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Paper 26
Date: November 28, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE, INC., LG ELECTRONICS, INC.,
LG ELECTRONICS U.S.A., INC., AND GOOGLE LLC,
Petitioner,

v.

GESTURE TECHNOLOGY PARTNERS, LLC,
Patent Owner.

IPR2021-00922[1]
Patent 8,553,079 B2

Before KEVIN F. TURNER, JONI Y. CHANG, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

DOUGAL, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

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[1] IPR2022-00090 (LG Electronics, Inc. and LG Electronics U.S.A., Inc.) and IPR2022-00360 (Google LLC) have been joined with this proceeding.

I. INTRODUCTION

A. Background

Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review challenging the patentability of claims 1–30 (the "challenged claims") of U.S. Patent No. 8,553,079 B2 (Ex. 1001, "the '079 patent"). Paper 10 ("Dec."). Apple, Inc.[2] filed the request for an *inter partes* review (Paper 1, "Petition" or "Pet."), which Patent Owner, Gesture Technology Partners, LLC, opposed (Paper 8).

After institution, Patent Owner filed a Response (Paper 13, "PO Resp."), Petitioner filed a Reply (Paper 17, "Reply"), and Patent Owner filed a Sur-reply (Paper 18, "Sur-reply"). An oral hearing was held on September 13, 2022, and a copy of the transcript was entered into the record. Paper 25 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. Having reviewed the arguments of the parties and the supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence, that claims 1–6, 8–16, 18–26, and 28–30 are unpatentable. We also determine that Petitioner has not shown that claims 7, 17, and 27 are unpatentable.

B. Related Matters

The parties identify these related matters: *Gesture Technology Partners, LLC v. Huawei Device Co., Ltd.*, No. 2:21-cv-00040 (E.D. Tex.); *Gesture Technology Partners, LLC v. Samsung Electronics Co.*, No. 2:21-

[2] Apple, Inc., LG Electronics, Inc., LG Electronics U.S.A., Inc., and Google LLC are collectively referred to herein as "Petitioner."

cv-00041 (E.D. Tex.); *Gesture Technology Partners, LLC v. Apple Inc.*, No. 6:21-cv-00121 (W.D. Tex.); *Gesture Technology Partners, LLC v. Lenovo Group Ltd.*, No. 6:21-cv-00122 (W.D. Tex.); *Gesture Technology Partners, LLC v. LG Electronics, Inc.*, No. 6:21-cv-00123 (W.D. Tex.); *Gesture Technology Partners, LLC v. Motorola Mobility LLC*, No. 1:22-cv03535 (ND Ill.); and *Gesture Technology Partners, LLC v. Katherine K. Vidal*, No. 1:22-cv-622 (E.D. VA). Pet. 77; Paper 20, 2–3. Patent Owner also identifies the following related *Ex Parte* Reexaminations: No. 90/014,900; No. 90/014,901; No. 90/014,902; and No. 90/014,903. Paper 20, 3–4.

C. The '079 Patent

The '079 patent relates to "[a] method for determining a gesture," such as a hand or finger gesture, using a camera and a light source, where the gesture serves as an input for a computer. Ex. 1001, Abstract, 1:54–57, 1:64–2:2. Figure 2, reproduced below, depicts an embodiment in which a computer device (e.g., laptop) includes this method.

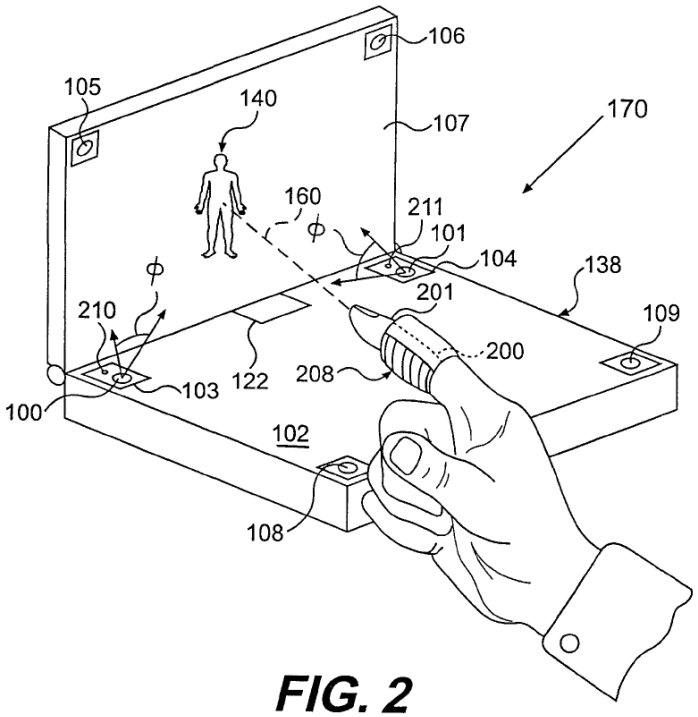


FIG. 2

As illustrated in Figure 2, a laptop (138) may include camera locations (100, 101, 105, 106, 108, 109), a keyboard surface (102), a screen housing (107), a light (122), light emitting diodes (LEDs) (210, 211), and a work volume area (170) within which a user's movements are detected. *Id.* at 2:39–53. The system can detect a user's finger alone or the user may employ external objects such as a ring (208) to help detect and recognize gestures performed in the work volume area (170). *Id.* at 2:54–3:8. The '079 patent describes detecting point, pinch, and grip gestures using this configuration. *Id.* at 2:54–61, 3:48–51.

