

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOBILE TECH, INC.,
Petitioner,

v.

INVUE SECURITY PRODUCTS INC.,
Patent Owner.

Case IPR2018-00481
Patent 9,576,452 B2

Before JUSTIN T. ARBES, STACEY G. WHITE, and
DANIEL J. GALLIGAN, *Administrative Patent Judges*.

WHITE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons discussed herein, we determine that Mobile Tech, Inc. (“Petitioner”) has shown, by a preponderance of the evidence, that claims 1–35 (“the challenged claims”) of U.S. Patent No. 9,576,452 B2 (“the ’452 patent,” Ex. 1001) are unpatentable.

A. Background

Petitioner requested *inter partes* review of the challenged claims. Paper 1 (“Petition”). InVue Security Products Inc. (“Patent Owner”) filed a Patent Owner Preliminary Response. Paper 8. Based on our review of these submissions, we instituted a trial on all of Petitioner’s challenges as described in the Petition. Paper 9 (“Dec. on Inst.”). Petitioner contends the challenged claims are unpatentable under 35 U.S.C. § 103 on the following specific grounds (Pet. 5–6):

References	Claim(s) Challenged
Rothbaum ¹ and Denison ²	1–35
Rothbaum, Denison, and Deguchi ³	1–31
Rothbaum, Denison, and Galant ⁴	20
Rothbaum, Denison, Galant, and Deguchi	20

¹ U.S. Patent No. 5,543,782, issued Aug. 6, 1996 (Ex. 1003, “Rothbaum”).

² U.S. Patent Pub. No. 2004/0201449 A1, pub. Oct. 14, 2004 (Ex. 1002, “Denison”).

³ U.S. Patent Pub. 2004/0003150 A1, pub. Jan. 1, 2004 (Ex. 1004, “Deguchi”).

⁴ U.S. Patent No. 6,308,928 B1, issued Oct. 30, 2001 (Ex. 1005, “Galant”).

References	Claim(s) Challenged
Rothbaum, Denison, and Uchida ⁵	21
Rothbaum, Denison, Uchida, and Deguchi	21

Patent Owner filed a Patent Owner Response (Ex. 2040⁶, “PO Resp.”) and Petitioner filed a Reply (Paper 18, “Reply”).

An oral hearing was held on April 10, 2019, and a transcript of the hearing is included in the record (Paper 24, “Tr.”). After the hearing, the parties met and conferred regarding the potential application of collateral estoppel to certain issues in this proceeding. The parties provided us with a list of their agreements and disagreements as to the application of collateral estoppel. Ex. 3001. We then authorized the parties to provide further briefing “regarding the parties’ stated disagreements regarding the application of collateral estoppel to this proceeding.” Paper 23. Petitioner and Patent Owner each filed opening (Paper 25, “Pet. CE Br.”; Paper 26, “PO CE Br.”) and responsive briefs (Paper 27, “Pet. CE Resp. Br.”; Paper 28, “PO CE Resp. Br.”).

B. Related Proceedings

The parties indicate the ’452 patent originally was asserted in *InVue Security Prods., Inc. v. Mobile Tech, Inc.*, Case No. 3-17-cv-00075 (W.D.N.C.), and that the case was consolidated with others involving patents

⁵ Japanese Patent App. Pub. No. 1997-259368, pub. Oct. 3, 1997 (Ex. 1012); certified translation (Ex. 1013, “Uchida”).

⁶ We granted Patent Owner’s Motion to Seal and by that Motion, we sealed the Patent Owner Response (Paper 13) in this proceeding. Paper 16. Exhibit 2040 is a redacted version of the Patent Owner Response. We cite to the redacted version unless otherwise indicated, and do not refer to any sealed materials herein.

related to the '452 patent and transferred to the United States District Court for the District of Oregon. Pet. 1; Paper 5, 2–4; Paper 15, 3. Petitioner has filed petitions for *inter partes* and post-grant review involving the same parties and related patents in IPR2016-00892, IPR2016-00895, IPR2016-00896, IPR2016-00898, IPR2016-00899, IPR2016-01241, IPR2016-01915, IPR2017-00344, IPR2017-00345, IPR2017-01900, IPR2017-001901, IPR2018-01138, and PGR2018-00004. Paper 15, 3–4. We note that final written decisions have been issued in IPR2016-00892, IPR2016-00895, IPR2016-00896, IPR2016-00898, IPR2016-00899, IPR2016-01241, IPR2016-01915, IPR2017-00344, IPR2017-00345, IPR2017-01900, and IPR2017-01901, some of which have been appealed. The parties also identify certain patents and pending patent applications that may be affected by a decision in this proceeding. Pet. 3; Paper 15, 4.

C. The '452 Patent

The '452 patent describes a security system and method including a programmable key. Ex. 1001, 1:29–34. This security system is depicted in Figure 1, which is reproduced below.

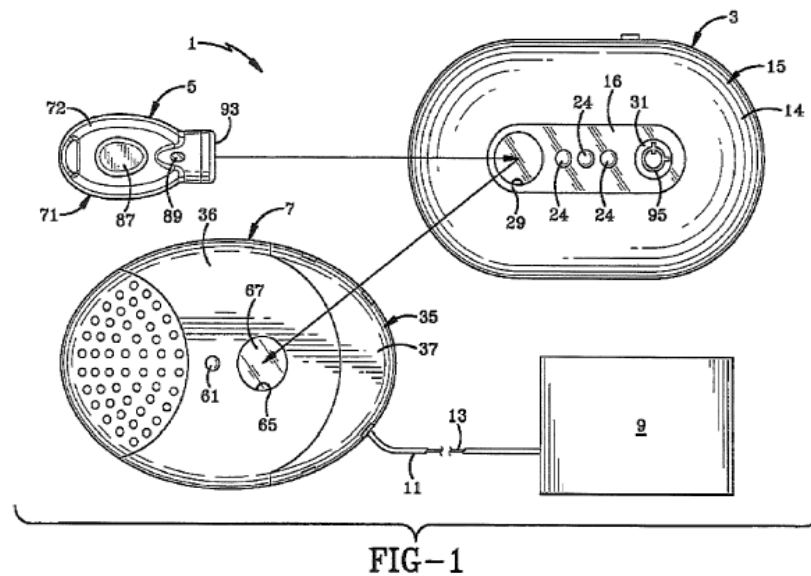


Figure 1 depicts security system 1. *Id.* at 6:13–15. The primary components of security system 1 are programming station 3, programmable key 5, and alarm module 7. *Id.* at 6:15–20. Merchandise 9 is connected to alarm module 7 via cable 11 that preferably contains sense loop 13. *Id.* at 6:15–20. The logic control circuit of programming station 3 randomly generates a unique security code (Security Disarm Code, or “SDC”) that is transmitted to programmable key 5, which in turn stores the SDC in key memory. *Id.* at 9:20–26. Once programmed with an SDC, key 5 is taken to alarm module 7 and the SDC is stored in the alarm module’s memory. *Id.* at 9:40–50. “SDC memory 53 permanently stores the randomly generated SDC in the alarm module 7, preferably for the remaining lifetime of the alarm module.” *Id.* at 9:47–50. The storage of the SDC in the memory of key 5 will actuate timer 82 for a predetermined time period. *Id.* at 9:56–58. “At the end of this time period, controller 80 automatically invalidates use of the SDC in SDC memory 81 by logic control circuit 77 to thereby render the key inoperative for use with alarm module 7.” *Id.* at 9:58–62. In addition, counter 83 of logic control circuit 77 counts each time that the key is activated. *Id.* at

10:44–46. “After a predetermined maximum number of activations . . . counter 83 will cause logic control circuit 77 to invalidate use of the SDC in SDC memory 81, thereby rendering key 5 inoperative for further use with alarm module 7.” *Id.* at 10:48–52.

Cable 11 extends between alarm module 7 and item of merchandise 9. Ex. 1001, 7:66–8:1. If sense loop 13 (which contains electrical or fiber optic conductors) is compromised, such as by cutting cable 11 or by pulling the cable loose from alarm module 7 or item of merchandise 9, the alarm module emits an audible alarm and/or causes LED 61 to emit a predetermined flashing pattern. *Id.* at 8:1–9. To disarm alarm module 7, programmable key 5 is programmed with a valid SDC and circuits in the alarm module and the key communicate with one another to deactivate the alarm, thereby enabling cable 11 to be removed from the merchandise item. *Id.* at 10:63–11:9. Programmable key 5 may then be used to re-arm the alarm module. *Id.* at 11:9–13. To disarm and re-arm alarm module 7, the SDC memory of the alarm module must read the same SDC that was generated randomly by programming station 3 and programmed into key 5. *Id.* at 11:16–21.

D. Illustrative Claim

As noted above, Petitioner challenges claims 1–35 of the ’452 patent, of which claims 1, 27, and 32 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. A programmable security system for protecting items of merchandise from theft, the programmable security system comprising:
 - a programming station comprising a logic control circuit configured to generate a security code, wherein the

programming station comprises a housing enclosing the logic control circuit therein, and wherein the housing comprises a port;

a programmable key comprising a memory configured to store the security code, an end of the programmable key configured to be inserted within the port for programming the security code in the memory of the programmable key; and

a security device comprising an alarm and a memory for storing the security code, the security device comprising a port, the security device configured to be attached to an item of merchandise, the security device further configured to activate the alarm in response to the integrity of the security device being compromised,

wherein the end of the programmable key is configured to be inserted within the port of the security device to communicate with the security device and to control the security device upon a matching of the security code stored by the security device with the security code stored by the programmable key.

II. COLLATERAL ESTOPPEL

This case is the latest in a large family of related proceedings. As of this date, final written decisions have been issued in eleven related proceedings and decisions in eight of those proceedings have been affirmed by the Federal Circuit. Appeals are pending in two additional cases and one case was not appealed. A chart of the prior decisions is below.

