

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

POWER2B INC.,
Patent Owner.

IPR2022-00315
Patent 10,664,070 B2

Before BARBARA A. PARVIS, SHEILA F. McSHANE, and
JOHN D. HAMANN, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively “Petitioner”) filed a Petition (Paper 3 (“Pet.”)) requesting an *inter partes* review of claims 1–18 (“challenged claims”) of U.S. Patent No. 10,664,070 B2 (Ex. 1001, “the ’070 patent”) pursuant to 35 U.S.C. §§ 311–319, along with the supporting Declaration of Benjamin B. Bederson, Ph.D. (Ex. 1002). Power2B, Inc. (“Patent Owner”) did not file a Preliminary Response. On June 27, 2022, we instituted an *inter partes* review of the challenged claims of the ’070 patent. Paper 7 (“Institution Decision” or “Inst. Dec.”).

Subsequently, Patent Owner filed a Patent Owner Response (Paper 10 (“Resp.”)); Petitioner filed a Reply (Paper 15 (“Reply”)); and Patent Owner filed a Sur-reply (Paper 20 (“Sur-reply”). The oral hearing was held on April 3, 2023. A copy of the hearing transcript has been entered into the record as Paper 33 (“Tr.”). Following the hearing, each party filed an additional paper regarding whether Petitioner presented new or changed positions in its Reply. Papers 31, 32.

We have authority to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision issues pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We determine that Petitioner has not shown by a preponderance of the evidence that the challenged claims of the ’070 patent are unpatentable.

II. BACKGROUND

A. *Real Parties-in-Interest*

Petitioner identifies as the real parties-in-interest the following: Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. Pet. 2. Patent Owner names itself as the real party-in-interest. Paper 5, 2.

B. Related Matters

Each party identifies a judicial matter that could affect, or be affected by, a decision in this proceeding. In particular, the parties inform us that the '070 patent is asserted in the following district court proceeding: *Power2B, Inc. v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:21-cv-00348 (E.D. Tex.) (“parallel district court proceeding”). Pet. 2; Paper 5, 2.

Petitioner also has filed (1) a petition for *inter partes* review of U.S. Patent No. 10,156,931 B2 (IPR2021-01190); (2) a petition for *inter partes* review of U.S. Patent No. 8,610,675 B2 (IPR2021-01220); (3) a petition for *inter partes* review of U.S. Patent No. 8,624,850 B2 (IPR2021-01239); (4) a petition for *inter partes* review of U.S. Patent No. 9,317,170 B2 (IPR2021-01257); (5) a petition for *inter partes* review of U.S. Patent No. 9,569,093 B2 (IPR2021-01266); (6) a petition for *inter partes* review of U.S. Patent No. 7,952,570 B2 (IPR2022-00300); (7) a petition for *inter partes* review of U.S. Patent No. 9,946,369 B2 (IPR2022-00325); (8) a petition for *inter partes* review of U.S. Patent No. 8,816,994 B2 (IPR2022-00334); and (9) a petition for *inter partes* review of U.S. Patent No. 8,547,364 B2 (IPR2022-00405). We instituted an *inter partes* review in each of the aforementioned proceedings. We issued final written decisions in each of IPR2021-01190, IPR2021-01220, IPR2021-01239, IPR2021-01257, IPR2021-01266, and IPR2022-00300.

Petitioner also filed a second petition for *inter partes* review of U.S. Patent No. 8,816,994 B2. We did not institute an *inter partes* review in that proceeding.

C. The '070 patent

The '070 patent relates to computer navigation and an apparatus that facilitates navigation of software stored on the apparatus. Ex. 1001, 1:25–28. Figure 1, below, shows device 10.

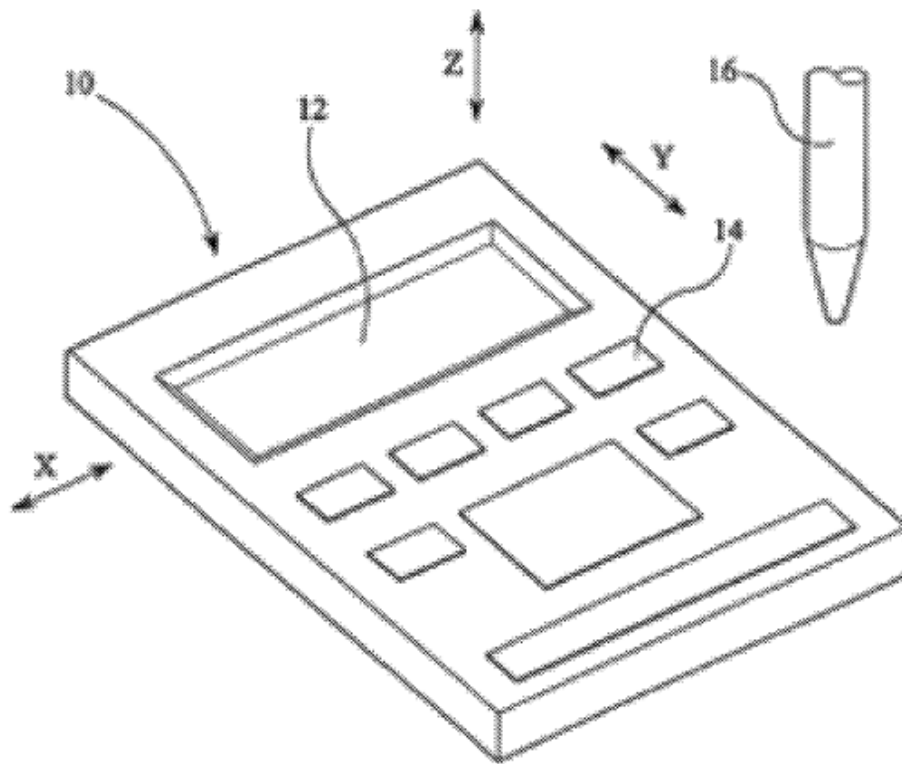


FIG. 1

Figure 1, above, illustrates device 10 having display 12, buttons 14, and stylus 16. *Id.* at 2:61–63, 3:38–44.

