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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 IPR2016-01241
Patent 7,737,846 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

A. Background

Mobile Tech, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") seeking to institute an *inter partes* review of claims 1–18 of U.S. Patent No. 7,737,846 B2 (Ex. 1001, "the '846 patent") pursuant to 35 U.S.C. §§ 311–319. Invue Security Products, Inc. ("Patent Owner") filed a Preliminary Response. Paper 6. Based on our review of these submissions, we instituted *inter partes* review of claims 1–3, 6, and 9 of the '846 patent based on the following grounds:

Reference(s)	Basis	Instituted Claim(s)
Denison[1]	§ 102	1 and 6
Denison	§ 103	1–3 and 6
Denison and Rothbaum[2]	§ 103	9

Paper 7 ("Dec."), 21.

Patent Owner filed a Patent Owner's Response (Paper 9, "PO Resp."), and Petitioner filed a Reply (Paper 11, "Reply"). Patent Owner filed a Motion to Exclude (Paper 17) and Petitioner filed an Opposition (Paper 20). An oral hearing was held on August 8, 2017. Paper 21 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, Petitioner has demonstrated by a preponderance of the evidence that claims 1–3, 6, and 9 of the '846 patent are unpatentable.

[1] U.S. Patent Pub. 2004/0201449, pub. Oct. 14, 2004 ("Denison," Ex. 1002).

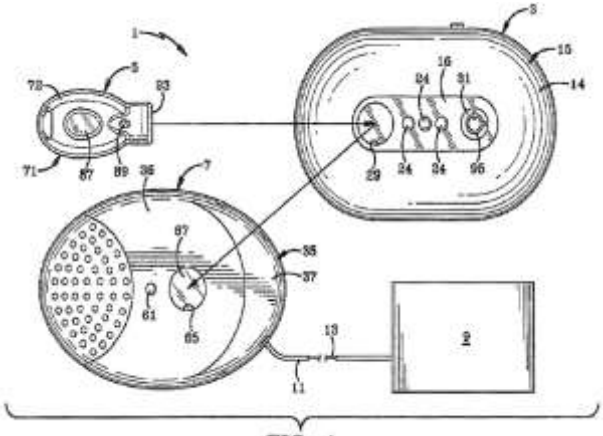
[2] U.S. Patent 5,543,782, issued Aug. 6, 1996 ("Rothbaum," Ex. 1003).

B. Related Proceedings

Petitioner informs us that *Invue Security Products Inc. v. Mobile Tech, Inc.*, 3:15-cv-00610 (W.D.N.C.) may be impacted by this proceeding. Paper 8. In addition, Petitioner filed petitions for *inter partes* review involving the same parties and related patents. Pet. 1; Paper 4, 1; IPR2016-00892, IPR2016-00895, IPR2016-00896, IPR2016-00898, IPR2016-00899, IPR2016-01915, IPR2017-00344, IPR2017-00345, IPR2017-01900, IPR2017-01901, and PGR2018-00004. Also, the parties identify certain patents and pending patent applications that may be impacted by this proceeding. *See id.*

C. The '846 Patent

The '846 patent describes a security system and method including a smart key that is programmed with a security disarm code ("SDC"). Ex. 1001, 1:14–19. Figure 1 of the '846 patent is reproduced below.



FIG–1

Figure 1 depicts security system 1. *Id.* at 4:65–5:1. The primary components of security system 1 are programming station 3, programmable smart key 5, and alarm module or security device 7. *Id.* at 5:1–3. Merchandise 9 is connected to alarm module 7 via cable 11 that preferably contains sense loop 13. *Id.* at 5:4–6. Programming station 3 randomly

generates a unique SDC that is transmitted to smart key 5, which in turn stores the SDC in key memory. *Id.* at 7:28–35. Once programmed with an SDC, key 5 is taken to one or more alarm modules 7 and the SDC is stored in the alarm module's memory. *Id.* at 7:45–50. "SDC memory 53 permanently stores this SDC in the programmed alarm module preferably for the life of the alarm module." *Id.* at 7:50–52. The storage of the SDC in the memory of key 5 will actuate timer 82 for a predetermined time period. *Id.* at 7:56–58. When the timer expires the SDC "will automatically be erased or invalidated by [the smart key's] control logic circuit 77 rendering the key inoperative if attempted to be used with alarm module 7." *Id.* at 7:58–62. In addition, counter 83 of key control logic circuit 77 counts each time that the key is activated. *Id.* at 8:20–22. "After a predetermined number of activations . . . counter 83 will cause logic control circuit 77 to inactive the key rendering it inoperative for further use." *Id.* at 8:23–26.

D. Illustrative Claim

As noted above, we instituted *inter partes* review of claims 1–3, 6, and 9 of the '846 patent, of which claim 1 is independent. Claim 1 is illustrative of the challenged claims and is reproduced below:

> 1. A security system for protecting an item of merchandise comprising:
>
> a) a programmable key;
>
> b) a programming station for generating a security code in the key; and
>
> c) a security device for attachment to the item of merchandise, said security device being initially programmed with the security code from the key and subsequently being controlled by the key upon matching the security code of the key with the security code in the security device.