D. Illustrative Claim

Petitioner challenges claims 1–30 of the '079 patent. Claims 1, 11, and 21 are independent. Claim 1 is illustrative:

> 1. A computer implemented method comprising:
>
> providing a light source adapted to direct illumination through a work volume above the light source;
>
> providing a camera oriented to observe a gesture performed in the work volume, the camera being fixed relative to the light source; and
>
> determining, using the camera, the gesture performed in the work volume and illuminated by the light source.

Ex. 1001, 13:2–9.

II. ANALYSIS

A. Summary of Issues

In the below analysis, we first address the grounds of unpatentability. We then address Patent Owner's jurisdiction argument.

B. Instituted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 5), supported by the declaration of Dr. Benjamin B. Bederson (Ex. 1010):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 4–14, 17, 19, 21, 22, 24–28, 30	103(a)[3]	Numazaki,[4] Knowledge of a PHOSITA[5]
3, 15, 23	103(a)	Numazaki, Numazaki '863[6]
16, 29	103(a)	Numazaki, DeLuca[7]
18	103(a)	Numazaki, DeLeeuw[8]
20	103(a)	Numazaki, Maruno[9]

1. Legal Standards for Unpatentability

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable as obvious under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). We resolve the question of

[3] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent was filed before March 16, 2013, we refer to the pre-AIA versions.
[4] U.S. Patent 6,144,366, issued Nov. 7, 2000 ("Numazaki") (Ex. 1004).
[5] A person of ordinary skill in the art ("PHOSITA").
[6] U.S. Patent 5,900,863, issued May 4, 1999 ("Numazaki '863") (Ex. 1005).
[7] U.S. Patent 6,064,354, issued May 16, 2000 ("DeLuca") (Ex. 1006).
[8] U.S. Patent 6,088,018, issued July 11, 2000 ("DeLeeuw") (Ex. 1007).
[9] U.S. Patent 6,191,773 B1, issued Feb. 20, 2001 ("Maruno") (Ex. 1008).

obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness.[10] *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We apply these principles to the Petition's challenges.

2. Level of Ordinary Skill in the Art

Petitioner asserts that "[a] person having ordinary skill in the art ('PHOSITA') at the time of the '079 Patent would have had at least a bachelor's degree in electrical engineering or equivalent with at least one year of experience in the field of human computer interaction" and that "[a]dditional education or experience might substitute for the above requirements." Pet. 4 (citing Ex. 1010 ¶¶ 29–31). Patent Owner does not dispute Petitioner's level of ordinary skill in the art. PO Resp. 6.

We are persuaded that Petitioner's declarant's statement is consistent with the problems and solutions in the '079 patent and prior art of record. We adopt this definition for the purposes of this Final Decision.

3. Claim Construction

In *inter partes* review, we construe claims using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2020).

[10] Neither party presents evidence or arguments regarding objective evidence of nonobviousness in the instant proceeding.

Patent Owner proposes a construction for a term in claims 3, 15, and 23. PO Resp. 6–8. The parties do not propose any other any claim constructions. Pet. 5–6; PO Resp. 6. We address the term "a plurality of light emitting diodes" in claims 3, 15, and 23 below. To the extent any other term needs construction, we address the term in the later arguments below. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

a) A Plurality of Light Emitting Diodes

Patent Owner proposes that "wherein the light source includes a plurality of light emitting diodes," in claim 3, be construed to mean "the light source illuminates the gesture by having two or more (i.e., a plurality) LEDs of the light source emit light at the same time." PO Resp. 6–8. Patent Owner argues that the similar limitations in claims 15 and 23 should also be construed in this way. *Id.* at 8.

Patent Owner argues that claim 1, from which claim 3 depends, "requires that the gesture performed in the work volume is illuminated by the light source, not a portion of the light source. As a result, the 'plurality of light emitting diodes' recited in claim 3 must illuminate the work volume, not a subset of the LEDs." *Id.* at 7.

Patent Owner's argument is inconsistent. As quoted above, Patent Owner says that a subset of LEDs cannot illuminate the work volume, but Patent Owner's argued-for-construction would only require two LEDs to emit light at the same time, even if the system had three or more. Thus, this argument does not support Patent Owner's argued-for-construction.

Claim construction starts with an analysis of the claim language itself. *Sjolund v. Musland*, 847 F.2d 1573, 1582 (Fed. Cir. 1988) ("[T]he claims define the invention."). Claim 1 includes "providing a light source adapted to direct illumination through a work volume above the light source," a "camera being fixed relative to the light source," and "determining . . . the gesture performed in the work volume and illuminated by the light source." Ex. 1001, 13:3–9. Claim 3 adds that "the light source includes a plurality of light emitting diodes." *Id.* at 13:12–13.

Reading claims 1 and 3 it can be seen that Patent Owner's construction is not apparent or implied from the claim language. Neither claim requires, for example, that the gesture be illuminated by 100% of the light source, or by at least two LEDs of the light source. Claim 1 merely states that the gesture be "illuminated by the light source." The amount of illumination is not specified.

