

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MASIMO CORPORATION,

Petitioner,

v.

APPLE INC.,

Patent Owner

Case No. *To Be Assigned*

U.S. Patent No. D735,131

DECLARATION OF R. JAMES DUCKWORTH, PH.D.

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

I reserve the right to supplement my opinions in the future to respond to any information, arguments, or positions Apple may raise, taking account of new information as it becomes available to me.

Dated: 4/10/2023



R. James Duckworth, Ph.D

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I, R. James Duckworth, Ph.D, declare and state as follows:

I. INTRODUCTION

1. I have been retained by Knobbe, Martens, Olson & Bear, LLP, counsel for Masimo Corporation (“Masimo”). I am making this declaration at the request of Masimo in connection with Masimo’s petition for *inter partes* review (“IPR”) of the claimed design (the “Challenged Claim”) of U.S. Patent No. D735,131 (the “D’131 Patent”). I understand that this Declaration is being submitted in the above-captioned proceeding as Exhibit 1014.

2. I am being compensated for my work in this matter at my standard hourly rate for expert consulting services. My compensation in no way depends on the outcome of this proceeding. I have no financial interest in any of the parties to these matters.

II. INFORMATION AND MATERIALS CONSIDERED

3. I have been asked to provide technical expert opinions relating to the validity of the Challenged Claim of the D’131 Patent. In conducting the analyses and forming the opinions set forth in this Declaration, I have reviewed and considered the D’131 Patent’s claim, specification, and file history, as well as numerous prior art references and other documents. I have reviewed and considered at least the following materials in preparing this Declaration:

- The D’131 Patent, including its claim, specification, and file history;

- Masimo’s IPR petition regarding the Challenged Claim of the D’131 Patent;
- The references relied upon herein, including, but not limited to, Lee-616, CN-470, Murray, Chiang;
- The Declaration of Joel Delman (Exhibit 1003);
- The complaint from the parties’ parallel design patent litigation in Delaware District Court (Exhibit 1005);
- Apple’s public opening post-hearing brief from the parties’ parallel ITC Investigation (Exhibit 1017);
- The public hearing transcript from the parties’ parallel ITC Investigation (Exhibit 1021);
- Any materials referenced directly or indirectly in my Declaration; and
- The information and materials identified in the following table:

Exhibit No.	Description
1001	U.S. Patent No. D735,131 (“the D’131 Patent”)
1002	File History of U.S. Patent No. D735,131
1003	Declaration of Joel Delman
1004	<i>Curriculum Vitae</i> of Joel Delman
1005	<i>Apple Inc. v. Masimo Corporation, et al.</i> , Complaint, No. 1:22-cv-01377 (D. Del.)

Exhibit No.	Description
1006	United Kingdom Design Reg. No. 4032616, https://www.registered-design.service.gov.uk/find/4032616 (last visited Mar. 28, 2023) (“Lee-616”)
1007	Certified English Translation of Chinese Design Reg. No. 302864470 (“CN-470”)
1008	U.S. Patent No. D718,236 (“Murray”)
1009	U.S. Patent No. D720,289 (“Chiang”)
1010	Certified English Translation of Korean Registered Design No. 30-0645410
1011	Chinese Design Reg. No. 302864470
1012	WIPO Global Design Database Entry for Chinese Design Reg. No. 302864470
1013	Korean Registered Design No. 30-0645410
1015	<i>Curriculum Vitae</i> of R. James Duckworth, Ph.D.
1016	GOV.UK Designs Journal Entry for Lee-616, https://www.registered-design.service.gov.uk/view/2013/11/215 (last visited Mar. 28, 2023)
1017	<i>Masimo Corp. et al. v. Apple Inc.</i> , Apple’s September 14, 2022 Public Second Corrected Post-Hearing Brief, ITC Inv. No 337-TA-1276
1018	Application for United Kingdom Design Reg. No. 4032616
1019	Copy of YouTube Video titled “GMYLE(R) Qi Wireless Charger Review (Nexus 5),” https://www.youtube.com/watch?v=EvJ4Jkvj_R8 (last visited Mar. 28, 2023)
1020	Screenshot of https://www.youtube.com/watch?v=EvJ4Jkvj_R8 (last visited Mar. 28, 2013)

Exhibit No.	Description
1021	<i>Masimo Corp. et al. v. Apple Inc.</i> , June 6-10, 2022 Public Hearing Transcript, ITC Inv. No 337-TA-1276
1022	“Charge Apple Watch,” https://support.apple.com/guide/watch/charge-apple-watch-apd2b717523a/watchos (last visited Mar. 6, 2023)
1023	“Apple Watch Magnetic Charging Cable (1 m),” https://www.apple.com/shop/product/MX2E2AM/A/apple-watch-magnetic-charging-cable-1m (last visited Mar. 6, 2023)
1024	U.S. Patent No. 9,460,846 (“’846 patent”)
1025	U.S. Pat. No. 10,627,783 (“’783 patent”)
1026	U.S. Pat. No. D645,818
1027	U.S. Pat. No. D620,884
1028	U.S. Pat. No. D718,324
1029	U.S. Pat. No. D718,233
1030	U.S. Pat. Appl. Pub. No. 2014/0117926
1031	U.S. Pat. Appl. Pub. No. 2014/0104999
1032	U.S. Pat. No. D694,182
1033	U.S. Pat. No. D697,027
1034	U.S. Pat. No. D704,634
1035	“Apple Watch – Technology,” archived on September 11, 2014 by the Internet Organization’s “Wayback Machine” at https://web.archive.org/web/20140911003437/http://www.apple.com/watch/technology/
1036	“Apple Unveils Apple Watch—Apple’s Most Personal Device Ever,” https://www.apple.com/newsroom/2014/09/09Apple-

Exhibit No.	Description
	Unveils-Apple-Watch-Apples-Most-Personal-Device-Ever/ (last visited Mar. 31, 2023)
1037	U.S. Pat. No. 6,091,530 (“Duckworth”)
1038	U.S. Pat. No. 6,075,755 (“Zarchan”)
1039	Y. Mendelson, “A Wearable Reflectance Pulse Oximeter for Remote Physiological Monitoring,” Proceedings of the 28th IEEE (2006)
1040	Y. Mendelson, “Wearable Wireless Pulse Oximetry for Physiological Monitoring,” PPL Workshop (2008)
1041	“Apple Watch Teardown – iFixit,” https://www.ifixit.com/Teardown/Apple+Watch+Teardown/40655 (last visited Apr. 3, 2023)

4. In preparing this Declaration, I have considered my own knowledge and experience, including my work in the fields of electrical engineering and wearable sensor development; my experience teaching within those subjects; my experience working with others involved in those fields; and the materials identified herein. I understand my analyses and opinions, including my review of any materials cited herein, should be made from the perspective of one of ordinary skill in the art related to the D’131 Patent at the relevant time (i.e., a “POSITA”). I understand the relevant time is August, 11, 2014. Accordingly, my analyses and opinions are made from that relevant perspective. My testimony herein refers to the knowledge of a POSITA as of August, 11, 2014, unless indicated otherwise. I

discuss the level of ordinary skill in the relevant art further in Section VI of this Declaration, below.

5. Any figures appearing in this Declaration were prepared with the assistance of counsel and reflect my understanding of the D'131 Patent and the materials discussed herein. Coloring and colored annotations to figures in my Declaration have been added unless I have indicated otherwise.

III. EXPERIENCE AND QUALIFICATIONS

6. My academic and professional background is in electrical and computer engineering. I obtained a Bachelor of Engineering degree in Electrical and Electronic Engineering from the University of Bradford and a Ph.D. Degree in Electrical and Electronic Engineering from the University of Nottingham. My Ph.D. thesis work concerned increasing the speed of data processing using multiple processing elements to complete computations in parallel and triggering computations based on the availability of data. After completing my Ph.D., I was a lecturer in the university's Computer Science Department for two years.

7. For more than 40 years, I have studied, designed, and worked in these fields. My experience includes over 35 years of teaching and research, including in the fields of pulse oximetry and other physiological monitoring technologies, low powered wireless sensor design, embedded system design, wearable technology, and indoor location tracking for first responders, among others.

8. I have been a professor of electrical and computer engineering at Worcester Polytechnic Institute (“WPI”) for over 35 years. I joined WPI in January 1987 as an Assistant Professor of Electrical Engineering and was an Associate Professor of Electrical and Computer Engineering from July 1991 to June 2021. Presently, I am a Professor Emeritus of Electrical and Computer Engineering at WPI.

9. More recently, my research work has centered on Precision Personnel Location (PPL) for first responders. This project started as a result of a tragic incident in Worcester in 1999, when six firefighters lost their lives in a warehouse fire. The overall goal of the PPL project is to protect the lives of emergency responders and to enhance their ability to accomplish their missions through research and development of systems for personnel location and tracking, movements, physiological and environment status monitoring, and command and control. The PPL project brought together diverse technical capabilities from other centers and laboratories at WPI to address important problems for emergency responders, the most critical of which is precise location and path tracking for each person in a building.

10. For over 30 years, I developed and taught courses at WPI relevant to electronic devices that could be used with a charger like the charger underlying the D’131 Patent (i.e., the Apple Watch charger). The classes I developed and taught included associated laboratory exercises and projects, which I also developed and

advised. Additionally, I advised on approximately more than 100 senior-level projects, many of which involved battery-powered electronic devices that could have been used with a device charger like the wireless (i.e., inductive) charger underlying the D'131 Patent.

11. In the course of my work at WPI, I have advised hundreds of engineering students in B.S. and M.S. programs and advised or co-advised approximately ten Ph.D. students that have completed Ph.D. degrees.

12. Additionally, I have authored or co-authored dozens of technical papers in refereed journals and conference proceedings and given many conference presentations in the fields I have taught, researched, and worked.

13. Aside from my work at WPI, I have years of experience working with portable, battery-powered electronic devices, sensors, and their accessories. During leave in approximately 2000 from WPI, I was the Vice President of Engineering for Adaptive Instruments. At Adaptive Instruments, I was responsible for designing and manufacturing a line of wireless industrial sensors for use in industrial process control. As a consultant, I helped program a small, battery-powered device used to count the number of times an inhaler had been used. Also as a consultant, I helped design and program a wrist-worn device that reminded the user throughout the day of the medications that needed to be taken. My work on the wrist-worn device led to the patent I obtained on a "Low Power Infrared Communication System," U.S.

Patent No. 6,091,530, a copy of which is included as Exhibit 1037. This wearable electronic device had some similar functionality to the consumer product (Apple Watch) used with the charger that underlies the design claimed in the D'131 Patent. The wearable electronic device in my '530 patent was worn like a watch, provided watch functionality on a display, was battery powered, contained a microcontroller to calculate and display messages, employed an optical data communication system, and incorporated buttons for user control. Exhibit 1037, Abstract, col. 2:7-17. The system included a dock or cradle shaped complimentary to the watch to mate and align with the watch: "The cradle housing 104 is preferably shaped configured to receive and align the case of the watch 102 so that, when the watch 102 is placed in the shaped nest provided by 104, the watch IR emitter 110 is thereby aligned in close proximity with the cradle IR detector 112." *Id.*, 4:38-42. This device from my '530 patent is shown below.

