

United States Court of Appeals  
for the Federal Circuit

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DUNCAN PARKING TECHNOLOGIES, INC.,  
*Appellant*

v.

IPS GROUP, INC.,  
*Appellee*

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2018-1205

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. IPR2016-  
00067.

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IPS GROUP, INC.,  
*Plaintiff-Appellant*

v.

DUNCAN SOLUTIONS INC., DUNCAN PARKING  
TECHNOLOGIES, INC., CIVICSMART, INC.,  
*Defendants-Appellees*

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2018-1360

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Appeal from the United States District Court for the Southern District of California in No. 3:15-cv-01526-CAB-MDD, Judge Cathy Ann Bencivengo.

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Decided: January 31, 2019

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STUART ALAN RAPHAEL, Hunton Andrews Kurth LLP, Washington, DC, argued for appellant in 2018-1205. Also represented by DANIEL GEORGE VIVARELLI, JR., STEVEN LESLIE WOOD.

RICHARD TORCZON, Wilson, Sonsini, Goodrich & Rosati, PC, Washington, DC, argued for appellee in 2018-1205. Also represented by MATTHEW A. ARGENTI, Palo Alto, CA; DOUGLAS H. CARSTEN, San Diego, CA; MICHAEL T. ROSATO, Seattle, WA.

DOUGLAS H. CARSTEN, Wilson, Sonsini, Goodrich & Rosati, PC, San Diego, CA, argued for plaintiff-appellant in 2018-1360. Also represented by NATHANIEL RYAN SCHARN, JAMES PATRICK HEALY STEPHENS; ADAM WILLIAM BURROWBRIDGE, Washington, DC; CHRISTOPHER D. MAYS, Palo Alto, CA.

JOSHUA M. KALB, Hunton Andrews Kurth LLP, Atlanta, GA, argued for defendants-appellees in 2018-1360. Also represented by DANIEL GEORGE VIVARELLI, JR., STUART ALAN RAPHAEL, Washington, DC.

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Before LOURIE, DYK, and TARANTO, *Circuit Judges*.  
LOURIE, *Circuit Judge*.

IPS Group Inc. (“IPS”) appeals from two decisions of the United States District Court for the Southern District

of California granting summary judgment of noninfringement of U.S. Patents 8,595,054 (“the ’054 patent”)—*IPS Grp., Inc. v. Duncan Sols., Inc.*, No. 15-CV-1526-CAB-(MDD), 2017 WL 5973337 (S.D. Cal. Dec. 1, 2017) (“’054 Decision”—and 7,854,310 (“the ’310 patent”)—*IPS Grp., Inc. v. Duncan Sols., Inc.*, No. 15-CV-1526-CAB-(MDD), 2017 WL 3530968 (S.D. Cal. Aug. 16, 2017) (“’310 Decision”) (collectively, the “1360 Appeal”).

Duncan Parking Technologies Inc. (“DPT”) appeals from a related decision of the Patent Trial and Appeal Board (“the Board”), *Duncan Parking Techs., Inc. v. IPS Grp., Inc.*, No. IPR2016-00067, Paper 29 (P.T.A.B. Mar. 27, 2017) (“Board Decision”), modified on reh’g, Paper 37 (P.T.A.B. Aug. 18, 2017) (“Rehearing Decision”), in an *inter partes* review holding that claims 1–5 and 7–10 of the ’310 patent were not shown to be unpatentable as anticipated under 35 U.S.C. § 102(e) (the “1205 Appeal”). We address these appeals together in this combined opinion.

We reverse the Board’s decision in the 1205 Appeal that claims 1–5 and 7–10 of the ’310 patent are not unpatentable as anticipated. We affirm the district court’s decision in the 1360 Appeal granting summary judgment of noninfringement of the ’310 patent. Finally, we vacate the district court’s decision in the 1360 Appeal granting summary judgment of noninfringement of the ’054 patent because the district court erred in construing the claims too narrowly, and we remand the case to the district court for further proceedings consistent with the claim construction we set forth.

## I. BACKGROUND

### A.

IPS designs parking meter technology. It is run by founder and CEO Dave King and Chief Technical Officer Alexander Schwarz. Both are electrical engineers by

training. The company manufactured multi-space parking meters from its founding in 1994 until it changed its focus to cellular phone technology around 2000. According to King, he conceived the idea for a credit-card enabled, solar-powered, single-space parking meter in May 2003, when he had trouble finding change to pay for a parking meter in Newport Beach, California. IPS began work on the project shortly thereafter, and King consulted with Schwarz as he developed his idea. Eventually, King decided that IPS could gain greater market access by offering a retrofit device that replaces the internal components of an existing parking meter, rather than a costly replacement of the entire meter.

King identified “two big hurdles” to developing IPS’s single-space parking technology: (1) designing a device with all of the requisite components that could easily retrofit existing parking meter housings and (2) integrating the electronic components and designing software and a controller to coordinate the electrical system. J.A. 1336.<sup>1</sup> To assist with the first challenge, IPS engaged a design firm, D+I, in November 2004 and provided it with a list of desired components and functionalities that King purportedly conceived, including a credit card reader, a solar panel, and a switch pad, among others.