Device 10 may be, for example, a hand-held computer, a personal digital assistant (PDA), or a mobile communication device such as a mobile telephone. *Id.* at 2:54–57. Device 10 displays data on display 12, which may be a liquid crystal display, a dot matrix display, or a TFT (thin film transistor) display. *Id.* at 2:57–62. Stylus 16 takes the form of a pen-shaped

instrument and allows the user to select various options displayed on display 12. *Id.* at 3:38–44.

Stylus 16 emits a beam of light, such as infrared or other spectrum light. *Id.* at 4:63–65. The light is sensed by a sensitive layer (not shown) that is positioned over or incorporated in display 12. *Id.* at 4:65–67. The light sensitive layer may be in the form of a charge-coupled device (CCD) or a complementary metal-oxide semiconductor (CMOS) infrared sensitive array. *Id.* at 4:66–5:2. The beam of light emitted by stylus 16 is detected by the sensitive layer. *Id.* at 5:4–5. The sensitive layer determines the X-Y coordinates of stylus 16 and sends a corresponding position signal to the central processing unit of device 10. *Id.* at 5:5–10. The angle of stylus 16 and distance of stylus 16 from display 12 are determined and used to determine the position of stylus 16 in the Z-dimension. *Id.* at 6:18–22.

D. Illustrative Claim

Petitioner challenges claims 1–18 of the '070 patent. Pet. 1. Claims 1, 10, and 16 are the independent claims. Claims 2–9 and 11 depend, directly or indirectly, from claim 1. Claims 12–15 depend, directly or indirectly, from claim 10. Claims 17 and 18 depend, directly or indirectly, from claim 16. Independent claim 1, reproduced below, is illustrative of the claimed subject matter.

1. 1[Pre]¹ An interactive device comprising:
1[A] a stylus for emitting a beam of electromagnetic radiation;

¹ Petitioner's designations to reference the elements of claim 1 are set forth in brackets. Pet. 20–34. Herein we refer to the elements of claim 1 using Petitioner's designations.

- 1[B] a display screen disposed in a housing, the display screen displaying one or more selectable icons, the display screen forming a touch-sensitive display plane;
- 1[C] a sensor array disposed in the housing and forming a sensitive layer in a sensor plane proximate to the display screen, the sensor array is configured to detect at least a portion of the beam of electromagnetic radiation incident on the display screen; and
- 1[D] a processing unit configured to:
 - 1[E] receive an output signal from the sensor array;
 - 1[F] determine the output signal from the sensor array corresponds to a distribution pattern of electromagnetic radiation;
 - 1[G] determine a three-dimensional position of the stylus relative to the interactive device based on the distribution pattern;
 - 1[H] determine the three-dimensional position of the stylus corresponds to a first selectable icon of the one or more selectable icons based on the output signal;
 - 1[I] determine at least a portion of the output signal corresponds to a selection function associated with the first selectable icon; and
 - 1[J] execute, based on the selection function, a function related to the first selectable icon.

Ex. 1001, 8:10–35.

E. Evidence

Petitioner relies on the patent document references summarized in the table below.

Name	Patent Document	Exhibit
Keely	US 6,337,698 B1, issued Jan. 8, 2002	1006
Geva	GB 2 299 856 A, published Oct. 16, 1996	1011
Kameyama	JP H05-265637, published Oct. 15, 1993	1012

Petitioner submits and relies upon the Declaration of Benjamin B. Bederson, Ph.D. (Ex. 1002) and the Reply Declaration of Dr. Bederson (Ex. 1044) in support of its positions. Patent Owner submits and relies upon the Declaration of Darran R. Cairns, Ph.D. (Ex. 2020) in support of its positions.

F. Asserted Grounds

Petitioner asserts that the challenged claims of the '070 patent are unpatentable based on the following grounds (Pet. 3):

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–6, 8–17	103(a) ²	Keely, Geva
7, 18	103(a)	Keely, Geva, Kameyama

III. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective

² The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103, and was effective on March 16, 2013. Petitioner takes no position on the priority date for the claims of the '070 patent and uses the June 9, 2003, date of the earliest provisional patent application, PCT/GB03/02533 as the priority date. Pet. 12. On this record, we refer to the pre-AIA version of 35 U.S.C. § 103. Our determinations herein would not change under the AIA version of the statute.

evidence of nonobviousness.³ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art the time of the invention would have had “a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience in the research, design, development, and/or testing of touch and/or proximity sensors, human-machine interaction and interfaces, and related firmware and software, or the equivalent, with additional education substituting for experience and vice versa.” Pet. 12 (citing Ex. 1002 ¶¶ 39, 42–58).

In the Institution Decision, we stated that we found the phrase “at least” in Petitioner’s proposed definition creates a vague, open-ended upper bound for the level of ordinary skill, and we therefore did not adopt that aspect of the proposal. Inst. Dec. 8. With that exception, considering the subject matter of the ’070 patent, the background technical field, and the asserted prior art, we otherwise agreed with Petitioner’s proposed qualifications for an ordinary level of skill. *Id.*

Patent Owner provides a different level of skill in its Patent Owner Response. Resp. 10. Neither party argues that the disputes in the instant proceeding turn on which level of skill we adopt.

Based on the complete record now before us, we maintain our determination in the Institution Decision (Inst. Dec. 8) that Petitioner’s proposed definition is consistent with the level of skill reflected in the

³ Patent Owner does not present objective evidence of non-obviousness into the complete record now before us.

specification of the '070 patent and the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Accordingly, we adopt Petitioner's assessment of the level of skill for one of ordinary skill in the art, except without the "at least" phrase. Our analysis and determinations herein, however, do not turn on which level of skill we adopt.

