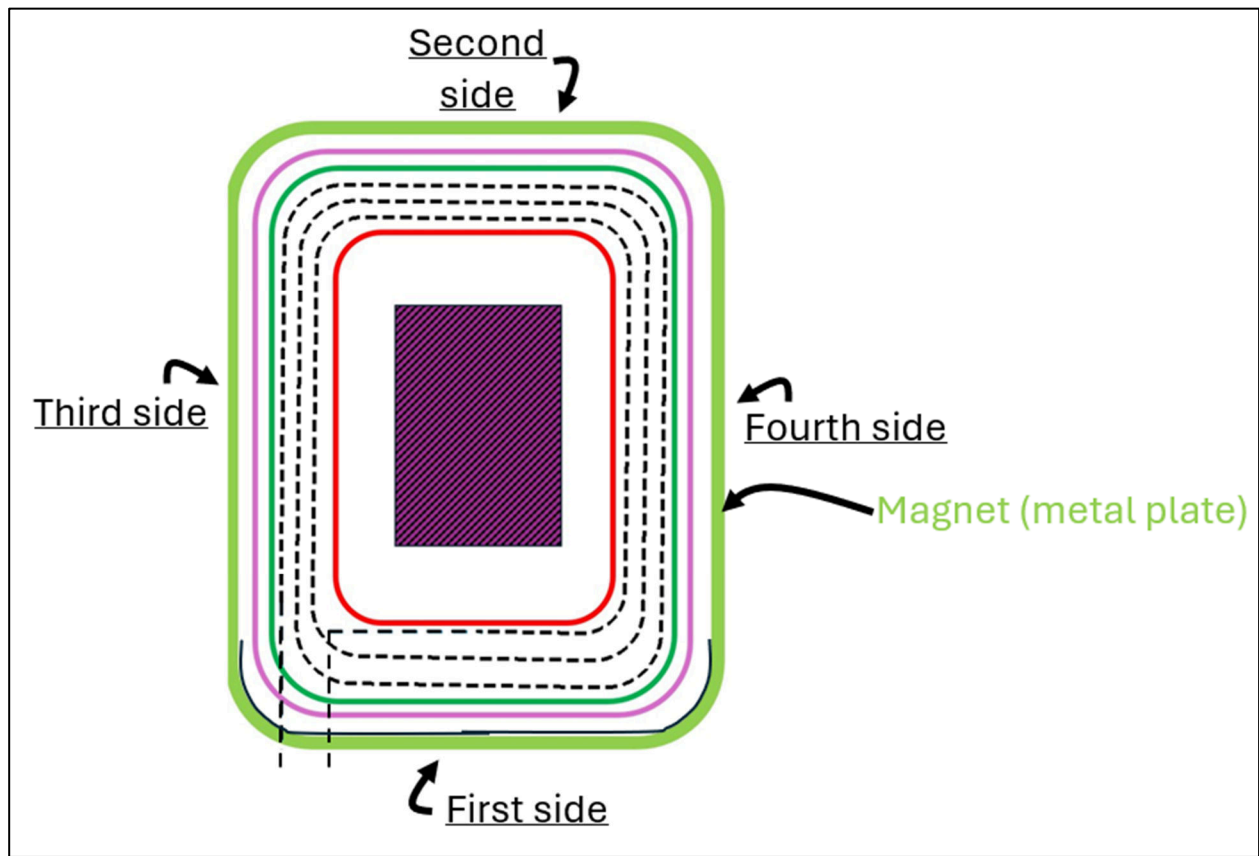
As shown in the image below illustrating a representation of a plan view of the metal plate (magnet) of the Wojcik-Franklin Combination case with a projection of the inner and outer boundaries of the receiver coil and the receiver coil, the metal plate (magnet) is substantially rectangular and has a first side having a rounded concave edge. EX1003, ¶92; *see also* discussion of claim [8], *infra*.



EX1003, ¶92.

[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 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 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, ¶93.



EX1003, ¶93.

(g) *Claim 8*

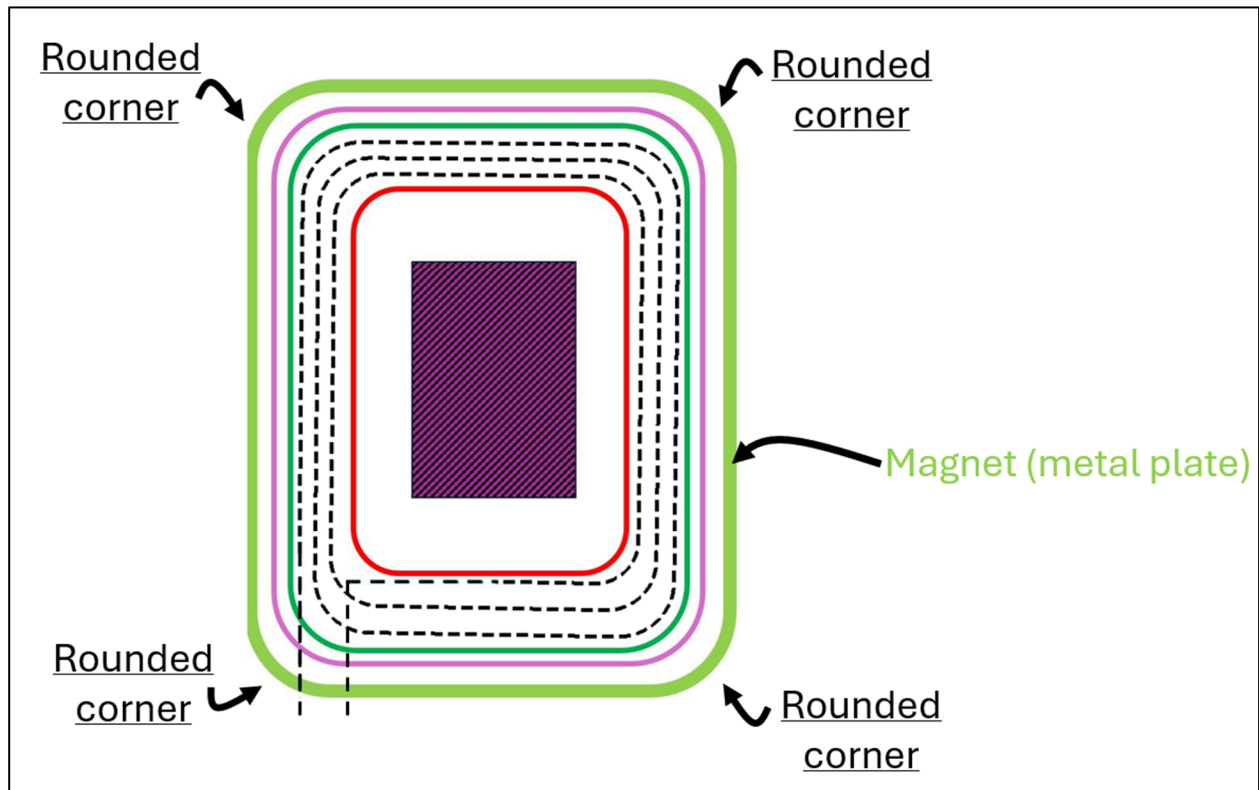
[8] *The case of claim 7, wherein the metal plate has rounded corners.*

A POSITA would have found obvious to include, in the Wojcik-Franklin Combination, a metal plate with rounded corners. EX1003, ¶94. 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 that one natural inclusion of Franklin's mounting magnet² in Wojcik's case would be to use a mounting magnet that matches the shape of Wojcik's receiver coil. EX1003, ¶94. 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, ¶94. As can be seen in the image below,

² 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 3 above. EX1003, ¶94 n.3.

the metal plate is shaped to match the outer boundary of the receiver coil.

EX1003, ¶94.



EX1003, ¶94.

(h) *Claim 10*

[10] *The case of claim 1, wherein the metal plate is attached to the hard 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”); EX1003, ¶95.