King assigned Schwarz responsibility for “figuring out how to implement the electronics.” J.A. 1337. According to King, “[Schwarz’s] inventive contribution [was] limited to conception and development of how the various electrical components of the meter are interconnected and

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<sup>1</sup> Because we decide two appeals in this opinion, there are two sets of briefs and two sets of joint appendices. All citations in the 1360 Appeal section refer to the briefs and joint appendices of the 1360 Appeal, while all previous citations, including those in the background section, refer to those of the 1205 Appeal.

operate together.” J.A. 1345. Schwarz sourced the electronic components, and generally took responsibility for solving electronics obstacles. In July 2005, Schwarz compiled a list of electrical components to be included in the device, along with product specifications for many of them, and drew a block diagram conceptualizing the electrical connections between the components. A slightly modified version of that block diagram was later disclosed in the ’054 patent as Figure 8, illustrating “[t]he various electrical and other components of the parking meter device.” ’054 patent col. 4 ll. 15–16.

## B.

The ’310 and ’054 patents are similar but do not have the same specifications. The ’054 patent issued in 2013 from a PCT application filed on December 4, 2006, naming King and Schwarz as inventors. It claims a credit card-enabled, solar-powered, single-space parking meter device that can be used to retrofit the internal components of existing parking meters. Claim 1 is the sole independent claim and is representative:

1. A parking meter device that is receivable within a housing base of a single space parking meter, the parking meter device including:
  - a timer;
  - a payment facilitating arrangement operable in cooperation with a non-cash payment medium for effecting payment of a monetary amount for a parking period;
  - a display configured to visually provide a balance remaining of the parking period;
  - a power management facility that supplies power to the timer, payment facilitating arrangement, and display;

a wireless communications subsystem configured to receive information relating to the non-cash payment medium in respect of the payment facilitating arrangement;

a keypad sensor that receives input comprising manipulation by the user;

a coin slot into which coins are inserted for delivery to the coin sensor and then to a coin receptacle; and

a lower portion and an upper portion;

wherein the keypad sensor operates the parking-meter and determines parking time amount for purchase in accordance with the received input from the user;

wherein the display provides the amount of time purchased in response to the received input from the user;

wherein the upper portion of the parking meter device includes a solar panel that charges the power management facility;

wherein the lower portion of the parking meter device is configured to have a shape and dimensions such that the *lower portion is receivable within the housing base of the single space parking meter*; and

wherein the upper portion of the parking meter device is covered by a cover that is configured to accommodate the upper portion and that is engageable with the housing base of the single space parking meter such that the payment facilitating arrangement is accessible by the user for user manipulation effecting the payment of the monetary amount for the parking period when the lower portion of the parking meter device is received

within the housing base and the upper portion is covered by the cover.

'054 patent col. 5 l. 43–col. 6 l. 17 (emphasis added).

The '310 patent issued in 2010 from an application filed on February 27, 2008, more than a year after the '054 patent's application had been filed, naming as inventors King and three engineers from D+I, Murray Hunter, Mathew Hall, and David Jones. It claims a credit card-enabled, solar-powered, single-space parking meter. Claim 9 is exemplary:

9. A parking meter comprising:

a housing comprising an intermediate panel set and a cover panel, *the cover panel being movably attached to the intermediate panel set*, wherein a first surface of the cover panel and a first surface of the intermediate panel set comprise a parking meter front face, *the first surface of the cover panel having a first window and a plurality of buttons that operate the parking meter upon manipulation by a user*, wherein a second surface of the cover panel and a second surface of the intermediate panel set comprise a parking meter rear face, the rear face surface of the cover panel providing a second window;

a module configured to be removably received by the housing, the module comprising

- (a) a coin sensor,
- (b) a card reader, and
- (c) *an electronic device electrically connected to the sensor and the reader so as to receive information electronically therefrom*, the electronic device comprising

(i) a screen to provide information visually via the first window when the cover panel is attached to the intermediate panel set,

(ii) a telephone connection to provide receiving information in respect of the card reader,

(iii) *a rechargeable battery electrically coupled to provide power to the reader, the sensor, and the electronic device*, and

(iv) *a solar cell operatively coupled with the rechargeable battery to charge the rechargeable batter[y]*, the solar cell being disposed to receive light via the second window;

a coin slot in the parking meter front face into which coins are inserted for delivery to the coin sensor and then to a coin receptacle; and

a card slot in the parking meter front face into which a card is inserted to be read by the reader;

wherein the coin sensor and the card reader are electrically linked to provide information to the electronic device to provide information of whether payment has been made.

'310 patent col. 4 l. 36–col. 5 l. 8 (emphases added).

The patents disclose closely related preferred embodiments based on the prototype D+I created for IPS. Figure 4 of the '310 patent is illustrative; it shows the front view of the parking meter, with the cover panel (16) pivoted to an open position:

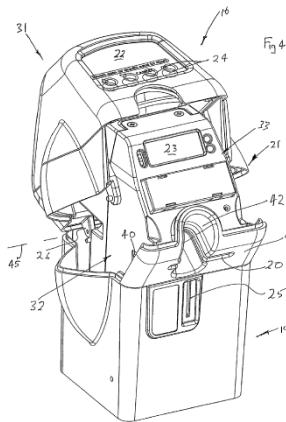


Figure 7 of the '054 patent shows the parking meter device alongside the empty housing, with the cover panel (36) again in the open position:

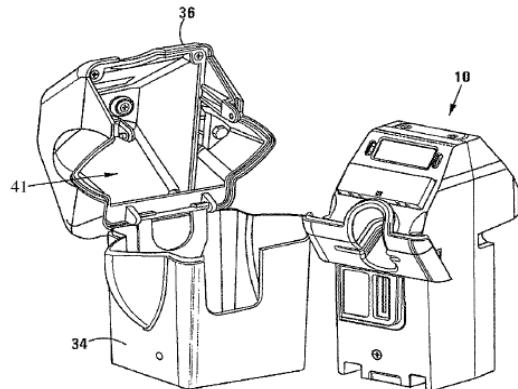
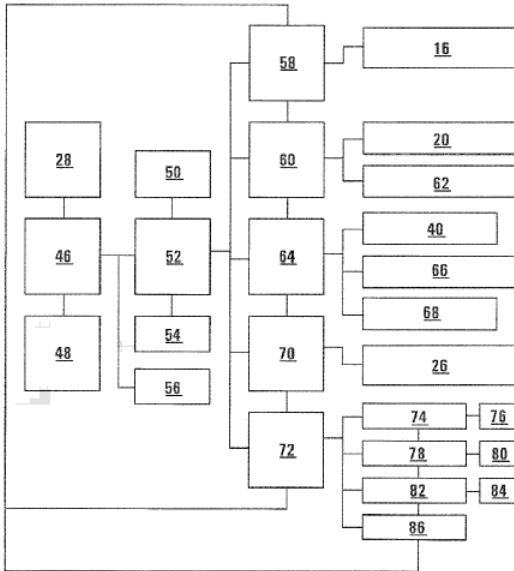


Figure 8 of the '054 patent shows the block diagram of the preferred embodiment's electrical components, which are described from col. 4 l. 15–col. 5 l. 8:



## C.

In July 2015, IPS filed a complaint against DPT in the Southern District of California asserting infringement of the '054 and '310 patents. The district court in August 2017 granted DPT's motion for summary judgment that DPT's accused product, the Liberty® Single-Space Meter ("the Liberty Meter"), does not infringe claims 1–9 or claim 11 of the '310 patent because the Liberty Meter's cover panel does not include a "plurality of buttons," as is required by the '310 patent claims. *'310 Decision* at 9. Instead, the Liberty Meter has a keypad that is part of the parking meter device itself, which protrudes through an opening in the housing. The court construed "cover panel" in the '310 patent claims as the "upper structural component of the exterior casing," *id.* at 8, and thus held that the Liberty Meter does not infringe, literally or under the doctrine of equivalents, any claim of the '310 patent. *Id.* at 10–11. The Liberty Meter is depicted below:



J.A. 23.

In December 2017, the district court further held that the Liberty Meter does not infringe any claim of the '054 patent. The claims require the “lower portion of the parking meter device [be] configured to have a shape and dimensions such that the lower portion is receivable within the housing base of the single space parking meter.” '054 patent col. 6 ll. 4–7. The court construed “receivable within” as “capable of being contained inside,” and applied this construction to require that the “*entire* lower portion” of the infringing product be “receivable within the housing base.” '054 *Decision* at 8. The district court granted summary judgment of noninfringement because it found that the Liberty Meter’s keypad extends through an opening in the lower portion of the housing and, as a result, the lower portion of the Liberty Meter’s device is not “receivable within” its housing base. *Id.*

Meanwhile, shortly after IPS filed its complaint, DPT petitioned in the U.S. Patent and Trademark Office for *inter partes* review of claims 1–5 and 7–10 of the '310 patent. The Board instituted a review on the ground that the '054 patent anticipates the '310 patent under 35 U.S.C. § 102(e). After institution, IPS chose not to

dispute whether, on the merits, the '054 patent anticipates the '310 patent claims. IPS instead argued in its Patent Owner Response that the anticipating portions of the '054 patent are solely King's invention, not that "of another" under 35 U.S.C. § 102(e), and therefore cannot be applied as prior art against the '310 patent claims. To support its argument that King alone conceived the relevant disclosure, IPS submitted declarations from King, Schwarz, and David Jones—an engineer from D+I and a named inventor of the '310 patent—along with contemporaneous documents reflecting the invention's development from 2003 to 2005. In the Petitioner's Reply, DPT argued that the '054 patent is prior art because Schwarz conceived at least a portion of the '054 patent's anticipating disclosure.

The Board held that, while Schwarz "contributed to the creation of at least some aspects of the block diagram of Figure 8 . . . [the Board was] skeptical that the general recitation in claims 1 and 9 of connections and operative associations of components constitutes more than what Mr. King broadly envisioned." *Board Decision* at 9–10. The Board also found that, in order to account for certain claim limitations, DPT's anticipation argument "relie[d] on content of [the '054 patent] that is outside of any depiction or description associated with Figure 8," which was indisputably the work of King alone. *Id.* at 10. The Board ultimately held that King was the sole inventor of the anticipating disclosure of the '054 patent, *id.* at 14, and thus claims 1–5 and 7–10 were held not unpatentable as anticipated by the '054 patent.<sup>2</sup>

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<sup>2</sup> The Board found that King was the sole inventor of all of the limitations of claims 1–5, 7, and 9, *Board Decision* at 14; that King, Hunter, Hall, and Jones (the '310 patent inventors) jointly invented the limitations of claims 8 and 10, *id.* at 15; and that King and Schwarz

DPT timely appealed from the Board's decision, and IPS timely appealed from the district court's summary judgments of noninfringement. We have jurisdiction over both appeals under 28 U.S.C. §§ 1295(a)(1), (a)(4)(A). We first address the Board's decision.