Patent Owner also argues that the purpose for having multiple light emitting diodes from the Specification should be read into the claims. PO Resp. 7. "Claim 3, when read in light of the specification, means the light source illuminates the gesture by having two or more (i.e., a plurality) LEDs of the light source emit light at the same time." *Id.*; *see also id.* ("the specification, . . . describes the purpose of the light source as increasing the amount of light incident to the object (e.g., finger) performing the gesture. Ex. 1001, 3:1-3").

The mere fact that the Specification provides an example as to how the light source is used is not a sufficient reason for us to read a limitation into the claims from the Specification. If the specification "reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor's lexicography

governs." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)); *see also* Reply 19. However, this is not the case here. Patent Owner does not identify anywhere in the Specification where "light source" or "plurality of light emitting diodes" are defined as "the light source illuminates the gesture by having two or more (i.e., a plurality) LEDs of the light source emit light at the same time."

For these reasons we decline to adopt Patent Owner's claim construction. We determine that the added limitation in claims 3, 15, and 23 should be read according to its plain and ordinary meaning. In other words, "the light source includes a plurality of light emitting diodes," simply means exactly what it says "the light source includes a plurality of light emitting diodes."

4. Obviousness over Numazaki and Knowledge of a PHOSITA

Petitioner argues that Numazaki in view of the knowledge of a PHOSITA would have rendered obvious claims 1, 2, 4–14, 17, 19, 21, 22, 24–28, and 30. Pet. 6–35. Patent Owner specifically contends that Numazaki does not disclose all the limitations of claims 1, 7, 11, 17, 21, and 27. PO Resp. 8–20.

We first give an overview of the asserted prior art, Numazaki. This is followed by a discussion of Petitioner's positions and Patent Owner's arguments in response where we conclude that Petitioner has shown by a preponderance of the evidence that some of the challenged claims are unpatentable.

a) Numazaki

Numazaki "relates to a method and an apparatus for generating information input in which input information is extracted by obtaining a reflected light image of a target object." Ex. 1004, 1:8–11.

Figure 1, reproduced below, depicts a block diagram for an information input generation apparatus.

FIG.1

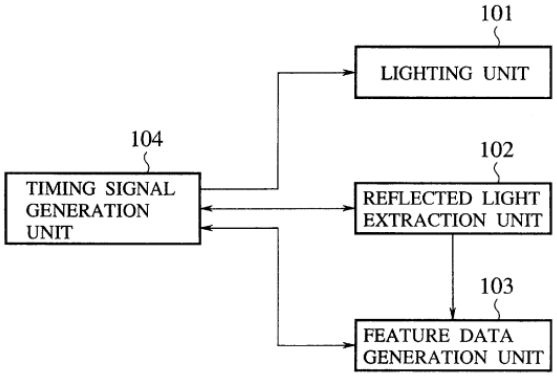
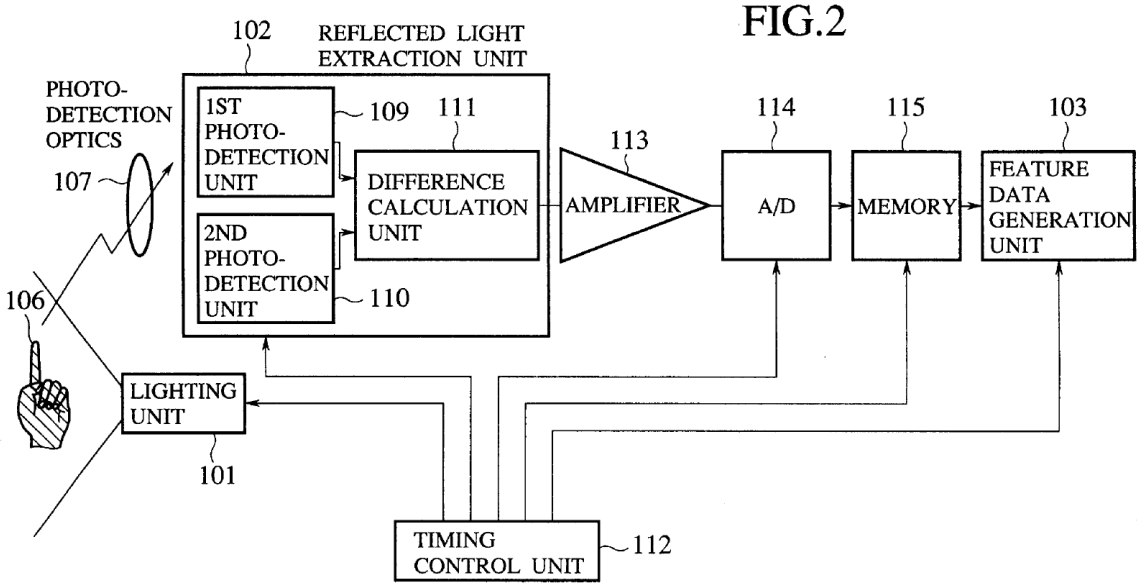


Figure 1 shows that an information input generation apparatus includes a lighting unit (101), a reflected light extraction unit (102), a feature data generation unit (103), and a timing signal generation unit (104). *Id.* at 10:23–28. Numazaki describes emitting light from the light emitting unit (101) and that the intensity of the light varies in time according to a timing signal from the timing signal generation unit (104). *Id.* at 10:29–31. The light is directed onto a target object and light reflected from the target object is extracted by the reflected light extraction unit (102). *Id.* at 10:31–35. Numazaki teaches that the feature data generation unit (103) extracts feature data from the reflected light image. *Id.* at 10:57–61. Numazaki further teaches operating a computer based on information obtained from the feature data. *Id.* at 10:61–66.

