NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

CHARLES SHAMOON,
Appellant

v.

RESIDEO TECHNOLOGIES, INC., CENTRAL SECURITY GROUP - NATIONWIDE, INC.,
Appellees

KATHERINE K. VIDAL, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Intervenor

2021-1813, 2021-1814

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2019-01335, IPR2019-01609.

Decided: August 8, 2023

CHARLES SHAMOON, SR., Little Elm, TX, pro se.

KIRK T. BRADLEY, Alston & Bird LLP, Charlotte, NC,

for appellee Resideo Technologies, Inc. Also represented by ADAM DOANE, LAUREN NICOLE GRIFFIN, SCOTT BENJAMIN PLEUNE.

ANITA SPIETH, Choate Hall & Stewart LLC, Boston, MA, for appellee Central Security Group - Nationwide, Inc.

PETER JOHN SAWERT, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for intervenor. Also represented by THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED.

Before NEWMAN, REYNA, and CUNNINGHAM, *Circuit Judges*.

NEWMAN, *Circuit Judge*.

This appeal is from two *inter partes* review ("IPR") decisions of the Patent Trial and Appeal Board ("PTAB" or "Board"), finding claims 1–11 and 13–22 of United States Patent No. 8,064,935 ("'935 patent") unpatentable.[1] The '935 patent is now owned by Charles Shamoon, the inventor thereof. The patent had initially been assigned to Ubiquitous Connectivity, LP, of which Mr. Shamoon was president.

The IPR proceedings were requested by Resideo Technologies, Inc. and Central Security Group - Nationwide, Inc. (collectively "appellees"). The Director of the Patent and Trademark Office intervened to respond to the

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[1] *Resideo Techs., Inc. v. Ubiquitous Connectivity LP*, No. IPR2019-01335, 2021 WL 262372 (P.T.A.B. Jan. 26, 2021) and No. IPR2019-01609 (P.T.A.B. Jan. 26, 2021). The Board issued identical opinions. Citations to "Board Dec." refer to IPR2019-01335.

constitutional issues raised by Mr. Shamoon. We now affirm the decisions of the Board.

I

Substitution of Pro Se Appellant

Ubiquitous Connectivity, LP owned the '935 patent during the PTAB proceedings, filed the appeal now before us, and completed briefing of the appeal. By assignment, Ubiquitous transferred ownership of the '935 patent to Mr. Shamoon, and this court granted Mr. Shamoon's request to substitute himself as the appellant and to appear *pro se*. *See* Letter dated July 14, 2022, ECF No. 68 ("Ubiquitous Connectivity, LP informs the Court that it intends to assign the patent at issue in these appeals to its President, Charles Shamoon, who then intends to represent himself *pro se*."); Motion of Charles Shamoon, ECF No. 69 (informing the court that the patent sale and assignment had occurred, and that Charles Shamoon intends to take over the appeal and to proceed without representation); Order, ECF No. 70 (granting motion to substitute and instructing Mr. Shamoon how to proceed).

We confirm that this appeal is properly before us. The appeal has been submitted on the briefs filed by Ubiquitous Connectivity, LP, the appellees, and the Director of the PTO. Mr. Shamoon adopted the briefs filed by Ubiquitous Connectivity, LP. *See* Letter dated September 14, 2022, ECF No. 72. Oral argument was waived.

II

A

The '935 Patent Claims

The '935 patent is titled "Ubiquitous Connectivity and Control System for Remote Locations." The specification states that the invention "relates to on-demand bidirectional communication between a remote access unit and a

multifunctional base control unit in a geographically remote location." '935 patent col. 1 ll. 20–22. The technology is used, for example, in a home automation system to enable users to monitor and control equipment from a remote location. The '935 patent describes and claims a remote access system where a base control unit monitors and controls associated devices such as air conditioners, water heaters, refrigerators, and other appliances in a user's home.

The patent provides that the remote unit can be in two-way communication with the base control unit. The base control unit sends information about monitored characteristics to the remote unit, and the remote unit sends commands to the base control unit which then sends them to the appropriate device. Claim 1 was designated as representative:

> 1. A wireless system comprising:
>
> an environmental device;
>
> a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device;
>
> a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and
>
> a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,
>
> wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,

> wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and
>
> wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.