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, ¶96. 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, ¶96; EX1005, [0338] (“Magnet 831 may comprise a round, ferrous metal plate with a center opening”).

(i) *Claim 13*

[13pre] *A metal plate for magnetically mounting an electronic device or a case with an electronic device installed therein 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 metal plate comprising:

As discussed with respect to claim 1, the Wojcik-Franklin Combination renders this element obvious. *See* discussion of [1pre], [1b], [1c]; EX1003, ¶97.

[13a] *a rounded concave edge,*

Supra, analysis of [1d]; EX1003, ¶98.

[13b] wherein the metal plate is constructed to be attachable to the electronic device or the case,

Supra, analysis of [10]; EX1003, ¶99.

[13c] *wherein the metal plate is constructed to enable magnetic retention or attachment of the electronic device to a support having a magnet,*

The metal plate (magnet) of the Wojcik-Franklin Combination, which is included in a recess of the case with an electronic device installed therein, enables retention or attachment of the electronic device to a support having a magnet for the same reasons discussed above with respect to [1c]. *See* discussion of [1c]. In particular, because the magnet enables magnetic retention or attachment of the case to a support having a magnet, the magnet similarly enables magnetic retention or

attachment of the electronic device because the electronic device is installed in the case. EX1003, ¶100.

[13d] *wherein the metal plate attached to the electronic device or the case is positioned to substantially allow magnetic waves to pass through the area formed by the inner boundary.*

Supra, analysis of [1e]; EX1003, ¶101

(j) *Claim 14*

[14] *The case of claim 13, wherein 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.*

Supra, analysis of [2]; EX1003, ¶102

(k) *Claim 15*

[15] *The case of claim 13, wherein the inner boundary and the outer boundary are substantially circular.*

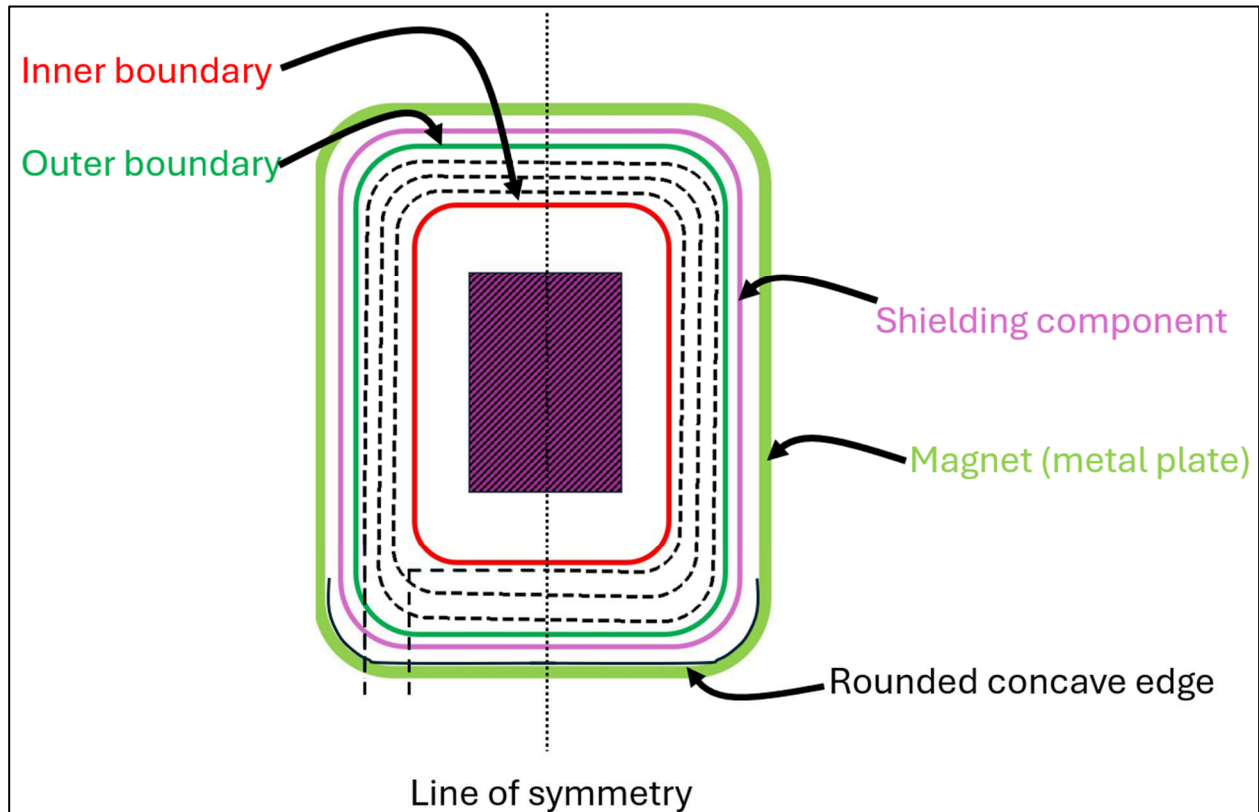
Supra, analysis of [3]; EX1003, ¶103

(l) *Claim 16*

[16] *The case of claim 13, wherein the rounded concave edge, the inner boundary, and the outer boundary are substantially symmetrical with respect to a same line.*

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, the inner boundary, and the outer boundary are substantially symmetrical with respect to a same line (labeled line of symmetry, below). EX1003, ¶104.



EX1003, ¶104.

(m) *Claim 18*

[18] *The case of claim 16, wherein the rounded concave edge is placed outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate.*

Supra, analysis of [6]; EX1003, ¶105.

(n) *Claim 19*

[19a] *The case of claim 13, wherein the metal plate is substantially rectangular with a first side having the rounded concave edge, and*

Supra, analysis of [7a]; EX1003, ¶106.

[19b] *the metal plate has rounded corners,*

Supra, analysis of [8]; EX1003, ¶107.

[19c] *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.*

Supra, analysis of [7b]; EX1003, ¶108.

B. GROUND 2A: Spigen-Partovi Renders Obvious Claims 1-4, 6-8, 10-11, 13-16, and 18-19

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; EX1024³ (Appendix YouTube4); EX1003, ¶¶109-110.

³ 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.

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).

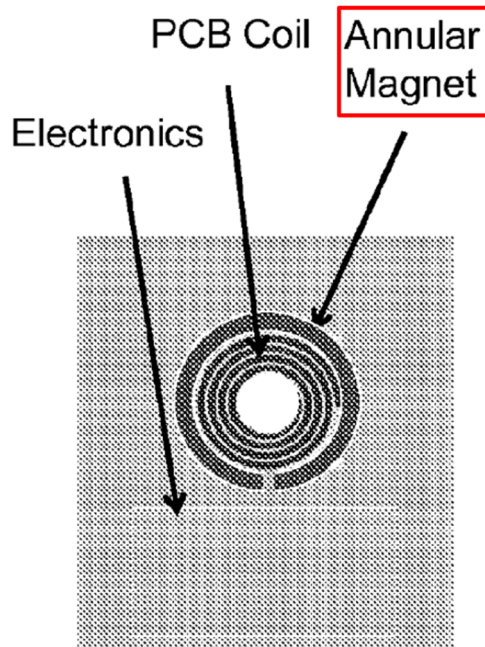
When seated within the recess of the case, the metal plate facilitates mounting of the mobile device within the protective case to an external magnetic base, such as a magnetic car mount. *Id.*; EX1003, ¶109. The solid, rectangular metal plate spans across a portion of the central rear face of the mobile device when the mobile device is received by the case. EX1006, 1:40-2:01; EX1003, ¶109.

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, ¶111. Partovi describes the receiver coil as being located within the mobile device and as interacting 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, ¶112.



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

3. The Spigen-Partovi Combination

(a) *Spigen and Partovi are Analogous Art*

Spigen and Partovi are analogous art to the '119 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, 1:13-19; EX1003, ¶113.