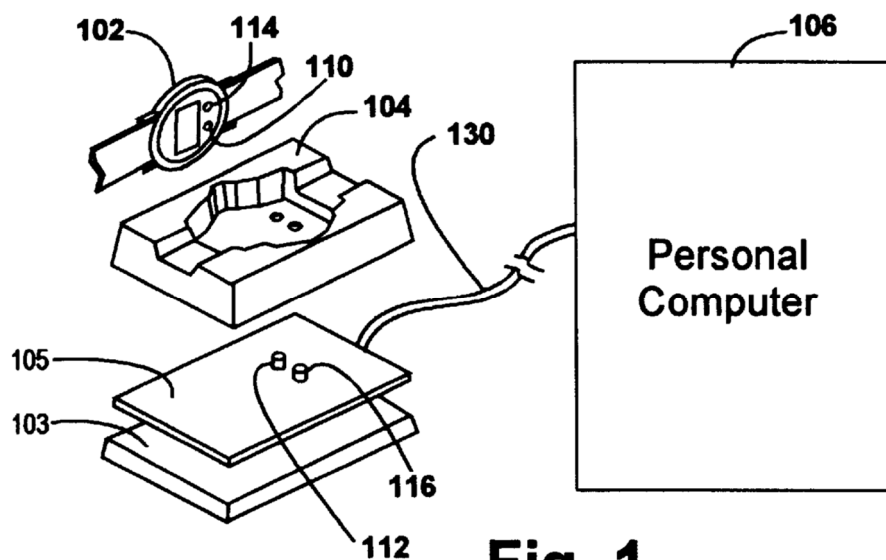


Fig. 1

Id., Fig. 1.

14. My technical work also contributed to features in the same device shown in U.S. Patent 6,075,755, which is titled “Medical Reminder System and Messaging Watch,” and a copy of which is included as Exhibit 1038. As in my ’530 patent above, the device from the ’755 patent incorporated a display with watch functionality (LCD display 110), was battery powered, contained a microcontroller to calculate and display medication reminder messages, employed an optical data communication system (infrared emitter and detector 116), and incorporated buttons (120, 122, 124, 126) for user control. Exhibit 1038, 6:28–65. Figures 1 and 4 from the ’755 patent are shown below.

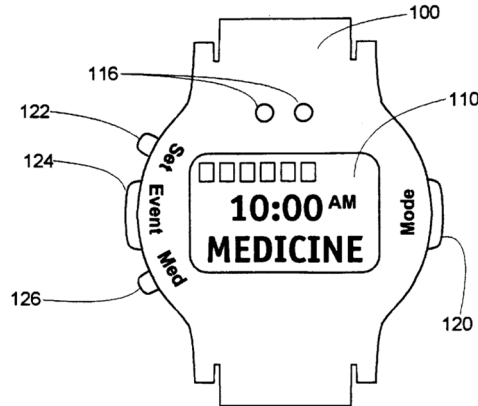
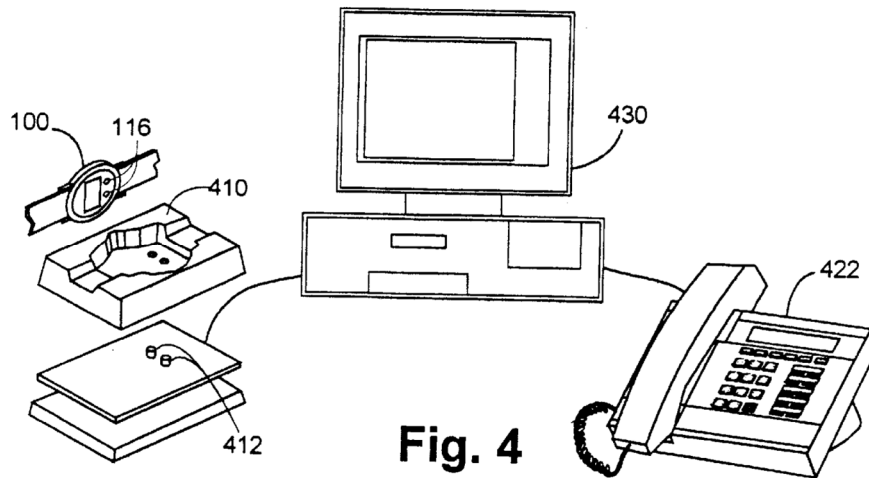


Fig. 1



Id., Figs. 1, 4.

15. From 2005 through 2008, I worked extensively with my colleague at WPI, Professor Yitzhak Mendelson, Ph.D., to research, publish papers about, design, and make, wearable pulse oximetry devices. One publication stemming from this work is titled “A Wearable Reflectance Pulse Oximeter for Remote Physiological Monitoring,” a copy of which is included as Exhibit 1039. In the process of developing a wearable (forehead-mounted) pulse oximetry device, Professor Mendelson and I investigated implementing wireless (i.e., inductive) charging in such a device. In 2008, Professor Mendelson presented the results of our work at an annual international technology conference held at WPI called the PPL Workshop, and a copy of his presentation is included as Exhibit 1040.

16. In addition to the patents discussed above, I am a named co-inventor on various other patents, including:

- a. U.S. Patent No. 7,292,189, issued in 2007, titled “Methods and

Apparatus for High Resolution Positioning”;

- b. U.S. Patent No. 9,476,963, issued in 2016, titled “Search and Rescue Method and System”;
- c. U.S. Patent No. 9,658,309, issued in 2017, titled “Precision Location Method and System”; and
- d. U.S. Patent No. 9,846,042, issued in 2017, titled “Gyroscope Assisted Scalable Visual Simultaneous Localization and Mapping.”

17. Above, I have provided a brief summary of my education and experience that I believe is most relevant to the analyses and opinions I have expressed in this Declaration. A copy of my curriculum vitae, which describes in further detail my qualifications, responsibilities, employment history, honors, awards, professional associations, presentations, publications, and patents is included as Exhibit 1015.

IV. SUMMARY OF OPINIONS

18. I have conducted analyses leading to the opinions expressed in this Declaration. To summarize those opinions, it is my conclusion, from a technical point of view, that:

- The recessed center portion claimed by the D’131 Patent is a primarily functional design element;

- The short, flat ring claimed by the D'131 Patent is a primarily functional design element;
- The overall cylindrical shape, flat bottom surface, and rounded edges of the charger design claimed by the D'131 Patent are primarily functional design elements; and
- By August 2014, a POSITA would have been motivated to use a width (i.e., thickness, in plan view) for Murray's top surface ring that would ensure the ring mated and aligned with the mating geometry of the device the charger was intended to charge, thus optimizing wireless charging efficiency; and
- By August 2014, a POSITA would have been motivated to modify Chiang's top surface into (or modify Chiang's top surface to include) a short, flat ring surrounding a recessed center portion that would enable the charger and the device intended to be charged by the charger to mate and align along a mutual axis for efficient wireless charging.

19. Below, I provide the complete analyses supporting my opinions.

V. THE D'131 PATENT

A. Overview of the D'131 Patent

20. The D'131 Patent, which is titled “Charger,” includes Figures 1-11 (below) and claims “[t]he ornamental design for a charger, as shown and described” in its figures. Exhibit 1001, FIGS. 1-11, claim. As shown below, the D'131 Patent claims the design of a charger having a cylindrical shape (gray) with a ring (blue) on the cylinder's top surface and a recessed center portion (green) that is surrounded by the top surface's ring. *Id.*

D'131 Patent Figures and Descriptions

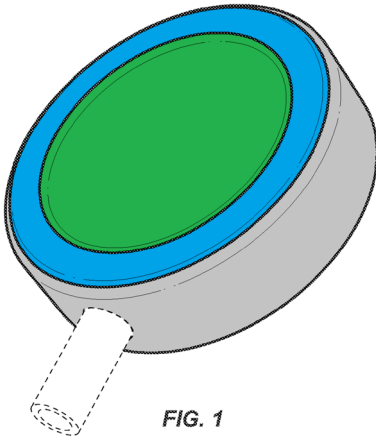


FIG. 1

“FIG. 1 is a bottom front perspective view of a charger[.]”

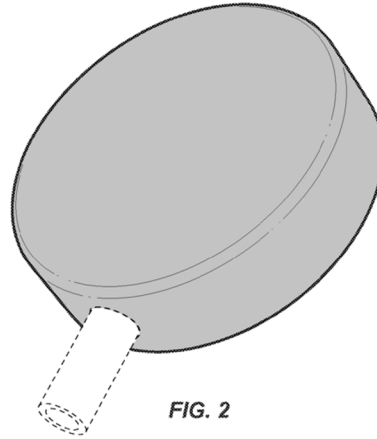


FIG. 2

“FIG. 2 is a bottom rear perspective view thereof.”

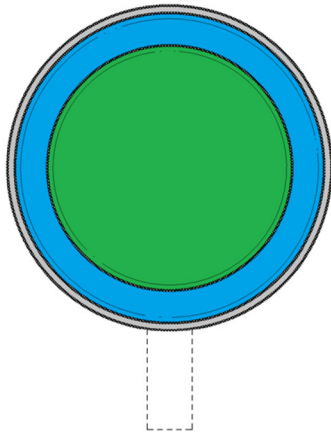


FIG. 3

“FIG. 3 is a front view thereof.”

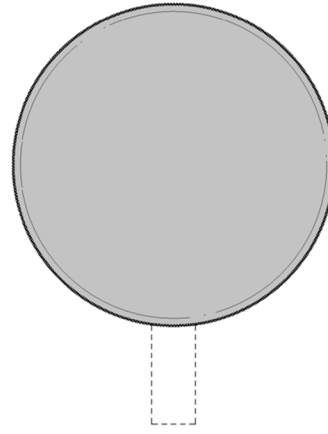


FIG. 4

“FIG. 4 is a rear view thereof.”

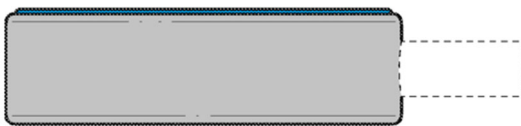


FIG. 5

“FIG. 5 is a left side view thereof.”

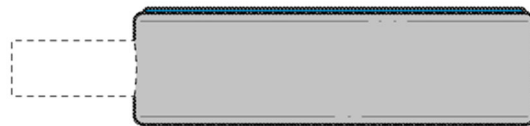


FIG. 6

“FIG. 6 is right side view thereof.”

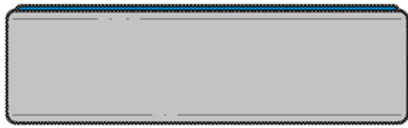


FIG. 7

“FIG. 7 is a top view thereof.”

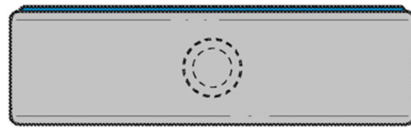


FIG. 8

“FIG 8 is a bottom view thereof.”

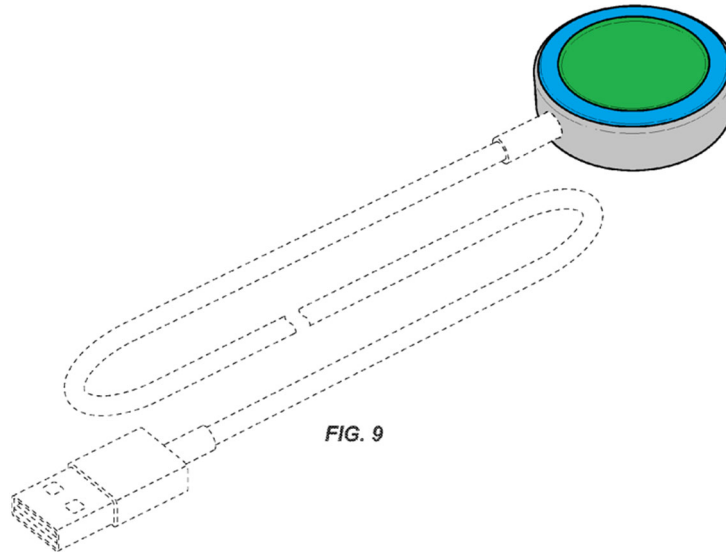


FIG. 9

“FIG. 9 is a perspective view thereof showing the charger in an environment in which it may be used.”