C. *Claim Construction*

We construe the challenged claims by applying the standard used in federal courts, in other words, "the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b)," which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2020). Under this standard, the words of a claim generally are given their "ordinary and customary meaning," which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips*, 415 F.3d at 1312–13.

Petitioner states "[t]o resolve the particular grounds presented in this Petition, Petitioner does not believe that any term requires explicit construction." Pet. 13. In the Institution Decision, we stated, "[f]or purposes of this decision, we determine we need not construe any claim term." Inst. Dec. 9. In its Patent Owner Response, Patent Owner states "[f]or purposes of this Patent Owner Response, Power2B also does not propose any constructions." Resp. 11.

Based on the complete record now before us, we determine we need not construe any claim term to resolve the disputes in this proceeding. *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))).

D. Unpatentability of Claims 1–6 and 8–17 under 35 U.S.C. § 103(a) as Obvious over Keely and Geva

Petitioner asserts that claims 1–6 and 8–17 are unpatentable as obvious over Keely and Geva. Pet. 3. We begin with overviews of Keely and Geva. We then turn to Petitioner’s contentions.

1. Keely

Keely is directed to a notepad or notebook computer interface that facilitates input via a pen. Ex. 1006, 1:12–13. User interface elements are provided along a side of the page that allow the behavior of the system to be changed. *Id.* at 1:66–2:2. Keely’s Figure 1, reproduced below, illustrates a display with a display area and tool region. *Id.* at 2:60–61.

FIG. 1

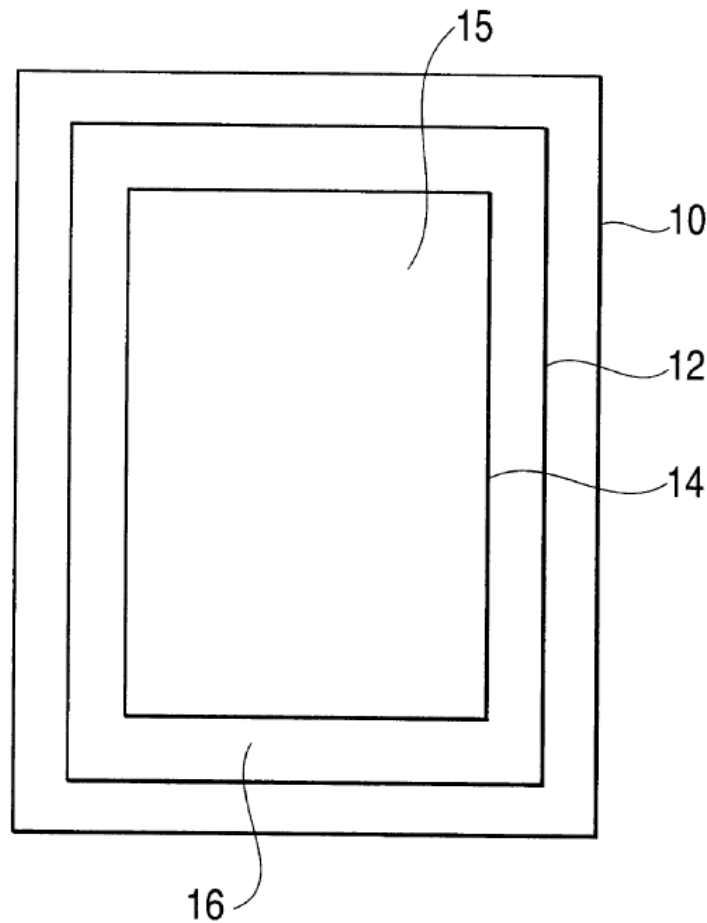


Figure 1, above, illustrates liquid crystal display 10 with display area 12 and tool region 16. *Id.* at 3:53–60, 5:20–23.

Display area 12 has writing surface 15, which is inset to allow for tool region 16. *Id.* Liquid crystal display 10 is included in a pen-based notebook or notepad computer. *Id.* Tools or status indicators are partially or fully displayed in tool region 16 around the edge of writing surface 15. *Id.* at 3:58–60, 5:20–23.

Core task tools are represented by icons that a user will recognize as related to the tasks they perform. *Id.* at 5:15–17. Figure 6, below, shows an example.

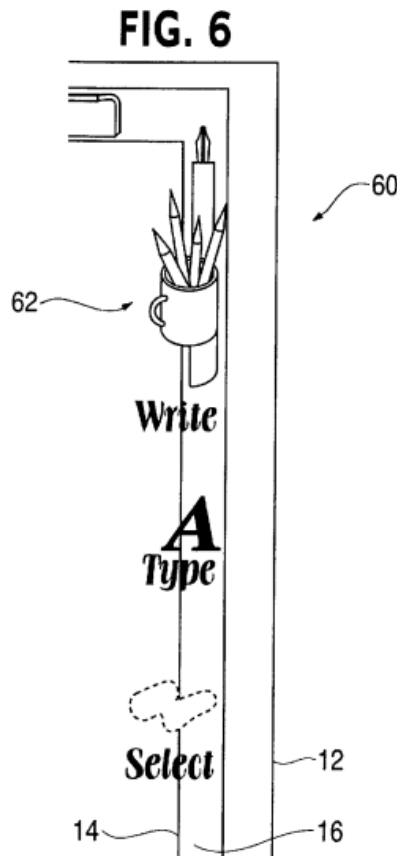


Figure 6 illustrates cup 62 of writing instruments fully visible in tool region 16. *Id.* at 5:17–23, Fig. 6. Cup 62 is an exemplary core task tool and, more specifically, is a writing tool. *Id.* at 5:15–19. The process 100 (shown in Figure 9) of displaying a core task tool involves obtaining the pen location from the digitizer grid control process of the computer and determining whether the pen is within a predetermined threshold distance of or in tool region 16. *Id.* at 6:3–7. The pen may be in the air above the display and not touching the display. *Id.* at 6:7–9. Figure 6, above, illustrates the display if

the pen is up and over the tool. *Id.* at 6:12–14. If the pen is pulled away, the tool fades. *Id.* at 6:17–18.