## II. DISCUSSION

### A. The 1205 Appeal

We review the Board's legal determinations *de novo*, *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004), but we review the Board's factual findings underlying those determinations for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). A finding is supported by substantial evidence if a reasonable mind might accept the evidence as adequate to support the finding. *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938). Anticipation is a question of fact. *In re Gleave*, 560 F.3d 1331, 1334–35 (Fed. Cir. 2009). Inventorship is a question of law based on underlying findings of fact, *Gen. Elec. Co. v. Wilkins*, 750 F.3d 1324, 1329 (Fed. Cir. 2014), which we review for substantial evidence.

DPT argues in the 1205 Appeal that Schwarz is a joint inventor of the relevant portions of the '054 patent because he conceived the electrical system depicted in Figure 8. Thus, DPT contends that the '310 patent claims are anticipated by the '054 patent. In addition, DPT argues that the Board abused its discretion by denying DPT's motion for additional discovery, under

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derived the subject matter in the '054 patent which discloses the limitations of claims 8 and 10 from King, Hunter, Hall and Jones, removing that subject matter as prior art under § 102(e), *Rehearing Decision* at 6. DPT does not dispute the inventorship of Hunter, Hall, and Jones on appeal. Appellant's Reply Br. 8.

37 C.F.R. § 42.51(b)(2), of documents that concern the invention of the relevant portions of the '054 patent.

IPS responds that Schwarz's drawing the block diagram does not mean that he conceived the relevant electronics, and that "Schwarz's conception of aspects of Figure 8 not recited in the '310 claims is irrelevant." Appellee Br. 33. IPS further argues that the fact that "King communicated his idea in terms of the 'general' connectivity of certain components does not matter since that merely reflects the connectivity of those components as recited in the '310 claims." Appellee Br. 37. IPS does not dispute the Board's finding that the '054 patent would anticipate the '310 patent claims if it were prior art. *Board Decision* at 6.

We agree with DPT that the '054 patent anticipates the challenged claims of the '310 patent. The Board clearly erred in concluding otherwise. A patent is anticipated under 35 U.S.C. § 102(e) if "the invention was described in . . . a patent granted on an application for patent *by another* filed in the United States before the invention by the applicant for patent" (emphasis added).<sup>3</sup> "The statute's reference to 'by another' means that an application issued to the same inventive entity cannot qualify as § 102(e) prior art." *EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1345 (Fed. Cir. 2017) (citing *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1355–56 (Fed. Cir. 2003)).

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<sup>3</sup> The '310 patent was filed in 2006 and issued in 2010, so pre-AIA § 102(e) applies. See Leahy-Smith America Invents Act, Pub. L. No. 112–29, sec. 3(c), 125 Stat. 284, 293 (2011) (explaining that the pre-AIA version of the Patent Act generally applies to patents with effective filing dates before March 16, 2013).

We must review here whether the Board erred in concluding that the applied portions of the '054 patent were invented by King alone and not by King and Schwarz jointly. See *In re DeBaun*, 687 F.2d 459, 463 (CCPA 1982). If Schwarz is a joint inventor of the anticipating disclosure, then it is “by another” for the purposes of § 102(e). *In re Land*, 368 F.2d 866, 879 (CCPA 1966) (“[A]n invention made jointly by A & B cannot be the sole invention of A or B . . .”). To be a joint inventor, one must:

- (1) contribute in some significant manner to the conception or reduction to practice of the invention,
- (2) make a contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention, and
- (3) do more than merely explain to the real inventors well-known concepts and/or the current state of the art.

*In re VerHoef*, 888 F.3d 1362, 1366 (Fed. Cir. 2018) (quoting *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998)). “The law of inventorship does not hinge co-inventorship status on whether a person contributed to the conception of all of the limitations in any one claim of the patent. Rather, the law requires only that a co-inventor make a contribution to the conception of the subject matter of the claim.” *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1361–62 (Fed. Cir. 2004); see *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1474 (Fed. Cir. 1997).

Thus, to decide whether a reference patent is “by another” for the purposes of 35 U.S.C. § 102(e), the Board must (1) determine what portions of the reference patent were relied on as prior art to anticipate the claim limitations at issue, (2) evaluate the degree to which those portions were conceived “by another,” and (3) decide whether that other person’s contribution is significant enough, when measured against the full anticipating

disclosure, to render him a joint inventor of the applied portions of the reference patent. We conclude that the Board erred in not holding that King and Schwarz are joint inventors of the anticipating disclosure.

As is clear from DPT’s Petition, J.A. 84–100, as well as the Institution Decision, *Duncan Parking Techs., Inc. v. IPS Grp., Inc.*, No. IPR2016-00067, 2016 WL 5679596, Paper 9 (P.T.A.B. Mar. 30, 2016), DPT relied on the ’054 patent’s disclosure of a specific parking meter device, depicted in the figures and described in detail in the specification. *See, e.g.*, ’054 patent col. 3 ll. 9–10 (“The invention is now described, by way of a non-limiting example, with reference to the accompanying drawings . . . .”); *id.* col. 4 ll. 15–34. As noted above, IPS does not dispute that the ’054 patent’s embodiment discloses all of the limitations of the ’310 patent claims at issue. On appeal, DPT relies on Figure 8, a block diagram depicting the embodiment’s electrical system, as anticipatory prior art “by another” disclosing the electrical connections and components claimed in the ’310 patent. *See, e.g.*, Appellant Br. 19–21 (comparing the electrical connections and components recited in claims 1 and 9 with the disclosure in Figure 8); ’054 patent col. 4 ll. 15–34 (“The various electrical and other components of the parking meter device **10** are indicated in FIG. 8. . . . [T]here is a power management facility **46** . . . . The controller **52** controls operation of the meter. An integrated device is used . . . .” (emphases added)).