The other challenged claims contain additional limitations. Claims 20 and 22 require an additional step in the communication sequence, whereby the base control unit sends a confirmation message to the remote unit when the instruction has been executed. Claim 20 states:

> 20. A wireless system comprising:
>
> a base unit operatively interfaced with an environmental device for controlling an environmental condition in a structure;
>
> a receiver associated with said base unit, and adapted for receiving a first wireless message from a remote unit having wireless connectivity, wherein the first wireless message includes a command for the environmental device;
>
> a controller operatively associated with said base unit, and operatively connected with the environmental device for executing the command; and
>
> a transmitter operatively associated with the controller for sending a second wireless message to the remote unit, wherein the second wireless message includes

> information indicating that the command has been executed.

Independent claims 18 and 21 and dependent claims 3 and 14 state that the base control unit includes a "microcontroller." Claim 18 states:

> 18. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:
>
> a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device;
>
> a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message is a first short message service (SMS) message including the environmental information, and wherein the second message is a second short message service (SMS) message including the command to the environmental device; and
>
> a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

B

The Prior Art

1.

The Oinonen Patent

U.S. Patent No. 6,275,710 B1 ("Oinonen") is titled "System for Transmitting Status Data, Method for Transmitting Status Data on a Connection Interface, and a Telecommunication Terminal." Oinonen describes telemetric "applications in which the state of a peripheral device is monitored and the peripheral device is controlled via a telecommunication network, preferably at least partly via a mobile communication network." Oinonen, col. 3 ll. 22–26. Oinonen summarizes its disclosure as follows:

> The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.

Id., col. 4 ll. 52–61.

Oinonen shows a "first telecommunication terminal," which the Board found to be analogous to the '935 patent's base control unit. *See* Board Dec. at 21. Oinonen also shows a mobile station comprising "a microprocessor." *Id.*, col. 7 ll. 14–15 & fig. 3. Oinonen describes specific examples of telemetric applications including a "real estate alarm system" and a "remote-controlled heating system."

Id., col. 3 l. 66, col. 10, l. 63–64. Oinonen does not show all the limitations in all the claims of the '935 patent.

2.

The Whitley WIPO Publication

"Whitley" is World Intellectual Property Organization International Publication No. 99/49680 (International Patent App. No. PCT/US99/06429), titled "Wireless Telemetry Methods and Systems for Communicating with or Controlling Intelligent Devices." Whitley describes "methods and apparatus for remotely monitoring and controlling via a wireless network various devices deployed in homes and businesses." Whitley, col. 1 ll. 4–5. The purpose of the Whitley system is "allowing customers to receive monitoring information about activities at their facility via a mobile station or a fixed terminal" and to "allow[] customers to control the gateway and devices coupled to the gateway from their mobile station or a fixed terminal communicating over the wireless network." *Id.*, col. 6 ll. 22–26. Alarms, thermostats, and lights are all controllable devices disclosed by Whitley. *Id.*, col. 12 ll. 21–23.

Whitley states that its gateway control unit may be a "device provided with a processor, such as an Intel 386 or 486 processor." *Id.*, col. 9 ll. 3–5. The purpose of Whitley is the same as that of the '935 patent; that is, remote communication and control of devices employing a base control unit.

3.

The Menard Publication

"Menard," U.S. Patent Publication No. 2002/0177428 A1, titled "Remote Notification of Monitored Condition," describes a bidirectional wireless system that allows for monitoring and controlling a remote condition, such as that of an alarm system. Menard describes an embodiment that

(1) notifies users of a received alarm signal, (2) receives responses from users for the purpose of processing the alarm, (3) executes the process, and (4) may include further actions based on instructions. Menard, ¶ 68. Menard explains that:

> ¶ 179. In one embodiment, after instructions from [a user] are completed, another round of notification may occur. In addition, selected [users] may be notified of the outcome of the process. For example, the notification may entail a message such as "the police were dispatched at 10:05 AM," or "response was canceled by [user] 'Susan Smith'["] or "[user] Jones received message and acknowledged receipt." In this manner, [users] are informed as to the outcome of the event.

Menard's claim 6 recites a method comprising receiving messaging device addresses for contacting users associated with a detected condition, receiving notification that the detected condition exists, executing a computer program to encode a message based on the detected condition, executing another computer program to send the message to user device addresses, receiving a first instruction from a user, and transmitting a notification to the users confirming execution of the first instruction.