Figure 2, reproduced below, shows a more detailed block diagram of an embodiment of information input generation apparatus.

FIG.2



In Figure 2, a timing control unit (112) is used to turn the lighting unit (101) on (i.e., illuminating the target object) when the first photo detection unit (109) is active and off when the second photo detection unit (110) is active. *Id.* at 11:20–32. The first photo detection unit captures an image of the target object illuminated by both natural light and the lighting unit and the second photo detection unit captures an image of the target object illuminated by only natural light. *Id.* at 11:33–39. The difference between the two images—obtained by a difference calculation unit (111)—represents the "reflected light from the object resulting from the light emitted by the lighting unit 101." *Id.* at 11:43–51. This information is then used by the feature data generation unit (103) to determine gestures, pointing, etc. of the target object that may be converted into commands executed by a computer. *Id.* at 10:57–66.

Figure 74, reproduced below, illustrates a system incorporating an information input generation apparatus.

FIG.74

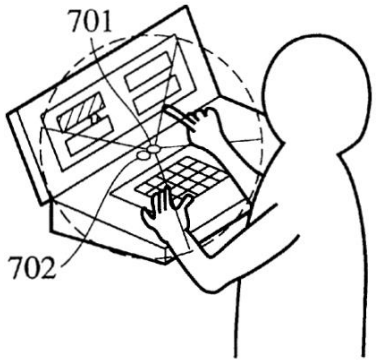


Figure 74 shows a portable computer with an information input generation device. *Id.* at 50:25–29. The device includes a lighting unit (701) and a photo-detection sensor unit (702). *Id.* at 50:29–35. Numazaki teaches that "the operator operating the keyboard can make the pointing or gesture input by slightly raising and moving the index finger." *Id.* at 50:38–40.

b) Claim 1

Petitioner relies on Numazaki in view of the knowledge of a PHOSITA for teaching or suggesting all of the elements of claim 1. Pet. 10–14. For example, Petitioner relies on the portable computer with an information input generation device of Figure 74 with its lighting unit (701) and photo-detection sensor unit (702) for the providing a computer, light source, and camera, method steps of claim 1. *Id.* at 10–13.

Petitioner further argues that the determining step is taught by Numazaki, where the lighting and photo-detection sensor units are used to determine a hand gesture in the area above the laptop. *Id.* at 12–13 (citing Ex. 1004, 50:30–43).

Numazaki only provides some details about the photo-detection sensor unit. *See generally* Ex. 1004, 50:25–54:6. However, Petitioner relies on Numazaki's teaching that "light and camera arrangement" of Figure 2 "is

incorporated into the eighth embodiment" for more details about the photo-detection sensor unit. Pet. 13–14; *see also id.* at 9 (quoting Ex. 1004, 50:21–24) ("*Numazaki* teaches that its eighth embodiment incorporates 'the information input generation apparatus of the present invention as described in the above embodiments.'"); Ex. 1010 ¶¶ 42–43 (discussing what a PHOSITA would have understood was incorporated into the eighth embodiment); Ex. 1004, 53:22–36 (Numazaki discussing "the photo-detection section" and then pointing to the prior discussion "as already described in detail above"). Petitioner describes Numazaki as teaching a system where two images are obtained of the target object by two different cameras, one with the lighting unit on and one with it off. Pet. 14 (citing Ex. 1007, 11:20–39). The images are compared to obtain certain information. *Id.* (citing Ex. 1007, 11:43–51). Petitioner concludes that the obtained "information is then used by feature data generation unit 103 to determine gestures, pointing, etc. of the target object that may be converted into commands executed by a computer" and that this all reads on the determining step of claim 1. *Id.* (citing Ex. 1007, 10:57–66).

Patent Owner argues that Numazaki does not teach the steps of "providing a camera" or "determining a gesture" in claim 1. PO Resp. 8–13. We address each argument in turn below.

(1) Providing a Camera

Claim 1 requires "providing a camera oriented to observe a gesture performed in the work volume, the camera being fixed relative to the light source." Ex. 1001, 13:5–7. As noted above, Petitioner relies on Numazaki's portable computer with an information input generation device of Figure 74 with its photo-detection sensor unit (702) for the providing a camera method step of claim 1. Pet. 12–13. The Petition further relies on Numazaki's

teaching that "light and camera arrangement" of Figure 2 "is incorporated into the eighth embodiment" for more details about the photo-detection sensor unit. *Id.* at 13–14; *see also id.* at 9 (quoting Ex. 1004, 50:21–24) ("*Numazaki* teaches that its eighth embodiment incorporates 'the information input generation apparatus of the present invention as described in the above embodiments.'"); Ex. 1010 ¶¶ 42–43 (discussing what a PHOSITA would have understood was incorporated into the eighth embodiment); Ex. 1004, 53:22–36 (Numazaki discussing "the photo-detection section" and then pointing to the prior discussion "as already described in detail above"). We determine that Petitioner has shown by a preponderance of the evidence that this limitation is taught by Numazaki.