2. Geva

Geva relates to position-determining input devices, such as digitizing technologies for pen-based computer systems. Ex. 1011, 1:6–9. Figure 6, below, illustrates a position-determining input device. *Id.* at 8.

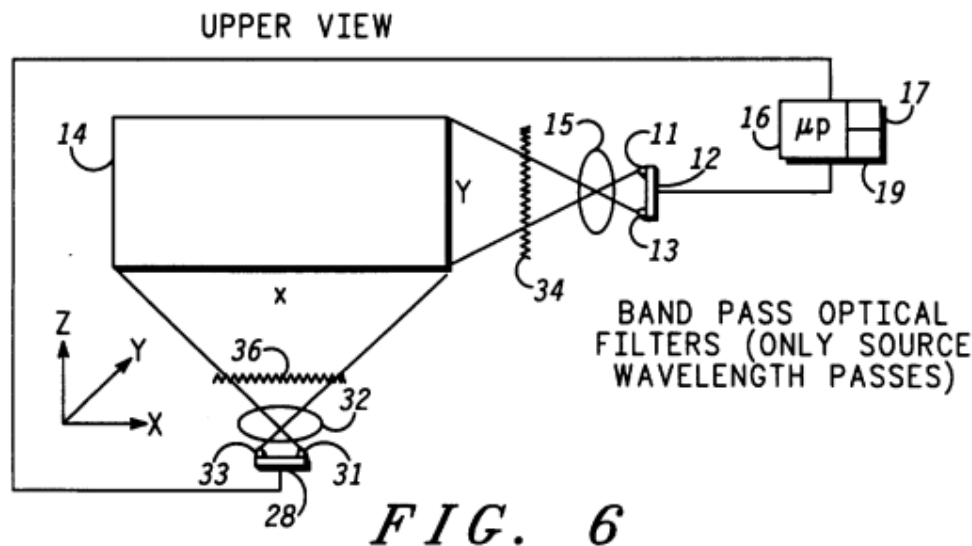


Figure 6 is an upper view of a position-determining input device including planar element 14, two light sensor arrays 12 and 28, and processing device 16, among other things. *Id.* at 8:32–9:7.

Light sensor arrays 12 and 28 preferably comprise a multiplicity of light sensing elements and are disposed at first and second edges of the planar element 14. *Id.* As shown in Figure 6, light sensor arrays 12 and 28 each comprise two light sensing elements 11 and 13, and 31 and 33, respectively. *Id.* Light sensor arrays 12 and 28 are coupled to optical lenses 15 and 32, respectively, through band-pass optical filters 34 and 36, which are arranged to select only light whose wavelength is the same as the wavelength of the desired light source. *Id.* Light sensor arrays 12 and 28 also

are operably coupled to a processing device 16, which comprises intensity/distance computation function 17 and memory element 19. *Id.*

Signals from each light sensing element in light sensor arrays 12 and 28 are transmitted to processing device 16. *Id.* at 9:14–21. Intensity/distance computation function 17 of processing device 16 calculates the position of light emitting cursor device 10 according to the intensity of light incident on first and second light sensor arrays 28 and 30. *Id.* The three-dimensional position of cursor device 10 is calculated. *Id.* at 9:23–10:6.

3. *Independent Claim 1*

The parties' disputes include (1) whether Petitioner's Reply and Dr. Bederson's Reply Declaration improperly introduce new argument and evidence necessary to make out Petitioner's *prima facie* case; and (2) whether the prior art teaches recitation 1[B] even if we consider the Reply arguments and evidence. *See, e.g.*, Resp. 28–36; Sur-reply 1, 13–17; Paper 31, 1; Paper 32, 1. We agree with Patent Owner with respect to each of the disputes based upon the evidence of record.

First, we address the question of whether we should consider Petitioner's Reply and Dr. Bederson's Reply Declaration. *See Consolidated Trial Practice Guide ("CTPG")*⁴ at 74–75 (explaining that a "reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered."); *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019). If Petitioner's Reply and Dr. Bederson's Reply Declaration do not improperly introduce new argument and evidence, we consider whether Patent Owner waived arguments by not raising them in the response. Paper 8, 9 ("Patent Owner is cautioned that any arguments not raised in the response may be deemed

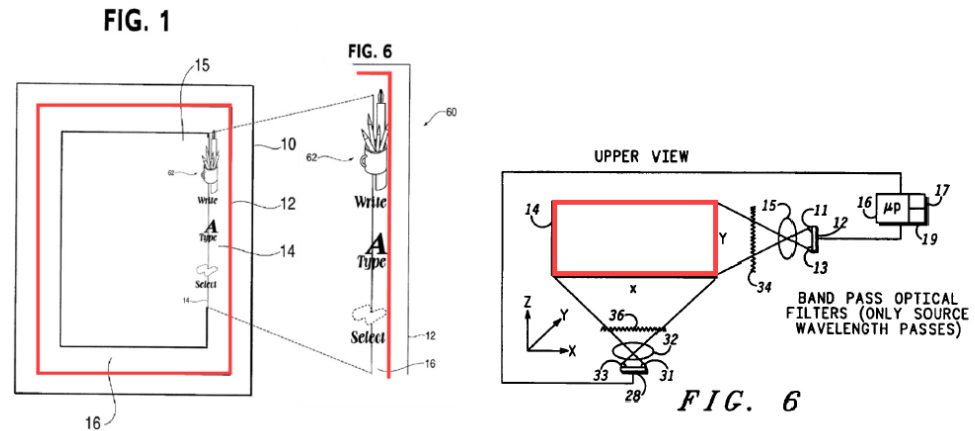
⁴ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

waived.”). For the reasons given herein, even upon consideration of arguments in Petitioner’s Reply and Dr. Bederson’s Reply Declaration, Petitioner does not demonstrate unpatentability by a preponderance of the evidence. With respect to whether Patent Owner waived arguments, however, we determine waiver is not appropriate here because, as discussed below, the Petition does not include Petitioner’s newly-raised, improper Reply arguments.