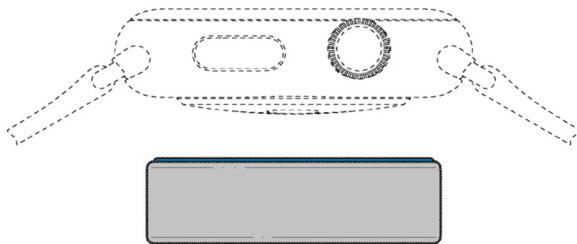


FIG. 10

“FIG. 10 is a perspective view thereof showing the charger in another environment in which it may be used.”

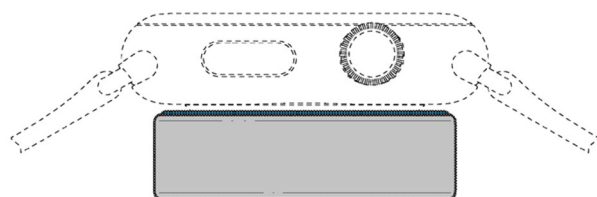


FIG. 11

“FIG. 11 is a perspective view thereof showing the charger in another environment in which it may be used.”

VI. LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

21. I understand that the level of ordinary skill in the art for the D'131 Patent is determined as of August 11, 2014, which is the earliest purported filing date of the patent.

22. The field of art relevant to the D'131 Patent is chargers for portable electronic devices. A person of ordinary skill in the art relating to the technical subject matter underlying the D'131 Patent would have had at least a Bachelor or Master of Science degree in electrical engineering, or a comparable engineering discipline, in combination with at least two years of related work experience involving portable electronic devices. To design and develop a portable electronic device charger design like the charger claimed in the D'131 Patent, a POSITA would have worked closely with a designer of ordinary skill in the art (a "DOSA"), such as an industrial designer or product designer, with a POSITA contributing from a technical perspective and a DOSA contributing from an industrial design perspective. I understand that Joel Delman is an experienced industrial designer that qualifies as a DOSA and is submitting a declaration (Exhibit 1003) in connection with this proceeding. I have therefore relied on Mr. Delman's discussions, analyses, and opinions from the perspective of a DOSA to support the discussions, analyses, and opinions I have set forth in my Declaration.

23. I understand the technical capabilities of a POSITA as of August 2014. Indeed, I possessed those capabilities myself before, during, and after that time. As a professor of electrical and computer engineering for over three decades, I have taught many such POSITAs and understand the level of knowledge and skill that persons with such academic experience would have possessed in August 2014. Through my education and decades of experience, such as teaching relevant engineering courses and working to develop portable electronic devices and their accessories, I am familiar with what a POSITA would have understood in August 2014 and qualified to provide opinions from the perspective of a POSITA at the relevant time.

VII. APPLICABLE LEGAL STANDARDS

24. I am an electrical and computer engineer by training and profession. The opinions I express in this Declaration involve the application of my knowledge and experience to the evaluation of the D'131 Patent and certain prior art to the D'131 Patent.

25. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, I have been advised of certain principles of patent law applicable in this matter, which I have used in arriving at my determinations and opinions. The paragraphs below express my understanding of the legal requirements I have used in forming my opinions.

A. Claim Construction

26. I understand that in an *inter partes* review, a design claim should be construed in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art in view of the solid lines shown in the patent's figures, the description of those figures, and the prosecution history pertaining to the patent.

27. I understand that, while the preferable course for design patent claim construction is not to provide a detailed verbal description, using verbal or written guidance is beneficial in certain circumstances. I understand that using verbal or written guidance to describe a claimed design is often helpful to point out various features of the claimed design as they relate to the prior art.

28. I understand that a design patent, unlike a utility patent, limits protection to the ornamental design of an article of manufacture. It is my experience that most articles and designs sold into the stream of commerce have some function or purpose. Where a design patent contains functional and ornamental elements, I understand that the scope of the claimed design is limited to the ornamental aspects alone and does not extend to functional elements. I further understand that, where a design contains both functional and non-functional (i.e., ornamental) elements, the scope of the design claim must be construed to identify the non-functional aspects of the claimed design. I understand that using verbal or written guidance to describe

a claimed design is helpful to outline the distinction between ornamental and functional elements of the claimed design. I also understand that a claim to a design with numerous functional elements requires a narrow construction. I further understand that functional aspects may be factored out of the claimed design, and that claim construction and the design obviousness analysis should focus on only the non-functional aspects of the claimed design.

29. While I understand that a particular test has not been mandated for assessing the functionality of a claimed design, I understand that there are numerous factors to be considered in evaluating functionality. First, I understand that the availability of comparable alternative designs is an important if not dispositive factor in evaluating the functionality of a claimed design. I also understand that if other designs would not produce the same or similar functional capabilities, or would not properly function with the claimed design, such other designs are not comparable alternative designs. Second, I understand that there are various other factors useful for assessing claim construction functionality, including: whether the claimed design represents the best design; whether alternative designs would adversely affect the article's utility; whether there are any concomitant utility patents; whether advertising touts particular design features as having specific utility; and whether there are any design elements or an overall appearance clearly not dictated by function. I also understand that where an element of a claimed design has been

specifically designed to fit into, or mate with, some other article, the design element has been deemed functional.

B. Obviousness

30. I understand that a patent is invalid as obvious if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious, before the effective date of the claimed invention, to a person of ordinary skill in the art. I further understand that the obviousness analysis assesses (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations nonobviousness (if present). For design patents, I understand that the ultimate obviousness inquiry asks whether the claimed design would have been obvious to a designer of ordinary skill in the art who designs articles of the type involved in the design patent at issue (a “DOSA”).

31. In a design patent obviousness inquiry, I understand that the first step is to identify a single, “primary” reference with design characteristics that are “basically the same” as the claimed design. I understand that once a primary reference is found, secondary references may be used to modify the primary reference to create a design that has the same overall visual appearance as the claimed design. I understand that secondary references may only be used to modify the primary reference if they are so related to the primary reference that the

appearance of certain ornamental features in one would suggest the application of those features to the other. I further understand that when a secondary reference is “so related” to the primary reference, the similarity in appearance among them is enough to motivate a designer of ordinary skill to combine features from one with features from the other. In addition to the relatedness of the prior art and claimed designs, I understand that other reasons could have motivated a designer of ordinary skill in the art to combine the features from a secondary reference with the features of the primary reference. Once the primary and secondary references have been combined, I understand that the design obviousness analysis asks whether the combination design has the same overall visual appearance as the claimed design. I understand that comparing the prior art and claimed designs as a whole is what is important, and that *de minimis* or trivial differences between the claimed and combination designs cannot prevent a finding of obviousness.

32. Further, I understand that secondary considerations of nonobviousness should be considered if evidence of such considerations is present, and that such secondary considerations cannot overcome a strong case of obviousness.

33. I understand that an assessment of what a reference discloses or teaches—for purposes of an obviousness analysis—must be conducted from the perspective of one of ordinary skill in the art at the time of the invention. I also

understand that something is only “inherent in,” and therefore taught by, the prior art if it necessarily flows from the explicit disclosure of the prior art.

VIII. CLAIM CONSTRUCTION FOR THE D’131 PATENT

34. Below, I set forth my understanding of the charger design claimed by the D’131 Patent. My understanding of the claimed design is consistent with the understanding that a designer of ordinary skill in the art would have had at the relevant time. Exhibit 1003 ¶¶39-42.

35. The D’131 Patent claims the design of a charger having (1) a cylindrical shape with a flat bottom surface (gray); (2) a short, flat ring (blue) on the cylinder’s top surface, with the ring having an outer diameter that is smaller than the cylindrical charger; and (3) a recessed center portion (green) that is surrounded by the ring on the charger’s top surface.

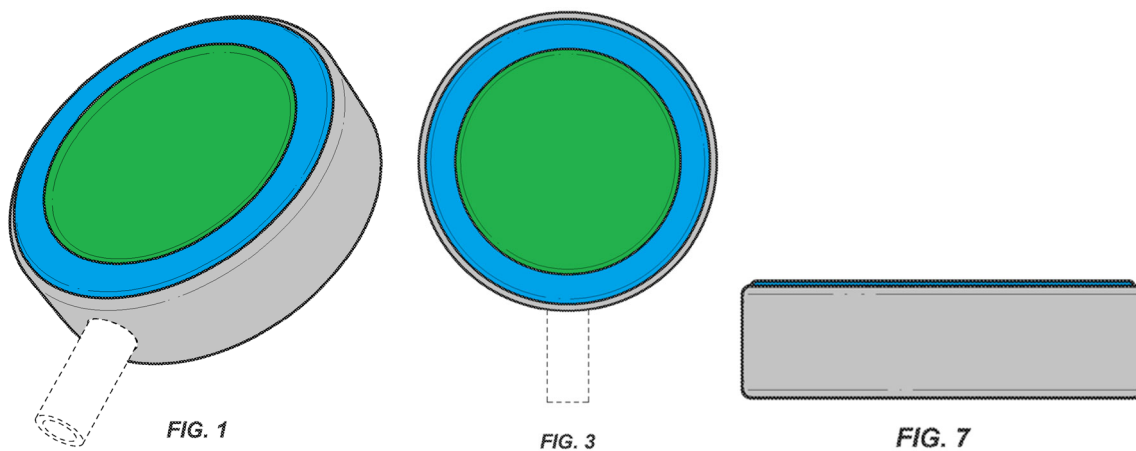


Exhibit 1001, FIGS. 1, 3, 7. As shown above (right), the top and bottom edges of the cylinder, and the outer edge of the ring on the top surface, are very slightly rounded. *Id.*, FIG. 7. As illustrated in FIGS. 10-11 below, the D’131 Patent shows

that the charger's recessed center portion and short, flat ring receive the bottom surface of an Apple Watch and align the Watch with the charger:

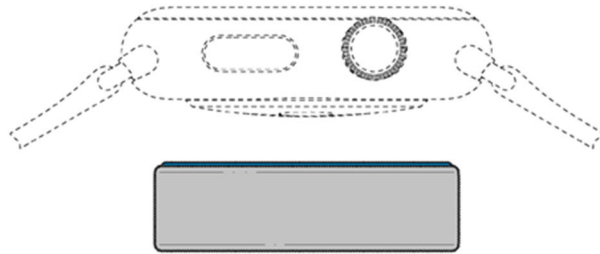


FIG. 10

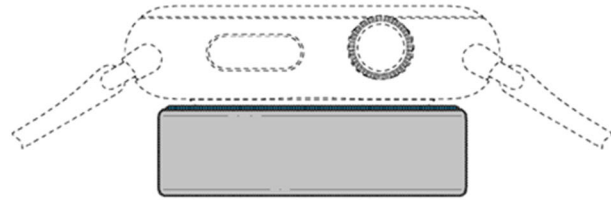


FIG. 11

Id., FIGS. 10-11.

36. I understand that the D'131 Patent was purportedly filed in August 2014, *id.*, cover, that Apple announced the original Apple Watch in September 2014, Exhibit 1018, and that the original Apple Watch (also called "Series 0") was released in early 2015. Exhibit 1021, 46:22-23; Exhibit 1036, 1.