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, ¶114; *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, ¶114.

Accordingly, Spigen and Partovi are both directed to the same field of endeavor as the '119 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, ¶¶115-116; *Graham v. John Deere Co.*, 383 U.S. 1 (1966). For at least that reason, Spigen and Partovi are analogous art to the '119 Patent.

Both references are also reasonably pertinent to a common core engineering problem that the '119 Patent purports to solve, including magnetic attachment with an external support using a metal plate while accommodating wireless charging. EX1001, 1:14-18, 20-44; *see also id.*, 1:44 (“This invention is directed to solve this problem”); *supra*, §§V.B.1-2, *infra*, §V.B.4.

For at least that additional reason, Spigen and Partovi are analogous art to the '119 Patent. *Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015); EX1003, ¶117.

(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

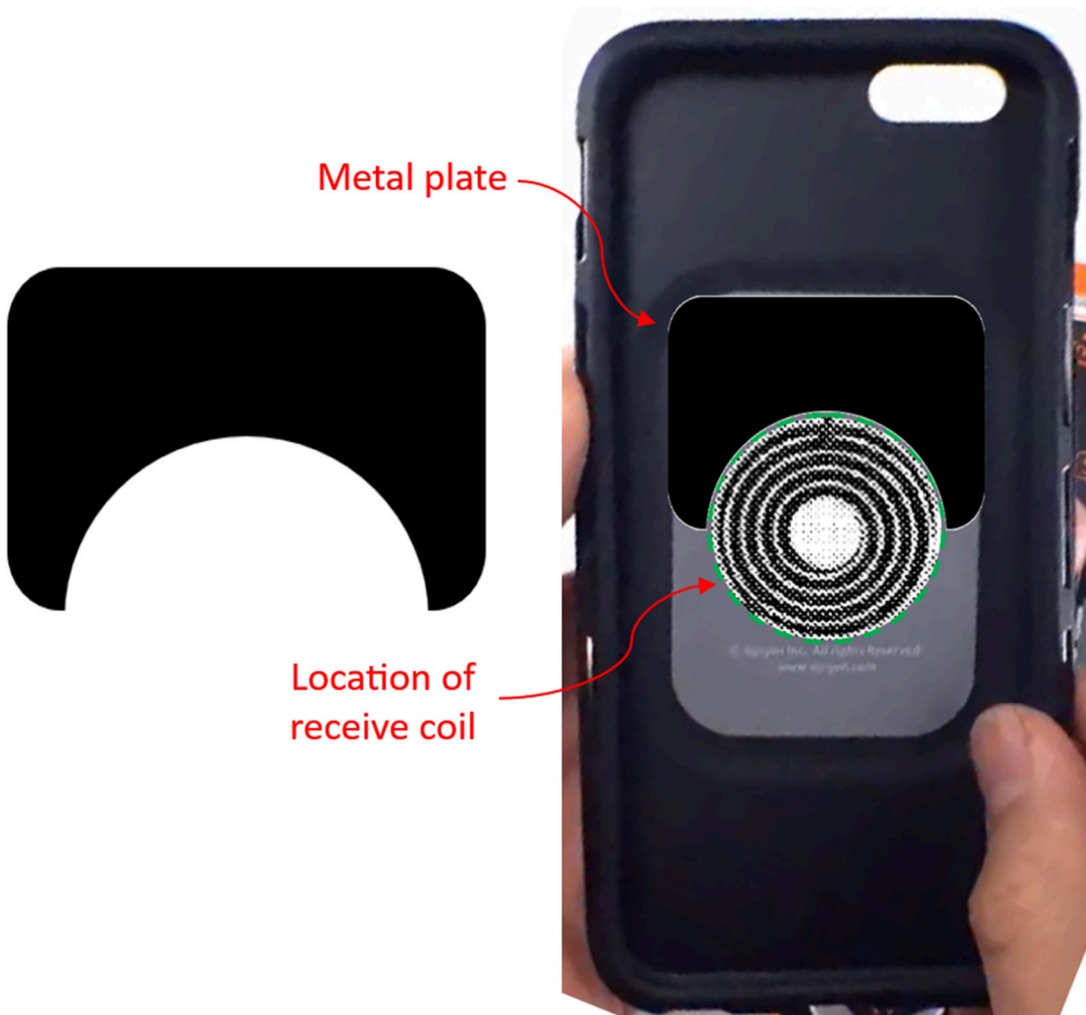
charging while providing secure attachment to a mount. EX1003, ¶118.

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 would be predictably shaped to accommodate inductive mobile phone charging. EX1006, 0:35-0:41, 1:05-1:20, 1:50-2:05; EX1003, ¶119.

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, ¶120.

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, ¶121; 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, ¶121.

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, shown above. EX1003, ¶122. 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. 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; EX1003, ¶123.

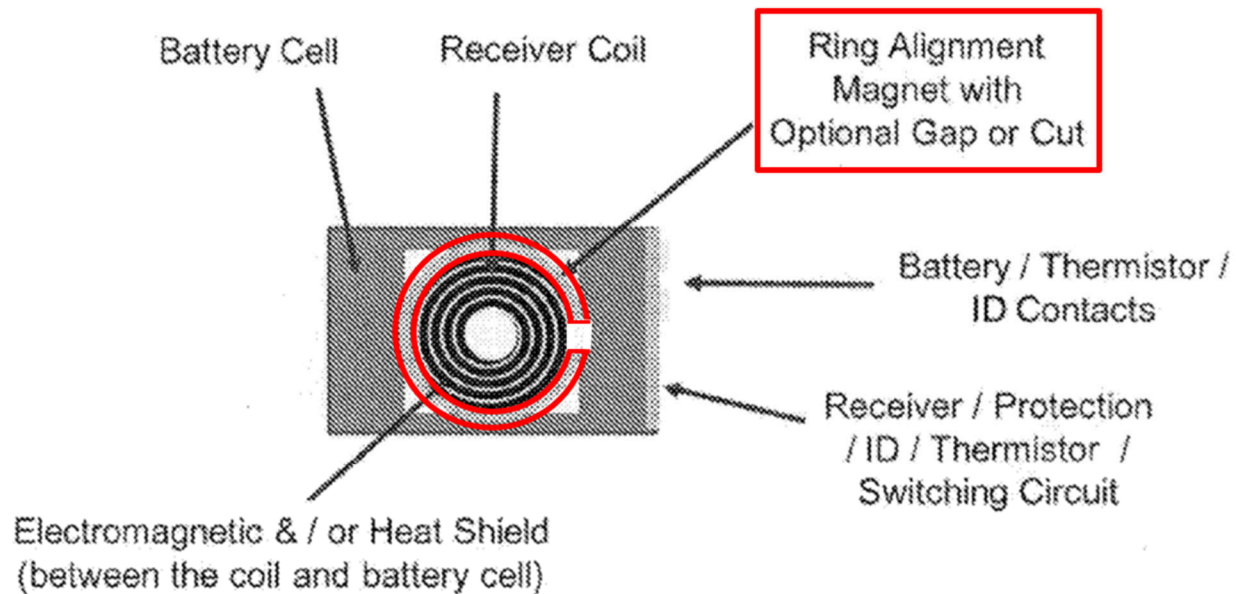
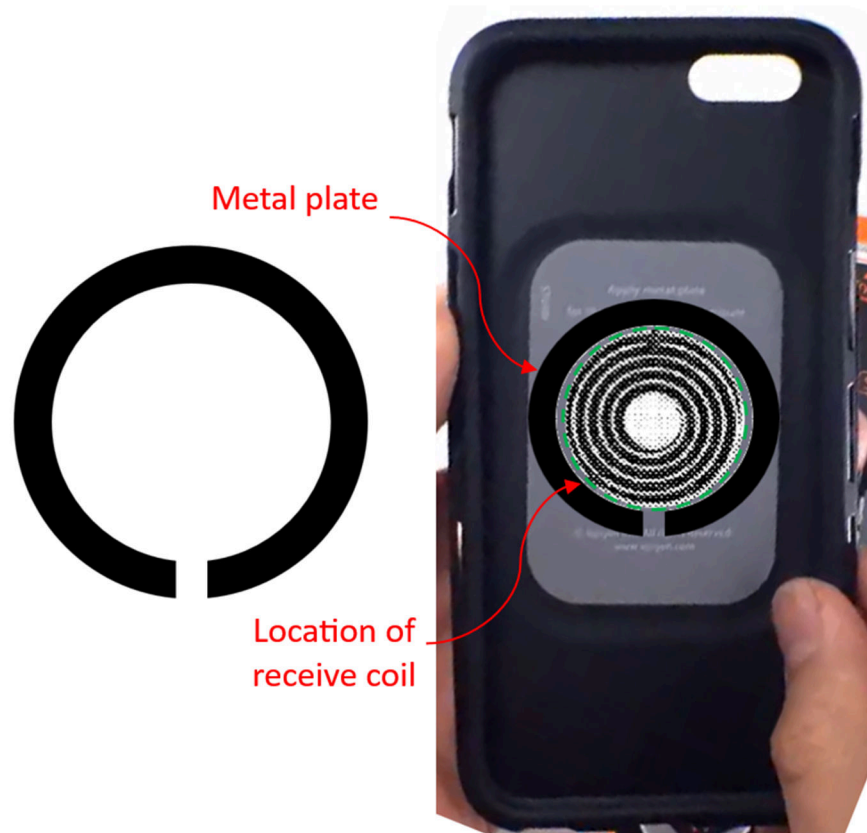