E. 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); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (upholding the use of the broadest reasonable interpretation standard). Under this standard, we construe claim terms using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). We presume that claim terms have their ordinary and customary meaning. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). This presumption, however, may be rebutted if the specification defines the claim term with "reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

With respect to the claims challenged in this *inter partes* review, the Decision on Institution discussed the broadest reasonable interpretation of the term "programmable key." Dec. 6 ("we are not persuaded the broadest reasonable interpretation of 'programmable key' is limited to a programmable key that 'deactivates itself upon the occurrence of a specific event,' as argued by Petitioner"). During trial, the parties did not further address our initial determination regarding the broadest reasonable interpretation of this term. *See* PO Resp. 4; *see generally* Reply. Based on our review of the record, we do not see any reason or evidence that compels

any change from the preliminary interpretation. We adopt the previous analysis and need not further interpret the term "programmable key" for purposes of this Decision.

F. Level of Ordinary Skill in the Art

Patent Owner and Petitioner provide similar definitions of the person of ordinary skill in the art. Petitioner's Declarant, Mr. Thaine Allison III, 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. 1010 ¶ 18. Patent Owner provides a slightly different skill level:

> [A person of ordinary skill in the art] would have the equivalent of a four-year degree in electrical engineering, computer engineering, computer science, or the equivalent and would also have approximately two to five years of professional experience and be trained in electronics including microcontrollers, and embedded programming for microcontrollers.

PO Resp. 4–5 (citing Ex. 2005 ¶ 35). Patent Owner's declarant, Christopher J. Fawcett, testifies that a person of ordinary skill in the art would have been

> an engineer (with a B.S. in electrical engineering, computer engineering, computer science, or the equivalent) with 2 to 5 years of experience and trained in electronics including microcontrollers, and embedded programming for microcontrollers. He/she would have been familiar with flowcharts and turning flowcharts and system operational descriptions into working software/firmware. He/she would have been familiar with asynchronous serial communications which were very common in systems that use microcontrollers. He/she would have been adept at turning design concepts into working products.

Ex. 2005 ¶ 35.

Neither party explains in detail why its proposed level of ordinary skill in the art should be adopted nor how the different levels affect the parties' analyses. Although there are slight differences between the proposed levels of ordinary skill in the art, the parties' declarants agree that an ordinarily skilled artisan would have had a four-year technical degree or the equivalent and some amount of professional experience. Based on the evidence of record, including the testimony of the parties' declarants, 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.

II. ANALYSIS

A. Unpatentability Challenge Based on Denison

1. 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. Denison's vending machines broadly include "machines commonly used for vending drinks and snacks, ATM stations, change machines, toll machines, coin-operated laundry machines, video arcades, etc." *Id.* ¶ 36. 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 1 of Denison is shown below.

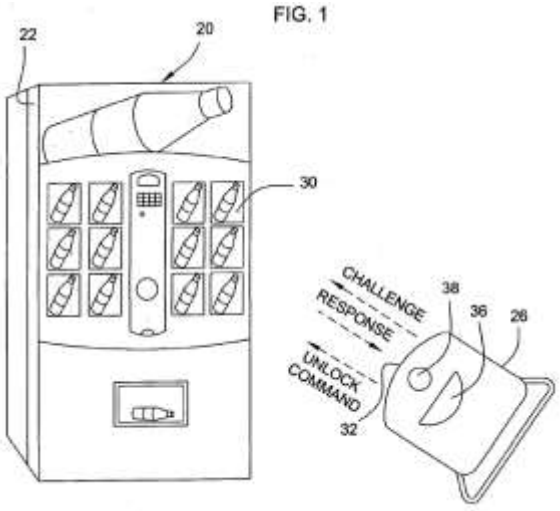


Figure 1 is a schematic view of Denison's vending machine and electronic lock. *Id.* ¶ 15. Vending machine 20 has a front panel or door 22 that can be opened when the electronic lock is unlocked by a properly programmed electronic key. *Id.* ¶ 36. Electronic key 26 preferably communicates with the lock via wireless communications. *Id.* ¶ 37.

2. Asserted Ground of Anticipation

Review of claims 1 and 6 was instituted pursuant to Petitioner's assertion that these claims are anticipated by Denison. Dec. 11–13, 15, 21; Pet. 14–29. Petitioner provides claim charts in support of its contentions and relies upon the Allison Declaration to support its positions. Pet. 14–29; Ex.

1010. Based on our review of Petitioner's explanations and supporting evidence and Patent Owner's arguments and evidence, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 6 are anticipated by Denison.

a. Independent Claim 1

Petitioner's arguments as to the alleged anticipation of claim 1 may be summarized as follows: Denison describes a security system (vending machine) for protecting an item of merchandise (e.g., drinks and snacks). Pet. 14; *see also id.* at 18–26 (claim chart). Denison is relied upon to disclose the recited programmable key and programming station through its description of a vending machine with an electronic lock and electronic key wherein external computing device 426 is used to program a key code and an access code into the memory of the electronic key. *Id.* at 14–15. The electronic key programs the vending machine with an access code. *Id.* at 24. In order to unlock Denison's vending machine, the access codes in the electronic lock and key must be the same. *Id.* at 15.

Patent Owner argues that Denison does not anticipate claim 1 because it does not disclose an embodiment that has "a programming station for generating a security code in the key [and] . . . said security device being initially programmed with the security code from the key." PO Resp. 5.

Petitioner relies on Denison's discussion of an "'external computing device,' such as a 'laptop'" to disclose the recited programming station. Pet. 21 (citing Ex. 1010, 38–39); *see* Ex. 1002 ¶ 78 ("To communicate wirelessly with the electronic lock, the external computing device 426, such as a laptop computer, is equipped with a wireless transceiver 428."). In Denison, "the external computing device 426 may optionally be used to

program an electronic key 410." Ex. 1002 ¶ 85. In addition to the programming station that programs the electronic key, claim 1 also recites "said security device being initially programmed with the security code from the key." As to this limitation, Petitioner relies upon Denison's disclosure that "[t]he electronic lock can learn a key code from a corresponding electronic key, a hand-held programming unit, ***and/or*** an external computing device via wireless communications." Pet. 16 (quoting Ex. 1002 ¶ 6); *see also* Ex. 1010, 41 (supporting testimony of Mr. Allison). As described in Denison, "a service person sets the electronic lock in a learning mode, in which the electronic lock receives a key code transmitted from an electronic key, and stores the key code in a non-volatile memory for future access control of the vending machine." Pet. 24 (quoting Ex. 1002 ¶ 7).