37. As shown in the below comparison, the D'131 Patent depicts the design of Apple Watch's charger. Specifically, the cylinder claimed by the D'131 Patent (gray below) depicts the cylinder of Apple Watch's charger, the claimed top ring (blue below) depicts the ring on the top surface of Apple Watch's charger, and the claimed recessed center portion (green below) depicts the recessed center portion surrounded by the ring on the top surface of Apple Watch's charger.

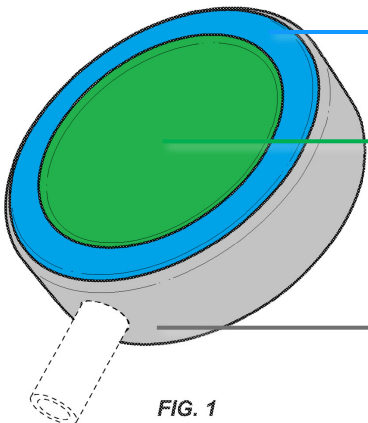
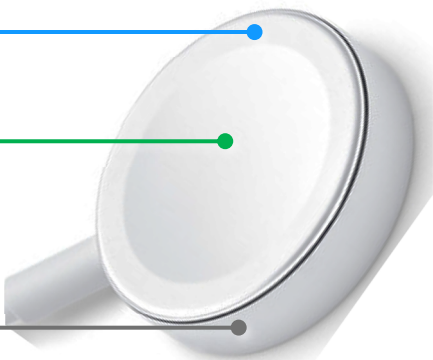
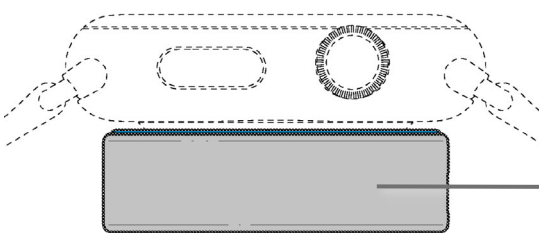
Claimed Design (Exhibit 1001)	Apple Watch Charger
 FIG. 1	 Exhibit 1023, 1 (rotated)
 FIG. 11	 Exhibit 1035, 8

Exhibit 1023, 1; Exhibit 1035, 8. I understand that Apple agrees that the D’131 Patent covers the Apple Watch charger’s design. Exhibit 1005 ¶¶17-18, 67. As I have explained in the following section, aspects of the charger design claimed by the D’131 Patent are functional design elements.

A. The Claimed Recessed Center Portion Is Functional

38. The D’131 Patent shows that the recessed center portion of the claimed charger is designed to mate and align with the convex surface (i.e., the dome or protrusion) on the back of every Apple Watch.

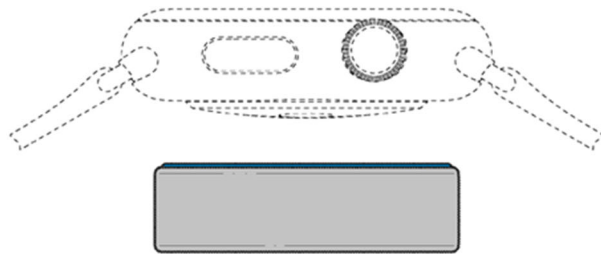


FIG. 10

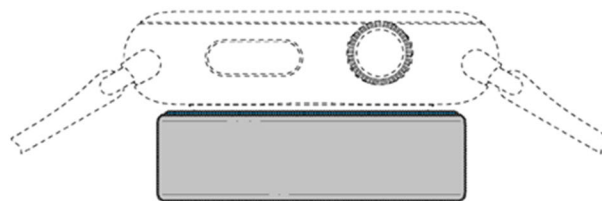


FIG. 11

Exhibit 1001, FIGS. 10-11. FIG. 11 of the D’131 Patent (above, right) shows the charger mated and aligned with the convex surface on the back of Apple Watch, as shown below.



Exhibit 1041, 4.

39. Apple confirmed during the parties’ ITC investigation (Inv. No. 337-TA-1276, the “ITC Investigation”) that the same “dome” or “curved” (i.e., convex) surface has been included on the back of every Apple Watch, starting with the 2015 release of the original Apple Watch (called “Series 0”). Exhibit 1021, 47:12-16 (explaining convex surface on back of Apple Watch “has been constant since the Series 0”), 46:22-23 (“The original Apple Watch, the Series 0, was released in 2015.”). Apple admitted that its Watch charger uses the claimed recessed center portion because that design ensures that the protrusion or “dome” on the back of

every Apple Watch: (1) “fits snugly in the [wireless charging] cradle” (i.e., the claimed charger); and (2) “align[s] the watch with the charging hardware components [i.e., the claimed charger’s power transmission coil] so that the charging can occur in an efficient way.” *Id.*, 47:20-24. The development of Apple Watch’s health sensors was led by Apple’s “distinguished engineer,” Brian Land. *Id.*, 954:15-955:9. And Mr. Land confirmed this functionality of the recessed center portion of Apple Watch’s charger by testifying that the Apple Watch’s charger “has a complementary shape” to the Watch to achieve two functions: (1) to allow the charger to mate with Apple Watch; and (2) to align the Watch’s charging coil with the charger’s charging coil for “efficient wireless charging.” *Id.*, 959:14-960:2. Consistent with these admissions from Apple, every Apple Watch charger has the same recessed center portion (which is claimed by the D’131 Patent) so that the charger mates snugly and aligns with the complementary surface on the back of every Apple Watch, as shown in the annotated figure below.



Exhibit 1005, 7; Exhibit 1023, 2 (confirming every Apple Watch uses the same charger design that is shown above). A prior art Apple patent explains that the Watch and charger have the complementary surfaces shown above in order to align the charging coil in the Apple Watch with the corresponding coil in the charger for efficient wireless charging. Exhibit 1025, FIG. 19, 45:18-28 (explaining, with reference to FIG. 19, that “the complementary geometries [of the Watch’s back and its charging dock] may facilitate aligning of the [Watch] and dock for efficient wireless power transfer”). Thus, this evidence shows that the recessed center portion of the charger claimed in the D’131 Patent was designed so that the Apple Watch charger underlying the claimed design could performed its intended functions of: (1) mating snugly with the complementary back surface of Apple Watch; and (2) aligning with that back surface of the Watch for efficient wireless charging. The same evidence shows that an alternative design to the recessed center portion

claimed in the D'131 Patent was unavailable because a different surface shape for the charger's top center portion would not mate snugly or precisely align with the back surface of the Apple Watch, both of which are needed for efficient wireless charging. *See, e.g.*, Exhibit 1005, 2, 7; Exhibit 1001, FIGS. 5-8; Exhibit 1025, 42:63-43:4 (explaining "power transfer efficiency ... may decrease as misalignment increases" between the Watch and its charging dock); Exhibit 1024, FIG. 1C, 8:29-41 ("[P]ower transfer efficiency between the [charger] 102 and the [Watch] 202 may be optimized when the receive coil 212 [in the Watch] is aligned with the transmit coil 112 [in the charger] along a mutual axis."; "Preferably, the [charger] 102 and the [Watch] 202 are aligned along a mutual axis 300, as shown in FIG. 1C."). That is, using a different design for the claimed recessed center portion would make the charger incompatible with the convex back surface of Apple Watch. *Id.* Accordingly, the claimed recessed center portion is dictated by function because the recessed center portion must be designed as claimed to perform the intended functions of mating and aligning with the corresponding back surface of Apple Watch for efficient wireless charging of Apple Watch.

40. Numerous other factors also support my opinion that the claimed recessed center portion is a functional element of the design claimed by the D'131 Patent. One such factor is that the claimed recessed center portion is the best design for that element because only the claimed recessed center portion allows the

underlying Apple Watch charger to mate snugly and properly align with the complementary shape of the back surface of Apple Watch. Exhibit 1021, 47:20-24, 959:14-960:2, Exhibit 1005, 7; Exhibit 1025, FIG. 19, 45:18-28. Indeed, as discussed above, using a different design for the top center portion of the claimed charger would result in a worse design because such an alternative design would be incompatible with the convex surface on the back of every Apple Watch that is intended to be used with the claimed charger. For example, using a different surface shape for the charger's recessed center portion would make the Watch-charger connection less secure, thereby allowing the Watch to become misaligned on the charger, which would impair the Watch's ability to recharge. Exhibit 1025, 42:63-43:4 (explaining "power transfer efficiency ... may decrease as misalignment increases" between the Watch and its charging dock); 45:18-28 (explaining how complementary curved Watch-back and charger surface geometries, like in FIGS. 18-19, enable "efficient wireless power transfer"), FIGS. 18-19); Exhibit 1024, FIG. 1C, 8:29-41 ("[P]ower transfer efficiency between the [charger] 102 and the [Watch] 202 may be optimized when the receive coil 212 [in the Watch] is aligned with the transmit coil 112 [in the charger] along a mutual axis.").

41. Using a different surface shape for the recessed center portion of the claimed charger could adversely affect the utility of the underlying article by harming or eliminating the charger's ability to mate as snugly and/or properly align

with the complementary convex surface on the back of Apple Watch, thus harming or eliminating the Watch's ability to be recharged and used. Exhibit 1021, 959:14-960:2 (Watch's charging dock (i.e., cradle) has a "complementary shape" to the Watch's "dome-shape" "so that, when you place [the Watch] on the cradle, [the Watch] aligns itself well to the ... charger for efficient wireless charging."); Exhibit 1025, 45:18-28 ("complementary geometries" of Apple Watch and its charger allow "efficient wireless power transfer"), 42:63-43:4 (explaining "power transfer efficiency ... may decrease as misalignment increases" between the Watch and its charging dock); Exhibit 1024, FIG. 1C, 8:29-41 ("[P]ower transfer efficiency between the [charger] 102 and the [Watch] 202 may be optimized when the receive coil 212 [in the Watch] is aligned with the transmit coil 112 [in the charger] along a mutual axis."). The charger underlying the D'131 Patent charges the Apple Watch by mating snugly and aligning with the complementary surface on the back of Apple Watch, as explained above, and thus the claimed recessed center portion enabling that Watch-charger connection is needed for charging and, therefore, essential to the use of the charger.

42. Apple also presents the recessed center portion claimed by the D'131 Patent as having a particular utility for aligning the charger with Apple Watch. Apple's website, for example, indicates that the "[t]he concave end of the charging cable" mates with the convex surface on the back of Apple Watch and ensures the

Watch and charger are properly aligned. Exhibit 1022, 1; Exhibit 1023, 1-2 (showing the claimed charger design is used for every Apple Watch model, starting with “Apple Watch 1st generation,” which I understand is also referred to as “Series 0”); Exhibit 1022, 1-3 (showing the concave end of Apple Watch’s charging cable mates with the back of every Apple Watch model from Series 4 to the latest models).

43. Further, the functionality of the recessed center portion of the charger claimed in the D’131 Patent is confirmed by multiple concomitant utility patents from Apple itself. Apple’s U.S. Pat. No. 10,627,783 (the “’783 patent”) shows that the recessed center portion claimed in the D’131 Patent is for achieving the Watch-charger mating and alignment functions discussed above. The ’783 patent teaches to avoid misalignment between the charger (or “dock” or “cradle”) and the Watch, because any misalignment decreases “power transfer efficiency.” Exhibit 1025, 42:63-43:4. To avoid such misalignment between the charger and Watch, the ’783 patent teaches using “alignment assistance features to effect alignment of the [Watch] 100 with the dock 1802 along a mutual axis.” *Id.*, 43:10-15. The ’783 patent specifically teaches that “the bottom surface of the [Watch] 100 is convex and the top surface of the [charging] dock 1802 is concave, following the same curvature as the bottom of the [Watch] 100.... [to] facilitate alignment of the [Watch] and dock for efficient wireless power transfer,” as shown below in FIGS. 18-19. *Id.*, 45:18-

28, 43:28-32 (explaining that “protrusions and corresponding indentations ... may be used to align [the Watch and its dock]”), 43:19-22, FIGS. 18-19 (below).