Figure 44

EX1003, ¶123.

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. 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”); EX1003, ¶124. 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, ¶124.



EX1003, ¶124.

A POSITA would have readily implemented the metal plate to package in a space-efficient manner and limiting potential interference with wireless charging. EX1003, ¶125. 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, ¶125; 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, ¶126.

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, ¶127. Prior to the time of the '119 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.* In particular, 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, ¶127; EX1007, [0178], [0196].

Toward that end, a POSITA would have 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, ¶128; 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 in order to facilitate 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. EX1003, ¶128.

And a POSITA would have recognized that utilizing a plate having a rounded concave edge, based on Partovi’s suggestions, would promote a compact, space-efficient geometry. EX1003, ¶129. 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, ¶129. 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, ¶130. 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, ¶130.

(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, ¶131. 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* at 417 (“[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, ¶131.

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, ¶132. 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, ¶133. 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.*

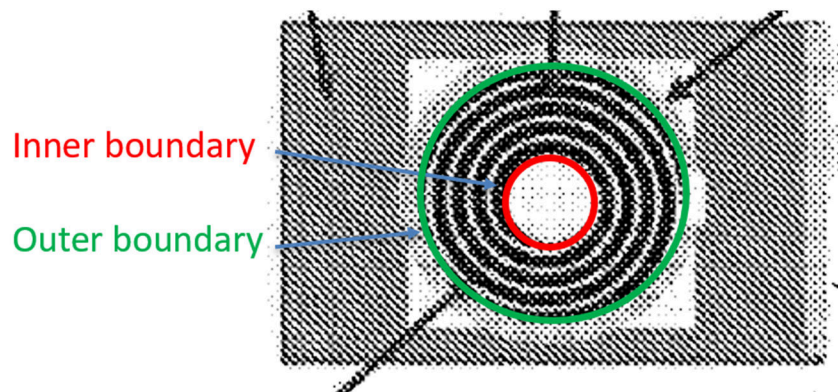
4. Analysis of Claims

(a) Claim 1

[1pre]⁴

The Spigen-Partovi Combination renders obvious this element. EX1003, ¶134. Spigen discloses a protective 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, ¶134; *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, ¶135. 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, ¶135 (EX1007, FIG. 44 (partial, annotated))

⁴ Corresponding claim language is provided in the Listing of Claims and Ground 1.

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, ¶136; EX1007, Abstract, [0003], [0077]-[0078], FIGs. 7, 10, 19-20, 44-45.

[1a]

Consistent with Spigen, the Spigen-Partovi Combination case, which is external with respect to the electronic device, includes a hard protective cover constructed to receive the electronic device in a recess which faces the electronic device. EX1003, ¶137.

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, ¶138. The case has structure and rigidity sufficient to receive and retain the electronic device.⁵

⁵ Notably, the hard protective cover and relatively softer inner cushion disclosed by Spigen is just like that described by the '119 Patent. EX1003, ¶138 n.4; EX1001, 8:22-27 ("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).

Spigen’s hard protective cover features a recess that faces the electronic device. EX1006, 0:19; EX1003, ¶139. The mobile device is received within the recess such that the hard protective cover is external with respect to the electronic device. *Id.*

[1b]

The Spigen-Partovi Combination includes a metal plate (e.g., Spigen’s “neodymium” plate) constructed to be received in the recess of the hard protective cover. 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, ¶140 (citing

EX1006, 0:17 (“Apply metal plate” text in case recess); EX1008 (“metal”));
EX1001, 9:18-26.

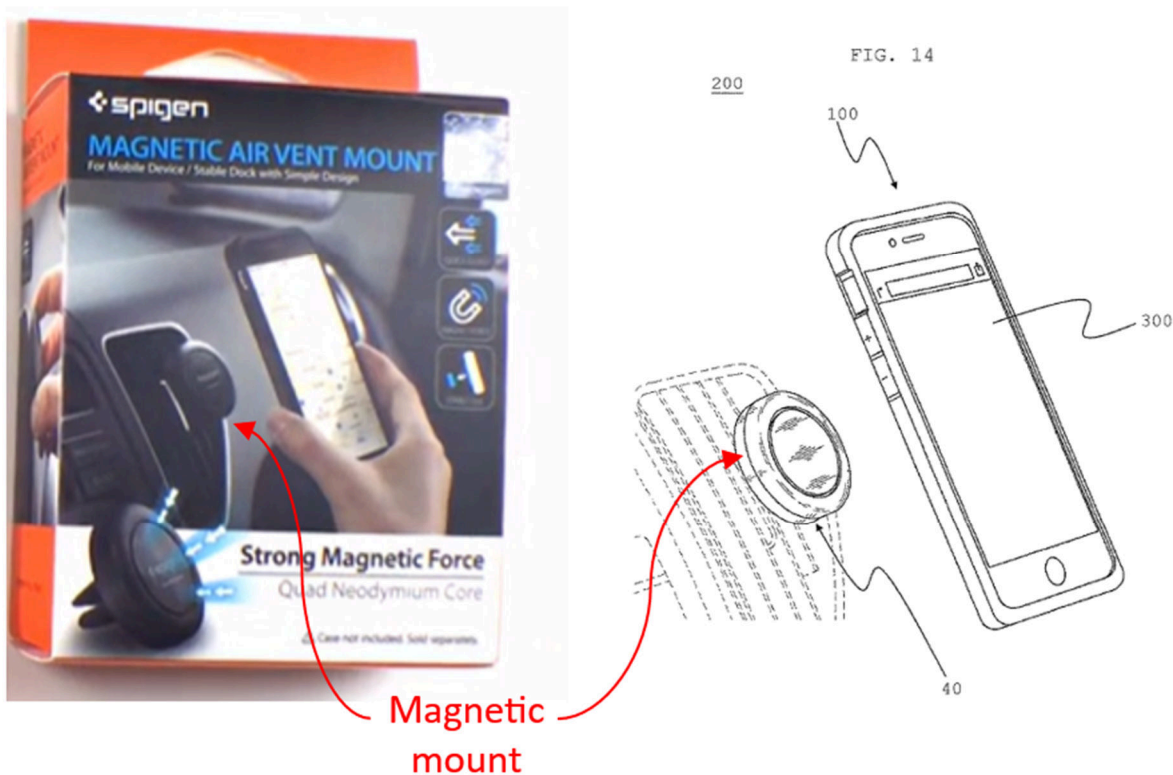


EX1006, 0:38 and 1:57 (annotated).