These three references are cited as prior art for the claims on appeal from the '935 patent's IPR proceedings.

C

The Board Decisions

The Board joined together the IPR petitions of Resideo and Central Security Group, and instituted IPR on all the challenged claims. The Board held unpatentable the claims before us on appeal. Mr. Shamoon argues that the Board incorrectly construed and erroneously applied the term "microcontroller" in relation to claims 3, 14, 18, and

21 of the '935 patent. He also states that the Board incorrectly applied the law of obviousness to claims 20 and 22, in holding these claims unpatentable over the combination of Oinonen, Whitley, and Menard. He raises a constitutional challenge based on *Arthrex*, and he further argues that a determination of unpatentability by these IPR proceedings constitutes an unconstitutional taking of property because the '935 patent application was filed before *inter partes* review was authorized by the America Invents Act.

1.

Claim Construction—Claims 3, 14, 18, and 21

Appellate review of the Board's claim construction is guided by precedent. *See, e.g.*, *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331–32 (2015) (the construction of claim terms and claim scope is reviewed under the *de novo* standard, as appropriate for rulings of law). Underlying factual findings of the PTAB are reviewed for support by substantial evidence. *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1280 (Fed. Cir. 2015), *aff'd sub nom. Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261 (2016).

In *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), this court explained that the claims determine the scope of the patent grant, and that a person of ordinary skill in the field of the invention is deemed to read the claims "in the context of the entire patent" including the specification and the prosecution history. *Id.* at 1312–13, 1317. The court wrote that "the specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). We stated that "extrinsic evidence 'can shed useful light on the relevant art,' [but] is 'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Id.* at 1317 (quoting *C.R. Bard, Inc.*

v. U.S. Surgical Corp., 388 F.3d 858, 862 (Fed. Cir. 2004)). We concluded that "[i]n sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319.

The Board stated the rule that each claim is construed "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." Board Dec. at 9 (quoting 37 C.F.R. § 42.100(b)). The Board held that the construction of "microcontroller" affects the obviousness of claims 3, 14, 18, and 21. *Id.* at 31–33.

The Board reviewed the specification and claims of the '935 patent and its prosecution history, as well as the three technical dictionary definitions and the expert testimony provided by both sides. The Board then rejected the patent owner's narrower construction of "microcontroller" as "a special-purpose computing device including at least a CPU, main memory, timing circuits, and I/O circuitry designed for a minimal quantity of chips and then programmed to handle a particular task," *id.* at 9–13, and largely accepted the appellees' broader construction, adopting the meaning "a microcomputer, microprocessor, or other equipment used for process control," *id.* at 13. The Board found that:

> Oinonen's microprocessor and Whitley's 386 processor are microcontrollers because they are programmed to (a) receive information from an environmental device, (b) send SMS messages containing that information to a remote device, (c) receive SMS messages containing a command from the remote device, and (d) control the environmental device as commanded.

Id. at 32. The Board found that the combination of the Oinonen and Whitley references teaches every limitation of claims 3, 14, 18, and 21, *id.* at 31–33, and that a person

skilled in the art would be motivated to combine these teachings. The Board held these claims unpatentable on the ground of obviousness. *Id.* at 32–33.

Mr. Shamoon argues that the Board erred in interpreting the expert testimony that was presented by both sides. He states that both experts agreed that "microcontroller" has a more specific meaning than that construed by the Board. He states that the Board offered no explanation for ignoring the testimony of the experts, and that the Board disregarded the precedent established in *Phillips* by giving undue weight to a dictionary definition of "microcontroller" over the evidence of the parties' experts. Mr. Shamoon cites other dictionary definitions as support for a narrow definition of "microcontroller" in claims 3, 14, 18, and 21. He states that the specification and included figures conform to the narrowed definition, and that the narrowed definition precludes obviousness over the cited references.

The appellees respond that Mr. Shamoon is attempting to narrow the definition of a well-understood term that is used in the '935 patent in its ordinary meaning.

We agree with the appellees. The '935 patent claims simply state that the invention uses a microcontroller "to process the . . . message . . . and to send the command," in claims 18 and 21, and that a microcontroller-based processing unit can have "customizable application specific software," in claims 3 and 14; the claims are not limited to specific components or circuitry, as now argued by Mr. Shamoon.