Regarding the second dispute, for the reasons given here, we determine that Petitioner has not shown that the prior art teaches recitation 1[B].

a) Do Petitioner’s Reply and Dr. Bederson’s Reply Declaration Improperly Introduce New Argument and Evidence?

Petitioner asserts that a person of ordinary skill in the art would have been motivated to combine Keely and Geva, where the skilled artisan “would have been motivated to include Geva’s light emitting pen in Keely’s system for an improved arrangement to determine the position of the ‘computer pen’ using its emitted light” for the teaching of element 1[A]. Pet. 19, 21. For the teaching of element 1[B], Petitioner asserts that “[a]s shown in [annotated] Figure 1, Keely’s tool icons from [annotated] Figure 6 have been superimposed to show how the display screen (outlined in red) forms a touch-sensitive plane which is compatible with Geva’s planer element 14 (annotated in red).” *Id.* at 23–24 (citing Ex. 1002 ¶75).

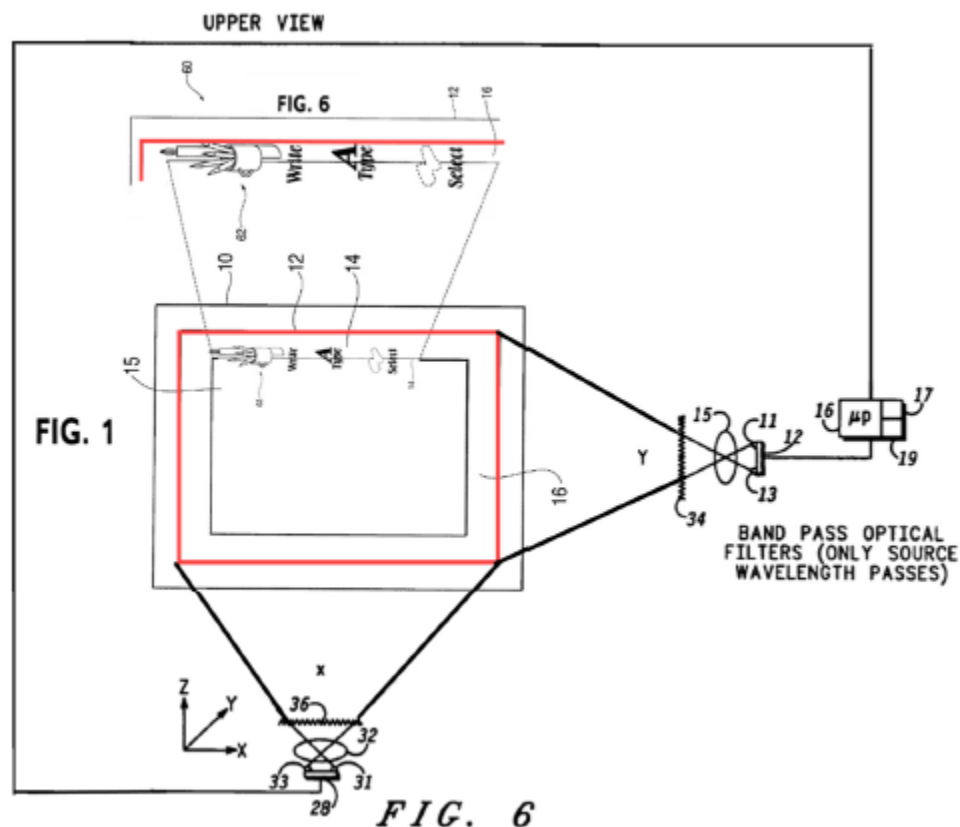


The figure, above, is a side-by-side presentation of Petitioner’s annotated version of Keely’s Figure 1 incorporating a portion of Keely’s Figures 1 and 6 (left) and Geva’s Figure 6 (right). Pet. 23–24. Dr. Bederson testifies that as to the annotated figures, above, “I have superimposed Keely’s tool icons from Figure 6 onto Figure 1 to show how the display screen (outlined in red) forms a touch-sensitive plane. I have also annotated Keely’s display screen and Geva’s planar element 14 in red *to show how Keely’s touch-sensitive plane can be used as Geva’s planar element[.]*” Ex. 1002 ¶ 75 (emphasis added).

For element 1[C], Petitioner asserts that “Kelly provides a touch-sensitive display plane.” Pet. 24. Petitioner asserts that “[i]t would have been obvious to a POSITA to include the sensor arrays disposed in the ‘notebook computer’ housing and forming a sensitive layer in a sensor plane proximate to the display screen 12 of Keely, because the sensor arrays in Geva are configured to detect at least a portion of the beam of electromagnetic radiation incident on the display screen.” *Id.* at 25 (citing Ex. 1002 ¶ 78).

Patent Owner argues in its Response that the proposed combination of Keely and Geva is inoperable, that Keely and Geva teach away from each other, and that Petitioner’s motivations to combine lack evidentiary support.

Resp. 11–28, 33–36. Petitioner responds to the Patent Owner Response by arguing in its Reply that Patent Owner addresses the “[w]rong [c]ombination of Keely and Geva.” Reply 1. In its Reply, Petitioner asserts that in its proposed combination “Geva’s sensor arrays and planar element would simply be placed on top of Keely’s conventional LCD, with Keely providing the user interface features based on the output of Geva’s input detection system.” Reply 3 (emphasis omitted). Petitioner argues “[a]s shown below in Geva’s modified Figure 6, Keely’s conventional LCD (Keely Figure 1) with Keely’s task tools (Keely Figure 6) sits underneath the area of Geva’s planar element.” Reply 3.