First, Patent Owner contends that the disclosures relied upon for the programming station and electronic lock that is programmed by an electronic key are found in two different embodiments and, thus, it is improper for Petitioner to rely upon them as part of an anticipation allegation. PO Resp. 7–12. According to Patent Owner, Petitioner characterizes Denison as including a "'first method'—where an electronic lock of a vending machine learns a key code from an electronic key—[as] disclosed in ¶¶ [0036]–[0076] of Denison." *Id.* at 7–8. In addition, according to Patent Owner, Denison includes two other methods disclosed in paragraphs 77–88, which "have the electronic lock 'learning the key code from the hand-held program unit' or learning the key code 'from the external computing device.'" *Id.* at 8. Patent Owner argues that Denison's file history and specification show that the first method and the other two methods come from descriptions of different inventions that were disclosed

at different times. *Id.* at 8–11. Specifically, Patent Owner asserts that Denison is a continuation-in-part, which adds new matter to the previous filing. *Id.* at 8–9. According to Patent Owner, that new matter included "another approach of the invention" that allowed the vending machine lock to be programmed by receiving an access code from an electronic key. *Id.* at 9.

Petitioner responds by arguing that Denison's Summary of the Invention ties together the three methods for programming the vending machine lock. Reply 5. In particular, Petitioner notes Denison states that "[i]n view of the foregoing, the present invention provides a vending machine with a field-programmable electronic lock. The ***electronic lock can learn a key code from a corresponding electronic key***, a hand-held program unit, ***and/or an external computing device*** via wireless communications." *Id.* (quoting Ex. 1002 ¶ 6 (emphases by Petitioner)). Petitioner asserts that this passage means that the lock of Denison's vending machine is able to be programmed by an electronic key, an external computing device, or both. *Id.* (citing Ex. 1011, 41:3–12).

According to Patent Owner, the term "and/or" makes this passage ambiguous. Tr. 31:2–15. Patent Owner contends that the usage of the term "present invention" in the first sentence merely signifies that the inventive system must have a vending machine with a field programmable lock. PO Resp. 16. Per Patent Owner's arguments, the next sentence in that passage, which includes the "and/or" language, is a distinct disclosure that lists the three different embodiments, but does not combine the teachings of these embodiments. *Id.* "Tellingly, Denison does not, following the 'and/or' statement, go on to describe in the Summary of the Invention any particular

embodiment that combines using an external computer to program the key and then using the key to program the electronic lock." *Id.* (citing Ex. 1002 ¶¶ 7–14).

An anticipating reference "must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972). Patent Owner describes in detail when each of the methods was introduced into the disclosure that eventually became the Denison specification. *See* PO Resp. 8–10. This exercise, however, does not address what one of ordinary skill in the art would understand to be disclosed by Denison as published. The disclosure of Denison may have evolved from the earlier filings, but we are presented with a specific publication that is the basis for Petitioner's asserted ground of anticipation and are tasked with determining what information would be obtained from reading Denison as published. We must refrain from "picking and choosing snippets" of Denison, but we must consider the reference as a whole and determine whether the teachings relied upon are sufficiently interrelated to support Petitioner's anticipation challenge. *Arkley*, 455 F.2d at 587.

Petitioner argues that Denison ties these methods together by stating that the vending machine's lock can be programmed by an electronic key ***and/or*** the external computing device. *See* Reply 5; Ex. 1002 ¶ 6. Patent Owner, on the other hand, is attempting to parse Denison's sentences in a manner that would require each individual sentence to be read alone and without context. The passage relied upon by Petitioner describes the present

invention as having the vending machine and the lock. Ex. 1002 ¶ 6. The very next sentence provides additional disclosure about the lock of the present invention. *Id.* Specifically, that sentence recites that the lock of the present invention can learn the key code from the electronic key, hand-held programming unit, ***and/or*** an external computing device. *Id.* We find that the "and/or" term would have indicated to one of ordinary skill in the art that the electronic lock can learn the access code from any one of those methods or it can learn the access code by using any combination of those methods. Thus, we are persuaded that these methods are "directly related to each other by the teachings of the cited reference." *See Arkley*, 455 F.2d at 587; *see also Purdue Pharma L.P. v. Epic Pharma, LLC*, 811 F.3d 1345, 1358–59 (finding two portions of a specification "directly related" based on one statement describing an embodiment of the disclosed invention).

In addition, Petitioner contends that "after a key is programmed with an access code by the external computing device, that same key is usable to program the vending machine (or alternatively, the external computing device can program the vending machine)." Pet. 17 (citing Ex. 1010 ¶¶ 100–105). Denison's external computing device 426 has a memory containing a list of access codes or a program for computing new access codes. Ex. 1002 ¶ 79 (cited at Pet. 22). Denison describes using the external computing device to program access codes into an electronic key. *Id.* ¶ 86; *see also* Pet. 15 (citing Ex. 1002 ¶ 85 ("the external computing device 426 may optionally be used to program an ***electronic key 410***") (emphasis added)). Denison further describes programming the vending machine lock with the "access code(s), access limit parameters, etc. that are already in the ***electronic key 410***." Ex. 1002 ¶ 87 (emphasis added); *see*

also Pet. 15 (citing Ex. 1002 ¶ 45 ("[T]he access control strategy is established by 'learning' or transferring the access code of the electronic key to be used to operate the machine into the electronic lock via a secured transfer process.")). Thus, we find that Denison describes electronic key 410 as being programed by external computing station 426 and being used to program the vending machine lock.