Specification figures 3 and 4 depict a microcontroller and, respectively, a remote unit and base control unit. Figure 3 shows a microcontroller interfacing with external ROM and RAM, and figure 4 shows a microcontroller interfacing with an external I/O (input/output) component. The microcontroller in figure 3 is described as using the ROM to access custom application software: "The application

software can be downloaded into the ROM by transmission from the cellular network to the antenna to the microcontroller, which stores the software therein." '935 patent col. 4 ll. 38–41 (reference numbers omitted). The specification explains that "[t]he RAM provides service or scratchpad memory for computational use by [the] microcontroller." *Id.*, col. 4 ll. 44–45. These statements do not require the microcontroller to contain a main memory. For figure 4, the specification states that the microcontroller may interface with an external I/O component to communicate with the wireless interface module. *Id.*, col. 4 ll. 46–52, col. 5 ll. 11–16.

The limitations that Mr. Shamoon states distinguish his microcontroller from the general definitions in dictionaries do not appear in the specification or the prosecution history. The Board analyzed the technical dictionary definitions cited by the parties and found that all the definitions require that a microcontroller include a CPU that has been programmed to perform a control function. Board Dec. at 12. For example, the Board considered Mr. Shamoon's proposed definition from the Comprehensive Dictionary of Electrical Engineering (2d ed.), which defines a microcontroller as "[a]n integrated circuit chip that is designed primarily for control systems and products." *Id.* at 10. The Board pointed out that the definitions state that a microcontroller "usually" and "typically" contains its own memory, I/O interface, and timers. *Id.* at 13. However, the definitions do not require the additional limitations which Mr. Shamoon states distinguish his system from the prior art.

The '935 patent's description and figures support the Board's ruling that "microcontroller" is correctly construed as a generic component as defined by the Board. Although we agree that there are differences in detailed definitions of "microcontroller," both parties' experts acknowledged that such differences do not affect the Board's construction

for the '935 patent. For example, the appellant's own expert, Mr. Zatkovich, agreed that nothing in claim 3 requires base unit functionality beyond receiving a "message and sending a command." The appellees' expert, Dr. Jeffay, testified that the term "microcontroller" means "some sort of processing unit . . . that has a processor, a memory, and some I/O capabilities." Dr. Jeffay also stated that "microcontroller is a fairly generic term" and that "some people can certainly use [microcontroller and microprocessor] synonymously in a lot of contexts." He explained that "the microcontroller is more of a system, a small system, whereas the microprocessor would be just a component of the system," and he disagreed with the idea that "microcontrollers are limited to single-chip designs." Mr. Shamoon states that this supports his position, and the appellees respond that a "microcontroller" is not confined to a single chip that includes CPU, memory, I/O, and timers, but rather, as Dr. Jeffay testified, a "microcontroller" includes the processor embedded in a system that includes these components. Resideo Br. 22, 44–45 (citing Appx11039 ¶ 267). Dr. Jeffay's testimony is not contradictory, but rather reveals, just as the dictionary definitions did, that microcontroller has a broad enough meaning to encompass both processors with integrated I/O, as urged by Mr. Shamoon, as well as other forms of microprocessors used for process control in conjunction with other external elements.

We conclude that the Board correctly held that "microcontroller" includes microprocessors along with external peripheral components for process control. This holding is supported by the lack of structural demands for the microcontroller in the claim language and the specification, by the specification figure descriptions, by the dictionary definitions, and by expert testimony. On this construction, the Board correctly determined that the microprocessor-based systems of Oinonen and Whitley render obvious the

microcontroller in claims 3, 14, 18, and 21. We affirm the Board's ruling that these claims are unpatentable as obvious.

2.