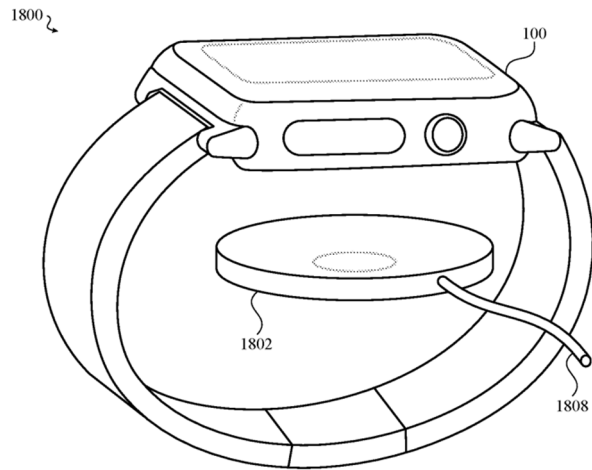


FIG. 18

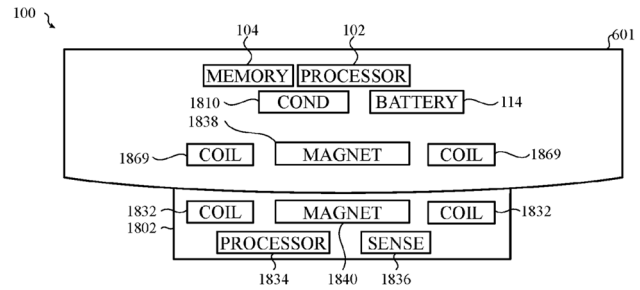


FIG. 19

Further, the '783 patent explains and shows that aligning the charging coil of the device 601 (e.g., Apple Watch), shown in purple below, with the corresponding charging coil of its charger 1802, shown in green below, is required for efficient wireless charging.

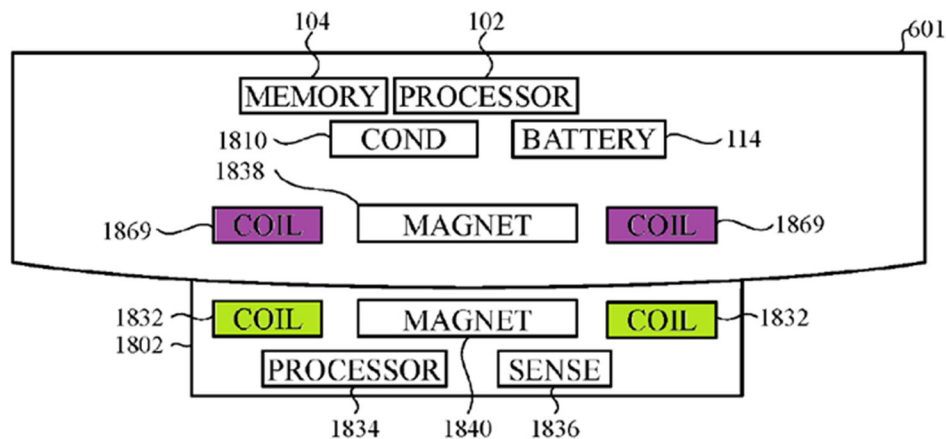


FIG. 19

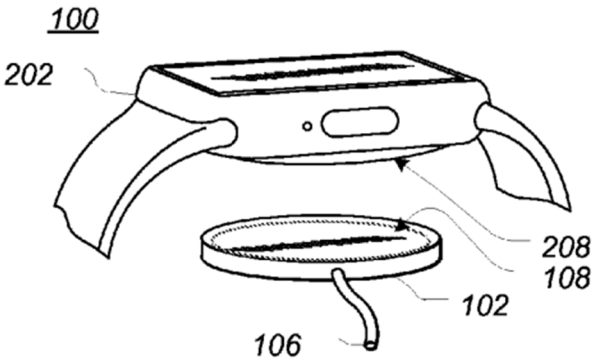
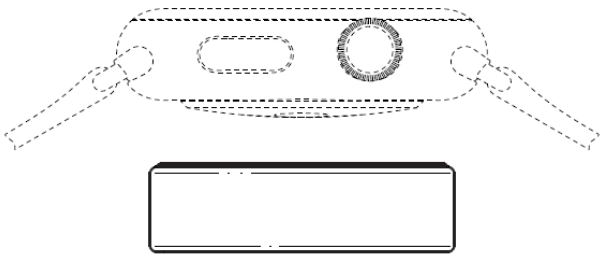
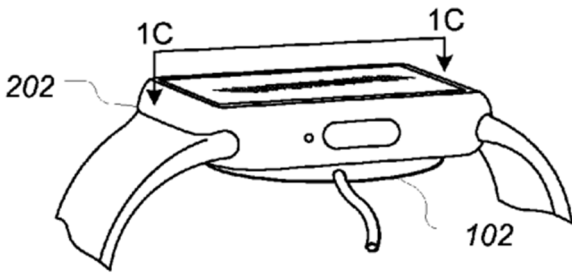
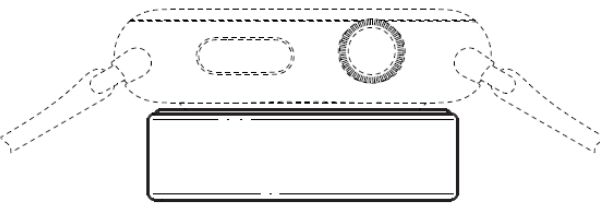
Exhibit 1025, FIG. 19, 42:63-43:48, 45:18-51. For example, the '783 patent teaches that:

A transmit coil and receive coil may be disposed respectively within housings of the dock and electronic device so as to align along a mutual axis when the electronic device is placed on the dock. ***If misaligned, the power transfer efficiency between the [chargers] transmit coil and the [Watch's] receive coil may decrease as misalignment increases.*** Accordingly, in many examples, the wireless power transfer system may include one or more alignment assistance features to effect alignment of the transmit and receive coils along the mutual axis.

Id., 42:63-43:4 (emphasis added); *see id.*, 43:5-48 (describing features to align the charging coils of the device (i.e., Apple Watch) and its charger), 45:18-51 (same), FIGS. 18-19. Consistent with the teachings of the '783 patent, Apple admitted during the ITC Investigation that the Apple Watch's charger must properly align with Apple Watch for efficient wireless charging. For example, Apple admitted the "dome" shape of every Apple Watch "is designed to align the watch with the charging hardware components so that the charging can occur in an efficient way." Exhibit 1021, 47:17-23. Similarly, the Apple engineer leading development of Apple Watch's health sensors, Mr. Land (*id.*, 954:15-955:12), testified that the Watch's charger "has a complementary shape" to the Watch, which "provides a self-centering mechanism so that, when you place [the Watch] on the cradle [i.e., charger], it aligns itself well to the other -- the charger for efficient wireless charging." *Id.*, 959:14-960:2. Therefore, for efficient wireless charging, the location of the charging coil in the Watch must align with the location of the corresponding

charging coil in the Watch's established charger. Put simply, the location of the charging coil in the Watch dictates the location of the associated charging coil in the charger, and thus, the location of the coil in the D'131 Patent, which claims the design of the Apple Watch charger with such a charging coil. *See, e.g.*, Exhibit 1023, 1-2; Exhibit 1041, 4, 15-16. Therefore, Apple's '783 patent confirms that the design of the recessed center portion claimed in the D'131 Patent is dictated by the function of aligning the underlying Apple Watch charger with the corresponding back surface of Apple Watch.

44. U.S. Patent No. 9,460,846 (the "'846 patent") is another of Apple's utility patents that further demonstrates that the recessed center portion claimed in the D'131 Patent is designed to achieve the charger mating and alignment functions discussed above. As shown below, the '846 patent discloses a connection between an Apple Watch-like device (202) and its charger (102) that is very similar to the Watch-charger connection depicted in FIGS. 10-11 of the D'131 Patent.

'846 patent (Exhibit 1024)	Claimed Design (Exhibit 1001)
 FIG. 1A	 FIG. 10
 FIG. 1B	 FIG. 11

As shown above (left column), Apple’s ’846 patent demonstrates that the recessed center portion of the charger 102 is sized and shaped to receive the convex back surface of the Apple Watch-like device 202 and align the Watch 202 with the charger 102. Exhibit 1024, FIGS. 1A-1B. The ’846 patent teaches that in the Watch-charger connection shown above (in FIGS. 1A-1B, left column), “the inductive power receiver 202 [i.e., Apple Watch]” includes “a lower surface 208 that may interface with, align, or otherwise contact an interface surface 108 of the inductive power transmitter 102 [i.e., the Watch’s charger].” *Id.*, 7:9-12. The ’846 patent further

teaches that “interface surface 108 [of the charger] may be configured in a particular shape that mates with a complementary shape of the inductive power receiver 202 [i.e., the Watch], for example, as shown in FIG. 1B,” which is reproduced above (left). *Id.*, 7:14-18. The ’846 patent thus teaches using complementary designs for the top center portion of the charger and the surface of the device to be charged (e.g., the back surface of Apple Watch) to achieve the desired mating and alignment functions for the device-charger (e.g., Watch-charger) connection.

45. Additionally, the ’846 patent encourages those of skill in the art to use the following device-charger connection design to achieve an “aligned configuration” where the Watch’s power-receiving coil (212, orange) is properly aligned with the charger’s corresponding power-transmitting coil (112, green).