Neither Patent Owner, nor Patent Owner's declarant, contest Petitioner's position, supported by its declarant, that Numazaki's reflected light extraction unit, with its two photo detection units in Figure 2 teach a camera. *See* PO Resp. 10 (citing Pet. 6, 7, 12–14; Ex. 1010 ¶¶ 35–36) (acknowledging Petitioner's position and declarant support); Ex. 2004 ¶ 50 (Patent Owner's declarant acknowledging Petitioner's position and declarant support).

However, Patent Owner argues that "[n]one of embodiments 1–7 in Numazaki [(including Figure 2)] mention a 'photo-detection sensor unit,' and thus none of embodiments 1–7 teach or suggest the 'photo-detection sensor unit' in Fig. 74 as being a camera." PO Resp. 9 (citing Ex. 2002 ¶ 48). Patent Owner admits that Numazaki Figure 2 teaches two "photo-detection units," but essentially argues that because the term "photo-detection unit" is not identical to Figure 74's "photo-detection sensor unit," one of skill in the art would not understand what a "photo-detection

sensor unit" is, or how it relates to the rest of the disclosure. *Id.* at 9, 11; *see also* Sur-reply 1–2.

In support, Patent Owner relies on its declarant who testifies: "I reviewed Numazaki in its entirety and it contains no disclosure stating that the 'photo-detection sensor unit' is a camera" and "it is my opinion that a POSITA would understand that none of embodiments 1–7 disclose the 'photo-detection sensor unit' in Fig. 74 as being or including a camera." Ex. 2002 ¶ 48.

As will be understood from reviewing Numazaki, Numazaki discloses an eighth embodiment having a number of different portable form factors shown in Figures 74–79, but sharing "a system configuration incorporating the information input generation apparatus of the present invention as described in the above embodiments," i.e., embodiments 1–7, including Figure 2. Ex. 1004, 50:19–20; *see also* Ex. 1010 ¶ 40. In addition to referring back to the prior disclosure, additional details of the information input generation apparatus including the photo-detection section are provided at 52:33–54:6. This section not only describes an information input generation apparatus that is very similar to the disclosure of Figure 2, but it again refers back to the "the photo-detection section . . ., as already described in detail above." *Id.* at 53:22–36; *see also* Dec. 9 (explaining that "details about the photo-detection sensor unit" could be found at Ex. 1004, 50:25–54:6).

Thus, the position of Patent Owner and Patent Owner's declarant is inconsistent with the express disclosure of Numazaki that makes clear that the photo-detection section of the eighth embodiment, including the "photo-detection sensor unit" of Figure 74 incorporates the disclosure of the photo-detection section of the prior embodiments, including Figure 2. Thus,

we determine that one of ordinary skill in the art would have understood Numazaki to teach that the "photo-detection sensor unit" in Figure 74 is or at least includes a camera, just as Numazaki's reflected light extraction unit, with its two photo detection units in Figure 2 teach a camera.

For the above reasons, Patent Owner's arguments do not identify any shortcomings in the showing by Petitioner that Numazaki teaches providing a camera.

(2) Determining the Gesture

Claim 1 also requires "determining, using the camera, the gesture performed in the work volume and illuminated by the light source." Ex. 1001, 13:8–9. As noted above, Petitioner relies on Numazaki to teach this step, where Numazaki's lighting and photo-detection sensor units are used to determine a hand gesture in the area above the laptop. Pet. 12–13 (citing Ex. 1004, 50:30–43). Petitioner further relies on Numazaki's teaching that "light and camera arrangement" of Figure 2 "is incorporated into the eighth embodiment" for more details about the photo-detection sensor unit. *Id.* at 13–14; *see also id.* at 9 (citing Ex. 1010 ¶¶ 42–43). We determine that Petitioner has shown by a preponderance of the evidence that this limitation is taught by Numazaki.

Patent Owner argues that this limitation is not taught because "[a] POSITA would interpret [it] . . . as requiring the gesture be illuminated by the light source while the camera is capturing one or more images of the gesture." PO Resp. 11 (citing Ex. 2002, ¶ 52; Ex. 1001, Abst., 3:1–8). Patent Owner then puts forth two positions based on whether "a camera" in the prior limitation means "only one camera" or "multiple cameras." *Id.* at 12.

Patent Owner's first argument is that if "providing a camera" means "providing only one camera," Numazaki teaches two and thus does not teach only one. *Id.* at 12.

Unless a more limited construction is indicated by the specification or prosecution history, the indefinite article "a" or "an" is construed in a claim to mean "one or more." *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). Thus, "providing a camera" is not limited to one interpretation or the other, but can include one camera or multiple cameras.[11] As the claim is not limited to "only one camera," Patent Owner's argument does not identify any shortcomings in Petitioner's showing.