Case Number	Patent Number	Exhibit/Paper	Appeal Status
IPR2016-00892	US Pat. No. 8,884,762 B2 ("the '762 patent")	Final Written Decision Ex. 1016 ("the 892 Decision")	Affirmed by Federal Circuit in 2018- 1236, 2018-1238, 2018-1239, 2018- 1304 (Rule 36)
IPR2016-00895 ⁷ IPR2016-00896	US Pat. No. 9,135,800 B2 ("the '800 patent")	Final Written Decision Ex. 1017 ("the 895/896 Decision")	Affirmed by Federal Circuit in 2018- 1236, 2018-1238, 2018-1239, 2018- 1304, 2018-1889, 2018-1898 (Rule 36)
IPR2016-00898 IPR2016-00899	US Pat. No. 9,269,247 B2 ("the '247 patent")	Final Written Decision Ex. 1015 ("the 898/899 Decision")	Affirmed by Federal Circuit in 2018- 1236, 2018-1238, 2018-1239, 2018- 1304 (Rule 36)
IPR2016-01241	US Pat. No. 7,737,846 B2 ("the '846 patent")	Final Written Decision 1241 IPR ⁸ Paper 22	Affirmed by Federal Circuit in 2018-1597 (Rule 36)
IPR2016-01915	US Pat. No. 7,737,844 B2 ("the '844 patent")	Final Written Decision Ex. 1020 ("the 1915 Decision")	Not Appealed
IPR2017-00344 IPR2017-00345	US Pat. No. 9,396,631 B2 ("the '631 patent")	Final Written Decision Ex. 1021 ("the 344 Decision")	Affirmed by Federal Circuit in 2018-2202 (Rule 36)

⁷ Cases IPR2016-00895 and 896; IPR2016-00898 and 899; IPR2017-00344 and 345; and IPR2017-01900 and 1901 are listed in pairs because a single final written decision was issued for each of those sets of cases.

⁸ Papers and exhibits from proceedings other than IPR2018-00481 will be indicated by a prefix indicating the proceeding. For example, papers from IPR2016-01241 will bear the prefix "1241 IPR."

Case Number	Patent Number	Exhibit/Paper	Appeal Status
IPR2017-01900 IPR2017-01901	US Pat. No. 9,478,110 B2 ("the '110 patent")	Final Written Decision 1900 IPR Paper 34 ("the 1900 Decision")	Appeal Pending

The parties assert that collateral estoppel applies to certain aspects of this proceeding based on prior proceedings. *See* Ex. 3001. The parties “agree[] and stipulate[] that collateral estoppel applies to” claim 1 as obvious over Rothbaum and Denison except as to two limitations of claim 1; claim 27 as obvious over Rothbaum and Denison except as to three limitations of claim 27; and they further agree and stipulate that “[e]stoppel additionally applies to claims 2–6, 10–18, 23–24, and 29–35.” *Id.* Collateral estoppel, also known as issue preclusion, precludes a party from relitigating an issue “when an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment, the determination is conclusive in a subsequent action between the parties, whether on the same or a different claim.” Restatement (Second) of Judgments § 27 (1982). The Supreme Court

has long recognized that “the determination of a question directly involved in one action is conclusive as to that question in a second suit.” The idea is straightforward: Once a court has decided an issue, it is “forever settled as between the parties,” thereby “protect[ing]” against “the expense and vexation attending multiple lawsuits, conserv[ing] judicial resources, and foster[ing] reliance on judicial action by minimizing the possibility of inconsistent verdicts.” In short, “a losing litigant deserves no rematch after a defeat fairly suffered.”

B & B Hardware, Inc. v. Hargis Indus., Inc., 135 S. Ct. 1293, 1302–03 (2015) (internal citations omitted). Collateral estoppel in *inter partes*

reviews “is not limited ‘to patent claims that are identical. Rather, it is the identity of the *issues* that were litigated that determines whether collateral estoppel should apply.’” *Nestle USA, Inc. v. Steuben Foods, Inc.*, 884 F.3d 1350, 1352 (Fed. Cir. 2018) (quoting *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1342 (Fed. Cir. 2013) (emphasis in original)). The Federal Circuit has articulated the following test for determining the proper application of collateral estoppel:

- (1) a prior action presents [the] identical issue;
- (2) the prior action actually litigated and adjudged that issue;
- (3) the judgment in that prior action necessarily required determination of the identical issue; and
- (4) the prior action featured full representation of the estopped party.

VirnetX Inc. v. Apple, Inc., 909 F.3d 1375, 1377 (Fed. Cir. 2018) (quoting *Stephen Slesinger, Inc. v. Disney Enters., Inc.*, 702 F.3d 640, 644 (Fed. Cir. 2012)).

If an exception applies, then collateral estoppel may be inapplicable even if all of the prongs of the test are met. *B & B Hardware*, 135 S. Ct. at 1303, 1309–10. One such exception is that collateral estoppel may be inapplicable if “the party sought to be precluded, as a result of the conduct of his adversary or other special circumstances, did not have an adequate opportunity or incentive to obtain a full and fair adjudication in the initial action.” Restatement (Second) of Judgments § 28(5) (c) (1982). The Supreme Court has recognized that “[i]ssue preclusion may be inapt if ‘the amount in controversy in the first action [was] so small in relation to the amount in controversy in the second that preclusion would be plainly unfair.’” *B&B Hardware*, 135 S. Ct. at 1309 (quoting Restatement (Second)

of Judgments § 28, cmt. j). It is with these principles in mind that we review the parties’ arguments as to collateral estoppel.

A. Real Party-In-Interest

Petitioner asserts that collateral estoppel applies to our determinations as to whether the proper real parties-in-interest have been identified in this proceeding. *See* Ex. 3001. We have addressed the propriety of Petitioner’s real party-in-interest (“RPI”) identifications in a number of previous proceedings. A chart of the prior RPI decisions is below.

Case Number	RPI Decision	Final Written Decision	Appeal Status
IPR2016-01915	Ex. 1018 (Decision on Motion to Terminate) (Sealed); Ex. 1019 (Public Version)	Ex. 1020 (“the 1915 Decision”)	Not Appealed
IPR2017-00344 IPR2017-00345	Ex. 1018 (Decision on Motion to Terminate) (Sealed); Ex. 1019 (Public Version)	Ex. 1021 (“the 344 Decision”)	Affirmed
IPR2017-01900 IPR2017-01901	1900 IPR Paper 34 (Final Written Decision), 6–21 (Sealed); Paper 38 (Public Version)	1900 IPR Paper 34 (Sealed); Paper 38 (Public Version) (“the 1900 Decision”)	Appeal Pending

The cases that have dealt with the RPI issue either stand unappealed, affirmed by the Federal Circuit, or are still pending appeal. The Federal Circuit has found collateral estoppel to be proper in the context of both affirmed and non-appealed cases. *See, e.g., XY, LLC v. Trans Ova Genetics*, 890 F.3d 1282, 1294 (Fed. Cir. 2018) (applying estoppel based on affirmed decision); *Power Integrations, Inc. v. Semiconductor Components*

Industries, LLC, 926 F.3d 1306, 1311 (Fed. Cir. 2019) (applying estoppel based on a non-appealed decision).

In *XY*, the Federal Circuit found “that an affirmance of an invalidity finding, whether from a district court or the Board, has a collateral estoppel effect on all pending or co-pending actions.” *XY*, 890 F.3d at 1294. In the recent precedential Federal Circuit decision in *Power Integrations*, the court also found that collateral estoppel would apply to a non-appealed decision (but for an exception that applied under the facts of that proceeding). There, the patent owner alleged that the *inter partes* review (“IPR”) was time-barred under 35 U.S.C. § 315(b) because the petitioner was in privity and had an RPI relationship with a company that had been sued on the subject patent. *Power Integrations*, 926 F.3d at 1311. The petitioner argued that collateral estoppel precluded the patent owner from arguing that the IPR was time-barred “because [the patent owner] did not appeal the Board’s final written decision reaching the same § 315(b) determination in another IPR.” *Id.* The Federal Circuit found that the patent owner “raise[d] the same § 315(b) time-bar argument in this appeal that it did in the non-appealed IPR on a different patent and actually litigated that issue in the non-appealed IPR.” *Id.* at 1312. In light of that finding, the Federal Circuit “agree[d] with [the petitioner] that the Board’s § 315(b) determination in the non-appealed IPR was essential to the final decision in that proceeding” and “conclude[d] that [the petitioner] has established the basic requirements for issue preclusion, and [the patent owner] has not substantively disputed that conclusion.” *Id.* Thus, the Federal Circuit found that the basic requirements for collateral estoppel had been met based on a final written decision that had not been appealed. On the facts of that proceeding, however, the “lack-

of-incentive-to-litigate exception” to collateral estoppel applied that allowed the patent owner to avoid estoppel. *Id.*

In our prior RPI decisions in this family of cases, Patent Owner was authorized to depose Petitioner’s Chief Executive Officer, Christopher Remy, regarding the identification of RPIs. *See* Ex. 1019, 2–3. We stated that unless a showing of good cause was made, that deposition would “be the only deposition authorized as to Mr. Remy in any of the proceedings involving these parties.” 344 IPR Paper 20, 5. Patent Owner did not seek authorization for a subsequent deposition in this proceeding. As to IPR2016-01915, IPR2017-00344, and IPR2017-00345, we authorized Patent Owner to file a motion to terminate along with supporting evidence, and Petitioner was authorized to file a response. *Id.* at 5–6. We did not authorize the filing of a motion to terminate in IPR2017-01900 or IPR2017-01901 because we had not yet determined whether those proceedings should be instituted. *Id.* at 5 n.3. In IPR2017-01900 and IPR2017-01901, the parties addressed the RPI issue in their Patent Owner Response and Reply, respectively. *See* 1900 IPR Paper 18, 2–3.

We denied Patent Owner’s Motion to Terminate because we determined that Petitioner’s RPI designation was proper. Ex. 1018 (Sealed)⁹; Ex. 1019 (Public Version). Subsequent to that decision, final written decisions were entered in IPR2016-01915 (Ex. 1020), and IPR2017-00344 and IPR2017-00345 (Ex. 1021). After those decisions were entered, we later issued a final written decision in IPR2017-01900 and IPR2017-

⁹ The parties filed the same briefing and evidence in IPR2016-01915, IPR2017-00344, and IPR2017-00345. We issued a single decision for all three cases.

01901 in which we once again found that Petitioner's RPI designation was proper. 1900 Decision. No requests for rehearing were filed in any of the proceedings. Patent Owner appealed IPR2017-00344 and IPR2017-00345 (345 IPR, Paper 37) and IPR2017-01900 and IPR2017-01901 (1900 IPR Paper 39). The final written decision in IPR2017-00344 and IPR2017-00345 has been affirmed by the Federal Circuit. No appeal was filed in IPR2016-01915. Patent Owner now asks us to make a different decision in this case because it believes that we "based [our prior] decision primarily on two assumptions" that Patent Owner believes to be in error. PO Resp. 1–2. Patent Owner proceeds to argue, based on the same evidence addressed in the prior decisions, that we should change our determination regarding the propriety of Petitioner's RPI identification. *Id.* at 1–16.