[1c]

In the Spigen-Partovi Combination, the metal plate is constructed to enable magnetic retention or attachment of the case to a support having a magnet (e.g., Spigen’s “magnetic air vent mount”), in accordance with Spigen and Partovi’s teachings. EX1003, ¶141. For example, the metal plate in the case enables magnetic retention or attachment to a support such as a “magnetic air vent mount” disclosed by Spigen, or other similar mounts *Id.*; EX1006, 0:35-0:41 (text shown on box); *id.* 1:08-1:10, 1:11-1:20; 1:40-2:05; EX1007, [0080], [0097], [0176]-

[0178], [0195]-[0196].⁶



EX1006, 0:38 (annotated, with Spigen at left and the '119 Patent at right).

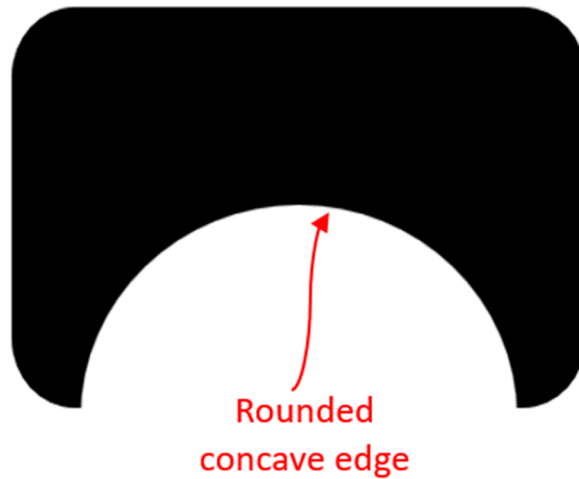
⁶ Notably, the metal plate resulting from the application of Partovi's teachings to Spigen, which enables magnetic retention of the case to a support featuring a magnet, is just like the metal plate described by the '119 Patent. EX1003, ¶141 n.5; EX1001, Abstract ("the hard protective frame has a ... a metal plate constructed to be received in the recess. The metal plate is constructed to enable magnetic retention or attachment of the case to a support having a magnet."); EX1006, 0:17-0:22.

[1d]

The Spigen-Partovi Combination features a metal plate that has a rounded concave edge, in accordance with Partovi's suggestions. EX1003, ¶142; *supra*, §V.B.3.

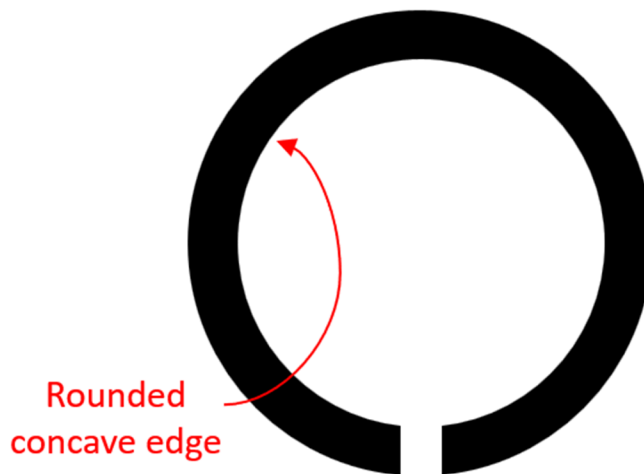
As described above, a POSITA would have found obvious multiple shapes for the metal plate, each of which includes a rounded concave edge that mimics and accommodates the profile of the receiver coil of the mobile device housed within the protective case. EX1003, ¶143. Partovi explains that an “example 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.



EX1003, ¶144.

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, ¶145.

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, ¶146.

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.*

[1e]

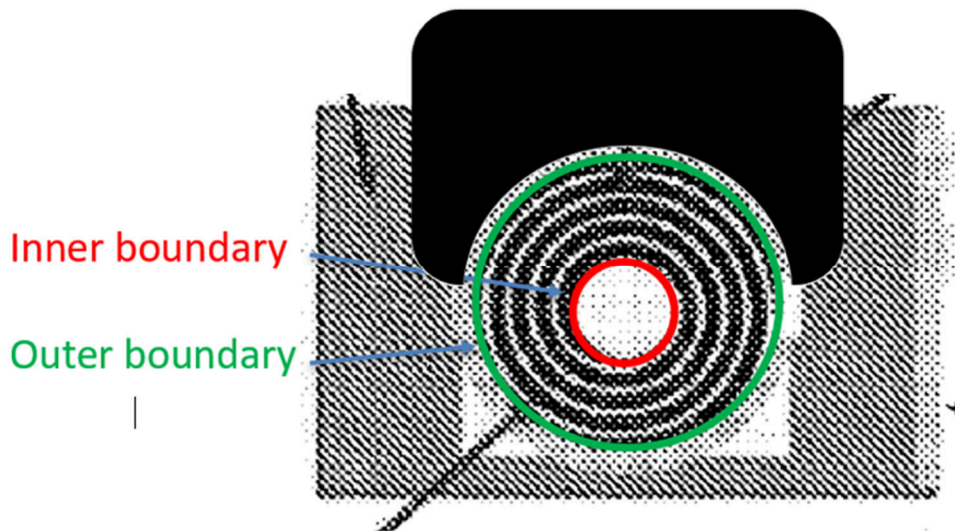
Consistent with Partovi's express teachings, the POSITA would have found it obvious to position the metal plate received in the Spigen-Partovi recess to substantially allow magnetic waves to pass through the area formed by the inner boundary. EX1003, ¶147; *supra*, §V.B.3. Partovi expressly indicates 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, ¶148; *see also, infra*, Analysis of Claims 2 and 6.

(b) *Claim 2*

[2]

As discussed above (§V.B.3), 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, ¶149; EX1007, FIGs. 5, 10, 11, 20, 43-45. Indeed, the rounded concave edge of the metal plate has a curvature that tracks near an outer boundary of the receiver coil and is spaced apart from an inner boundary of the receiver coil. *Id.*



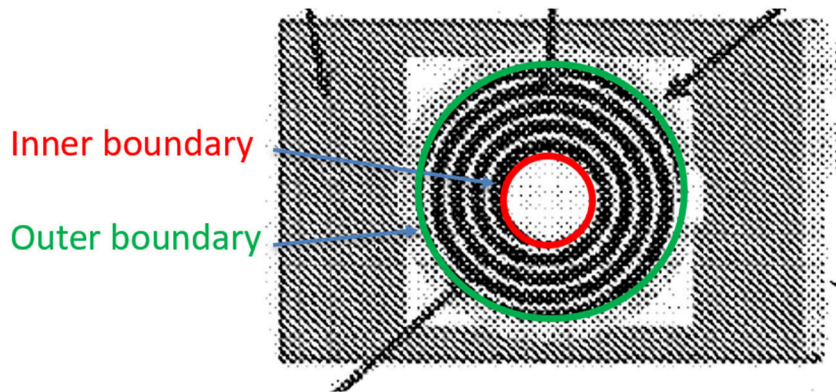
EX1003, ¶149

Likewise, according to the second exemplary predictable implementation in which the metal plate is implemented in the form of a ring (*supra*, Analysis of Element [1d]), the rounded concave edge of the metal plate has a curvature that tracks near an outer boundary of the receiver coil and is spaced apart from an inner boundary of the receiver coil. 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, ¶150.

(c) *Claim 3*

[3]

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, ¶151; EX1007, FIG. 44; *see also*, EX1007, FIGS. 5, 7-13, 19-25, 36-37, 41, 43-47.