Patent Owner then argues that if "a camera" means "multiple cameras," Numazaki fails to teach the limitation because the claim

> requires the gesture be illuminated by the light source when any of the cameras is capturing an image of the gesture. But as discussed above, Numazaki requires two photo-detection units (i.e., two cameras) and Numazaki's lighting unit (i.e., light source) is *not* active when one of the photodetection units is capturing an image of the gesture.

PO Resp. 12.

However, claim 1 does not require or refer to capturing images. It is not clear why Patent Owner is arguing that a person of ordinary skill in the art would interpret the claim as requiring the capturing of images when that is not claimed. Patent Owner does not further explain this position.

The claim does require that the gesture be "illuminated by the light source," but Patent Owner admits that this is taught by Numazaki. *Id.* Patent Owner states that "Numazaki requires two photo-detection units (i.e., two

[11] Patent Owner disavows this argument in the Sur-reply when it agrees that '"a camera' . . . should be construed as 'one or more cameras.'" Sur-reply 3.

cameras) and Numazaki's lighting unit (i.e., light source) is *not* active when one of the photodetection units is capturing an image of the gesture." *Id.*

The claim does not require that the gesture remain permanently illuminated. Further, the fact that Numazaki also teaches a second photo-detection unit that captures the gesture while lighting unit 101 is not active is not excluded by the language of the claim. The fact that Numazaki compares both images in determining the gesture is also not excluded by the claim. The claim merely requires that the determining be made "using the camera," that "the gesture [be] performed in the work volume" and that the gesture be "illuminated by the light source" at some point in time. Claim 1 uses the term "comprising" to create an "open ended" claim. "'Comprising' is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997). Thus, the additional steps taught by Numazaki highlighted by Patent Owner are not excluded from the claim.

For the above reasons, Patent Owner's arguments do not undermine the showing by Petitioner that Numazaki teaches all of the aspects of the determining a gesture claim element.

(3) Conclusion

After review of the arguments and evidence, and further in view of the above discussion, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 1 is unpatentable over Numazaki and the knowledge of a PHOSITA.

c) Claims 11 and 21

Independent claim 11 is directed to a computer apparatus and is very similar to method claim 1. *Compare* Ex. 1001, 13:31–39, *with id.* at 13:1–9.

Independent claim 21 is directed to a computer implemented method and is very similar to method claim 1. *Compare id.* 14:14–22, *with id.* at 13:1–9. As such, the Petition relies on essentially the same teachings of Numazaki discussed above with respect to claim 1 for the features of claims 11 and 21, which we agree with for the reasons explained above. *See* Pet. 28–30, 33.

Similarly, Patent Owner argues that the Petition fails to teach or suggest the claim elements of claims 11 and 21 "for the same reasons above with respect to claim [1]." PO Resp. 16–17, 18–19. Patent Owner then briefly reiterates some of the same arguments discussed above. *Id.* Patent Owner does not provide any additional argument other than what has already been addressed with respect to claim 1 above.

After review of the arguments and evidence, and further in view of the above discussion, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 11 and 21 are unpatentable over Numazaki and the knowledge of a PHOSITA.

d) Claims 7, 17, and 27

Claims 7, 17, and 27 depend from claims 1, 11, and 21, respectively and are very similar in scope:

> 7. . . . providing a target positioned on a user that is viewable in the work volume.
>
> 17. . . . including a target that is viewable by the camera when in the work volume.
>
> 27. . . . providing a target positioned on the user that is viewable by the camera.

Ex. 1001, 13:21–23, 14:5–7, 14:35–37.

Petitioner argues[12] that Numazaki teaches using a hand within the work volume. Pet. 22–23 (citing Ex. 1004, 10:57–66, 50:35–37, Figs. 74, 77). Petitioner also argues that Numazaki recognizes "that it was known to paint a fingertip or to wear a ring in a particular color to improve detection." *Id.* at 23 (citing Ex. 1004, 3:4–11). Petitioner argues that in view of these teachings in Numazaki, "[a] PHOSITA would have understood . . . that the Fig. 74 arrangement described in the eighth embodiment [of Numazaki] is particularly well suited to a ring or other small target mounted on a user's finger." *Id.* (citing Ex. 1010 ¶¶ 48–49).

Petitioner acknowledges, however, that Numazaki "cautions that requiring users to wear or mount some external component may negatively impact the user's convenience and may bring with it durability issues." *Id.* (citing Ex. 1004, 3:32–38). Petitioner relies on the testimony of its declarant to support its position that "users would accept" the tradeoff "of improved accuracy in exchange for the minor inconvenience of wearing a small ring or other hand-based target when using gesture recognition while typing." *Id.* (citing 1010 ¶¶ 48–49). Further, Petitioner argues that "the durability concerns are implicated by a ring target, and many adults wear rings routinely while typing with no ill effect, which suggests that such a tradeoff would be acceptable to many users." *Id.* at 23–24 (citing 1010 ¶¶ 48–49).

Patent Owner argues[13] that the portions of Numazaki that Petitioner discusses, identifying the user's inconvenience and durability issues

[12] Petitioner relies on the same positions laid out with respect to claim 7 for claims 17 and 27. Pet. 33, 34.
[13] Patent Owner reiterates the main points made with respect to claim 7 to argue over claims 17 and 27. PO Resp. 17–18, 19–20.