Next, Patent Owner asserts that these disclosures are insufficient to anticipate claim 1 because the claim requires a specific sequence of events. PO Resp. 17. According to Patent Owner, claim 1 "requires the *particular sequence* of 1) the programming station 'generating a security code in the key' 2) the key 'initially' programming the security device with the security code 'from the key' and 3) the security device 'subsequently being controlled by the key upon matching the security code.'" *Id.* In Patent Owner's view, in order to meet the claim language a system must be configured to carry out each of those events in the sequence listed above. Tr. 29:21–30:5. Thus, Patent Owner contends that Denison does not anticipate claim 1 because it does not disclose this particular sequence. PO Resp. 18.

Claim 1 is directed to "[a] security system for protecting an item of merchandise." Ex. 1001, 11:7. One element of this security system is a "security device for attachment to the item of merchandise." *Id.* at 11:12–13. The claim recites "said security device ***initially programmed*** with the security code from the key and ***subsequently being controlled*** by the key upon matching the security code." *Id.* at 11:13–16 (emphases added). Petitioner asserts that the "subsequently" and "initially" language found in claim 1 does not require a particular series of events because timing of

events is not part of a product claim. Tr. 7:4–13. Petitioner asserts that in Denison, "after a key is programmed with an access code by the external computing device, that same key is usable to program the vending machine (or alternatively, the external computing device can program the vending machine)." Pet. 17 (citing Ex. 1010 ¶¶ 100–105).

As noted above, claim 1 recites "said security device ***initially programmed*** with the security code from the key and ***subsequently being controlled*** by the key upon matching the security code." *Id.* at 11:13–16 (emphases added). We determine that this means that the security device must be capable of being controlled by the key that programmed the security device. This determination is based upon the specific language of the claim. The antecedent basis for "said" security device and "the" key indicates that the same security device and key are referred to throughout the claim. The functional language in the claims ("programmed" and "being controlled") "reflects the capability of" the structures recited in the claims. *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1315 (Fed. Cir. 2017). The claim recites that the security device is programmed with a security code and being controlled by a key. As such, these functional terms indicate capabilities that must be present within the claimed system. We determine that the security device must be capable of being programmed and controlled by the recited key. As such, the functional capabilities at issue recite the capability to perform an initial programming with the key and subsequent control by the key. Thus, we find the claim to require a key capable of programming and controlling the security device.

Denison discloses "the external computing device 426 may optionally be used to program an electronic key 410 . . . . To that end, the electronic

key 410 is connected to the cradle 430, and the access code that has been programmed into the lock is transmitted via the cradle into the key." Ex. 1002 ¶ 85. Further, "[e]ach electronic key 26 has a key code 88 stored therein, and the same key code is stored in the memory 52 of the electronic lock in each vending machine to be operated with the electronic key." *Id.* ¶ 42; *see also id.* ¶ 79 ("The electronic key 410 has stored therein access code(s), control parameters for accessing the lock, and an optional timebase."). "The electronic lock can be unlocked if the key code it receives from the electronic key matches the key code stored in the memory of the lock." *Id.* ¶ 42; see *also id.* ¶ 87 ("[T]he operator takes the key 410 to the location of the vending machine and uses the key to access the lock by communicating with the lock via the access control transceiver 408 based on the new access code and/or operation parameters programmed into the lock."). We find that these passages disclose the recited programming station for generating a security code and security device capable of being programmed by a key and capable of being controlled by that key upon a matching of the security code.

Thus, for the foregoing reasons, we are persuaded by Petitioner's contentions as to all of the limitations of independent claim 1. Upon consideration of the evidence, we conclude that Petitioner has shown by a preponderance of the evidence that claim 1 is anticipated by Denison.

b. Analysis of Dependent Claim 6

Petitioner asserts that claim 6 is anticipated by Denison. Pet. 28–29. Claim 6 depends from claim 1 and further recites "wherein the key includes a counter which counts the number of activations of the key." Petitioner relies upon Denison's disclosure of an access counter in the key memory

that keeps track of the number of accesses for that key. *Id.* (citing Ex. 1002 ¶ 60, Fig. 9). Although Patent Owner does not make any additional arguments with respect to claim 6, and thereby waived any arguments as to its patentability apart from Patent Owner's arguments addressed above in the context of the independent claim, the burden remains on Petitioner to demonstrate unpatentability of all challenged claims. 35 U.S.C. § 316(e); *see* Paper 8, 3 ("Patent Owner is cautioned that any arguments for patentability not raised in the response will be deemed waived."); *Dynamic Drinkware LLC, v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). 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 claim 6. Pet. 28–29. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claim 6 is anticipated by Denison.