Petitioner argues in reply that Patent Owner is collaterally estopped from raising issues that were resolved against it in the prior Board decisions. Reply 17–19; *see MaxLinear, Inc. v. CF CRESPE LLC*, 880 F.3d 1373, 1376 (Fed. Cir. 2018) (stating "[i]t is well established that collateral estoppel, also known as issue preclusion, applies in the administrative context"). Petitioner also argues that regardless of whether the unnamed parties argued by Patent Owner are RPIs, the RPI challenge is not dispositive because the Petition was filed within one year of service of the complaint asserting infringement of the '452 patent and Patent Owner's "argument thus improperly conflates § 315(b) with § 312(a)(2)." Reply 19.

Patent Owner argues that collateral estoppel should not be applied here because the instant case has different facts. PO CE Resp. Br. 6. Specifically, Patent Owner points out that MTI Holdings, LLC changed its name to ITM Holdings, LLC after the Petition was filed. *Id.* at 6–7; *see*

Paper 5, 2 (Petitioner’s amended mandatory notices noting name change, filed Jan. 22, 2018). Patent Owner also argues that Petitioner relies upon “a new [declaration from Mr. Remy] and facts in support of the RPI issue.” PO CE Resp. Br. 7. Patent Owner also asserts that there has been a change in law since we made the RPI decisions in IPR2017-00344 and IPR2017-00345. *Id.* at 7 n.3.

Patent Owner’s arguments are unpersuasive. To the extent that Patent Owner asserts that there was a change in law based on recent Federal Circuit decisions in *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336 (Fed. Cir. 2018) (“*AIT*”), and *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237 (Fed. Cir. 2018), those decisions were considered in our RPI decision in IPR2017-01900 and IPR2017-01901. The parties presented argument at oral hearing in IPR2017-01900 and IPR2017-01901 regarding the impact of those Federal Circuit decisions. 1900 IPR Paper 32 (Sealed) (transcript of oral hearing including an extensive RPI argument). We analyzed the facts presented in light of all appropriate precedent, including *Worlds* and *AIT*. 1900 Decision 6–21.

Patent Owner’s argument that collateral estoppel should not be applied due to a change in the facts is similarly unpersuasive. First, the parties have not asked for any new depositions or written discovery as to RPI issues. In the 1900 Decision, Patent Owner argued that as to the facts in the 1900 proceeding as compared to those in the early proceedings, “[t]he evidence is the same documents. The facts are different.” 1900 Decision 9. Patent Owner further argued that “[t]he difference in evidence would be the [passage of] time.” *Id.* at 10. In an effort to make sure that the evidence was fully reviewed under the appropriate standards, we reviewed all of the

evidence anew and came to the same conclusion that Petitioner's identification of RPIs was proper. *Id.* at 10–21. Second, MTI Holdings, LLC's name change was disclosed in each of the prior cases and thus, it is not new information. *See, e.g.*, 344 IPR Paper 19, 1 (“Petitioner learned on January 18, 2018 that MTI Holdings, LLC legally changed its name to ITM Holdings, LLC.”). Third, the new declaration in this matter is the Supplemental Declaration of Christopher Remy. Ex. 1028 (Sealed); Ex. 1029 (Public Version). There, Mr. Remy states that everything in his original declaration was and still is correct except as supplemented. Ex. 1029 ¶ 4. He testifies that “nothing relevant has changed” and asserts that he continues to “make all decisions with respect to the IPRs, to direct them, and to control them.” *Id.* ¶ 7. The only new information in this declaration is a statement noting that the membership of the Board of Directors had been updated and certain stock ownership percentages had changed over time. *Id.* ¶¶ 5–6. These minor facts are not significant enough to disturb the earlier decisions made in five proceedings that resulted in final written decisions.

Here, the same RPI issue was raised in the prior decisions, the RPI issue was actually litigated by the parties (replete with discovery and dispositive motions on this issue), and our determination that the RPI identification was proper was essential to the prior decisions (especially because Patent Owner has sought to have the proceedings terminated due to an allegedly improper identification of RPIs). This case is different from the facts before the Federal Circuit in *Power Integrations*; there, the Federal Circuit declined to apply collateral estoppel because an exception applied (lack of incentive to litigate). 926 F.3d at 1311. No such exception is

applicable here. In this case, the parties have fully participated in the appeals of IPR2017-00344 and IPR2017-00345 (affirmed); and IPR2017-01900 and IPR2017-01901 (pending). As such, we find that collateral estoppel applies to the RPI issue in this case, and conclude that no exception to collateral estoppel applies.

Thus, we determine that collateral estoppel prevents the relitigation of the RPI issue in this proceeding and therefore, we decline Patent Owner's request to terminate this proceeding due to an allegedly incorrect identification of RPIs.

In addition, we note that as discussed above, the evidence of record in this proceeding as to RPI analysis is substantially identical to the evidence of record in IPR2017-00344 and IPR2017-00345; and IPR2017-01900 and IPR2017-01901. We reviewed our analysis in those prior decisions and we determine that that analysis is also correct as applied to this proceeding. In lieu of reproducing our RPI analysis from the 1900 Decision and the 344 Decision here, we adopt and incorporate by reference, in its entirety, our previous RPI analysis, which concluded that Petitioner's RPI designation was proper. *See* 1900 Decision 6–21; Ex. 1018 (Decision on Motion to Terminate) (Sealed); Ex. 1019 (Public Version). Accordingly, for the reasons given in the 1900 Decision and in the Order on Patent Owner's Motion to Terminate from IPR2017-00344, we determine that Petitioner identified all RPIs in this proceeding, as required by 35 U.S.C. § 312(a)(2).

B. Estoppel Based on Rothbaum and Denison

Claims 1–35 of the '452 patent are alleged to be obvious over Rothbaum and Denison. Pet. 12–56. The combination of Rothbaum and Denison has been applied to the claims of several of the related patents. *See*

Ex. 1015, 77 (finding claims 1 and 3–37 of the ’247 patent to be unpatentable over Rothbaum and Denison); Ex. 1016, 69 (finding claims 1, 5–20, 22–25, and 27 of the ’762 patent to be unpatentable over Rothbaum and Denison); Ex. 1017, 80 (finding claims 1, 3–22, 24–30, and 32–49 of the ’800 patent to be unpatentable over Rothbaum and Denison); Ex. 1021, 92 (finding claims 1–5, 8–27, and 29 of the ’631 patent to be unpatentable over Rothbaum and Denison). The Federal Circuit has affirmed our final written decisions in IPR2016-00892 (’762 patent), IPR2016-00895 and 896 (’800 patent), IPR2016-00898 and 899 (’247 patent), and IPR2017-00344 and 345 (’631 patent).

A final judgment of unpatentability of a patent claim from the Board precludes the patent owner from arguing for the patentability of those claims. *XY, LLC*, 890 at 1294; *see MaxLinear*, 880 F.3d at 1376. Under traditional principles of issue preclusion, however, a party may be bound not simply by the ultimate conclusion (e.g., unpatentability of a claim), but by any subsidiary factual determinations that were actually litigated and essential to the judgment. *Stephen Slesinger, Inc. v. Disney Enters., Inc.*, 702 F.3d 640, 644 (Fed. Cir. 2012); *see MaxLinear*, 880 F.3d at 1377 (noting “that the collateral-estoppel effect of an administrative decision of unpatentability generally requires the invalidation of related claims that present identical issues of patentability”). Key factors in determining if “issues” are identical under collateral estoppel is whether “there [is] a substantial overlap between the evidence or argument to be advanced in the second proceeding and that advanced in the first” and whether the “new evidence or argument involve[s] application of the same rule of law as that involved in the prior proceeding.” Restatement (Second) of Judgments § 27,

cmt. c (1982). Below we shall examine the parties’ assertions regarding the application of collateral estoppel to claims alleged to be unpatentable over Rothbaum and Denison.

1. Claim 1

The parties agree that

[Patent Owner] is estopped from arguing against the combination of Rothbaum and Denison on independent claim 1 except to the extent that the claim covers [1] “an end of the programmable key is configured to be inserted within the port” of the programming station, and [2] “the end of the programmable key is configured to be inserted within the port of the security device.”

Ex. 3001. Petitioner asserts that estoppel should extend to the entirety of claim 1 including the exceptions labeled [1] and [2]. *Id.*

We begin with a comparison between claim 1 of the ’452 patent and claim 1 of the ’247 patent. Claim 1 of the ’247 patent was held to be unpatentable over Rothbaum and Denison and that decision was affirmed by the Federal Circuit. *See* Ex. 1015, 22–44. Claim 1 of the ’247 patent is but one of the more than 100 related patent claims that we have reviewed and determined to be obvious over the teachings of Rothbaum and Denison. It is readily apparent from a side-by-side comparison of claims 1 of the ’452 and ’247 patents that there is substantial identity between the claims.

Claim 1 of the ’452 patent	Claim 1 of the ’247 patent (found unpatentable in the 898/899 Decision (affirmed))
1. A programmable security system for protecting items of merchandise from theft, the programmable security system comprising:	1. A programmable security system for protecting items of merchandise from theft, the programmable security system comprising:

Claim 1 of the '452 patent	Claim 1 of the '247 patent (found unpatentable in the 898/899 Decision (affirmed))
a programming station comprising a logic control circuit configured to generate a security code, wherein the programming station comprises a housing enclosing the logic control circuit therein, and wherein the housing comprises a port; a programmable key comprising a memory configured to store the security code, an end of the programmable key configured to be inserted within the port for programming the security code in the memory of the programmable key; and a security device comprising an alarm and a memory for storing the security code, the security device comprising a port, the security device configured to be attached to an item of merchandise, the security device further configured to activate the alarm in response to the integrity of the security device being compromised, wherein the end of the programmable key is configured to be inserted within the port of the	a programming station comprising a logic control circuit configured to generate a unique security code, and a memory for storing the unique security code; a plurality of programmable keys each configured to communicate with the programming station to receive and store the unique security code in a memory, each of the plurality of programmable keys having the unique security code stored in its memory; and a plurality of security devices each comprising an alarm and a memory for storing the unique security code, each of the plurality of security devices having the unique security code stored in its memory, each of the plurality of security devices configured to be attached to an item of merchandise, each of the plurality of security devices further configured to activate the alarm in response to the integrity of the security device being compromised; wherein each of the plurality of programmable keys is configured to arm or disarm each of the plurality

Claim 1 of the '452 patent	Claim 1 of the '247 patent (found unpatentable in the 898/899 Decision (affirmed))
security device to communicate with the security device and to control the security device upon a matching of the security code stored by the security device with the security code stored by the programmable key	of security devices upon a matching of the unique security code stored by the plurality of security devices with the unique security code stored by the plurality of programmable keys.