(Ex. 1004, 3:32–38), teach away from using a ring as a target. PO Resp. 13–16.

> 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. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

Concerning the use of rings and other devices on the hand, Numazaki teaches that they are "not realistic so that they are utilized for experiments but not for practical use" and further:

> the requirement for mounting some element at every occasion of its operation is a *great demerit* from a viewpoint of the *convenience* of the user, and can *limit* its application range *significantly*. Moreover, as can be seen in the example of the data glove, a device that requires to mount some element on the movable part such as hand tends to have a *problem of the durability*.

Ex. 1004, 3:10–11, 3:26–39 (emphasis added).

Patent Owner, supported by the testimony of its declarant, characterizes these teachings as follows:

> Numazaki explicitly criticizes, discredits, and discourages the use of targets (i.e., Numazaki's markers or elements). Accordingly, upon reading Numazaki, a POSITA would be led in a path (i.e., an anti-target path) that diverges from the path in claim 7. Thus, Numazaki teaches away from the subject-matter of claim 7 and does not render claim 7 obvious. *See* Ex. 2002, ¶ 60.

PO Resp. 14.

At oral argument, Petitioner also characterized the teachings of Numazaki as "disparagement" and "a slight at targets and the historical use of targets in the art." Tr. 28–29. Petitioner further admitted that Numazaki "has strong words about the downsides of targets and those strong words were to set up its own improvement of the art" and that "Numazaki['s] . . . teaching[s] . . . can obviate the need for these targets." *Id.* at 28, 29.

However, even in view of that "disparagement," Petitioner argues that its declarant identified reasons why one of ordinary skill in the art would have accepted certain trade-offs that he identified in using targets which would have rendered adding targets obvious. Reply 15–18.

The testimony of Petitioner's declarant cannot overcome the strong "disparagement" that Petitioner admits Numazaki makes against the use of rings or other added targets. This is not a case where Numazaki merely expresses a general preference for an alternative invention, rather Numazaki clearly criticizes, discredits, and discourages the use of rings and other targets. In Petitioner's own words, "Numazaki['s] . . . teaching[s] . . . can obviate the need for these targets." Tr. 28. Neither Petitioner nor Petitioner's declarant address why one of ordinary skill in the art would have modified Numazaki to use a ring, in view of Petitioner's admission that "Numazaki['s] . . . teaching[s] . . . can obviate the need for these targets." *Id.*

Petitioner also fails to explain how the teachings of Numazaki related to specialized rings supports it conclusion related to a "small [generic] ring," similar to what people routinely wear. Pet. 23–24. Numazaki discusses rings in specialized colors, as well as "color markers," and "light emitting elements." Ex. 1004, 3:7–9, 26–31. Neither Petitioner nor Petitioner's declarant explain the logical steps between Numazaki's disclosure and a "small [generic] ring" similar to what people routinely wear, or why one of

ordinary skill in the art would have considered them to be the same or similar.

For these reasons, we determine that Petitioner has not shown that claims 7, 17, and 27 are unpatentable.

e) Claims 2, 4–6, 8–10, 12–14, 19, 22, 24–26, 28, 30

Petitioner argues that Numazaki in view of the knowledge of a PHOSITA would have rendered obvious dependent claims 2, 4–6, 8–10, 12–14, 19, 22, 24–26, 28, and 30. Pet. 14–21, 24–28, 30–35. Patent Owner does not separately contest Petitioner's assertions regarding these claims at this stage. PO Resp. 13, 17, 19.

After review of the arguments and evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 2, 4–6, 8–10, 12–14, 19, 22, 24–26, 28, and 30 are unpatentable over Numazaki.

5. Obviousness over Numazaki and Numazaki '863

Petitioner argues that the combination of Numazaki and Numazaki '863 would have rendered obvious dependent claims 3, 15, and 23. Pet. 35–42. Patent Owner argues, based on its claim construction, that the combination fails to teach the added limitations in claims 3, 15, 23. PO Resp. 20–22.

As noted previously, claim 3 depends from claim 1 and adds "wherein the light source includes a plurality of light emitting diodes." Claims 15 and 23 add the same limitation to their respective independent claims. We determine previously herein that the added limitation in claims 3, 15, and 23 should be read according to its plain and ordinary meaning. In other words, "the light source includes a plurality of light emitting diodes," simply means exactly what it says "the light source includes a plurality of light emitting diodes."

Petitioner argues that Numazaki '863 teaches using a plurality of light emitting diodes to illuminate a hand gesture and to control a computer based on the gesture. Pet. 37. Petitioner also identifies a number of reasons to modify Numazaki's light source to use Numazaki's '863's plurality of light emitting diodes as the light sources are used for similar purposes. *Id.* at 38–39.

Patent Owner does not contest Petitioner's positions in the Petition, other than to argue that the combination does not teach the claim limitation under Patent Owner's construction. PO Resp. 20–22. Patent Owner further admits that Numazaki '863 teaches a plurality of light emitting diodes used to illuminate an object. *Id.* at 21 (citing Ex. 1005, 16:36–57, Fig. 4). As we previously rejected Patent Owner's attempt to read limitations from the Specification into the claims, Patent Owner's arguments here do not apply to the requirements of the claims.