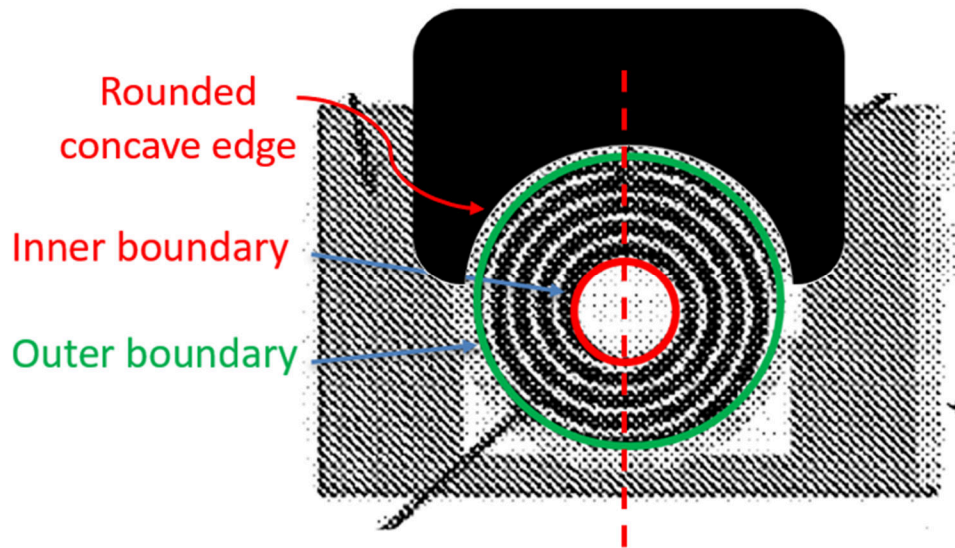


EX1003, ¶151 (EX1007, FIG. 44 (partial, annotated))

(d) *Claim 4*

[4]

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, ¶152; *see also* EX1001, 4:18-25; 5:21-27.



EX1003, ¶152.

(e) *Claim 6*

[6]

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, ¶153; EX1007, FIGs. 5, 10, 11, 20, 43-45; *see also, supra*, Analysis of Claim 2.

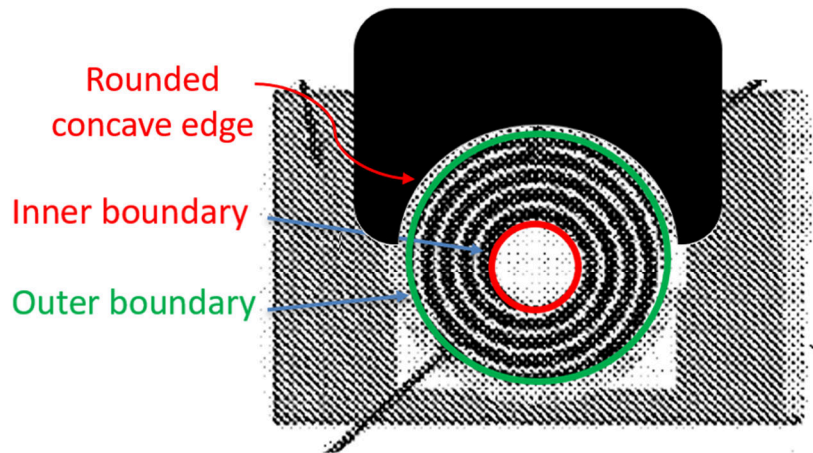


FIG. 6B

EX1003, ¶153.

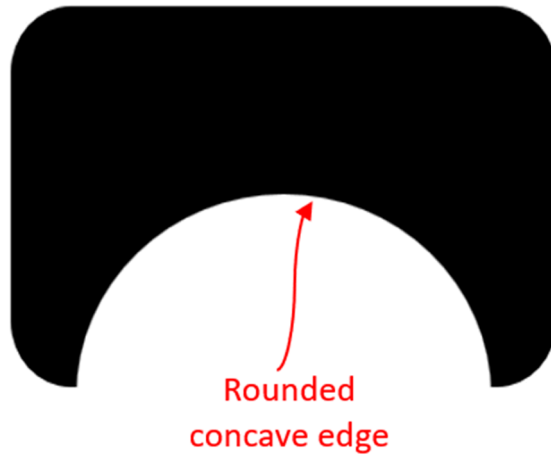
Likewise, according to the second example predictable implementation in which the metal plate is implemented in the form of a ring (*supra*, Analysis of Element [1d]), the metal plate is positioned similarly relative to the receiver coil such that the rounded concave edge is outside an orthographic parallel projection of the outer boundary onto a projection plane of the metal plate, for the reasons discussed above. EX1003, ¶154.

(f) *Claim 7*

[7a]

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

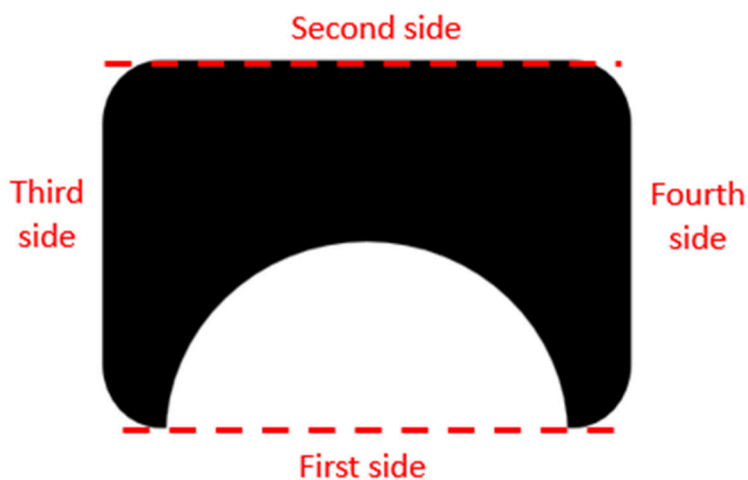
first side having a rounded concave edge. EX1003, ¶155; *see also* discussion of claim [8], *infra*.



EX1003, ¶155.

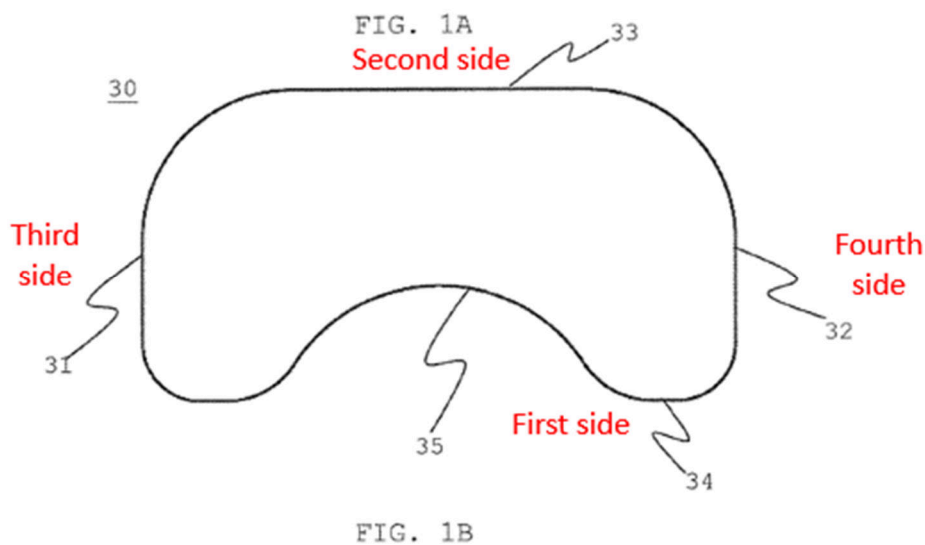
[7b]

In the first exemplary 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, ¶156.



EX1003, ¶156

Here again, the Spigen-Partovi Combination's metal plate is like the example depicted by the '119 Patent.