These claims are both directed to a “programmable security system for protecting items of merchandise from theft.” Both systems are composed of a programming station comprising a logic control circuit, a programmable key, and a security device, and recite that the key is used to operate the system upon a matching of the codes stored in the key and the security device. Claim 1 of the '247 patent is different in that it recites a “plurality” of keys and security devices and the instant claim could be met with a single key and a single security device. The instant claim also recites a housing¹⁰ enclosing the logic control circuit and that the end of the key is configured to be inserted into a port. Thus, the vast majority of factual findings necessary to support a conclusion of obviousness as to claim 1 of

¹⁰ Patent Owner makes no arguments as to the application of collateral estoppel to claim 1 based on the claim’s recitation that the “programming station comprises a housing enclosing the logic control circuit.” We note, however, that we previously found similar limitations to be taught by the combination of Rothbaum and Denison. See 1900 Dec. 62–64 (discussion of claims 16 and 17 of the '110 patent); *see also* '110 patent claim 16 (“programming station housing the logic control circuit”), claim 17 (“programming station comprises a housing fastened to a base for containing the logic control circuit therein”).

the instant patent over Rothbaum and Denison have already been made as part of our analysis of claim 1 of the '247 patent.

Patent Owner argues that collateral estoppel is inapplicable because two portions of claim 1 were not addressed in any of the prior decisions. PO CE Resp. Br. 2. According to Patent Owner, “[1] ‘an end of the programmable key is configured to be inserted within the port’ of the programming station, and [2] ‘the end of the programmable key is configured to be inserted within the port of the security device’” “present[] a significant new issue for consideration in any obviousness analysis.” *Id.* at 2, 3.

Petitioner asserts that we “previously addressed Claim 15 of the '800 Patent, which recites ‘wherein the security device comprises a port for **receiving** the programmable key **therein.**’” Pet. CE Br. 2–3 (also citing claim 12 of the '247 and '631 patents and claim 8 of the '110 patent (same or similar limitations)). According to Patent Owner, “receiving the ‘end’ of the key provides a structure with additional assurance of alignment and enhances signal transmission when using the programmable key.” PO CE Resp. Br. 3. Thus, we are tasked with analyzing whether an end of a key configured to be inserted within a port implicates different issues of patentability as compared to a claim that recites a port for receiving the key.

The Federal Circuit has held that “[i]f the differences between the unadjudicated patent claims and adjudicated patent claims do not materially alter the question of invalidity, collateral estoppel applies.” *Ohio Willow Wood*, 735 F.3d at 1342. In *Ohio Willow Wood*, the Federal Circuit applied collateral estoppel in a situation in which the two challenged “patents use slightly different language to describe substantially the same invention.” *Id.*;

see also Papst Licensing GMBH & Co. KG v. Samsung Elecs. Am., Inc., 924 F.3d 1243, 1252 (Fed. Cir. 2019) (applying collateral estoppel where the claim “recites a materially identical ‘without requiring’ limitation”).

Claim 15 of the ’800 patent depends from claim 1 of the ’800 patent. Claim 1 of the ’800 patent recites, in relevant part, “a programmable key configured to communicate with the programming station to receive and store the single security code in a memory,” “wherein the programmable key is configured to arm or disarm the security device upon a matching of the single security code stored in the memory of the security device with the single security code stored by the programmable key.” Claim 15 recites an additional limitation “wherein the security device comprises a port for receiving the programmable key therein.” Claims 1 and 15 of the ’800 patent both were held to be unpatentable over Rothbaum and Denison. Ex. 1017, 80. Claim 1 of the ’452 patent recites “an end of the programmable key [is] configured to be inserted within the port.” Thus, in both the previously addressed claims and claim 1 of the ’452 patent, we are presented with a programmable key and a port wherein the key must be able to be received or inserted within the port.

Patent Owner’s argument focuses on the fact that the “end” of the key is specifically recited in claim 1 of the ’452 patent. PO CE Resp. Br. 3. We, however, do not agree that this is a significant distinction that would “materially alter the question of validity” of the challenged claim. *See Soverain Software LLC v. Victoria’s Secret Direct Brand Mgmt., LLC*, 778 F.3d 1311, 1319 (Fed. Cir. 2015). We find that the unpatentability analysis would not change in order to account for the recited “end” of the key because the most basic understanding of a key as a physical structure is one

in which the key has an end for inserting into a port or lock. For example, Figure 1 of Denison depicts a key with an end. Ex. 1002, Fig. 1. As such, we are presented with an “end of the programmable key configured to be inserted within the port” (claim 1 of the ’452 patent) as opposed to “a port for receiving the programmable key therein” (claim 15 of the ’800 patent). The analysis for both limitations comes down to whether the key and the port are configured such that a male-female connection could be made between them.

As to claim 15 of the ’800 patent, we found that it would have been obvious to add Denison’s cradle to the modified Rothbaum system. Ex. 1017, 48–50. We agreed with Petitioner’s assertion that “Denison’s external computing device includes cradle 430 for receiving the electronic key so that the security code can be programmed into the electronic key.” *Id.* at 48. There, we were persuaded that adding the port “would have ‘help[ed] to prevent eavesdropping of the security codes and to prevent accidental disarming of the modified Rothbaum security device.’” *Id.* at 50. We determine that the findings made in our analysis of claim 15 of the ’800 patent also would support a finding of unpatentability of claim 1 of the ’452 patent. Our analysis of the patentability of the prior claims was essential to our determination that Petitioner had proven those claims to be unpatentable, and Patent Owner had a full and fair opportunity to litigate the limitations of claim 1 of the ’452 patent. As such, we find that collateral estoppel applies to claim 1 of the ’452 patent. Therefore, we determine, on the basis of collateral estoppel, that Petitioner has demonstrated by a preponderance of the evidence that claim 1 is unpatentable.

2. *Claim 27*

The parties agree that

[Patent Owner] is estopped from arguing against the combination of Rothbaum and Denison on independent claim 27 except to the extent that the claim covers [3] “inserting an end of the key within a port defined in a housing enclosing the logic control circuit”, [4] “actuating a mechanical switch on the housing”, and [5] “inserting the end of the programmable key within the port of the security device”.

Ex. 3001. Petitioner asserts that estoppel should extend to the entirety of claim 27 including the exceptions labeled [3] through [5]. *Id.* Claim 27 is similar to claim 1, but it is written in method form. We disagree with Patent Owner’s assertions as to [3] “inserting an end of the key within a port defined in a housing enclosing the logic control circuit” and [5] “inserting the end of the programmable key within the port of the security device” for the same reasons discussed above in relation to claim 1.

The additional area of dispute for claim 27 involves the recitation of [4] “actuating a mechanical switch on the housing.” Petitioner contends that “the Board already confronted the limitation of ‘the programming station comprises a switch configured to be actuated for programming the security code in the programmable key’ [in regards to] Claim 15 of the ’762 Patent.”¹¹ Pet. CE Br. 4–5 (also citing claim 13 of the ’800 patent; claim 10 of the ’247 and ’631 patents). Patent Owner argues that the lack of the word “mechanical” in claim 15 of the ’762 patent is significant for the

¹¹ The ’762 patent was at issue in IPR2016-00892. In that proceeding, we found that claim 15 was unpatentable over Rothbaum and Denison. Ex. 1016, 43–44. That final written decision was affirmed by the Federal Circuit.

patentability analysis. PO CE Resp. Br. 4. In support of that argument, Patent Owner directs us to our prior decision in IPR2016-01915 wherein we determined that Petitioner failed to establish the unpatentability of claim 12 of the '844 patent over Denison, Roatis,¹² and Deguchi. Ex. 1020, 43–44. Claim 12 of the '844 patent recites, in relevant part, “a mechanical key activated ON/OFF switch mounted in the housing and operatively connected to the logic control circuit.”

The relevant language of the three claims is reproduced below.

Claim 27 of the '452 patent	Claim 15 of the '762 patent (found unpatentable in the 892 Decision (affirmed))	Claim 12 of the '844 patent (not found to be unpatentable in the 1915 Decision)
actuating a mechanical switch on the housing for programming a security code in the programmable key with the logic control circuit	wherein the programming station comprises a switch configured to be actuated for programming the security code in the programmable key	a mechanical key activated ON/OFF switch mounted in the housing and operatively connected to the logic control circuit

In the 1915 Decision, we analyzed Petitioner’s challenge to claim 12 of the '844 patent over Denison, Roatis, and Deguchi. Ex. 1020, 7. As an initial matter, we note that two out of three references at issue there are not a part of the ground under discussion in this proceeding. There, Petitioner relied upon the testimony of its declarant, Thaine Allison III, and argued that Denison “discloses a laptop computer as the external computing device, and that a person of ordinary skill in the art ‘would have understood that laptop

¹² U.S. Patent Application Publication No. 2005/0165806 A1, filed Dec. 13, 2004, published July 28, 2005.

computers include an ‘ON/OFF’ button, *i.e.*, the button is mounted in the housing.” *Id.* at 43. Mr. Allison provided further testimony in that matter that “a person of ordinary skill in the art would have ‘understood and found obvious that such ‘ON/OFF’ buttons are typically mechanical keys that can be physically pressed to turn the power on and off.’” *Id.* at 44. We found Petitioner’s arguments unpersuasive because they relied upon “a general ‘ON/OFF’ button’ of a typical laptop computer as *both* the recited ‘switch’ itself and the recited ‘mechanical key.’” *Id.* “Petitioner [did] not explain what particular physical structure in the housing of a laptop computer would constitute the ‘switch,’ how that structure would be activated by a different structure that can be considered a ‘mechanical key,’ or how the alleged switch would be ‘operatively connected to the logic control circuit.’” *Id.*

We are not persuaded that the previous analysis of claim 12 of the ’844 patent in IPR2016-01915 supports Patent Owner’s position that the “mechanical” and “housing” limitations of claim 27 of the ’452 patent materially alter the question of patentability. In the ’844 patent, for example, we were faced with a claim that required a mechanical key that activated an on/off switch. Here, claim 27 of the ’452 patent recites “actuating a mechanical switch” and as such, does not require two separate structures as was recited in the ’844 patent. Thus, our findings regarding Petitioner’s failure to sufficiently identify “*both* the recited ‘switch’ itself and the recited ‘mechanical key’” are different from the patentability analysis that must be made in regards to claim 27 of the ’452 patent. *See id.* at 44–45. In addition, the combination of references relied upon and addressed in Case IPR2016-01915 is different from the combination asserted in this proceeding.