In particular, Figure 8 discloses each of the electrical components claimed in the ’310 patent, along with a detailed diagram showing how each component is connected. The electrical system limitations of the ’310 patent claims require such connections and operability. Claim 9 recites “[a]n electronic device electrically connected to the sensor and the reader” along with “a rechargeable battery electrically coupled to provide power to the reader, the sensor, and the electronic device” and “a solar

cell operatively coupled with the rechargeable battery to charge the rechargeable batter[y].” Claim 1 similarly recites “[a]n electronic device electrically connected to the sensor and reader” and “connections for at least one rechargeable battery to power the reader, sensor, and device” along with a “solar cell operatively associated with said connections to charge said battery.” The ’310 patent claims are clear on their face that they require electronic connections and components disclosed by Figure 8 in the ’054 patent. Because the ’310 patent claims clearly include elements previously disclosed in Figure 8, the question is whether Schwarz conceived those elements as they were disclosed in the ’054 patent. *Cf. In re Carreira*, 532 F.2d 1356, 1358–59 (CCPA 1976) (holding that a reference patentees’ declaration that they did not invent the claimed method is insufficient to remove the reference patent as § 102(e) prior art because “the declarants could be the inventors of the *species* disclosed in their patents, but at the same time never have conceived of the general or generic use [claimed in the patent at issue]”).

It is clear that Schwarz conceived much of the ’054 patent’s electrical system, including designing the diagram showing how all the electronic components are connected. *See Board Decision* at 9. Schwarz invented “how the various electrical components of the meter are interconnected and operate together.” J.A. 1345. Schwarz’s block diagram, depicted in Figure 8, organizes 26 separate electrical components and specific electrical connections between them. ’054 patent Fig. 8; J.A. 1390. The record shows that Schwarz conceived many of these details. *See, e.g.*, J.A. 1517 (“I came up with the [ideal] that there needs to be a power management block next to the central controller that controls the power and how to actually connect that in detail.”); J.A. 1381–82 (communicating product specifications and electrical requirements of the solar panel, card reader, display, antenna, and battery to King); J.A. 1391–92 (directing procurement and

design of all sourced electrical components); J.A. 1533 (noting he conceived of ideas to connect the solar panels to recharge the battery).

Schwarz's contribution to the invention defined by the '310 patent claims, as disclosed in the '054 patent, was significant in light of the invention as a whole. While IPS argues that Schwarz's role consisted of "drawing a schematic," Appellee Br. 33, the record shows that creating the block diagram was not a minor task. Schwarz had to coordinate with D+I as they designed a device that could physically fit within an existing parking meter housing. *See* J.A. 1376–77 (telling D+I that "determin[ing] a wiring schematic . . . [will] be easier once we have some components and can lay them out – [it will] give me a better idea"). As a result of Schwarz's contribution, the '054 patent discloses a parking meter device with a detailed electrical system, a challenge King described as one of "two big hurdles" to the invention, J.A. 1336. Thus, Schwarz's contribution, measured against the dimension of the full invention, was significant.

Further, the '054 patent's parking meter device, its sole embodiment, contains the specific electrical system disclosed in Figure 8. As the Board found, *Board Decision* at 9–10, Schwarz conceived, at the very least, some aspects of that electrical system which are required by the electrical system limitations of the '310 patent claims. The record indicates that these aspects of the electrical system were a significant contribution to the invention claimed in the '310 patent. Thus, the anticipating embodiment was the joint invention of King and Schwarz, an inventive entity different from that of the '310 patent, and the '054 patent is prior art under 35 U.S.C. § 102(e). Since IPS does not dispute the Board's finding that this embodiment discloses every limitation of claims 1–5 and 7–10, *id.* at 6, we hold those claims of the '310 patent unpatentable as anticipated. We therefore need not address the discovery dispute concerning them.

### B. The 1360 Appeal

We review a district court’s grant of summary judgment according to the law of the regional circuit. *Kaneka Corp. v. Xiamen Kingdomway Grp. Co.*, 790 F.3d 1298, 1303 (Fed. Cir. 2015) (citing *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 769 F.3d 1371, 1377 (Fed. Cir. 2014)). In the Ninth Circuit, summary judgment is reviewed *de novo*, *Brunozzi v. Cable Commc’ns, Inc.*, 851 F.3d 990, 995 (9th Cir. 2017) (citing *Ctr. for Bio-Ethical Reform, Inc. v. L.A. Cty. Sheriff Dep’t*, 533 F.3d 780, 786 (9th Cir. 2008)), and is appropriate when, viewing the evidence in favor of the non-movant, there is no genuine dispute as to any material fact, *Zetwick v. Cty. of Yolo*, 850 F.3d 436, 440 (9th Cir. 2017).