The above figure is Petitioner’s annotated version of Geva’s Figure 6, incorporating Keely’s Figure 1 and a portion of Keely’s Figure 6. Reply 4.

In its Sur-reply, Patent Owner argues “the Reply attempts to cure the deficiencies of the initial Keely-Geva combination by introducing a new Keely-Geva combination,” which is “unduly prejudicial” to Patent Owner and should be disregarded. Sur-reply 1; *see also id.* at 3 (“The new Keely-Geva combination is impermissible in a reply and unduly prejudicial to Power2B who must now defend against new arguments without the opportunity to submit rebuttal expert testimony”); Paper 32, 1 (“Petitioner’s new theories remain unsupported by the Petition, raise new issues after PO submitted counter evidence and expert testimony, and should be properly disregarded under the law and Consolidated Trial Practice Guide (‘CTPG’).”).

The parties’ dispute centers around each party’s articulation of the proposed combination of Keely and Geva’s teachings raised in the Petition. In particular, Patent Owner argues that Petitioner proposes a modification to Geva’s sensor arrangement “where Keely’s LCD is ‘used as Geva’s planar element’” in the Petition. *See, e.g.,* Resp. 1. Patent Owner also argues that the Petition proposes “add[ing] Geva’s linear arrays at the edges of Keely’s LCD,” rather than replacing Keely’s sensors with Geva’s linear sensor array, which would result in “redundant” sensors (referred to herein as the “redundant Keely and Geva sensor combination”). *See, e.g., id.* at 34. Patent Owner also argues that “Keely II,” a reference incorporated by reference in Keely, “confirms Keely’s LCD does not have any special properties to redirect light to linear sensor arrays disposed at its edges.” *Id.* at 21. In Reply, Petitioner argues that in its proposed combination “Geva’s sensor arrays *and* planar element would simply be placed on top of Keely’s conventional LCD, with Keely providing the user interface features based on the output of Geva’s input detection system.” Reply 3. Petitioner also argues

that it “does not rely on any aspect of Keely II’s alternative digitizer approaches.” *Id.* at 2.⁵ As a result of not relying on “any aspect” of Keely II’s digitizer, Keely’s position determining is replaced with Geva’s position determining such that Petitioner relies on only Geva for determining position. *Id.* at 2–3. As set forth above, Petitioner also includes a “modified Figure 6” of Geva and argues “[a]s shown . . . in Geva’s modified Figure 6, Keely’s conventional LCD (Keely Figure 1) with Keely’s task tools (Keely Figure 6) sits underneath the area of Geva’s planar element.” Reply 3.

The parties do not dispute that the Petition argues use of Geva’s light emitting pen and Geva’s sensor arrays in combination with Keely’s system. *See, e.g.*, Pet. 21, 26–27. The operative issue here, which we discuss in more detail below, is whether the Reply’s assertion that “Petitioner’s combination,” which is “that Geva’s sensor arrays and planar element would simply be placed on top of Keely’s conventional LCD” and Petitioner’s argument that it does not rely on Keely II’s digitizer (Reply 2–3) are advanced in the Petition or whether the Reply presents new theories in violation of 37 C.F.R. § 42.23(b).

Based on our review of the Petition, we agree with Patent Owner’s arguments that the Petition relies on Keely’s teachings of determining position in its element-by-element analysis. *See, e.g.*, Pet. 23 (describing with respect to element 1[B] that Keely’s “‘notebook’ or ‘notepad’ computer includes all of the components, including the display, processors, memory, sensors, and other components”), 23 (arguing for element 1[B] that Keely’s display screen “forms a touch-sensitive plane”), 24 (arguing “[a]s explained

⁵ U.S. Patent 6,756,970 B2 issued June 29, 2004 (Ex. 1015) is referred to as “Kelly II” herein.

above, Keely provides a touch-sensitive display plane”), 33 (arguing for element 1[H] that “a POSITA would have understood that Keely determines the three-dimensional position of the stylus corresponding to a first selectable icon from among selectable icons”). Keely describes that its position detection is done by hardware disclosed in Keely II, which is incorporated by reference. *See, e.g.*, Ex. 1006, 1:5–9 (describing that “[t]his application is related to U.S. application Ser. No. 09/196114,” which is “incorporated by reference”), 3:50–53 (“[t]he present invention is directed to interface elements of a pen based, notepad or notebook computer, the hardware of which is described in detail in the related application previously mentioned”); Ex. 1015, code (21) (“Appl. No.: 09/196,114”). Petitioner does not dispute that Keely incorporates Keely II by reference. *See, e.g.*, Reply 6 n.1 (discussing the “incorporation by reference of Keely II’s disclosures”), 14 n.4 (discussing that Keely “points to another reference, Keely II”).⁶

Keely describes that it “is directed to interface elements of a pen based, notepad or notebook computer, the hardware of which is described in detail in” Keely II. Ex. 1006, 3:50–53. Keely II teaches that “[t]he *digitizer grid 60 and pen controller 72* operate by producing an electromagnetic field which interacts with one or more coils in the pen *from which the pen position, angle, and stylus pressure are determined.*” Ex. 1015, 4:22–26

⁶ Petitioner argues that “Keely is agnostic as to its specific pen technology.” Pet. 21 (citing Ex. 1002 ¶ 73). Petitioner also argues that Keely “requires determining a three-dimensional position, but leaves the implementation details to a POSITA.” *Id.* at 26 (citing Ex. 1002 ¶ 86). Based on the complete record now before us, we find that the characterizations of Keely in the Petition and in Dr. Bederson’s testimony (Pet. 21, 26; Ex. 1002 ¶¶ 73, 86) are inconsistent with Keely’s teachings because Keely teaches that its position detection is done by hardware disclosed in Keely II, which is incorporated by reference.