In the 892 Decision, we analyzed the patentability of claim 15 of the '762 patent over Rothbaum and Denison, the same two references at issue in this proceeding. Ex. 1016, 43–44. Claim 15 of the '762 patent recites, in relevant part, “a switch configured to be actuated for programming the security code in the programmable key.” Petitioner relied upon the testimony of Mr. Allison and the disclosures of Denison to prove that one of ordinary skill in the art would have used “a keyboard or mouse, both of which contain numerous switches corresponding to the keys/buttons, . . . to cause the programming [of the security code in the programmable key.]” *Id.* at 43–44. We found that Petitioner made a sufficient showing to establish that Rothbaum and Denison taught that “a key or a button (i.e., a switch) on the laptop (programming station) would be used to program the security code.” *Id.* at 44.

The Federal Circuit has found that minor additional limitations that narrow the scope of a broader claim element, such as the change from “polymeric” gel to “block copolymer” gel and “network” to “Internet,” do not materially change the patentability analysis for the claims at issue. *See Soverain*, 778 F.3d at 1319; *Ohio Willow Wood*, 735 F.3d at 1342. This is because the prior claim element had already been found obvious in the context of the invalidated claims, and the party seeking to avoid estoppel had “not provided any explanation regarding how” the “difference” in claim language “is patentably significant in view of the obviousness determination.” *Ohio Willow Wood*, 735 F.3d at 1343 (emphasis omitted). As stated by the Federal Circuit, “[i]f the differences between the unadjudicated patent claims and adjudicated patent claims do not materially alter the question of invalidity, collateral estoppel applies.” *Id.* at 1342.

Here, claim 27 recites, in relevant part, “actuating a mechanical switch on the housing for programming a security code in the programmable key.” Thus, both claim 27 of the ’452 patent and claim 15 of the ’762 patent require a switch that may be actuated in order to program the key. We find that the unpatentability analysis would not be materially different in order to account for the difference between the scope of the “switch” recited in claim 15 of the ’762 patent and the “mechanical switch” of claim 27 of the ’452 patent. In addition, we note that the switches relied upon by Petitioner in its challenge to the ’762 patent (keys/buttons of keyboards and mice) are well known mechanical devices. *See* Ex. 1016, 43–44. Thus, we determine that Patent Owner had a full and fair opportunity to litigate the limitations of claim 27 of the ’452 patent. As such, we find that collateral estoppel applies to claim 27 of the ’452 patent. Therefore, we determine, on the basis of collateral estoppel, that Petitioner has demonstrated by a preponderance of the evidence that claim 27 is unpatentable.

3. Claims 7, 9, and 28

Claims 7 and 9 of the ’452 patent depend directly or indirectly from claim 1, and claim 28 depends from claim 27. These claims include limitations similar to those discussed above in regards to claims 1 and 27. Claim 7 recites “wherein the programming station further comprises a mechanical switch on the housing configured to actuate the logic control circuit for generating the security code.” Claim 9 further recites “wherein the housing of the security device comprises the port for receiving the end of the programmable key therein.” Claim 28 further recites “wherein the actuating comprises actuating the mechanical switch for randomly generating the security code with the logic control circuit.” Petitioner

asserts that Patent Owner is collaterally estopped from asserting that claims 7, 9, and 28 would have been patentable over Rothbaum and Denison. Pet. CE Br. 5–6.

Patent Owner contends that claim 7 has language that corresponds to the mechanical switch limitation discussed above in relation to claim 27 and that more fully describes how the switch is “configured to actuate the logic control circuit for generating the security code.” PO CE Resp. Br. 4–5. Patent Owner argues that claim 28 is distinct from the previously addressed claims because it “further recites that the ‘mechanical switch’ is ‘for randomly generating the security code with the logic control circuit.’” *Id.* at 5. According to Patent Owner, claim 9 raises previously unaddressed issues because it requires the housing of the security device to comprise the port for receiving the end of the key. *Id.*

Petitioner directs us to claim 10 of the ’247 patent. Pet. CE Br. 5–6. In the 898/899 Decision, claim 10 was held to be unpatentable over the teachings of Rothbaum and Denison. Ex. 1015, 58–59. Claim 1 of the ’247 patent recites, in relevant part, “a programming station comprising a logic control circuit configured to generate a security code.” Claim 10 depends from claim 1 and further recites “wherein the programming station comprises a switch configured to be actuated for generating the unique security code.” Thus, read in light of its independent claim, claim 10 of the ’247 patent and claim 7 of the ’452 patent both require a logic control circuit configured to be actuated for generating a security code.

We also note that claim 20 of the ’247 patent recites limitations similar to those found in claim 28 of the ’452 patent. Claim 20 depends from claim 1 of the ’247 patent and recites “wherein the logic control circuit

is configured to randomly generate the unique security code.” Claim 20 also was found to be unpatentable over Rothbaum and Denison. *Id.* at 57–59. Thus, the limitations of claim 28 of the ’452 patent were addressed in our analysis of claims 10 and 20 of the ’247 patent, which recite the actuation of the logic control circuit for generating a security code and the use of a logic control circuit to randomly generate a security code.

According to Patent Owner, however, “the prior claims do not include the switch being mechanical or located on the housing.” PO CE Resp. Br. 5. Patent Owner’s arguments regarding the mechanical limitation are unpersuasive for the reasons described above in reference to claim 27. As to the limitations regarding the housing, Petitioner asserts that “a key on a laptop’s keyboard is on [the modified Rothbaum system’s] ‘housing’ (since the laptop is the housing in the Petition).” Pet. CE Br. 5 (internal citations omitted) (citing Pet. 28 (identifying the housing of Denison’s laptop in the “modified Rothbaum system”)). Thus, the question of patentability, based on, for example, the laptop’s keyboard as teaching the recited switches (as discussed above in regards to claim 27), is not materially different with respect to the housing limitation found in claim 7 of the ’452 patent.

Claim 9 of the ’452 patent recites that the “housing of the security device comprises the port for receiving the end of the programmable key therein.” In regards to claim 1 of the ’452 patent, we discussed claim 15 of the ’800 patent, which recites “wherein the security device comprises a port for receiving the programmable key therein.” Claim 15 of the ’800 patent did not specifically address the housing of the security device, but claim 22 of the ’800 patent is directed to the housing of the security device. Claim 22 depends indirectly from claim 1 of the ’800 patent and recites “wherein the

security device comprises a housing containing the switch.” We found that claim 22 would have been obvious over Rothbaum and Denison. Ex. 1017, 47–48. Thus, in our analysis of the disclosures of Rothbaum and Denison as applied to the ’800 patent, we found that these references taught a security device having a port for receiving a programmable key and a housing of the security device.

The question is whether the question of patentability is materially altered by the difference in claim language with respect to the security device’s housing comprising the port as required by claim 9. The housing is an external casing for the security device, and, thus, providing a port for inserting or receiving the key as part of the housing would allow the key to access or interact with the inner working of the security device as required by the claims. In our analysis of the ’800 patent, we determined that Rothbaum and Denison taught both the security device’s housing and port, and we find that our patentability analysis would not need to change in a material way in order to find that the port would have been part of the housing of the security device. See Ex. 1017, 47–48. This is not a case where the unadjudicated claim presents an entirely new limitation, but rather we are presented with a claim where we previously determined that each element of the claim was found in the cited art as part of our analysis of two claims in the prior case. Collateral estoppel applies to subsidiary findings, and the subsidiary findings necessary to determine that claims 15 and 22 of the ’800 patent would have been obvious over Rothbaum and Denison are the same as the subsidiary findings necessary here in order to establish that claim 9 would have been obvious over Rothbaum and Denison. We determine that Patent Owner had a full and fair opportunity to litigate the

limitations of claims 7, 9, and 28 of the '452 patent. As such, we find that collateral estoppel applies to claims 7, 9, and 28 of the '452 patent.

Therefore, we determine, on the basis of collateral estoppel, that Petitioner has demonstrated by a preponderance of the evidence that claims 7, 9, and 28 are unpatentable.

4. Claim 19

Petitioner alleges that claim 19 is unpatentable over Rothbaum and Denison. Pet. 5. According to Petitioner, collateral estoppel applies to claim 19 in light of our determination regarding claim 17 of the '110 patent. Pet. CE Br. 6. The '110 patent was at issue in the 1900 Decision, which is the subject of a pending appeal. The fact that an appeal is pending does not prevent the application of collateral estoppel. *See Rice v. Dep't of Treasury*, 998 F.2d 997, 999 (Fed. Cir. 1993). Out of an abundance of caution, however, we decline to apply collateral estoppel to this claim and will address Petitioner's arguments on the merits.

5. Claim 22

Petitioner alleges that claim 22 is unpatentable over Rothbaum and Denison. Pet. 5. According to Petitioner, collateral estoppel applies to claim 22 in light of our determination regarding claim 30 of the '800 patent. Pet. CE Br. 6. In the 895/896 Decision, we held that Petitioner had provided sufficient argument and evidence to demonstrate by a preponderance of the evidence that claim 30 of the '800 patent would have been obvious over the disclosures of Rothbaum and Denison. Ex. 1017, 54–57. The 895/896 Decision was affirmed by the Federal Circuit. The relevant text of claim 22 of the '452 patent and claim 30 of the '800 patent are reproduced below.

Claim 22 of the '452 patent	Claim 30 of the '800 patent (found unpatentable in the 895/896 Decision (affirmed))
the security code stored by the programmable key is configured to be invalidated when the security code stored by the programmable key does not match the security code stored by the security device	the programmable key is configured to be inactivated if the single security code stored in the memory of the security device does not match the single security code stored by the programmable key

As is shown above, claims 22 and 30 both address the aftermath of a mismatch between the security code stored in the security device and the security code stored in the key. The claims differ in that claim 22 requires the key's security code to be invalidated in case of a mismatch and claim 30 of the '800 patent requires the key to be inactivated. Petitioner does not sufficiently address the impact of this difference to the application of collateral estoppel. *See* Pet. CE Br. 6. Thus, we decline to apply collateral estoppel to this claim and will address it on the merits.