3. Asserted Ground of Obviousness

Petitioner argues claims 1–3 and 6 would have been obvious over Denison. Pet. 29–34. Petitioner provides claim charts in support of its contentions and relies upon the Allison Declaration to support its positions. *Id*. Ex. 1010. Based on our review of Petitioner's explanations and supporting evidence, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 1–3 and 6 would have been obvious over Denison.

a. Claims 1 and 6

Petitioner directs us to the same disclosures in Denison as relied upon in support of its alleged ground of anticipation of claims 1 and 6. *See* Pet. 29–31. Petitioner supplements these disclosures by arguing, in the

alternative, that if the Board were to be persuaded that the "descriptions of electronic key 26 and 410 describe different embodiments, combining these embodiments would have been obvious." *Id.* at 29 (citing Ex. 1010 ¶¶ 120–124). Mr. Allison testifies that one of ordinary skill would have been motivated to combine the cited disclosures "in order to provide extra flexibility to the user of the system." Ex. 1010 ¶ 123. Mr. Allison also testifies that combining the cited disclosures "would have been a routine and simple task for a [person of ordinary skill in the art], and thus there would have been a high expectation of success." *Id.* ¶ 124. Further, Petitioner contends that

> Denison discloses only two different ways for storing a security code on the electronic key: (1) the key is programmed with a code at the factory (Ex. 1002 ¶ 45), and (2) the key receives the code from the external computing device (*id.* ¶ 84-85). Given only two options, a person of ordinary skill in the art ("POSA") would have found it obvious to use a key programmed either way to program a vending machine.

Reply 10 (citing *KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 410 (2007)).

Patent Owner asserts that Petitioner's obviousness argument "still fails to address the programming sequence required by claim 1." PO Resp. 18. Petitioner responds by asserting that if the claims were construed to require a particular order then that recited order of capabilities would have been obvious over Denison. Reply 10. Specifically, Petitioner argues that

> if the key programmed with an external computing device is used to program the lock of the vending machine (security device), the key must receive the code from the external computing device before it can program the code into the lock. And the lock must be programmed with the code before the lock can be controlled by the key upon matching the code of the key with the code in the vending machine.

Id. We find Petitioner's contentions to be a persuasive explanation of what would have been learned from the disclosures of Denison. We are persuaded that it would have been obvious to program the key before using the key to program the lock and that it would have been obvious to program the lock before attempting to use the key to unlock the lock. We also are persuaded that because Denison only describes two ways of programming a key, it would have been obvious to use a key programmed by the external computing device as the key that programs the vending machine lock.

Patent Owner argues that Petitioner's arguments do not account for the prosecution history of Denison. PO Resp. 21. When asked at oral hearing, however, Patent Owner was unable to cite any precedent to support its argument that, to determine whether a cited reference discloses one embodiment or multiple embodiments, the reference should be reviewed in light of its prosecution history. Tr. 33:6–34:5. We are not convinced that consideration of the prosecution history is necessary in this instance to determine what one of ordinary skill in the art would have gleaned from the cited reference. Rather, we consider what the reference on its face would have taught to a person of ordinary skill in the art. On its face, Denison's disclosure renders obvious the recited system of claim 1, for the reasons set forth by Petitioner and Mr. Allison.

Patent Owner also argues that "Denison teaches away from using a key to program the vending machine by specifically teaching a separate 'hand-held programming unit' for programming electronic locks at the location of the vending machine." PO Resp. 22. Further, "[g]iven the disclosure of long range communications in Denison, a person of ordinary

skill in the art would have no reason or motivation to use an intermediary step of programming through the use of a key." *Id.* (citing Ex. 2005 ¶ 55).

"What the prior art teaches and whether it teaches toward or away from the claimed invention . . . is a determination of fact." *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1088 (Fed. Cir. 1995). "[A] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Mouttet*, 686 F.3d 1322, 1333–34 (Fed. Cir. 2012) (citation omitted); *see also Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, -- F.3d --, No. 2017-1475, 2017 WL 6044237, at *4 (Fed. Cir. Dec. 7, 2017) ("[t]he degree of teaching away will of course depend on the particular facts," and "some references may discourage more than others" (citation omitted)). Petitioner contends that Denison "simply provides an *alternative* for programming via short range communication. A [person of ordinary skill in the art] certainly would have found this advantageous, because 'long range communications' do not always work; networks go down." Reply 17. The fact that a reference discloses alternative methods is insufficient on its own to show teaching away. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We are not persuaded that one of ordinary skill in the art would have been discouraged or led in a different direction by Denison's disclosure of using a hand-held device to program a vending a machine lock, and we see no evidence of a disclosure in Denison that would discourage one of ordinary skill in the art from using Denison's electronic key to program a vending machine lock, as expressly disclosed in Denison.

Upon consideration of all the evidence, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1 and 6 would have been obvious over Denison.

b. Claims 2 and 3

Claims 2 and 3 depend from claim 1 and each recite additional limitations regarding wireless communication. Petitioner asserts that these claims would have been obvious over Denison. Pet. 31–34. Claim 2 recites "wherein the programming station includes a wireless interface for generating the security code in the key." Claim 3 recites "wherein the wireless interface is infrared (IR) or radio frequency (RF) communications." Petitioner relies on Denison's teaching that "key 26 and the lock preferably communicate with each other wirelessly, which may be via an infrared or radio frequency (RF) channel." Ex. 1002 ¶ 37 (quoted at Pet. 32). Denison also describes external computing device 426 as communicating in either the RF range or infrared band. *Id.* ¶ 83. We find this evidence to be sufficient to show that Denison teaches the recited limitations of claims 2 and 3. Although Patent Owner does not make any additional arguments with respect to claims 2 and 3, and thereby waived any arguments as to their patentability apart from Patent Owner's arguments addressed above in the context of the independent claim, the burden remains on Petitioner to demonstrate unpatentability of all challenged claims. 35 U.S.C. § 316(e); *see* Paper 8, 3; *Dynamic Drinkware*, 800 F.3d at 1378. 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 claims 2 and 3. Pet. 31–34. Upon consideration of all the

evidence, we conclude that Petitioner has shown by a preponderance of the evidence that claims 2 and 3 would have been obvious over Denison.