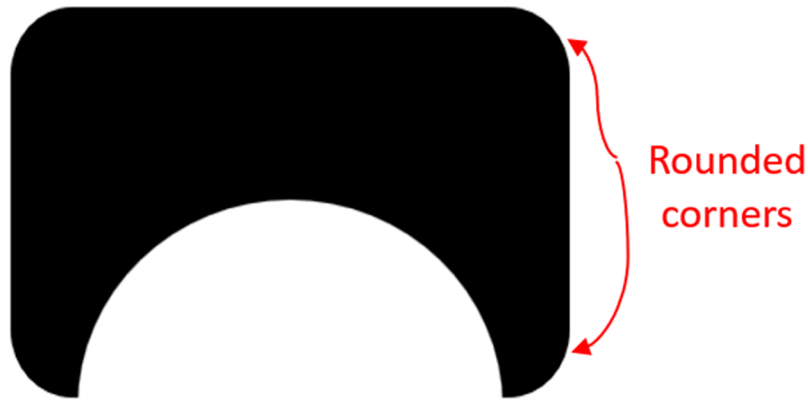


EX1003, ¶157.

(g) *Claim 8*

[8]

In the combination, the metal plate has rounded corners, in accordance with Spigen and Partovi's suggestions. EX1003, ¶158 (EX1006, 1:50-2:02).



EX1003, ¶158.

(h) *Claim 10*

[10]

In the Spigen-Partovi Combination, the metal plate is attached to the hard 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, ¶159 (citing EX1009).



EX1003, ¶159 (EX1006, 1:58 (annotated))

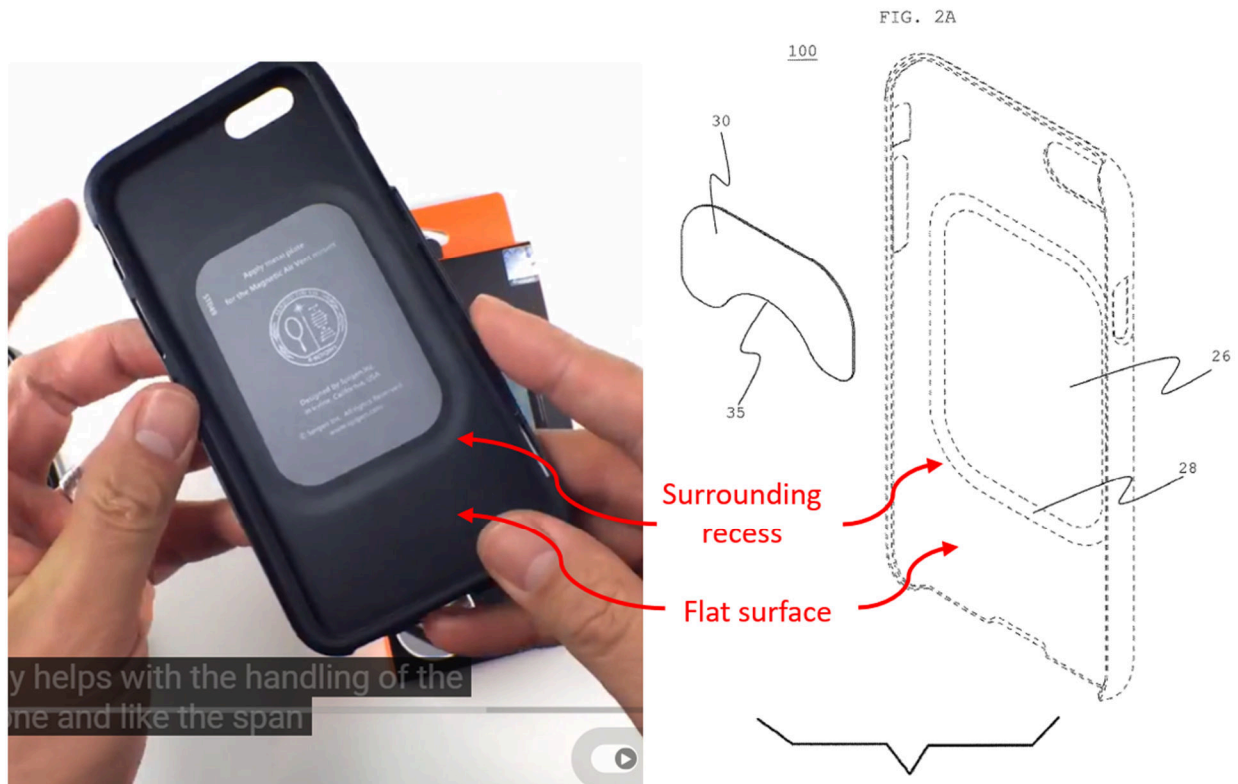
(i) *Claim 11*

[11]

The hard protective cover of the Spigen-Partovi Combination includes a surrounding recess which surrounds the recess and slopes away from a flat surface of the hard protective cover towards the recess forming a cavity, in accordance with Spigen. EX1003, ¶160.

Spigen

'119 Patent



EX1003, ¶160 (EX1006, 0:17, EX1001, FIG. 2A (annotated)).

The shape and configuration of the surrounding recess of Spigen is just like the '119 patent itself. EX1003, ¶161.

Similarly, according to the second exemplary predictable implementation in which the metal plate is implemented in the form of a ring (*supra*, Analysis of Element [1d]), the surrounding recess which surrounds the recess and slopes away from a flat surface of the hard protective cover towards the recess forming a cavity, consistent with Spigen's suggestion. Indeed, consistent with Spigen's surrounding recess depicted above, a POSITA would have readily modified the shape to likewise surround a ring shaped metal plate. EX1003, ¶162.

(j) *Claim 13*

[13pre]

The Spigen-Partovi Combination renders this element obvious. *Supra*, Analysis of [1pre], [1b], [1c]; EX1003, ¶163.

[13a]

Supra, Analysis of [1d]; EX1003, ¶164.

[13b]

Supra, Analysis of Claim [10]; EX1003, ¶165.

[13c]

The metal plate of the Spigen-Partovi Combination, included in a recess of the case with an electronic device installed therein, enables retention or attachment of the electronic device to a support having a magnet for the same reasons discussed above with respect to [1c]. *Supra*, Analysis of [1c]; EX1003, ¶166. The magnet enables magnetic retention or attachment of the case to a support having a magnet, and similarly enables magnetic retention or attachment of the electronic device installed in the case. EX1003, ¶166.

[13d]

Supra, Analysis of [1e]; EX1003, ¶167.

(k) *Claim 14*

[14]

Supra, Analysis of Claim [2]; EX1003, ¶168.

(l) *Claim 15*

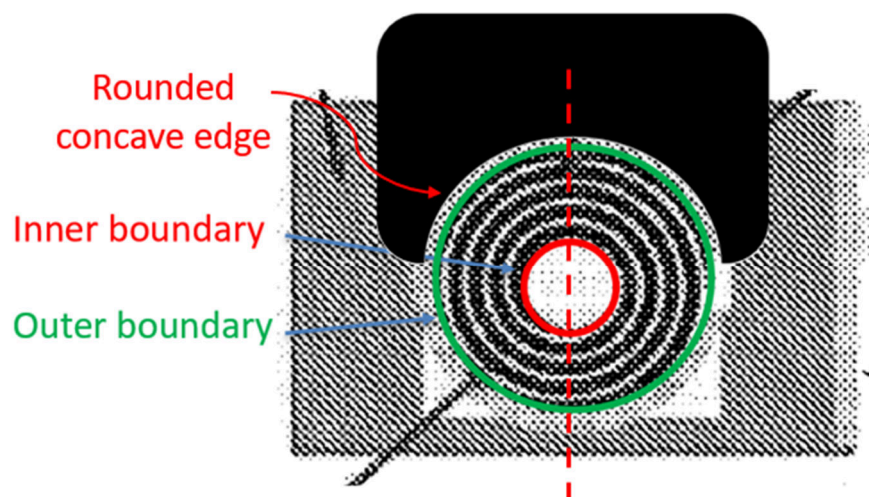
[15]

Supra, Analysis of Claim [3]; EX1003, ¶169.