While infringement is a question of fact, *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1309 (Fed. Cir. 2009), we review *de novo* the district court’s grant of summary judgment of noninfringement, *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1378 (Fed. Cir. 2008). “An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc) (citations omitted), *aff’d*, 517 U.S. 370 (1996).

“To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly.” *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995). The patentee has the burden of proving infringement by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). Claim construction is ultimately an issue of law, which we review *de novo*. *Shire Dev., LLC v. Watson Pharm., Inc.*, 787 F.3d 1359, 1364 (Fed. Cir. 2015). We review *de novo* the dis-

trict court’s findings of fact on evidence “intrinsic to the patent (the patent claims and specification[], along with the patent’s prosecution history),” and review for clear error all other findings of fact subsidiary to the district court’s claim construction. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

### 1. The ’310 Patent

IPS asserted claims 1–9 and 11 of the ’310 patent in the district court. ’310 Decision at 2. These claims are not coextensive with the claims DPT challenged in its petition for IPR, claims 1–5 and 7–10, *Board Decision* at 1, which makes it necessary for us to consider IPS’s infringement arguments relating to claims 6 and 11 despite our holding claims 1–5 and 7–10 unpatentable. Because we affirm the district court’s grant of summary judgment of noninfringement of claims 1 and 9, the only independent claims of the ’310 patent, we need not separately address the additional limitations of the remaining dependent claims 6 and 11, which IPS has not specifically argued. See *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989) (“One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim.” (citing *Teledyne McCormick Selph v. United States*, 558 F.2d 1000, 1004 (Ct. Cl. 1977))). We therefore will only review the infringement arguments relating to claim 9, which IPS has indicated is exemplary.

IPS argues in the 1360 Appeal that the district court should not have granted summary judgment of noninfringement of the ’310 patent because the Liberty Meter infringes claim 9 either literally or through the doctrine of equivalents. The essence of IPS’s argument for literal infringement is that the district court applied its construction of the term “cover panel” as “the upper structural component of the exterior casing” too narrowly, relying on the preferred embodiment and the figures to limit the

scope of the claimed invention to a cover panel that swings open, as in Figure 4. Specifically, IPS argues that the Liberty Meter’s keypad, a part of the device itself that extends through an opening in the housing base, meets the limitation of a “cover panel movably attached to the intermediate panel set . . . [with] a plurality of buttons” because it is “slidably attached” to the housing, which the ’310 patent specification discloses as an alternative cover panel mechanism. ’310 patent col. 2 ll. 49–50.

DPT responds that the ’310 patent discloses the cover panel as a singular component, not as a collection of components, and as a part of the housing, not the internal device as in the Liberty Meter. DPT also argues that the Liberty Meter’s keypad is not “attached” to the intermediate panel set but is instead merely in contact with its outside surface. Appellee Br. 37 (analogizing the Liberty Meter keypad’s sliding over the surface of the housing to a golf ball on a tee).

We are unpersuaded by IPS’s arguments. The Liberty Meter’s keypad is an extension of its device, and construing part of the device as the cover panel is inconsistent with the claims of the ’310 patent. *See* ’310 patent col. 4 l. 36–col. 5 l. 3 (defining “a housing comprising . . . a cover panel” in contradistinction to the module “removably received by the housing” as well as the coin slot); *see generally id.* col. 3 l. 45–col. 4 l. 4, col. 4 l. 36–col. 5 l. 5. The specification is equally clear that the cover panel is a part of the housing and does not include the device. *See id.* col. 2 ll. 66–67 (“The panel set **15** and cover panel **16** provide a housing **31** within which a module **32** is located.”). DPT is also correct that the cover panel is described as a singular component. *See, e.g., id.* col. 2 ll. 44–49 (“*The* cover panel **16** is pivotally attached to the panel set . . . In an alternative form, *the* panel **16** may be slidably attached.” (emphases added)).

Nor is the Liberty Meter’s keypad “attached” to an intermediate panel set, as required by the ’310 patent claims, simply by virtue of making contact with its housing. The word “attach” is never used in so broad a sense in the ’310 patent. *See, e.g.*, ’310 patent col. 2 ll. 28, 30, 44, 50. IPS has not presented any argument that a person of skill in the art would understand the term more broadly than its ordinary meaning of “to fasten or join.” *Attach*, *The New Oxford American Dictionary* (2d ed. 2005). Accordingly, there is no genuine dispute that the Liberty Meter does not meet the limitation of a “cover panel movably attached to the intermediate panel set . . . [with] a plurality of buttons,” and the district court therefore did not err by granting summary judgment of noninfringement of the ’310 patent claims.

IPS argues in the alternative that the Liberty Meter infringes under the doctrine of equivalents because its keypad performs substantially the same function as the cover panel buttons of the claimed parking meter, in the same way, to achieve the same result. The keypad operates the parking meter, as in the claimed invention, by using buttons to allow the user to purchase time and process credit card transactions. According to IPS, changing the location of the buttons from the cover panel to the device itself is an insubstantial change, and thus the case should not have been resolved on summary judgment. *See Brilliant Instruments, Inc. v. GuideTech, LLC*, 707 F.3d 1342, 1348 (Fed. Cir. 2013) (finding that an alleged difference in location of a structural claim limitation is a genuine dispute of material fact).