B. Asserted Obviousness in View of Rothbaum and Denison

Petitioner asserts that claim 9 would have been obvious over the combination of Rothbaum and Denison. Pet. 37–45. Petitioner explains how the cited prior art references allegedly teach the claimed subject matter and relies upon the Allison Declaration to support its positions. *Id*. We have reviewed Petitioner's arguments and supporting evidence, and we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claim 9 would have been obvious in view of the combination of 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.

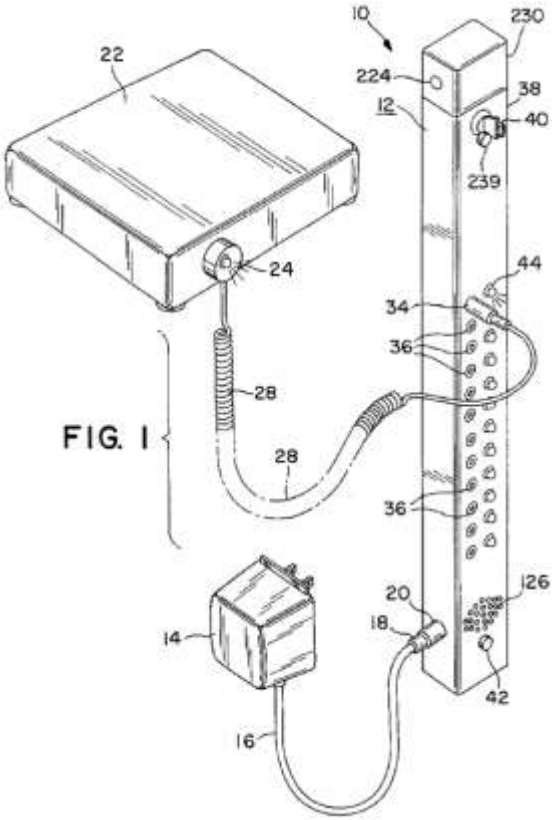


FIG. 1

Figure 1 depicts a perspective view of Rothbaum's security system. *Id.* at 4:22–23. 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.

2. Claim 9

Claim 9 depends from claim 1. Petitioner argues that claim 9 would have been obvious over Denison and Rothbaum. Pet. 42–45. Claim 9 further recites that the security device contains an audible alarm, a sense loop connects the security device to the item of merchandise, and an alarm is activated when the integrity of the sense loop is compromised. Petitioner relies upon Rothbaum's alarm horn 126 ("audible alarm") and item cord 28

("sense loop") to teach the alarm that sounds when the sense loop is compromised. *Id.* Petitioner contends that one of ordinary skill in the art would have combined the teachings of Rothbaum and Denison in order to improve Rothbaum's system by replacing its mechanical key with Denison's electronic key. *Id.* at 39–40. According to Petitioner, one of ordinary skill would have been motivated to do this because an electronic key system would have alleviated problems associated with managing numerous mechanical keys that are used by many employees and could be obtained for unauthorized purposes. *Id.* at 39 (citing Ex. 1002 ¶¶ 4–6, 9–10, 79; Ex. 1010 ¶¶ 138–139). We find these arguments to be persuasive.

Patent Owner does not attack the sufficiency of the references' disclosures, but rather it makes several arguments as to why Petitioner allegedly does not provide sufficient reasoning to justify the combination of Rothbaum and Denison. Patent Owner relies upon the testimony of Mr. Christopher Fawcett (Ex. 2005), a named inventor on the '846 patent. PO Resp. 23–30. For instance, Patent Owner disputes Petitioner's assertion that the "problems resolved by Denison would also have been problems present with the security system disclosed in Rothbaum." *Id.* at 27 (quoting Pet. 39). Patent Owner argues:

> Nothing in Rothbaum . . . teaches or suggests that its mechanical key has any problems. *See* Ex. 2009, 227:23–228:1; Ex. 2005 ¶ 47. Rothbaum's disclosure of a key is very straightforward, generally focusing on the basic functionality of the mechanical key. Ex. 1003 at 6:17–22; Ex. 2005 ¶ 47. Rothbaum at no point mentions problems with such mechanical keys nor does it explicitly or implicitly suggest the mechanical key needs replacing or improvement. Ex. 2005 ¶ 47.

Id. Mr. Fawcett testifies similarly, citing column 6, lines 17–22 of Rothbaum in his testimony. *See* Ex. 2005 ¶ 47.[3]

Although we agree with Patent Owner that Rothbaum does not expressly disclose problems with its own key, Petitioner's contentions of obviousness are not premised on any such disclosure in Rothbaum. Rather, Petitioner contends, and Mr. Allison testifies, that the problems Denison identifies with respect to mechanical keys also would have been issues in Rothbaum's system, which uses mechanical keys. Pet. 39; Ex. 1010 ¶ 140–141. Indeed, Mr. Allison explains that the security device of Rothbaum "is used to protect merchandise in the retail environment" and that, "[i]n this environment, there are also many employees and thus the need for multiple keys, which can get lost or be stolen and then used by unauthorized individuals." Ex. 1010 ¶ 140. Rothbaum itself discloses that "[o]nly authorized personnel should have access to key 40 to prevent the circumvention of the security system" (Ex. 1003, 6:20–22), underscoring the very security issues identified by Mr. Allison that are encountered in a retail environment. *See* Ex. 1010 ¶ 140. Therefore, we credit Mr. Allison's testimony that the problems Denison identifies with respect to mechanical keys also would have been issues in Rothbaum's system. *Id.*

Patent Owner also argues that Rothbaum's concerns with power conservation and device integration undermine Petitioner's rationale to combine. PO Resp. 28. With respect to power conservation, Patent Owner argues:

[3] Although Mr. Fawcett cites column 7, lines 17–22 of Rothbaum, the quoted passage appears at column 6, lines 17–22 of Rothbaum. *See also* PO Resp. 27 (citing Ex. 1003, 6:17–22).