(emphases added). As we explain further in the discussion that follows, arguments in the Petition specifically relating to Keely’s determination of pen position support Patent Owner’s contention that the combination in the Petition includes Keely II’s hardware.

We turn to Petitioner’s arguments in its Reply that its Reply combination is not new. First, Petitioner argues that its position is set forth precisely on page 19 of the Petition in a sub-section titled “[a] POSITA would be motivated to combine the teachings of Keely and Geva.” Reply 2–3 (quoting Pet. 19). That portion of the Petition is as follows:

Keely in view of Geva (Keely-Geva) teaches all the limitations of Claims 1–6 and 9–17. Both Keely and Geva relate to pen-based computing. Ex-1006, 2:20–23; Ex-1011, Abstract. A POSITA would have known of and consulted each of these proposed solutions. Ex-1002 ¶¶69–70.

Keely and Geva provide complementary solutions to improve pen-based computing by sensing and interacting with a stylus in similar and predictable ways. Ex-1002 ¶70. For example, Keely provides a “pen-based system interface for a notepad computer” that combines “spatial and gestural cues by which it deduces how the input should be processed.” Ex-1006, Title, 3:61–64, 4:14–5. Geva provides a “position determining input device” that determines the X-Y-Z position of the pen from the “intensity of incident light.” Ex-1011, Title, Abstract. Both recognize these issues and propose solutions using related types of hardware and software. Ex-1002 ¶70. Accordingly, a POSITA would have understood that these references disclose interrelated teachings that reasonably would be combined in predictable ways. *Id.*

Pet. 19.

Petitioner argues that because it relies on Geva’s “position determining input device,” which includes planar element 14, Petitioner’s proposed combination must include planar element 14. Reply 2–3. In the same discussion of the Petition, however, Petitioner also relies on Keely’s

“pen-based system interface for a notepad computer” that Petitioner asserts “combines ‘spatial and gestural cues by which it deduces how the input should be processed.’” *Id.* (citing Pet. 19). Keely’s “pen-based system interface for a notepad computer” (*id.*) includes Keely’s digitizer. *See, e.g.*, Ex. 1006, 1:5–9, 3:50–53. Also, the “spatial and gestural cues” referred to are processed by Keely’s digitizer. Ex. 1006, 6:3–5. In contrast to Petitioner’s argument, we find that the identified discussion of the Petition describes only how Keely and Geva are similar. To the extent Petitioner relies on that discussion to assert that all referenced teachings would have been part of Petitioner’s proposed combination, Petitioner’s argument is contrary to its argument that it “does not rely on any aspect of Keely II’s alternative digitizer approaches.” Reply 2.

Second, Petitioner argues that in the Petition it relied on Geva’s teaching of using Geva’s technology “as an improved alternative.” Reply 3, 5 (quoting Ex. 1011, 2:19–21). Petitioner does not identify any specific portions of the Petition, but the parts of the Petition that appear most applicable are as follows:

A POSITA would have been motivated to include Geva’s light emitting pen in Keely’s system for an improved arrangement to determine the position of the “computer pen” using its emitted light since “the digitizing technology must work effectively with a liquid crystal display (LCD) screen, it must protect the LCD polarized surface, and it should accurately simulate the sense of pen and paper.” Ex-1011, 1:15–18; Ex-1002 ¶74. Additionally, Geva teaches its invention as an “improved alternative” to the several well-known digitizing technologies at the time (such as the various options disclosed by Keely). Ex-1011, 2:19–21. For example, Geva teaches that a “light [based input device], has low power consumption, is immune to noise and does not produce radio frequency interference (RFI) noise.” Ex-1011, 2:37–39. Based on these

teachings, a POSITA would have been motivated to use Geva specifically because Geva suggests itself as an improvement to technology like that discussed in Keely. Ex-1002 ¶74. A POSITA thus would have been motivated by Geva to apply its “improved” approaches to Keely. *Id.* A POSITA would have had a reasonable expectation of success of combining Keely and Geva, because Geva is directed to a “pen-based” LCD display that would be a logical design choice for Keely’s notebook computer system that “facilitates input via a pen.” Ex-1011, 1:6-9; Ex-1006, 1:12-16.

Pet. 21–22.

It would have been obvious to a POSITA to include the sensor arrays disposed in the “notebook computer” housing and forming a sensitive layer in a sensor plane proximate to the display screen 12 of Keely, because the sensor arrays in Geva are configured to detect at least a portion of the beam of electromagnetic radiation incident on the display screen. Ex-1002 ¶78. Geva is designed to “work effectively with a liquid crystal display (LCD) screen” as “an improved alternative arrangement for determining the position of digitizer input elements.” Ex-1011, 1:16–18, 2:19–21. A POSITA would have included Geva’s sensors in Keely for the added benefits of Geva such as “low power consumption,” “immun[ity] to noise” and because it “does not produce radio frequency interference (RFI) noise.” Ex-1011, 2:37–39. Based on these teachings, a POSITA would have been motivated to use Geva among the existing alternatives. Ex-1002 ¶78.

Id. at 25–26.

Consistent with Patent Owner’s argument, the portions of the Petition above include express statements that a person having ordinary skill in the art “would have been motivated to include *Geva’s light emitting pen* in Keely’s system” and would have been motivated “to include the *sensor arrays* disposed in the ‘notebook computer’ housing and forming a sensitive layer in a sensor plane proximate to the display screen 12 of Keely,” but include no express reference to planar element 14. *Id.* at 21–22, 25–26

(emphases added). Also, consistent with Patent Owner’s argument, the portions of the Petition above include the statement that “[i]t would have been obvious” to include Geva’s sensor arrays “to detect at least a portion of the beam of electromagnetic radiation *incident on the display screen.*” Pet. 25. That statement is consistent with Patent Owner’s arguments because electromagnetic radiation, which is light, is described as being detected “incident on” Keely’s “display screen.” *Id.* In contrast, in Geva, light emitting cursor device 10 “emits a beam of light on to the planar element 14,” which is “reflected off the planar element 14” and “onto the light sensor array 12.” Ex. 1011, 5:23–25.