6. Claims 25 and 26

Claims 25 and 26 are alleged to be unpatentable over the teachings of Rothbaum and Denison. Pet. 5. Petitioner urges that collateral estoppel should apply to these claims because they are patentably indistinct from the other claims which we have addressed that include a port. Pet. CE Br. 6–7. Claims 25 and 26 depend from claim 1 and each recites a port that encircles the end of a programmable key when inserted therein.

Petitioner argues that we previously determined that Rothbaum and Denison taught a port that receives the programmable key and that in order to receive a key the port must surround or encircle that key. *See id.*; Tr. 11:22–12:2 (discussing claim 1 of the '247 patent, claim 1 of the '800

patent, and claim 1 of the '110 patent). According to Petitioner, “the Board has made [a] final determination, and the Federal Circuit has affirmed that Rothbaum and Denison render obvious a port into which the key is inserted. And when the key is inserted into the port, the port encircles, that is surrounds, the key.” *Id.* at 12:3–7. Patent Owner disputes that position and asserts that Petitioner has not provided sufficient evidence to establish that a port that receives a key would also encircle that key. *Id.* at 31:21–24.

We agree with Petitioner. A person of ordinary skill in the art would understand that a port that receives a key or in which a key is inserted would encircle (or surround) the key. *See* Tr. 33:6–11 (Patent Owner agreeing that “encircling means surrounding”); *see also* Ex. 1014, 104 (Mr. Allison testifying that it would have been obvious that “the port (of the housing and/or security device) would encircle or surround the key when inserted into the port (of the housing and/or security device)”). For example, claim 1 of the '452 patent recites “an end of the programmable key configured *to be inserted within the port*” and claim 27 of the '452 patent recites “inserting an end of a programmable key *within a port*.” Insertion of the key within the port indicates a male-female connection and such a connection would necessarily encircle the key which has been inserted within the port. We already have determined that collateral estoppel applies to claims 1 and 27 and we see no distinction in claims 25 or 26 that would make the application of collateral estoppel improper for these claims. Thus, we determine that collateral estoppel applies to claims 25 and 26. Therefore, we determine, on the basis of collateral estoppel, that Petitioner has demonstrated by a preponderance of the evidence that claims 25 and 26 are unpatentable.

7. *Claims 2–6, 10–18, 23, 24, and 29–35*

The parties have agreed that “[e]stoppel additionally applies to claims 2–6, 10–18, 23–24, and 29–35.” Ex. 3001. We have reviewed the assertions against these claims in light of our previous determinations and we agree that collateral estoppel applies to these claims.

For example, claim 2 of the ’452 patent depends from claim 1 and recites that the “the security device further compris[es] an attachment cable attached to the security device.” Claim 3 of the ’800 patent depends from claim 1 of that patent and recites the programmable security system of claim 1, “further comprising an attachment cable attached to the security device.” In IPR2016-00895, Petitioner asserted that claim 3 of the ’800 patent would have been obvious over Rothbaum and Denison. 895 Paper 4, 42. Specifically, Petitioner directed us to Rothbaum’s disclosure of item cord 28 and hard goods sensor 24. *Id.* (citing 895 Ex. 1005, Fig. 1, 5:54–57, 10:31–36). In the 895/896 Decision, we held that Petitioner had provided sufficient argument and evidence to demonstrate by a preponderance of the evidence that claim 3 of the ’800 patent would have been obvious over the disclosures of Rothbaum and Denison. Ex. 1017, 47–48. The 895/896 Decision was affirmed by the Federal Circuit. Here, Petitioner asserts that claim 2 would have been obvious over Rothbaum and Denison. Pet. 38–39. Petitioner directs us to Rothbaum’s disclosure of item cord 28 and hard goods sensor 24. *Id.* at 38 (Ex. 1003, 5:54–57; *id.* at 6:1–4). Thus, the issue is the same between the 895/896 Decision and the current Petition and that issue is whether Rothbaum, in light of Denison, would have taught the claimed attachment cable attached to the security device. We find that this issue was fully and fairly litigated in the 895/896 proceedings. As such, we agree with

the parties that collateral estoppel applies to claims 2–6, 10–18, 23, 24, and 29–35. Therefore, we determine, on the basis of collateral estoppel, that Petitioner has demonstrated by a preponderance of the evidence that claims 2–6, 10–18, 23, 24, and 29–35 are unpatentable.

8. Conclusion

Thus, for all of the foregoing reasons, we determine that collateral estoppel applies to Petitioner’s allegations of obviousness over Rothbaum and Denison as to claims 1–7, 9–18, and 23–35 of the ’452 patent. Therefore, Petitioner has established by a preponderance of the evidence that claims 1–7, 9–18, and 23–35 are unpatentable over Rothbaum and Denison.

C. Estoppel Based on Rothbaum, Denison, and Deguchi

Claims 1–31 of the ’452 patent are alleged to be obvious over Rothbaum, Denison, and Deguchi. Pet. 56–61. Patent Owner asserts that collateral estoppel applies to claims 1 and 27 in light of our determinations regarding claim 13 of the ’844 patent in IPR2016-01915. PO CE Br. 2. We, however, have determined that claims 1 and 27 are unpatentable on the basis of collateral estoppel due to our previous decisions regarding the teachings of Rothbaum and Denison. In light of those determinations, we decline to address the applicability of collateral estoppel to claims 1 and 27 based on our previous decisions regarding the teachings of Rothbaum, Denison, and Deguchi.

III. ANALYSIS OF REMAINING CLAIMS

A. Claim Construction

In an *inter partes* review, “[a] claim in an unexpired patent that will not expire before a final written decision is issued shall be given its broadest reasonable construction in light of the specification of the patent in which it

appears.” 37 C.F.R. § 42.100(b) (2007).¹³ In determining the broadest reasonable construction, we presume that claim terms carry their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). This presumption may be rebutted when a patentee, acting as a lexicographer, sets forth an alternate definition of a term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner seeks construction of the phrases “single security code,” “logic control circuit,” “programmable key,” “security code is unique to a retail establishment or retail store” / “unique to the programming station” / “unique to the logic control circuit” (the “unique” terms), and “security code . . . is configured to be invalidated.” Pet. 8–11. Patent Owner seeks construction of “single security code” and “security code . . . is configured to be invalidated.” PO Resp. 18–22.

In the Decision on Institution, we interpreted certain “unique” limitations of the claims to encompass (but not be limited to) a randomly generated code. Dec. on Inst. 9. We do not perceive any reason or evidence that compels any deviation from the interpretation, and adopt the previous analysis for purposes of this Decision. Based on the remaining issues before us, we discern a need to provide express construction for the phrase

¹³ The Petition in this proceeding was filed on January 12, 2018, prior to the effective date of the rule change that replaces the broadest reasonable interpretation standard with the federal court claim interpretation standard. *See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340, 51,340 (Oct. 11, 2018) (“This rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date.”).

“security code . . . is configured to be invalidated.” For the purposes of this Decision, no other terms require express construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Claim 22 recites “the security code stored by the programmable key is configured to be invalidated when the security code stored by the programmable key does not match the security code stored by the security device.” According to Petitioner, the ’452 patent describes two methods of invalidating a security code: (1) preventing the key from transmitting the code, and (2) erasing the code. Pet. 11. Thus, Petitioner asserts that this term is broad enough to encompass “erasing the security code.” *Id.*

Patent Owner asserts that “invalidating the security code means rendering the security code in the key incapable of controlling the security device.” PO Resp. 21. We adopted Patent Owner’s proposed construction in our Decision on Institution. Dec. 9–11. Based on the record before us, we discern no reason to depart from our preliminary analysis of the construction of this phrase. We adopt the previous analysis and need not further interpret the phrase “the security code stored by the programmable key is configured to be invalidated when the security code stored by the programmable key does not match the security code stored by the security device” for purposes of this Decision.

B. Level of Ordinary Skill in the Art

As part of our determination as to whether an invention would have been obvious, 35 U.S.C. § 103 requires us to ascertain the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). The resolution of this question is important because it allows us to “maintain[] objectivity in the obviousness inquiry.” *Ryko*

Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718 (Fed. Cir. 1991). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In addition, the level of ordinary skill in the art is reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovation Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Petitioner’s Declarant, Mr. Allison, testifies that a person of ordinary skill in the art

would have had a four year technical degree (*e.g.* B.S. engineering) with a minimum of three years of experience in using, provisioning, designing or creating, or supervising the design or creation, of such theft prevention devices, and other related security devices. Extended experience in the industry could substitute for a technical degree. A [person of ordinary skill in the art] would have known how to research the technical literature in fields relating to theft prevention, including in retail and other environments, as well as security in general. Also, a [person of ordinary skill in the art] may have worked as part of a multidisciplinary team and drawn upon not only his or her own skills, but also taken advantage of certain specialized skills of others in the team, *e.g.*, to solve a given problem. For example, designers, engineers (*e.g.*, mechanical or electrical), and

computer scientists or other computer programmers may have been part of a team.

Ex. 1014 ¶ 22; *see* Pet. 11–12. Patent Owner does not dispute Petitioner’s statement as to the level of ordinary skill in the art. PO Resp. 22. Based on the evidence of record, including the testimony of Mr. Allison, the subject matter at issue, and the prior art of record, we determine that a person of ordinary skill in the art would have had a four-year technical degree or equivalent experience with a minimum of two years of professional technical experience in the field of theft prevention devices or related security devices. We apply this level of ordinary skill in the art for purposes of this Decision.

C. Asserted Obviousness over Rothbaum and Denison

1. Overview of Rothbaum

Rothbaum is directed to an electronic security system for monitoring merchandise that provides for the sounding of an alarm based on an indication from a sensor. Ex. 1003, Abstract. The system is intended to be used for theft prevention in retail stores, hotels, and other businesses. *Id.* at 1:6–9. Figure 1 of Rothbaum is reproduced below.