> Rothbaum was also concerned with the need to conserve power in the closed loop system. Ex. 1003, 2:30–35. Denison's external computing device, keys and electronic lock, although working well on a vending machine without the same power concerns, would likely worsen the power drain that Rothbaum conscientiously seeks to minimize or avoid. Ex. 2005 ¶ 49.

Id. The cited portion of Rothbaum, however, describes a drawback of closed loop security systems when the power is off, such as during a power outage (Ex. 1003, 2:30–35), and Rothbaum discloses the use of "an energy conservation mode" in which a battery supplies power in such circumstances (*id.* at 3:63–4:14). Rothbaum does not appear to have the same concerns with power conservation during normal operation, as it discloses the use of a closed system that is powered by an AC adapter when power is on. *Id.* at 3:63–64 ("The instant invention is a closed system when drawing power from its AC adapter."). We do not find that Rothbaum's disclosure of the use of an energy conservation mode when power is off undermines Petitioner's asserted rationale to combine. Indeed, Denison's disclosure that external computing device 426 is a laptop computer (Ex. 1002 ¶ 78) complements Rothbaum's energy conservation mode because a laptop computer would have a battery and need not be plugged into an outlet at all times. For example, Denison describes that "an operator may drive to the building in which the vending machine is located. *In his service vehicle*, the operator uses a laptop computer that functions as the external computer device to wirelessly communicate with the electronic lock of the vending machine by sending RF signals." *Id.* ¶ 86 (emphasis added).

Patent Owner argues that

> [a person of ordinary skill in the art] would also not modify Rothbaum to add components that are not integrated. During prosecution of its application, Rothbaum described that the

> "invention provides a fully integrated security device [which] advantageously enables alarm and detection circuitry and connections to sensors be located within one housing [in] a completely self-contained unit." Ex. 2017, 4. Modifying Rothbaum to include a programming station and programmable key would lead to additional circuitry being outside the housing and a reduction in simplicity and security. Ex. 2005 ¶ 49.

PO Resp. 28 (second and third alterations in original). As we understand Petitioner's contentions, however, the security device of the Rothbaum-Denison combination remains an integrated device having alarm and detection circuitry and sensor connections located within one housing. In particular, Rothbaum's strip or housing 12 is a "security device" as recited in claims 1 and 9. Petitioner does not argue that the programming station of the Rothbaum-Denison combination would have alarm and detection circuitry and sensor connections. Therefore, the inclusion of a programming station in the combined Rothbaum-Denison security *system* would not affect the location of these components in the security device itself.

Patent Owner also argues that "Rothbaum in particular seems to be concerned with ***avoiding*** complexity," and, therefore, "[m]odifying Rothbaum's system (as alleged by [Petitioner]) to supplant a simple mechanical key with Denison's distributed electronic key system would only increase complexity, costs, and the risk of improper installation by adding extensive additional electronic components." *Id.* at 27–28 (citing Ex. 1003, 2:1–6; Ex. 2005 ¶ 48). We do not disagree that adapting Rothbaum's system to include electronic keys as taught by Denison may result in a more complex system, but this alone does not undermine Petitioner's asserted rationale for the combination. As the U.S. Court of Appeals for the Federal Circuit has stated, "a given course of action often has simultaneous

advantages and disadvantages, and this does not necessarily obviate motivation to combine." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006). "Instead, the benefits, both lost and gained, should be weighed against one another." *Id.* (quoting *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000)).

Even if the proposed combination introduces complexities that are not present in the system of Rothbaum alone, we also consider the advantages that electronic keys provide, as described in Denison, such as greater security and improved key management and distribution. *See* Ex. 1002 ¶¶ 9–10. We find such advantages would have outweighed any added complexity and motivated a person of ordinary skill in the art to adapt Rothbaum's system to use electronic keys. In other words, based on the disclosures of the references, a person of ordinary skill in the art would have considered the use of electronic keys to be a significant *improvement* to the mechanical system of Rothbaum, regardless of the minimal added complexity of such a change.

Further, we find credible Mr. Allison's testimony that a person of ordinary skill in the art "would have had a reasonable expectation of success in combining the electronic key system of Denison with the security system of Rothbaum" (*see* Ex. 1010 ¶¶ 142–146) because it is consistent with the evidence of record, including Denison's disclosure that security systems using electronic keys were well-known as of the relevant time.[4] *See*

[4] Although Mr. Fawcett testifies regarding increased complexity of the proposed Rothbaum-Denison system (Ex. 2005 ¶ 48), we do not find testimony from Mr. Fawcett rebutting Mr. Allison's testimony regarding reasonable expectation of success. *See generally* Ex. 2005.

Ex. 1002 ¶¶ 3–10. Mr. Allison's testimony and the disclosure of Denison are evidence that implementing electronic keys in security devices was well within the skill level of a person of ordinary skill in the art.

Patent Owner also faults Mr. Allison, Petitioner's Declarant, for not having proposed a specific design for the combined system in his Declaration. PO Resp. 29–30. The Federal Circuit, however, has

> consistently held . . . that "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."