DPT contends that finding the Liberty Meter to be an equivalent, as sought by IPS, would vitiate the claim limitation requiring buttons to be located on the cover panel, which is a part of the housing, not the device. Consequently, the Liberty Meter’s keypad does not work in the “same way” as required by the doctrine of equiva-

lents. DPT argues that summary judgment was therefore appropriate.

We agree with DPT that the Liberty Meter’s keypad does not work in the same way as the claimed invention. Under the doctrine of equivalents, a product or process that does not literally infringe a patent claim may nevertheless be held to infringe “if it performs substantially the same function in substantially the same way to obtain the same result.” *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950) (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929)). But the doctrine of equivalents cannot be used to effectively read out a claim limitation, *Primos, Inc. v. Hunter’s Specialties, Inc.*, 451 F.3d 841, 850 (Fed. Cir. 2006), because the public has a right to rely on the language of patent claims. See *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (“[I]f the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then claims will cease to serve their intended purpose.”).

The ’310 patent claims fundamentally distinguish the housing from the device. See, e.g., ’310 patent col. 4 ll. 37, 47. Holding that the Liberty Meter infringes the ’310 patent claims under the doctrine of equivalents would essentially void the claim limitation of a “housing [with] a cover panel being movably attached to the intermediate panel set [and with] a plurality of buttons.” We have consistently held that the doctrine of equivalents does not extend so broadly. See, e.g., *Conopco, Inc. v. May Dep’t Stores Co.*, 46 F.3d 1556, 1562 (Fed. Cir. 1994) (“The doctrine of equivalents cannot be used to erase ‘meaningful structural and functional limitations of the claim on which the public is entitled to rely in avoiding infringement.’” (quoting *Pennwalt Corp. v. Durand-Wayland, Inc.*,

833 F.2d 931, 935 (Fed. Cir. 1987)); *Freedman Seating Co. v. Am. Seating Co.*, 420 F.3d 1350, 1361 (Fed. Cir. 2005) (holding that a rotatably mounted stowable seat was not equivalent to the claimed slidably mounted stowable seat because it was a “structural difference” that constituted a “clear, substantial difference or difference in kind”).

The district court correctly found that IPS’s doctrine of equivalents argument required vitiating a claim limitation. ’310 Decision at 10. Allowing IPS to greatly expand the scope of the ’310 patent claims, to cover a parking meter with buttons located nearly anywhere on the outside of the meter, would disserve members of the public who seek to avoid infringing those claims. *See London*, 946 F.2d at 1538. Thus, the district court did not err by granting summary judgment of noninfringement. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39 n.8 (1997) (“[I]f a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve.” (emphasis omitted)).

The parties also argue at length about whether prosecution history estoppel bars IPS’s doctrine of equivalents argument. We find it unnecessary to address this dispute because we agree with the district court that the Liberty Meter is simply not an equivalent to the ’310 patent claims.

IPS further maintains that the district court resolved disputed issues of fact over its expert Dr. Rosing’s testimony, but “[w]here the parties do not dispute any relevant facts regarding the accused product . . . but disagree over possible claim interpretations, the question of literal infringement collapses into claim construction and is amenable to summary judgment.” *See Gen. Mills, Inc. v. Hunt-Wesson, Inc.*, 103 F.3d 978, 983 (Fed. Cir. 1997).

Here, Dr. Rosing’s opinion that the Liberty Meter’s keypad may comprise a portion of the cover panel is clearly foreclosed by the district court’s claim construction. In such a situation, the district court is not obligated to credit an expert’s testimony. *See TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1372 (Fed. Cir. 2002) (holding that unsupported expert testimony is “insufficient to avoid summary judgment where the moving party has met its initial burden”). We discern no error in the district court’s consideration of Dr. Rosing’s report.

We have considered IPS’s other arguments but do not find them persuasive. We therefore affirm the district court’s grant of summary judgment of noninfringement of claims 1–9 and 11 of the ’310 patent.

## 2. The ’054 Patent

IPS also contends in the 1360 Appeal that the district court’s grant of summary judgment of noninfringement of the ’054 patent was erroneous. Its arguments pertain essentially to claim construction. IPS argues that the district court construed the term “receivable within,” in the claim limitation “a lower portion [of the parking meter device] . . . receivable within the housing base” too narrowly, requiring that the entire lower portion of the parking meter device be contained inside the parking meter housing. IPS further argues that the district court erroneously construed claim 1 to exclude a potential unclaimed “middle portion” of the device between the upper and lower portions.

According to IPS, the district court’s claim construction as a whole renders the preferred embodiment outside the scope of claim 1. The card slot and the coin slot (both parts of the device itself) cannot be part of the upper portion of the device because the upper portion must be covered by the cover panel. But they also cannot be a part of the lower portion of the device because they are not “receivable within” the housing base as per the district

court’s claim construction. Instead, they are accessible through openings in the housing. Thus, either the coin slot and card slot comprise a “middle portion” not defined by the claims or the specification, or the district court’s construction of “receivable within” is too narrow.

DPT responds that the plain meaning of “within” is “inside,” and IPS did not choose to modify the term with the words “generally” or “substantially.” Appellee Br. 12–13. DPT argues that the district court’s claim construction does not actually exclude the preferred embodiment because the coin slot is still inside the housing base. While the coin slot of the preferred embodiment is accessible through an opening in the housing, it does not actually protrude through that opening. *See* ’054 patent Fig. 6. DPT further argues that prosecution history estoppel bars IPS from asserting that claim 1 includes parking meter devices that are not entirely contained within a housing.