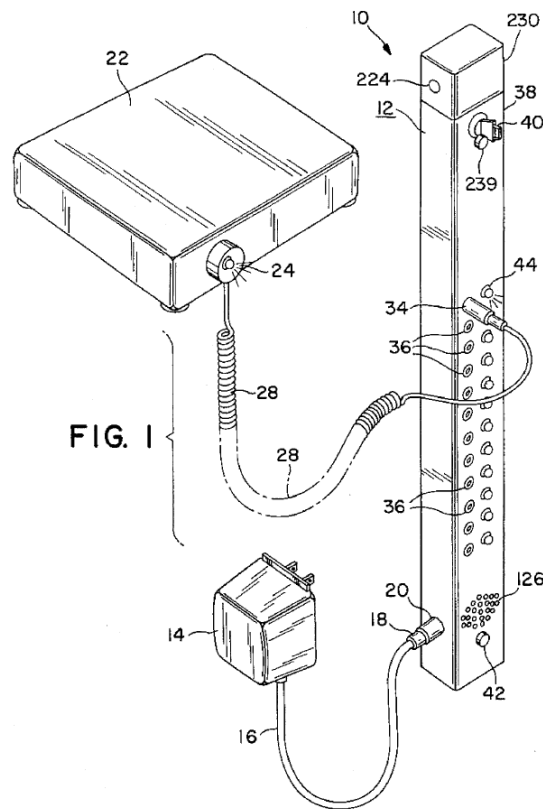


Figure 1 depicts a perspective view of Rothbaum's security system. *Id.* at 4:22–23. Specifically, it depicts “a twelve jack security system 10 . . . which can protect twelve items of merchandise.” *Id.* at 5:10–11. Article 22 is the merchandise being protected by security system 10. *Id.* at 5:5–9, 5:49–50. Sensor 24 is attached to article 22. *Id.* at 5:54–56, 5:62–64. Item cord 28 connects sensor 24 to the alarm circuitry located in housing 12. *Id.* at 5:16–17, 6:1–2. An alarm will sound and an LED will light when an alarm condition occurs. *Id.* at 3:43–47; *see id.* at 12:10–18 (describing the activation of an alarm if someone tampers with the security device). “[O]nce a breach of security condition is detected, the alarm horn 126 will sound [u]ntil key switch 38 is turned from the ON position to the SET position.” *Id.* at 8:23–25.

2. Overview of Denison

Denison is directed to vending machines that are equipped with electronic locks. Ex. 1002 ¶ 2. Denison describes vending machines as automated means for selling products. *Id.* ¶ 3. Access to the contents of the vending machine is controlled by an electronic lock and key. *Id.* ¶ 7. In order to unlock the electronic lock, there must be a match between codes stored in the electronic key and electronic lock. *Id.* ¶ 42.

Figure 17 of Denison is reproduced below.

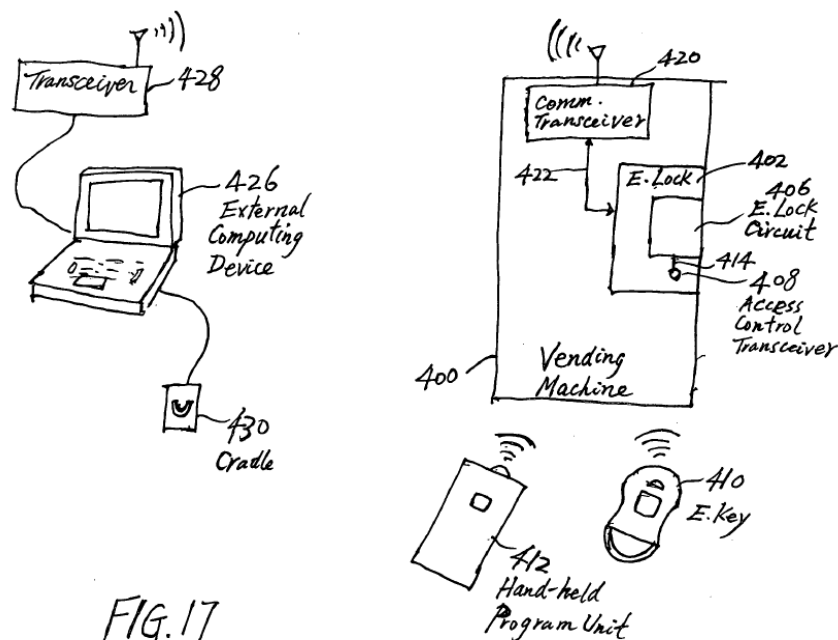


Figure 17 depicts “a system in which one or more programming schemes may be implemented for field-programming the electronic lock 402 of the vending machine 400 without having to open the vending machine to access a program switch.” *Id.* ¶ 77. The vending machine may be opened using electronic key 410, which may be programmed by external computing device 426. *Id.* ¶ 85. External computing device 426 has a memory that includes an “access code or codes for electronic locks on vending machines,

and access control parameters for the electronic locks.” *Id.* ¶ 79. Database 436 may be resident on external computing device 426. *Id.* “[D]atabase 436 may alternatively or additionally contain programs for computing new access codes and generating control parameters for electronic locks and keys.” *Id.* In addition, “external computing device 426 may . . . have programs that implement[] mathematical algorithms for computing the access codes and control parameters. Such calculations may generate the access codes randomly or based on a function that includes the time as a variable.” *Id.* ¶ 84.

In addition, Denison’s keys may be limited to operating during certain hours. *Id.* ¶¶ 41, 60. Figure 9 of Denison is reproduced below.

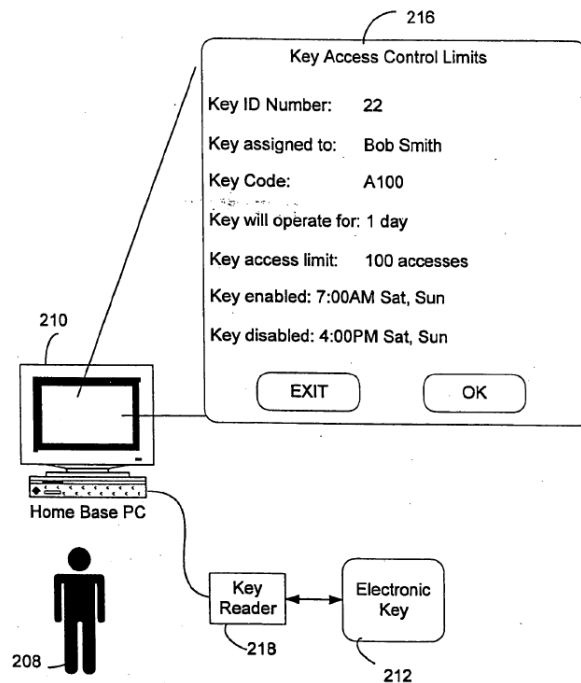


FIG. 9

Figure 9 depicts a computer for programming operational limits into an electronic key. *Id.* ¶ 23. Operation limits may be customized for each

key in the system. *Id.* ¶ 61. These limits could be used to render a key inactive outside of specified work hours. *Id.* A supervisor programs these limits on a personal computer (PC), and the limits are then transferred to the key. *Id.*

3. Claim 8

Petitioner alleges that claim 8 would have been obvious over the teachings of Rothbaum and Denison. Pet. 41–42. Claim 8 depends from claim 1 and further recites “wherein the security device comprises a housing enclosing the alarm and the memory.” Petitioner directs us to Rothbaum’s disclosure of “security device 12, which has a housing” that encloses “alarm horn 126.” *Id.* at 41 (citing Ex. 1014, 79–80). Petitioner also directs us to Denison’s teaching that a “key code is stored in the memory 52 of the electronic lock.” *Id.* at 42 (citing Ex. 1014, 80–81). Patent Owner makes no specific arguments as to claim 8. *See generally* PO Resp.¹⁴ Although Patent Owner does not make any specific arguments with respect to this claim, the burden remains on Petitioner to demonstrate unpatentability of all challenged claims. 35 U.S.C. § 316(e); *see* Paper 10, 5 (“The patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived.”). We have analyzed Petitioner’s contentions and cited evidence, including the supporting testimony of Mr. Allison, and agree with and adopt Petitioner’s analysis regarding dependent claim 8.

¹⁴ Patent Owner did provide specific argument regarding impermissible hindsight as to the combination of Rothbaum and Denison as well as specific argument directed to independent claim 1. PO Resp. 23–42. In light of our determination regarding collateral estoppel as to claim 1, however, those arguments are not persuasive.

Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 8.

4. *Claim 19*

Petitioner alleges that claim 19 would have been obvious in light of the teachings of Rothbaum and Denison. Pet. 50–51. Claim 19 depends from claim 1 and further recites “wherein the programming station comprises a base fastened to the housing, and wherein the logic control circuit is disposed between the base and the housing.” Petitioner directs us to Denison’s disclosure of an external computing device, such as a laptop, and argues that a person of ordinary skill in the art would have understood that would have had a multi-piece housing. *Id.* at 50. “Thus, in such a laptop, the ‘logic control circuit’ (internal components, such as processor and memory) are disposed between the base (bottom cover) and the housing (top cover).” *Id.* at 51. Petitioner also asserts that the top and bottom covers of a laptop housing are fastened together with screws. *Id.* at 50–51. Patent Owner makes no specific arguments as to claim 19. *See generally* PO Resp. Although Patent Owner does not make any specific arguments with respect to this claim, the burden remains on Petitioner to demonstrate unpatentability of all challenged claims. 35 U.S.C. § 316(e); *see* Paper 10, 5. We have analyzed Petitioner’s contentions and cited evidence, including the supporting testimony of Mr. Allison, and agree with and adopt Petitioner’s analysis regarding dependent claim 19. Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 19.

5. *Claim 20*

Petitioner contends that claim 20 would have been obvious over the teachings of Rothbaum and Denison. Pet. 51–52. Claim 20 depends from claim 19 and further recites “a fastener for securing a bottom surface of the base on a supporting structure.” Mr. Allison testifies on behalf of Petitioner that “it was common to connect laptop computers to docking stations, to allow for connection to external monitors and peripherals.” Ex. 1014, 97. He further opines that an ordinarily skilled artisan “would have found it obvious to use Denison’s laptop (*i.e.*, ‘external computing device’) with such a docking station within the context of a retail environment in the Rothbaum-Denison combination.” *Id.* According to Mr. Allison, “[s]uch docking stations were fastened to laptops and thus are a ‘fastener.’” *Id.* Patent Owner makes no specific arguments as to claim 20. *See generally* PO Resp. Although Patent Owner does not make any specific arguments with respect to this claim, the burden remains on Petitioner to demonstrate unpatentability of all challenged claims. 35 U.S.C. § 316(e); *see* Paper 10, 5. We have analyzed Petitioner’s contentions and cited evidence, including the supporting testimony of Mr. Allison, and agree with and adopt Petitioner’s analysis regarding dependent claim 20. Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 20.