Claims 20 and 22

The Board held claims 20 and 22 of the '935 patent to be unpatentable for obviousness in view of the combination of Whitley, Oinonen, and Menard. The Board found that Oinonen and Whitley taught a base unit interfacing with an environmental device and having a receiver that receives commands for the environmental device. Board Dec. at 48. The Board further found that Oinonen and Whitley teach confirmation messages of receiving SMS messages/commands. *Id.* The Board also found that Menard teaches receiving and executing a command, and transmitting a confirmation that the command has been executed. *Id.*

The Board found that the three references are in the same field of endeavor and deal with the same field of technology, whereby it would have been obvious to persons of ordinary skill in this field to combine their teachings. Board Dec. at 45–46. Mr. Shamoon argues the distinction that the "message" recited in claims 20 and 22 concerns confirmation that a command for an environmental device was executed, and that Menard does not teach this type of message. Mr. Shamoon states that even if Menard is deemed to teach sending a message confirming that a command has been executed, the Menard command is not for an environmental device as required by claims 20 and 22. Mr. Shamoon states that the Board did not identify any reference that teaches the claimed environmental limitation, and that the Board wrongly relied on "common sense" or "ordinary creativity" to supply the missing teaching. He argues that the Board's analysis fell short of the "searching

inquiry" required by *DSS Tech. Mgmt., Inc. v. Apple Inc.*, 885 F.3d 1367, 1375 (Fed. Cir. 2018).

The Board correctly characterized Mr. Shamoon's arguments with respect to the environmental limitation as "improperly attack[ing] the teachings of the individual references rather than their combined teachings." Board Dec. at 47. Because Oinonen and Whitley disclose the environmental devices and commands, it does not avail Mr. Shamoon to complain that Menard does not. The Board did not rely on either common sense or ordinary creativity to supply any missing environmental teaching, but rather pointed to the Oinonen and Whitley references. *Id.* at 48.

The Board in its analysis referred to ¶ 68 of Menard as an example whereby a user is notified of an alarm by an active home alarm system, the user may "respond for the purpose of managing the alarm processing," and the "system then executes the process . . . based upon executing the instructions." Menard ¶ 68; Board Dec. at 47. Menard provides further details: "[I]f the alarm is cancelled, then the present system automatically updates the [user] of this outcome." Menard, ¶ 77. This conforms to the description in the '935 patent whereby a message is sent to the user's remote unit to confirm execution of the instruction.

We affirm that claims 20 and 22 are obvious over the combination of Oinonen, Whitley, and Menard, for both Oinonen and Whitley teach base units communicating with environmental devices, and Menard teaches sending a confirmation message after a command is executed. We conclude that it would be obvious to an artisan in this field to combine these teachings. The Board's decision is affirmed.

III

Finality in view of *Arthrex*

Mr. Shamoon argues that the administrative patent judges who decided this case were unconstitutionally

appointed, as described in *United States v. Arthrex, Inc.*, 594 U.S. __, 141 S. Ct. 1970 (2021). Applying *Arthrex*, this court previously remanded this appeal on this ground. *See* ECF No. 61 (removing appeal from argument calendar and remanding "for the limited purpose of allowing appellant the opportunity to request Director rehearing"); ECF No. 63 (Letter from Ubiquitous Connectivity, LP stating that "on June 10, 2022, the Director of the United States Patent and Trademark Office issued an order denying Ubiquitous's request for Director review"). This challenge is resolved.

IV

Constitutionality of IPR for Pre-AIA Filing

Mr. Shamoon argues that the application of post-grant proceedings created by the America Invents Act to patents that were applied for before the AIA was enacted constitutes an impermissible taking by the United States without just compensation, in violation of the Fifth Amendment of the Constitution. Mr. Shamoon points out that pre-AIA patent applicants had no way of knowing that their duly granted patents would be subject to this new post-grant agency proceeding, and that this change in the patent bargain is also a violation of due process.

This court considered this question in *Celgene Corp. v. Peter*, 931 F.3d 1342, 1362 (Fed. Cir. 2019), and ruled that "the retroactive application of IPR proceedings to pre-AIA patents is not an unconstitutional taking under the Fifth Amendment." Accord, *Mobility Workx, LLC v. Unified Patents, LLC*, 15 F.4th 1146, 1157 (Fed. Cir. 2021); *Golden v. United States*, 955 F.3d 981, 989 (Fed. Cir. 2020). The court also held that the new IPR system does not violate due process when applied to pre-AIA patents. *Mobility Workx*, 15 F.4th at 1157 (rejecting several constitutional challenges).

Applying precedent, no constitutional violation arises in the application of post-grant proceedings to pre-AIA patent filings.

CONCLUSION

We have considered Mr. Shamoon's remaining arguments and found them unpersuasive. We affirm the Board's ruling of unpatentability on the ground of obviousness of the appealed claims of the '935 patent.

AFFIRMED