(m) *Claim 16*

[16]

In the Spigen-Partovi Combination, the rounded concave edge, the inner boundary, and the outer boundary are substantially symmetrical with respect to a same line (labeled line of symmetry, below). EX1003, ¶170; *see also, supra* Analysis of Claim 4.



EX1003, ¶170.

(n) *Claim 18*

[18]

Supra, Analysis of Claim [6]; EX1003, ¶171.

(o) *Claim 19*

[19a]

Supra, Analysis of Claim [7a]; EX1003, ¶172.

[19b]

Supra, Analysis of Claim [8]; EX1003, ¶173.

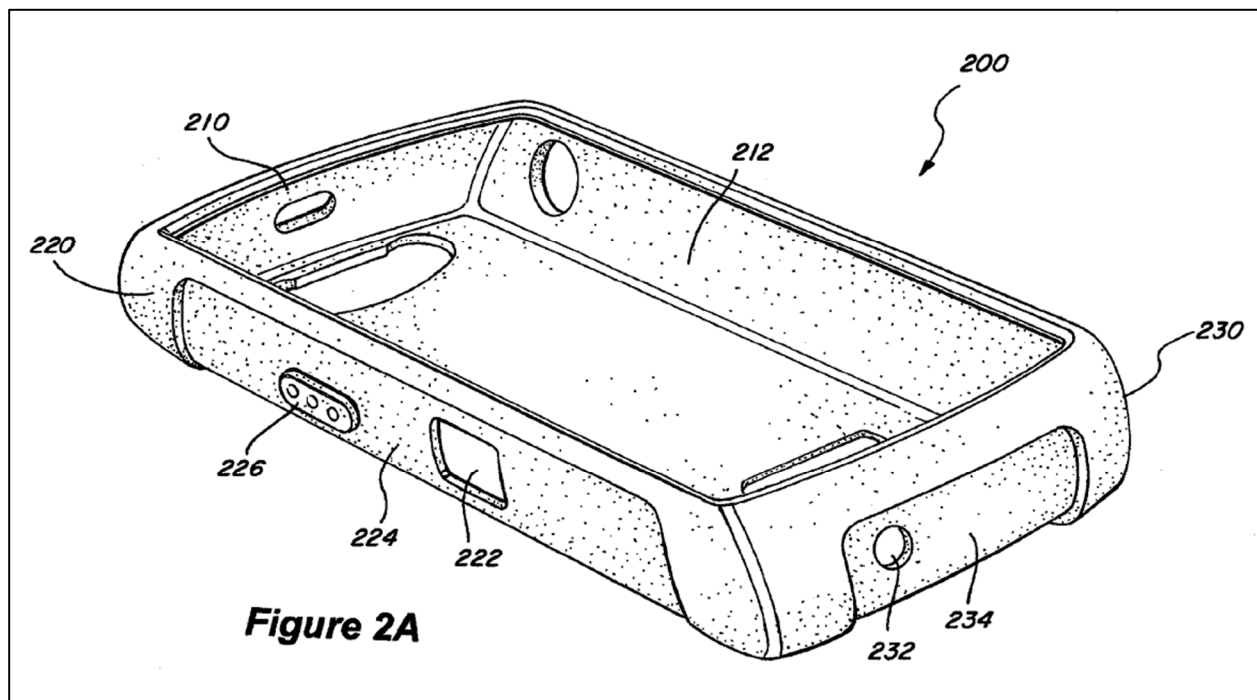
[19c]

Supra, Analysis of Claim [7b]; EX1003, ¶174.

**C. GROUND 2B: Spigen-Partovi-Fathollahi Renders Obvious
Claim 12**

1. Fathollahi

Fathollahi describes “a protection device for a mobile device” that includes a combination of a flexible inner sleeve and a rigid shell. EX1010, Abstract, [0003], [0010]-[0012], [0030]-[0038], [0039]-[0043], [0045]-[0047], cl. 1, FIGS. 2A-2B, 3A-5, 7A-7C; EX1003, ¶175. The flexible inner sleeve “encapsulates” a mobile device. *Id.*



EX1010, FIG. 2A.

2. The Spigen-Partovi-Fathollahi Combination

(a) *Fathollahi is Analogous Art to the '119 Patent*

Fathollahi is analogous art to the '119 patent. EX1003, ¶176. Fathollahi is in the same field of endeavor, and is reasonably pertinent to the same core engineering problems involving mobile device case construction. *Id.* Indeed, Fathollahi is directed to mobile device case construction, and provides teachings a POSITA would have found pertinent to case construction and configurations. *Id.*; *infra*, §§V.C.2-3.

(b) *A POSITA would have been Motivated to Combine Spigen-Partovi with Fathollahi*

A POSITA would have improved the Spigen-Partovi Combination's mobile device case based on Fathollahi's teachings regarding a flexible inner sleeve component that includes a back portion that extends across the mobile phone. EX1003, ¶177; EX1010, [0012] ("backing portion"), cl. 1 ("back surface"); FIG. 2A (showing back surface of "flexible inner sleeve"). The resulting case would in accordance with Spigen include hard and flexible portions, and the flexible portion would include a back that extends across the back of a mobile phone received in the case. *Id.*

A POSITA would have been motivated to combine Spigen-Partovi with Fathollahi in order to enhance protection of a mobile device within the case, in accordance with the express objectives of both Spigen and Fathollahi. EX1003, ¶178; EX1006, 2:04-2:15; EX1010, [0003], [0010]-[0011], [0030] (the elasticity of

the flexible inner sleeve “protects against accidental dropping or other damages to the underlying mobile device.”), FIG. 2A. Fathollahi expressly describes encapsulating the mobile device with a flexible inner sleeve. EX1003, ¶178.

Based on that related disclosure, a POSITA would have been motivated to provide cushioning across the back of the mobile device, in addition to around the perimeter, to afford additional protection. *Id.*

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

A POSITA would have reasonably expected success when combining Spigen-Partovi and Fathollahi, as doing so would have required nothing more than routine knowledge well within the skill of a POSITA prior to the earliest effective filing date. EX1003, ¶179. For example, the application of known techniques (use of a hard outer shell and flexible inner sleeve having a back portion to provide protection to a mobile device) to a known system (Spigen-Partovi’s phone case mounting system that includes a hard outer portion and a flexible inner portion) ready for improvement to yield predictable results (benefits articulated above). *KSR*, 550 U.S. at 417. A POSITA would have had a reasonable expectation of success in making the proposed modifications, especially based on the similarity of the case constructions, and the simplicity of including a back material to the existing flexible cushion described by Spigen. EX1003, ¶179.

3. Analysis of Claims

(a) Claim 12

[12]

Spigen-Partovi-Fathollahi combination renders obvious Claim 12. The system includes a soft protective cover. *See*, EX1006, 0:17-22, 2:04-2:15. In the combined system, the soft protective cover includes a back panel to cover a back portion of the electronic device, in accordance with Fathollahi. EX1010, FIG. 2A, [0010]-[0011]; *supra*, §V.C.2; EX1003, ¶180.

The soft protective cover includes a side wall extending from a top surface of the back panel along edges of the back panel, in accordance with Spigen and Fathollahi's teachings. *See, e.g.*, EX1006, 0:17-22, 2:04-2:15; EX1010, FIG. 2A; EX1003, ¶181.

Consistent with Spigen, the hard protective cover is constructed to removably mount over the soft protective cover. EX1006, 0:17-22, 2:04-2:15; EX1003, ¶182.

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 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 '119 Patent.

The '119 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.

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D. Service Information

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

Petitioner consents to electronic service by email at IPR50095-0305IP1@fr.com.

Respectfully submitted,

Dated: September 18, 2026

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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 13,496 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: September 18, 2026

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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:

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