MCM Portfolio LLC v. Hewlett-Packard Co., 812 F.3d 1284, 1294 (Fed. Cir. 2015), *cert. denied*, 137 S. Ct. 292 (2016) (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

Further, the Supreme Court has held that, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417. As discussed above, Mr. Allison provides credible testimony that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Rothbaum and Denison. *See* Ex. 1010 ¶¶ 142–146. Indeed, Mr. Fawcett, testified that a person of ordinary skill in the art "would have been adept at turning design concepts into working products." Ex. 2005 ¶ 35. Therefore, we are persuaded by Petitioner's contention that a person of ordinary skill in the art

would have had a reasonable expectation of success in combining the teachings of Rothbaum and Denison. *See* Pet. 40–41.

Patent Owner further notes that "[i]ndependent claim 1 of the '846 patent requires a security device 'for attachment to an item of merchandise', while claim 9 of the '846 patent requires an 'audible alarm' configured to activate upon the integrity of the sense loop being compromised." PO Resp. 26. Patent Owner argues that Petitioner "ha[s] [not] addressed the underlying fundamental question of why a [person of ordinary skill in the art] would venture out of the field of merchandise security systems with alarms to vending machines without alarm systems." *Id.* at 27. Patent Owner, therefore, contends Petitioner fails to provide a sufficient rationale to combine Rothbaum and Denison. *See generally id.* at 23–30.

We disagree with Patent Owner. Rather, having considered the arguments of the parties and based on the evidence of record, we are persuaded by Petitioner's contention that a person of ordinary skill in the art would have had reason to combine Denison's teachings of electronic keys and locks with the security system teachings of Rothbaum. *See* Pet. 39–42. In particular, we find that a person of ordinary skill in the art would have been motivated to combine these teachings to take advantage of the numerous benefits of an electronic key system, as described in Denison. *See* Ex. 1010 ¶¶ 140–141; Ex. 1002 ¶¶ 9–10. For example, Denison discloses that "electronic keys provide a greater level of key security compared to mechanical keys, as they cannot be copied as easily as conventional mechanical keys." Ex. 1002 ¶ 9. Denison further discloses that the use of electronic locks and keys "provides advantages in terms of significant reduction in the costs associated with managing the distribution of the keys

for unlocking the machines and the monitoring of the usage of the keys," and that "[c]ustomized access limitations may be programmed by a supervisor into the electronic keys to restrict" their use. *Id.* ¶ 10.

As discussed above, Mr. Allison provides credible testimony explaining that the security device of Rothbaum "is used to protect merchandise in the retail environment" and that, "[i]n this environment, there are also many employees and thus the need for multiple keys, which can get lost or be stolen and then used by unauthorized individuals." Ex. 1010 ¶ 140. Rothbaum itself discloses that "[o]nly authorized personnel should have access to key 40 to prevent the circumvention of the security system" (Ex. 1003, 6:20–22), underscoring the very security issues identified by Mr. Allison that are encountered in a retail environment. *See* Ex. 1010 ¶ 140.

Further, consistent with the evidence of record, including Mr. Allison's testimony, which we credit as discussed above, we find that a person of ordinary skill in the art would have had a reasonable expectation of success in combining Denison's electronic key teachings with the security system of Rothbaum. *See* Ex. 1010 ¶¶ 142–146. We also find that implementing electronic keys in security devices was well within the skill level of a person of ordinary skill in the art. *See id.*

For the foregoing reasons, we are persuaded by Petitioner's contentions, and, thus, we find that Petitioner has demonstrated by a preponderance of the evidence that claim 9 would have been obvious over Rothbaum and Denison.

III. MOTION TO EXCLUDE

Patent Owner filed a Motion to Exclude in which it objects to Petitioner's alleged "misquotation and limited introduction of transcript testimony from Chris Fawcett (Ex. 1011)." Paper 17, 2. Patent Owner identifies various citations in Petitioner's Reply to which Patent Owner objects as misquotations of testimony or citations in incomplete testimony. *Id.* at 2–3. Patent Owner argues that, under Federal Rule of Evidence 106, "statements in the transcript cannot be read out of context of other supporting statements" and that "misquoted or partial testimony should be considered in context with other testimony on the subject or the alleged testimony support should be excluded as unsupportive of [Petitioner]'s positions." *Id.* at 2.

Federal Rule of Evidence 106 provides: "If a party introduces all or part of a writing or recorded statement, an adverse party may require the introduction, at that time, of any other part—or any other writing or recorded statement—that in fairness ought to be considered at the same time." This Rule provides a basis for including, rather than excluding, evidence. In this case, Exhibit 1011 is the complete transcript of the deposition of Mr. Fawcett, and, therefore, the additional portions of Exhibit 1011 that Patent Owner cites for our consideration are already part of the record in this matter and have been considered in rendering our Decision. As such, Patent Owner's request for relief under Federal Rule of Evidence 106 is moot.

Based on the foregoing, Patent Owner's Motion to Exclude is dismissed as moot.

IV. CONCLUSION

For the foregoing reasons, we conclude that the information presented in the Petition establishes by a preponderance of the evidence the unpatentability of claims 1–3, 6, and 9 of the '846 patent. We find that claims 1 and 6 are anticipated by Denison; we conclude that claims 1–3 and 6 would have been obvious over Denison and we conclude that claim 9 would have been obvious over Rothbaum and Denison.

V. ORDER

Accordingly, it is:

ORDERED that claims 1–3, 6 and 9 of the '846 patent have been shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed*; 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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