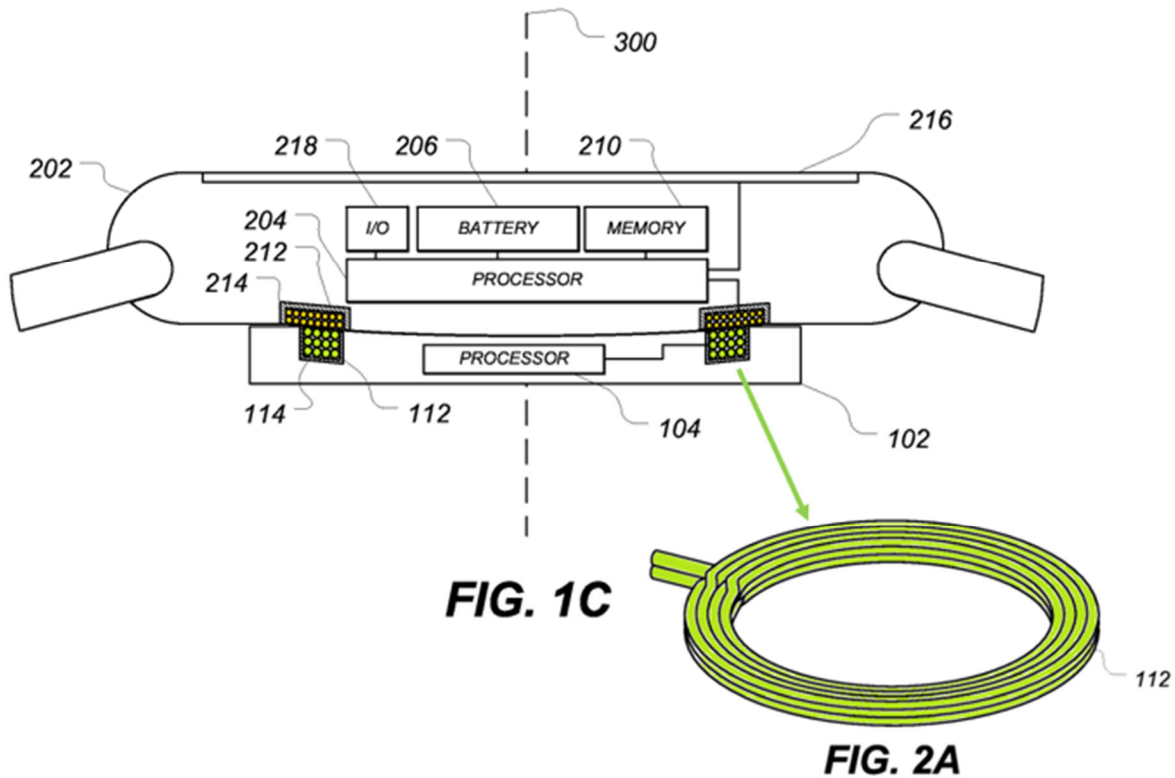


Exhibit 1024, FIGS. 1C, 2A, 7:40-47 (FIG. 1C depicts ... the example inductive power transfer system in an aligned configuration.... [wherein] the bottom surface 208 of the inductive power receiver 202 [i.e., the Watch] contacts the interface surface of the inductive power transmitter 102 [i.e., the charger].”), 7:48-57 (describing operation of wireless charging system shown in FIG. 1C). The ’846 patent cautions that “a slight misalignment of the [charger’s] inductive power transmitter 102, ... and the [Watch’s] inductive power receiver 202 may result in a substantial misalignment of the transmit coil 112 and receive coil 212,” thereby “substantially reduc[ing] power transfer efficiency.” *Id.*, 8:32-38. Accordingly, to avoid power transfer inefficiency caused by Watch-charger misalignment, the ’846

patent teaches that, “[p]referably, the inductive power transmitter 102 and the inductive power receiver 202 are aligned along a mutual axis 300, as shown in FIG. 1C,” which is reproduced above. *Id.*, 8:37-41. Indeed, the ’846 patent teaches that “power transfer efficiency between the [charger] 102 and the [Watch] 202 may be optimized when the receive coil 212 is aligned with the transmit coil 112 along a mutual axis [as shown in FIG. 1C above].” *Id.*, 8:29-32. The ’846 patent thus confirms that the recessed center portion claimed by the D’131 Patent, like the recessed center portion of the charger of FIG. 1C of the ’846 patent, is designed to perform the above-discussed Watch-charger alignment function, and thus to ensure maximum power transfer efficiency from the charger to the Watch.

46. Also, notably, Apple has retained the claimed recessed center portion in the charger used with the original Apple Watch (i.e., Apple Watch Series 0, also called Apple Watch 1st Generation) and Apple Watch Series 1, 2, 3, 4, 5, 6, 7, 8, and Ultra, which I understand constitutes every Apple Watch released to date. Exhibit 1023, 1-2 (confirming same charger design used for every Apple Watch from “Apple Watch 1st Generation (i.e., Series 0) to the latest Apple Watch models such as Series 8 and Ultra). In my opinion, that Apple kept the claimed recessed center portion design in the charger used for every Apple Watch (eleven consecutive models, *id.*) indicates that the claimed recessed center portion design is the most

useful design for mating and aligning the charger with the back surface of Apple Watch.

47. Accordingly, for the reasons explained above, the claimed recessed center portion is a functional design element of the D'131 Patent.

B. The Short, Flat Ring on the Charger's Top Surface Is Functional

48. As shown below, the short, flat ring (blue) on the top surface of the claimed charger is designed to perfectly surround and align the convex surface on the back of the Apple Watch with the complementary recessed center portion of the charger design claimed in the D'131 Patent.

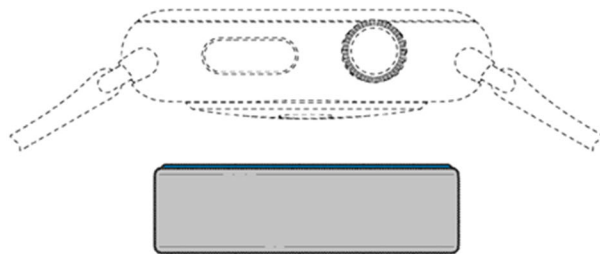


FIG. 10

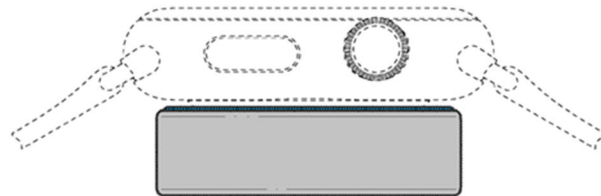


FIG. 11

Exhibit 1001, FIGS. 10-11. The claimed charger, including the top surface ring (blue) and recessed center portion (green), is designed (i.e., shaped and sized) to ensure there are complementary geometries between the charger and protruding back surface of the Apple Watch, as shown above and below.

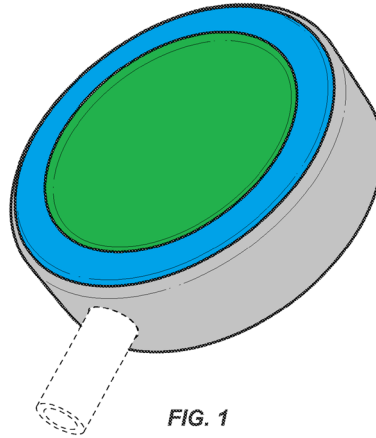


FIG. 1

Id., FIG. 1. However, if the claimed ring had a smaller diameter, the top surface of the charger would no longer be the perfectly complementary geometry for the Apple Watch's back surface that enables the above-discussed mating and alignment functions. Rather, using a smaller diameter for the claimed ring would result in a less stable Watch-charger connection, thereby hindering or stopping the charger from repeatably mating and aligning with the back surface of the Watch as intended. If the claimed ring had a larger diameter, the ring would not perfectly surround the protruding back surface of Apple Watch, thereby diminishing the repeatability and stability (i.e., snugness) of the Watch-charger connection. Thus, once again, using a diameter for the ring that was different than the diameter of the mating surface of Apple Watch would inhibit or prevent the charger from repeatably mating and aligning with the back surface of the Watch as intended. Additionally, if the claimed ring had less height (i.e., was shorter), there would not be sufficient space between the charger's recessed center portion and bottom surface to house the internal

components of the charger. Exhibit 1041, 15 (showing virtually no extra space between the charger's top surface (semi-removed) and internal charger components). Conversely, making the claimed ring taller would be disadvantageous. Specifically, making the claimed ring taller would correspondingly increase the distance of the recessed center portion from the charger's charging coil, which in turn would increase the distance between the charging coil of the Watch and that of the charger when connected, thereby reducing the charger's power transfer efficiency due to excessive distance between the charging coils in the Watch-charger connection. *See, e.g.,* Exhibit 1024, FIG. 1C, 8:29-41 (teaching that the charging coil (212) or the Watch (202) and the charging coil (112) of the charger (102) should be adjacent and aligned along a mutual axis (300), as shown in FIG. 1C). Thus, none of these options would be suitable alternatives for the claimed ring design because, unlike these other designs, the claimed ring design: (1) allows the charger to include the recessed center portion that perfectly mates and aligns with the protruding back surface of Apple Watch; and (2) simultaneously provides the proper internal space (i.e., height) to house the charger's hardware components. *Id.*, 15.

49. Additionally, Apple has retained the claimed short, flat ring in the charger used with the original Apple Watch (i.e., Apple Watch Series 0, also called Apple Watch 1st Generation) and Apple Watch Series 1, 2, 3, 4, 5, 6, 7, 8, and Ultra, which I understand constitutes every Apple Watch released to date. Exhibit 1023,

1-2 (confirming same charger design used for every Apple Watch from “Apple Watch 1st Generation (i.e., Series 0) to the latest Apple Watch models such as Series 8 and Ultra). In my opinion, that Apple kept the claimed short, flat ring design in the charger used for every Apple Watch (eleven consecutive models, *id.*) indicates that the claimed ring design is the most useful design for mating and aligning the charger with the back surface of Apple Watch.

50. Accordingly, for the reasons explained above, the short, flat ring on the charger’s top surface is a functional design element of the D’131 Patent.

C. The Overall Cylindrical Shape, Flat Bottom Surface, and Rounded Edges of the Claimed Charger Are Functional

51. The claimed Apple Watch charger design has an overall cylindrical shape with a flat bottom surface and very slightly rounded edges, as shown below.

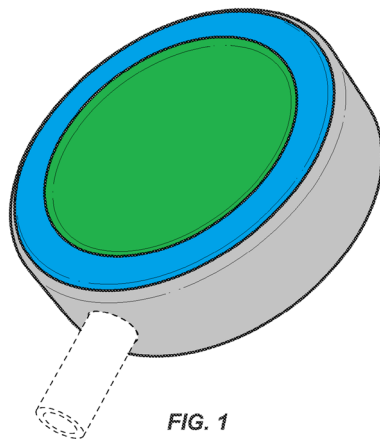


Exhibit 1001, FIGS. 1, 6. However, the prior art confirms that chargers with overall cylindrical shapes, flat bottom surfaces, and slightly rounded edges like the claimed design (*id.*) are functional because chargers with such design aspects were pervasive

in the prior art. *See, e.g.*, Exhibit 1026, FIG. 1; Exhibit 1027, FIG. 1; Exhibit 1031, FIG. 1; Exhibit 1033, FIG. 1; Exhibit 1010, Perspective View; Exhibit 1032, FIG. 1; Exhibit 1030, FIG. 1; Exhibit 1006, Side View; Exhibit 1028, FIG. 1; Exhibit 1029, FIG. 1; Exhibit 1008, FIG. 1; Exhibit 1034, FIG. 1; Exhibit 1007, Three-dimensional view; Exhibit 1009, FIG. 1; Exhibit 1024, FIG. 1A. Additionally, as shown below, chargers, including those disclosed in Apple's utility patents, often used cylindrical power transmission coils (green below).