6. *Claim 21*

Petitioner contends that claim 21 would have been obvious over the teachings of Rothbaum and Denison. Pet. 52–54. Claim 21 depends from claim 1 and further recites “wherein the alarm is configured to be activated when the security code stored by the programmable key does not match the

security code stored by the security device.” According to Petitioner, “a well-known security measure is to sound an alarm when an unauthorized key or incorrect security code is used.” *Id.* at 52 (citing Ex. 1014 ¶¶ 172–73). Rothbaum specifically provides for the sounding of an alarm. As described in the reference, an alarm will sound and an LED will light when an alarm condition occurs. Ex. 1003, 3:43–47. “[O]nce a breach of security condition is detected, the alarm horn 126 will sound [u]ntil key switch 38 is turned from the ON position to the SET position.” *Id.* at 8:23–25.

Patent Owner contends that “vending machines as described by Denison operate in a different environment than retail merchandise systems. Denison and Rothbaum address different security problems; Rothbaum discloses a security device that does not use a lock, while Denison describes an improvement for vending machines with electronic locks.” PO Resp. 44 (citing Ex. 1002 ¶ 2; Ex. 1003 at 3:24–4:14). Thus, Patent Owner asserts that Petitioner “does not demonstrate why a [person of ordinary skill in the art] would combine a security device with an alarm that does not use a lock with a vending machine with an electronic lock.” *Id.*

Patent Owner, however, misinterprets Petitioner’s proposed combination and reads Denison’s disclosures too narrowly. We agree that Patent Owner “conflates the actual proposed combination (modified Rothbaum system) with Denison’s system.” Reply 12. Petitioner explains that the proposed combination entails “replacing the key system of Rothbaum with an electronic key system similar to that disclosed in Denison.” Pet. 17–18. Thus, the modified system proposed by Petitioner would not include a vending machine, but rather the security system for use in retail stores described in Rothbaum. *See* Ex. 1003, 1:6–9, 5:5–19.

As such, we are persuaded by Petitioner's contentions and cited evidence, including the supporting testimony of Mr. Allison, and agree with and adopt Petitioner's analysis regarding dependent claim 21. Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 21.

7. Claim 22

Petitioner argues that claim 22 would have been obvious over the teachings of Rothbaum and Denison. Pet. 52–54. Claim 22 depends from claim 1 and further recites “the security code stored by the programmable key is configured to be invalidated when the security code stored by the programmable key does not match the security code stored by the security device.” Petitioner argues that “Denison discloses a key that ‘may also be programmed with other types of limits of operation’ that cause a key to deactivate.” *Id.* at 52 (citing Ex. 1002 ¶ 60). Petitioner asserts that it would have been obvious to program the key to include an operation limit that would inactivate the key upon a code mismatch. *Id.*

According to Petitioner, “Denison discloses multiple ways that a key becomes deactivated upon an ‘operation limit.’ In one method, the key transmits an ‘access code,’ recorded for ‘audit’ purposes, but unable to validly unlock/disarm the security device.” *Id.* at 53 (citing Ex. 1014 ¶¶ 181–82). Mr. Allison supports Petitioner's contention through his testimony that one of ordinary skill in the art “would have understood that this . . . method could be accomplished through the use of a flag sent to the vending machine, indicating whether the operation limits have been exceeded,” and another way “would be to erase or set to null the key code on the key once the operation limits are exceeded. That way, the key would be

unable to unlock any vending machine, since there would be no matching of codes.” Ex. 1014 ¶¶ 182–183. Mr. Allison testifies that there are only a “limited number of methods of preventing a key with the correct code from controlling a security device.” *Id.* ¶ 184.

Patent Owner responds by arguing that “[t]he claim does not merely require that the key no longer functions, but it requires that the security code itself ‘be invalidated.’” PO Resp. 45. “[Petitioner], however, does not and cannot contend that Denison discloses or teaches any action on or towards its security code.” *Id.* Patent Owner further argues that “Mr. Allison’s testimony in support is similarly deficient because he focuses repeatedly on his view that Denison’s ‘operation limits’ can be ‘set for the electronic key such that the key becomes disabled (inactivated).’” *Id.* (emphases omitted) (quoting Ex. 1014 ¶ 177). Patent Owner contends that Mr. Allison’s testimony is based on impermissible hindsight when he testified that deleting the code would have been the simplest method to deactivate the key. *Id.* at 46. According to Patent Owner, this statement is not taught by the cited art or supported by evidence other than his conclusory statement. *Id.*

As noted above, we interpret “security code . . . is configured to be invalidated” in claim 22 to mean that the security code is rendered incapable of controlling the security device. *See supra* Section III.A. We find credible Mr. Allison’s testimony that Denison teaches a key transmitting an access code that is recorded for audit purposes, but is unable to validly unlock/disarm the security device. Ex. 1014 ¶¶ 181–82. As described in Denison, in the event of “a key code mismatch or if the key is disallowed for access because an operation limit . . . is reached,” the unlocking procedure is terminated and a record is made of the improper key code and timestamp.

Ex. 1002 ¶ 63. Petitioner asserts that “[a person of ordinary skill in the art] would have found obvious programming the key with ‘limits of operation’ to inactivate the key upon mismatching of codes in the security device and key, ‘particularly given that that the key code itself is listed under ‘Key Access Control Limits’ in Figure 9.” Pet. 52–53 (citing 895/896 Dec. 54–57). Mr. Allison testifies that this inactivation of the key can occur in a limited number of ways. Ex. 1014 ¶ 184. We are persuaded that one of ordinary skill in the art would have inactivated the code in the key because that procedure is one of the finite number of methods for invalidating the key and thus, it would have been obvious for Petitioner to try that method.

As such, we are persuaded by Petitioner’s contentions and cited evidence, including the supporting testimony of Mr. Allison, and agree with and adopt Petitioner’s analysis regarding dependent claim 22. Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 22.

D. Asserted Obviousness Based on Rothbaum, Denison, and Deguchi

Claims 1–31 of the ’452 patent are alleged to be obvious over Rothbaum, Denison, and Deguchi. Pet. 56–61. In light of our determination that claims 1–31 are unpatentable over Rothbaum and Denison, we decline to address the unpatentability of claims 1–31 over Rothbaum, Denison, and Deguchi.

E. Additional Challenges Directed to Claim 20

Claim 20 depends from claim 19, which depends from claim 1, and recites that the programmable security system “further compris[es] a fastener for securing a bottom surface of the base on a supporting structure.” Claim 20 is asserted to be unpatentable over Rothbaum, Denison and Galant; and

over Rothbaum, Denison, Galant, and Deguchi. Pet. 62–64. Patent Owner’s Response does not contain arguments expressly directed to claim 20 apart from those directed to independent claim 1. *See generally* PO Resp.

Petitioner relies on Galant’s disclosure of “a need for an anti-theft device . . . to secure a laptop computer to a work surface, and which provides an increased level of security over traditional cable devices.” Pet. 62 (quoting Ex. 1005, 1:22–25). According to Petitioner, Galant met that need by securing the laptop bottom to a work surface. *Id.* Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Galant with Rothbaum and Denison because “a [person of ordinary skill in the art] would have understood a need to protect the laptop against theft by employees and by unauthorized individuals wandering off the sales floor to the location of the laptop.” *Id.* We find Petitioner’s arguments and evidence to be persuasive.

Based on our analysis of Petitioner’s explanations and supporting evidence, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claim 20 would have been obvious over Rothbaum, Denison, and Galant. As to the ground also based on Rothbaum, Denison, Galant, and Deguchi (Pet. 63–64), we decline to reach this ground in light of our determination that claim 20 would have been obvious over both the combination of Rothbaum and Denison and the combination of Rothbaum, Denison, and Galant.

F. Additional Challenges Directed to Claim 21

Claims 21 depends from claim 1 and further recites “wherein the alarm is configured to be activated when the security code stored by the programmable key does not match the security code stored by the security

device.” Claim 21 is asserted to be unpatentable over Rothbaum, Denison and Uchida; and over Rothbaum, Denison, Uchida, and Deguchi. Patent Owner’s Response does not contain arguments expressly directed to claim 21 apart from those directed to independent claim 1. *See generally* PO Resp.

Petitioner relies upon Uchida’s disclosure “that upon a mismatch of codes, its alarm (‘buzzer’) sounds.” Pet. 64 (citing Ex. 1014 ¶ 224; Ex. 1013 ¶ 51). Petitioner asserts that a person of ordinary skill in the art would have been motivated to combine the teachings of Uchida with those of Rothbaum and Denison because Uchida would “reduce the ill-effect of ‘stolen or copied keys’” by “provid[ing] an alert to security personnel who can proactively handle a situation if a shoplifter attempts to steal merchandise, before the shoplifter can deactivate security devices or damage merchandise.” *Id.* at 64–65. We find Petitioner’s arguments and evidence to be persuasive.

Based on our analysis of Petitioner’s explanations and supporting evidence, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claim 21 would have been obvious over Rothbaum, Denison, and Uchida. As to the ground also based on Rothbaum, Denison, Uchida, and Deguchi (Pet. 65), we decline to reach this ground in light of our determination that claim 21 would have been obvious over both the combination of Rothbaum and Denison and the combination of Rothbaum, Denison, and Uchida.

IV. CONCLUSION

Based on the information presented and the record developed during trial, we conclude that Petitioner has shown by a preponderance of the evidence that (1) claims 1–35 are unpatentable under 35 U.S.C. § 103(a) as

having been obvious over Rothbaum and Denison; (2) claim 20 is unpatentable under 35 U.S.C. § 103(a) as having been obvious over Rothbaum, Denison, and Galant; and (3) claim 21 is unpatentable under 35 U.S.C. § 103(a) as having been obvious over Rothbaum, Denison, and Uchida. In light of our other determinations of unpatentability, we decline to address whether claims 1–31 are unpatentable as obvious over Rothbaum, Denison, and Deguchi; whether claim 20 is unpatentable as obvious over Rothbaum, Denison, Galant, and Deguchi; and whether claim 21 is unpatentable as obvious over Rothbaum, Denison, Uchida, and Deguchi.

V. ORDER

Accordingly, it is:

ORDERED that claims 1–35 of the '452 patent have been shown to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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