We have reviewed Petitioner's assertions with respect to these claims and the supporting evidence, and determine that Petitioner has established by a preponderance of the evidence that claims 3, 15, and 23 are unpatentable.

6. Obviousness over Numazaki and DeLuca, Numazaki and DeLeeuw, and Numazaki and Maruno

Petitioner argues that the combination of Numazaki and DeLuca would have rendered obvious dependent claims 16 and 29. Pet. 42–49. Petitioner argues that the combination of Numazaki and DeLeeuw would have rendered obvious dependent claim 18. *Id.* at 49–55. Petitioner argues that the combination of Numazaki and Maruno would have rendered obvious dependent claim 20. *Id.* at 55–68. Patent Owner does not separately address these grounds. *See generally* PO Resp.

We have reviewed Petitioner's assertions with respect to these claims and the supporting evidence, and determine that Petitioner has established by a preponderance of the evidence that claims 16, 18, 20, and 29 are unpatentable.

C. Jurisdiction over Expired Patents

Patent Owner argues that the USPTO does not have jurisdiction over expired patents. PO Resp. 1–2. Rather, Patent Owner argues, the USPTO only has jurisdiction over patents with claims that can be amended or cancelled. *Id.* Patent Owner states that, as explained by the Supreme Court, "Congress [has] significant latitude to assign [the] adjudication of public rights to entities other than Article III courts," including for the USPTO to "reexamine—and perhaps cancel—a patent claim in an inter partes review." *Id.* (quoting *Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC*, 138 S. Ct. 1365, 1368, 1374 (2018). However, Patent Owner argues that this authority does not extend to expired patents because the public franchise associated with an issued patent no longer exists after expiration. *Id.* at 2. Thus, it is argued, the USPTO no longer has jurisdiction, even though the patent owner "may be entitled to collect damages" for patent infringement, because "the patent owner[] no longer has the right to exclude others" and the USPTO has nothing to cancel or amend. *Id.*

Patent Owner reasons that:

> Expiration removes the patent from the [US]PTO's jurisdiction and returns it to the sole jurisdiction of the Article III courts, which have exclusive authority to govern claims for damages. If this were not so, the [US]PTO would purport to have authority to retroactively modify a public franchise that no longer exists, in a setting where the expired public franchise does not enjoy any presumption of validity and in which amendment of claims is no longer permitted.

Id.

Inter partes review of patents, whether expired or not, fits within the USPTO's mandate "for the granting and issuing of patents" (35 U.S.C. § 2(a)(1)), for as the Supreme Court has stated, "[i]nter partes review is 'a second look at an earlier administrative grant of a patent'" (*Oil States Energy Servs.*, 138 S. Ct. at 1374 (quoting *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016)). Our rules have also made clear that *inter partes* review covers expired patents. 37 C.F.R. 42.100(b) (2012); *see also, e.g.*, 83 Fed. Reg. 51341 (Oct. 11, 2018) (Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board)[14] ("The claim construction standard adopted in this final rule also is consistent with the same standard that the Office has applied in interpreting claims of expired patents and soon-to-be expired patents. *See, e.g.*, *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017) (noting that '[t]he Board construes claims of an expired patent in accordance with *Phillips* . . . [and] [u]nder that standard, words of a claim are generally given their ordinary and customary meaning')."").

Further, the statutes governing *inter partes* review do not limit them to non-expired patents. For example, 35 U.S.C. § 311(b), which sets forth the scope of *inter partes* review merely refers to patents, with no mention of the expiration date. Further, 35 U.S.C. § 311(c) entitled "Filing Deadline" makes no mention of the expiration date of the patent. Elsewhere, 35 U.S.C. § 315 does limit the filing of IPRs based on civil actions and the serving of complaints, but again makes no mention of the expiration date of the patent.

[14] *Available at* https://www.federalregister.gov/d/2018-22006/p-13.

Patent Owner does not identify any statute or legal precedent that expressly limits *inter partes* review to non-expired patents.

Patent Owner fails to adequately explain why the Patent Office's authority to take a second look at an earlier administrative grant of a patent ends when the patent term expires even though the rights granted by the patent are not yet exhausted.

For all of these reasons, we do not agree that the Board lacks jurisdiction over expired patents.

III. CONCLUSION

For the reasons discussed above, we determine that Petitioner has proven, by a preponderance of the evidence, that some of the challenged claims are unpatentable, as summarized in the following table:

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 4–14, 17, 19, 21, 22, 24–28, 30	103(a)	Numazaki, Knowledge of a PHOSITA	1, 2, 4–6, 8–14, 19, 21, 22, 24–26, 28, 30	7, 17, 27
3, 15, 23	103(a)	Numazaki, Numazaki '863	3, 15, 23	
16, 29	103(a)	Numazaki, DeLuca	16, 29	
18	103(a)	Numazaki, DeLeeuw	18	
20	103(a)	Numazaki, Maruno	20	
Overall Outcome			1–6, 8–16, 18–26, 28–30	7, 17, 27

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, claims 1–6, 8–16, 18–26, and 28–30 of U.S. Patent 8,553,079 B2 have been shown to be unpatentable;

FURTHER ORDERED that, claims 7, 17, and 27 of U.S. Patent 8,553,079 B2 have not been shown to be unpatentable; and

FURTHERED 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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