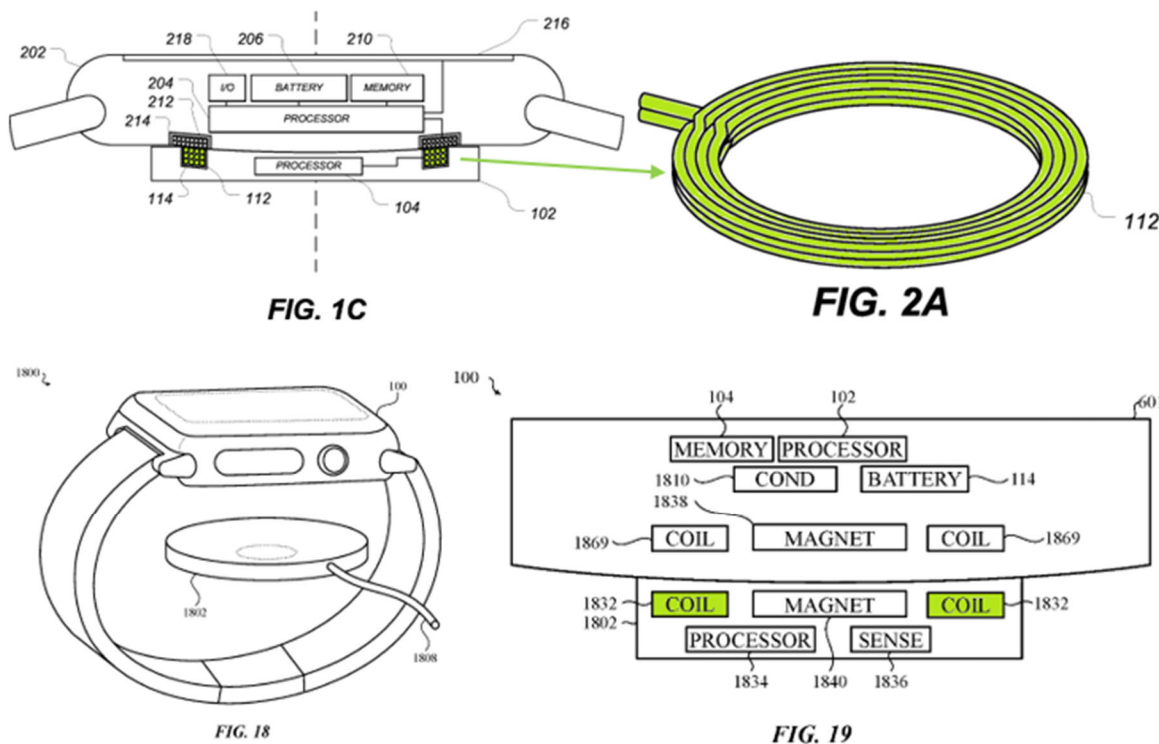


Exhibit 1024, FIG. 1C (top-left), 2A (top-right); 2:56-57, 8:42-51; Exhibit 1025, FIGS. 18-19 (bottom). A POSITA would have understood that an overall cylindrical charger shape was the most efficient shape for housing a cylindrical power transmission coil, such as the above-shown coils from Apple's utility patents, with

minimal wasted or excess space. *See, e.g.*, Exhibit 1025, FIGS. 18-19 (showing cylindrical charger housing circular power transmission coil 1802), 10:16-26 (recognizing desire in the art for internal electronics components to “be configured to take up a minimal amount of space, which may facilitate the device body 11 having a small form factor”; “[T]he components may be packaged [] in order to provide the most functionality in the smallest space.”). Further, Apple has retained the claimed overall cylindrical shape for the charger used with every Apple Watch. Exhibit 1023, 1-2 (confirming same charger design used for every Apple Watch, which is eleven consecutive models to date). In my opinion, that Apple kept the claimed cylindrical design in the charger used for every Apple Watch indicates that the claimed cylindrical design is the most useful design for connecting with and charging the Apple Watch.

52. The flat bottom surface of the claimed charger design is also functional because that design makes the charger easier to use on a typical surface (e.g., the user’s desk or table) and facilitates alignment of the Apple Watch on the charger. Thus, to charge an Apple Watch, Apple instructs users to “place your charger or charging cable on a flat surface.” Exhibit 1022, 1. And a POSITA would have understood that the Watch chargers disclosed in Apple’s utility patents had a flat bottom surface to ensure proper alignment between the charger and Watch for efficient wireless charging, as shown below.

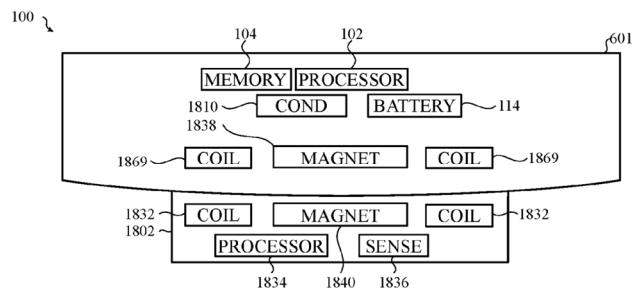


FIG. 19

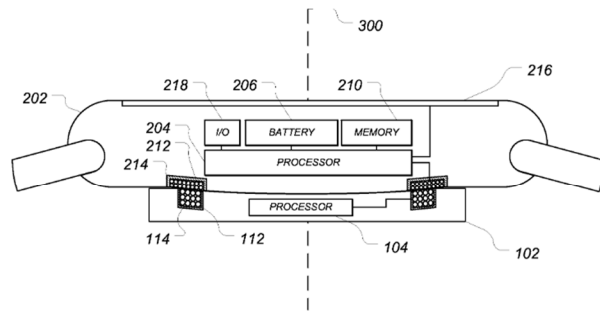


FIG. 1C

Exhibit 1025, FIG. 19 (left), 45:18-28 (explaining need to align charging coil of charger and device); Exhibit 1024, FIG. 1C (right), 8:29-41 (explaining need to align charging coil of charger and device). Indeed, a POSITA would have understood that a flat bottom surface was ubiquitous in prior art chargers to support using the charger on a flat surface and alignment of the charger with the device it was intended to charge. *See, e.g.*, Exhibit 1026, FIG. 2; Exhibit 1027, FIGS. 2-5; Exhibit 1033, FIGS. 2-5; Exhibit 1010, “Front,” “Rear,” “Left side,” “Right side” views; Exhibit 1032, FIGS. 2-5; Exhibit 1030, FIGS. 1-2; Exhibit 1006, Back View; Exhibit 1028, FIGS. 4-7; Exhibit 1029, FIGS. 2-5; Exhibit 1008, FIGS. 3-5 (rotated); Exhibit 1034, FIGS. 4-7; Exhibit 1007, “Right,” “Top,” “Bottom” views; Exhibit 1009, FIGS. 2-5; Exhibit 1025, FIG. 1C.

53. Also, the very slightly rounded edges of the claimed design are designed to improve user comfort when handling the charger, which Apple and its expert confirmed by arguing that smoothing device edges via common techniques (e.g., chamfering) was done to improve user comfort of a device against the user’s

skin. Exhibit 1021, 1236:17-1237:3, 1229:8-10; Exhibit 1017, 119-120 (“A POSITA also would have been motivated to incorporate chamfered edges, for multiple reasons—including, for example, for user comfort...”), 115 (“the benefits [of chamfered edges] (including user comfort) were well-known”).

54. Accordingly, for the reasons explained above, the overall cylindrical shape of the claimed charger design, including the flat bottom surface and rounded edges, are functional design elements of the D’131 Patent.

55. In conclusion, for the reasons explained above, the following elements are functional elements of the design claimed by the D’131 Patent: (1) the claimed recessed center portion, (2) the short, flat ring on the charger’s top surface, and (3) the overall cylindrical shape, flat bottom surface, and rounded edges.

IX. TECHNICAL OPINIONS REGARDING OBVIOUSNESS FOR THE D’131 PATENT

A. Overview of the Prior Art

56. I understand that the obviousness inquiry for design patents is assessed from the perspective of a designer of ordinary skill in the art. As explained above in Section VI, a designer of ordinary skill in the art would have consulted and collaborated with a POSITA, such as myself, regarding technical concepts outside of the designer’s area of expertise. Accordingly, below, I provide technical discussion regarding the applied prior art references from the perspective of a POSITA, who would have worked closely with a designer of ordinary skill in the art

to design devices like the Apple Watch Series 4 sensor design claimed by the D'131 Patent.

1. **Lee-616 (Exhibit 1006 – United Kingdom Design Reg. No. 4032616)**

57. Lee-616 discloses the “wireless mini charging pad” shown below.

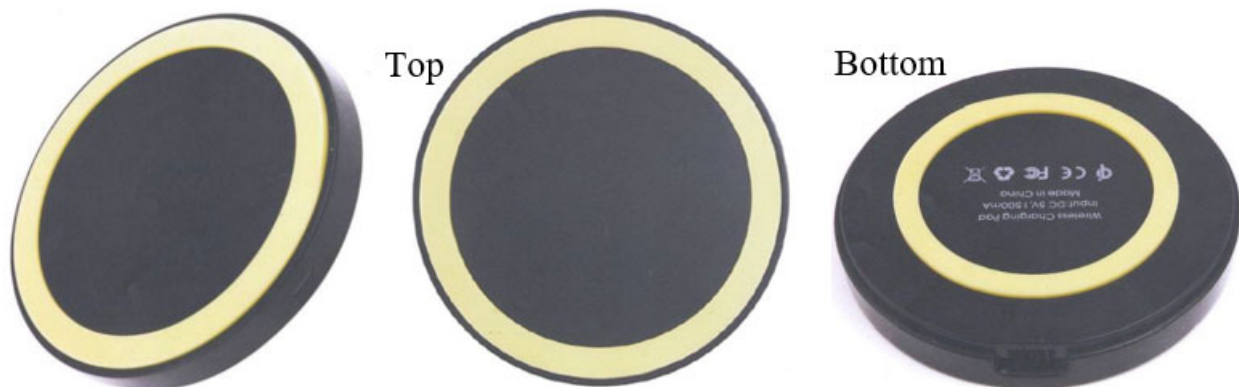


Exhibit 1006, 1, FIGS. 3 (left, rotated), 2 (center), 4 (right). Lee-616’s design, shown above, is of a charger having (1) a cylindrical shape with a flat bottom surface; (2) a short, flat ring (yellow) on the cylinder’s top surface that is smaller in diameter than the cylinder; and (3) a recessed center portion that is surrounded by the ring on the top surface. *Id.* The flat bottom surface of the Lee-616 charger also has a short, flat ring, as shown above (rightmost figure). *Id.*

2. **CN-470 (Exhibit 1007 – Chinese Design Reg. No. 302864470)**

58. CN-470 discloses the “wireless charging transmitter” that is shown below.

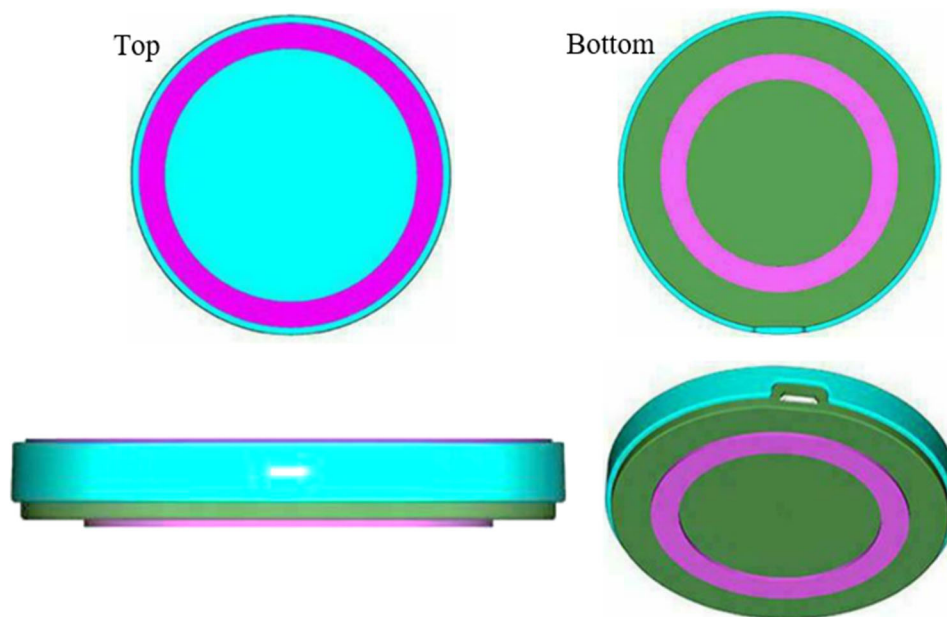


Exhibit 1007, Abstract, FIGS. 4 (top-left), 3 (top-right), 5 (rotated, bottom-left), 8 (rotated, bottom-right). CN-470's design, shown above, is of a charger having (1) a cylindrical shape with a flat bottom surface; (2) a short, flat ring (pink) on the cylinder's top surface that is smaller in diameter than the cylinder; and (3) a recessed center portion that is surrounded by the ring on the top surface. *Id.* The flat bottom surface of the CN-470 charger also includes a short, flat ring, as shown above (figures in right column). *Id.*