We agree with IPS and conclude that the district court erred by construing “receivable within” as meaning “capable of being contained [entirely] inside.” The district court construed the term “receivable within” as “capable of being contained inside,” *’054 Decision* at 5, but upon applying the claim construction in its infringement analysis added a requirement that the “entire” lower portion of the device must be contained within the housing, *id.* at 8, effectively altering the construction to “capable of being contained entirely inside.” Thus, we read the district court’s claim construction as meaning “capable of being contained [entirely] inside,” but through operation of the word “entirely,” this construction is much narrower than the plain meaning of the claim limitation and is unsupported by either the specification or the prosecution history of the ’054 patent.

Claim terms must be given the ordinary and customary meaning that the term would have to a person of

ordinary skill in the art when read in the context of the specification and prosecution history. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). The specification and prosecution history are important to interpreting the claim language. *Id.* at 1316–17; *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1362–63 (Fed. Cir. 2016). A “term’s ordinary meaning must be considered in the context of all the intrinsic evidence, including the claims, specification, and prosecution history.” *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1094 (Fed. Cir. 2013). A patentee is normally entitled to the full scope of its claim language, *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004), and a departure from this general rule may be warranted only where the patentee either clearly sets forth a different definition of a claim term in the specification or disavows the full scope of the claim term during prosecution. See *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012).

A reasonable meaning of the term “receivable within” in the context of the ’054 patent is “capable of being contained inside.” *Receive*, *The New Oxford American Dictionary* (2d ed. 2005) (defining “receive” as “to act as a receptacle for” and “receptacle” as “an object or space used to contain something”). The suffix “-able” further implies that the lower portion of the device is *capable* of being contained within the housing base. But this definition contains no limitation to “completely” or “entirely” contained, nor is there any evidence that persons of skill in the art would understand it to be so limited. Indeed, DPT advertised the Liberty Meter on the basis that it “fits within” existing parking meter housings. J.A. 8589.

Likewise, the specification’s sole use of the term “receivable” does not imply any limitation to devices “entirely” contained by the housing. ’054 patent col. 2 ll. 11–14 (“The parking meter device in accordance with the invention may be receivable in a conventional single space

parking meter housing, such as that supplied by Duncan Industries, POM or Mackay.”).

We also agree with IPS that the district court’s claim construction excludes the preferred embodiment. The specification defines the coin slot as a part of the lower portion, *see ’054 patent col. 3 ll. 44–45*, even though it is not located “within” the housing base but is instead accessible through an opening, *id. at Fig. 6*. Whether the coin slot “protrudes” or not is beside the point; it is a part of the lower portion of the parking meter device but is not “capable of being contained [entirely] within” the housing base as required by the district court’s claim construction. As IPS notes, a claim construction that excludes the preferred embodiment is highly disfavored. *See Vitrionics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (holding that a claim construction that excludes the preferred embodiment is “rarely, if ever, correct and would require highly persuasive evidentiary support”).

DPT argues that the district court’s narrow construction is warranted by the prosecution history of the ’054 patent because IPS disavowed parking meter devices not fully enclosed by a housing in its response to an office action. DPT specifically contends that by differentiating the prior art on the basis that it discloses an embodiment exposed to the elements, rather than one enclosed within a housing, IPS disavowed parking meter devices not entirely enclosed within a housing.

We note that the district court never relied upon the ’054 patent’s prosecution history in the *’054 Decision*. In any case, IPS’s statements fall far short of the disavowal DPT urges. IPS distinguished the cited prior art—an actual parking meter, not an insertable device—on the basis that it discloses a “self-contained unit,” as opposed to the claimed device, which is “a retro-fit upgrade to existing parking meters.” J.A. 1424. Whether IPS was wise to use “exposure to the elements” as a point of dis-

tinction is debatable, but IPS's statements certainly do not amount to clear disavowal of parking meter devices not "completely" or "entirely" contained by a housing nor do we think the prosecution history sheds any light on the proper interpretation of the claim.

We have considered DPT's other arguments but do not find them persuasive. The claims cannot be limited to a parking meter device with a lower portion "entirely" contained by the parking meter housing, and we therefore hold that the term "receivable within" should be construed as "capable of being contained substantially inside" the housing base. This construction is consistent with the plain meaning of the terms, as well as the evidence from the intrinsic record that the inventors aimed to design a parking meter device that could practically retrofit an existing parking meter, not to create a device completely sealed from the elements.

Because we agree with IPS that the district court's claim construction of "receivable within" was erroneous, we vacate the district court's grant of summary judgment of noninfringement of the '054 patent and remand for further proceedings consistent with the claim construction we have set forth, including whether DPT's product infringes under the proper claim construction.

### III. CONCLUSION

For the foregoing reasons, we reverse the Board's decision and hold claims 1–5 and 7–10 of the '310 patent unpatentable as anticipated by the '054 patent. We affirm the district court's grant of summary judgment of noninfringement of the '310 patent, vacate its grant of summary judgment of noninfringement of the '054 patent, and remand to the district court for further proceedings consistent with the construction of the '054 patent claims set forth in this opinion.

**REVERSED IN APPEAL NO. 2018-1205**

**AFFIRMED-IN-PART, VACATED-IN-PART, AND  
REMANDED IN APPEAL NO. 2018-1360**