3. Murray (Exhibit 1008 – U.S. Patent No. D718,236)

59. Murray discloses the “charger” that is shown below.

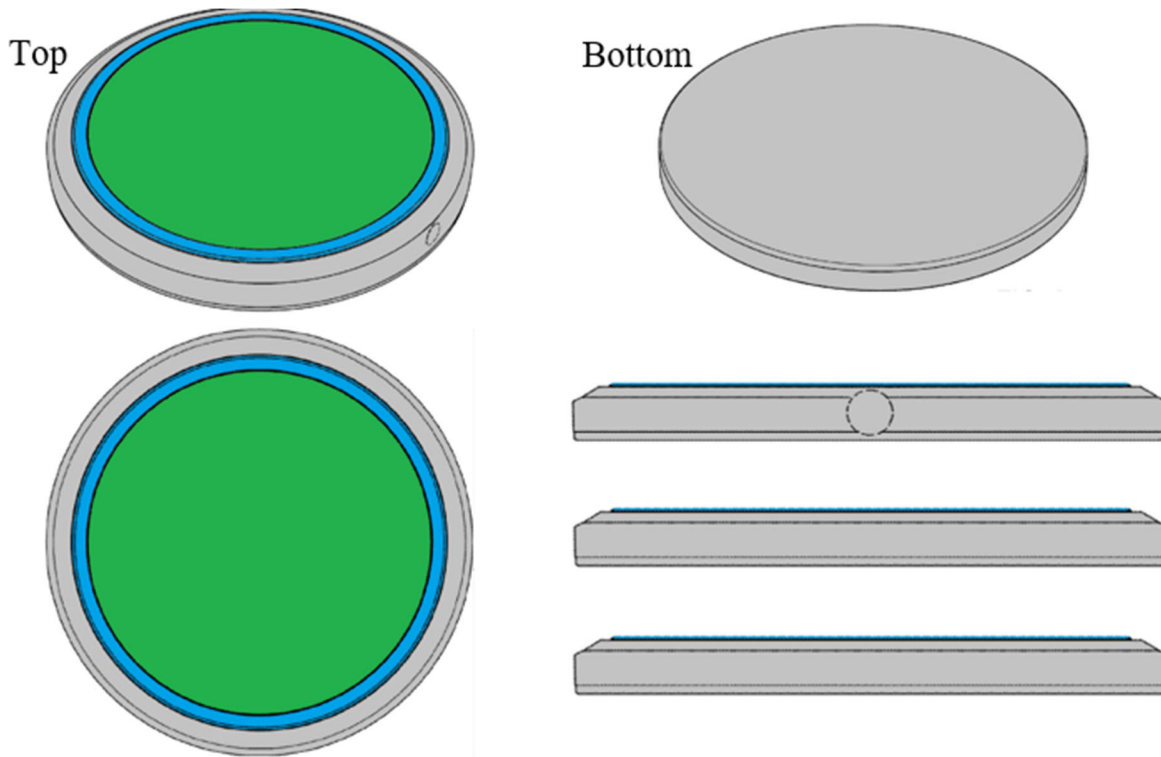


Exhibit 1008, FIGS. 1, 2, 3-5 (rotated 180°), 6. The side views of Murray (the three views on the bottom right, above) have been rotated 180 degrees herein because a POSITA would have readily understood that the figures in Murray depict the charger upside down, with the charger's flat bottom surface (shown clearly in Exhibit 1008, FIGS. 2, 7) on the top. That is, the side views of Murray (Exhibit 1008, FIGS. 3-5) have been presented herein to show the device in its upright orientation. Murray's design, shown above, is of a charger having (1) a cylindrical shape with a flat bottom surface; (2) a short, flat ring (blue) on the cylinder's top surface that is smaller in diameter than the cylinder; and (3) a recessed center portion (green) that is surrounded by the ring on the charger's top surface. *Id.*

4. **Chiang (Exhibit 1009 – U.S. Patent No. D720,289)**

60. Chiang discloses the “power bank” that is shown below.

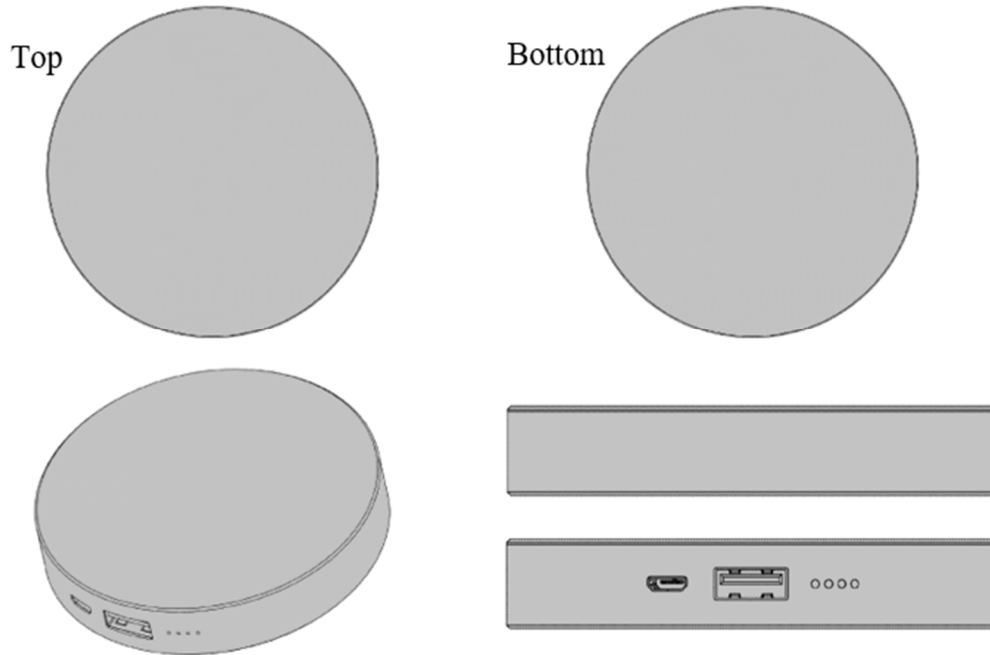


Exhibit 1009, FIGS. 1-3, 6-7. Chang’s design, shown above, is of a power bank having a cylindrical shape (gray) with a flat bottom surface and smoothed edges between the top and bottom surfaces and the cylinder’s sidewall. *Id.*

B. **Ground 5 (Obviousness Over Murray) + Ground 7 (Obviousness Over Chiang)**

61. I understand that the obviousness inquiry for design patents is assessed from the perspective of a designer of ordinary skill in the art. As explained above in Section VI, a designer of ordinary skill in the art would have consulted and collaborated with a POSITA, such as myself, regarding technical concepts outside of the designer’s area of expertise. Accordingly, below, I provide technical

discussion from the perspective of a POSITA that is relevant to whether the Apple Watch charger design claimed by the D'131 Patent would have been obvious to a designer of ordinary skill in the art over Murray (i.e., Ground 5) and over Chiang (i.e., Ground 7).

1. Motivation to Modify Murray; Motivation to Modify Chiang

62. A POSITA would have understood that, to design a wireless charger (i.e., an inductive charger) with optimal charging efficiency, the top surface of the charger would need to be designed such that it mated and aligned in a specific manner with the device being charged. Specifically, a POSITA would have understood that, as taught by Apple's '846 patent, "[p]referably, the inductive power transmitter [i.e., charger] 102 [colored gray below] and the inductive power receiver [i.e., device being charged] 202 [colored pink below] are aligned along a mutual axis 300, as shown in FIG. 1C," which is reproduced below.

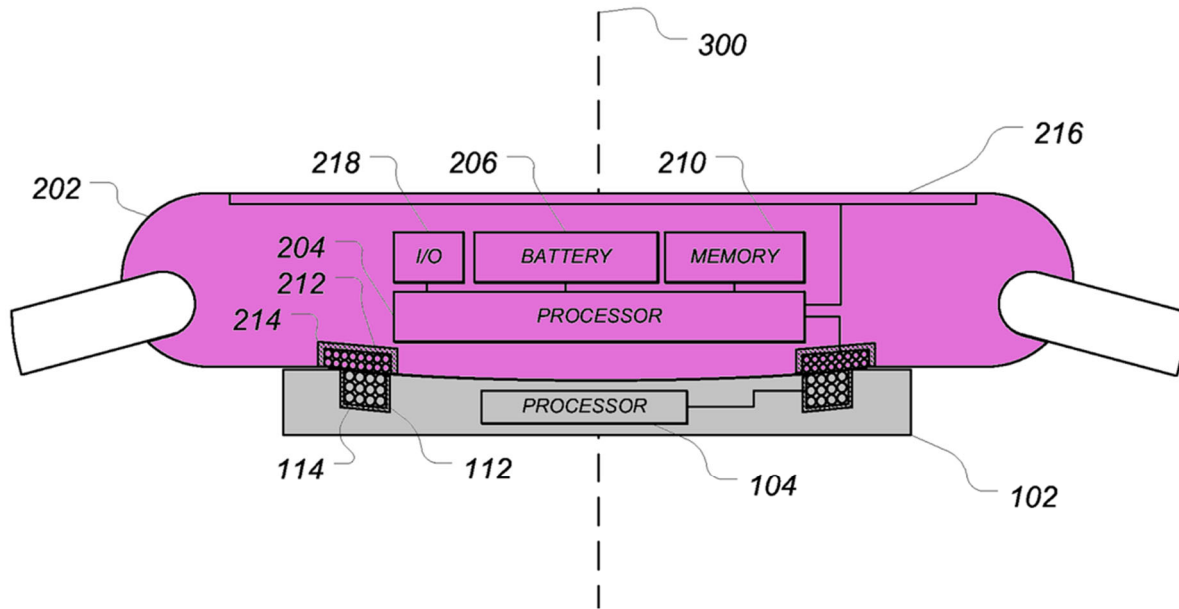


FIG. 1C

Exhibit 1024, 8:37-41, FIG. 1C. Indeed, Apple’s patent confirms that a POSITA would have understood to use a top surface mating geometry like the design shown in FIG. 1C above to optimize wireless charging efficiency between the charger and the device it charges. *Id.*, 8:29-32 (“[P]ower transfer efficiency between the [charger, colored gray above] 102 and the [device, colored pink above] 202 may be optimized when the receive coil 212 is aligned with the transmit coil 112 along a mutual axis [as shown in FIG. 1C, reproduced above].”). Accordingly: (1) a POSITA would have been motivated to adjust the width (i.e., thickness, in plan view) of Murray’s top surface ring to ensure the ring mated and aligned with the mating geometry of the device the charger was intended to charge, thus optimizing wireless charging efficiency; and (2) to optimize wireless charging efficiency of a

charger intended to be used with a device having a protruding mating geometry (e.g., the device 202 (colored pink above) in FIG. 1C of Apple's '846 patent), a POSITA would have been motivated to modify Chiang's top surface into (or modify Chiang's top surface to include) a short, flat ring surrounding a recessed center portion that would enable the charger and device to mate and align along a mutual axis.

X. CONCLUSION

63. I reserve the right to supplement my above analyses and opinions in the future to respond to any information, arguments, or positions Apple may raise, taking account of new information as it becomes available to me.