Petitioner’s argument that “Geva teaches its invention as an ‘improved alternative’” and that “a POSITA would have been motivated to use Geva specifically because Geva suggests itself as an improvement to technology like that discussed in Keely” provides Petitioner’s reasoning to combine. The Petition does not state expressly that Petitioner’s proposed combination includes planar element 14 and the “combination actually advanced by Petitioner . . . does not rely on any aspect of Keely II’s alternative digitizer approaches,” as is set forth in the Reply. Reply 2–3.

Third, Petitioner argues in its Reply that Keely “points to” Keely II as an example prior art input approach that could be used, but never says it must be used.” Reply 14, n.4. As set forth above, however, Petitioner relies on Keely for teaching determining the pen position and Keely states that its hardware is described in Keely II. Ex. 1006, 3:50–53.

Importantly, arguments in the Petition specifically relating to element 1[B] discussed below (*see infra* § III.D.3.b) support Patent Owner’s position. In particular, Petitioner relies on Keely for teaching “the display screen forming a touch-sensitive display plane” recited in element 1[B]. Pet.

23–24. Keely describes button tools 380, which may be “touch-screen buttons.” Ex. 1006, 12:5–10, 12:44–48. Keely describes that its tool display process “involves obtaining the pen location from the digitizer grid control process of the computer.” *Id.* at 6:3–6. As discussed above, Keely describes that it “is directed to interface elements of a pen based, notepad or notebook computer, the hardware of which is described in detail in” Keely II.

Ex. 1006, 3:50–53. Keely II teaches that “[t]he *digitizer grid 60 and pen controller 72* operate by producing an electromagnetic field which interacts with one or more coils in the pen *from which the pen position, angle, and stylus pressure are determined.*” Ex. 1015, 4:22–26 (emphases added). Thus, the Petition’s reliance on Keely’s position determining is consistent with Patent Owner’s argument that Petitioner proposes “add[ing] Geva’s linear arrays at the edges of Keely’s LCD,” rather than replacing Keely’s sensors with Geva’s linear sensor array, which results in “redundant” sensors. *See, e.g.,* Resp. 34.

The Petition’s reliance on Keely’s position determining is consistent with Patent Owner’s argument that Petitioner proposes “add[ing] Geva’s linear arrays at the edges of Keely’s LCD,” rather than replacing Keely’s sensors with Geva’s linear sensor array, which results in “redundant” sensors. *See, e.g.,* Resp. 34. The Petition is not consistent with Petitioner’s argument in its Reply that it “does not rely on any aspect of Keely II’s alternative digitizer approaches.” Reply 2.

Also, Petitioner’s arguments with respect to element 1[B] are consistent with Patent Owner’s position that the Petition does not set forth Petitioner’s reliance on Geva’s planar element 14 as part of Petitioner’s proposed combination. In particular, Petitioner relies on Dr. Bederson’s

testimony in connection with its arguments for element 1[B] that are contrary to its arguments in its Reply. Dr. Bederson testifies as follows:

Keely-Geva teaches elements 1[B], 10[B], and 16[B]. Keely's "notebook or notepad computer includes a liquid crystal display 10, as depicted in FIG. 1, with a display area 12 of a size and shape approximating a piece of paper." Ex-1006, 3:50-56. A POSITA would have understood that the "notebook" or "notepad" computer includes all of the components, including the display, processors, memory, sensors, and other components in a unitary housing, to ensure maximum mobility as seen with the mobile touch screen products I described above. *See* Section XII.F. Keely displays a page including selectable icons, such as a "tool region" where "tool icons" are partially visible until the "pen is brought near one of the icons, at which time [the tools] become[] fully visible." Ex-1006, 2:23-31, 12:47-48. I have superimposed Keely's tool icons from Figure 6 onto Figure 1 to show how the display screen (outlined in red) forms a touch-sensitive plane. I have also annotated Keely's display screen and Geva's planar element 14 in red to show *how Keely's touch-sensitive plane can be used as Geva's planar element*.

Ex. 1002 ¶ 75 (emphasis added).

Patent Owner argues "the Petition incorrectly assumed 'Keely's touch-sensitive plane can be used as Geva's planar element' and thus did not include Geva's planar element in the Keely-Geva combination asserted against the independent claims." Resp. 1-2 (quoting Ex. 1002 ¶ 75; citing Pet. 19-34). Patent Owner argues that Petitioner's "mistake is dispositive" because Petitioner's proposed combination would have been "inoperable." *Id.* at 2.

Petitioner does not dispute that a combination without Geva's planar element would have been inoperable. *See generally* Reply. Petitioner argues that Patent Owner "dedicates a significant portion of its POR to attacking a combination that is not what Petitioner advanced." Reply 1. Petitioner

submits the Reply Declaration of Dr. Bederson with further testimony as follows:

Additionally, I annotated the top-down view of Keely's Figure 1 and Geva's Figure 6, to diagrammatically show where Geva's planar element would be positioned with respect to Keely's LCD screen. Ex-1002 ¶75. It is clear that Power2B and Dr. Cairns misunderstood my proposed combination. It appears that their misunderstanding stems from the following sentence in Paragraph 75 of my declaration: "I have also annotated Keely's display screen and Geva's planar element 14 in red to show how Keely's touch-sensitive plane can be used as Geva's planar element." Ex-1002 ¶75. While my proposed combination, as discussed above, should have been clear from the context of my declaration and opinions, Power2B and Dr. Cairns find ambiguity in this sentence. Perhaps I could have been more precise by using the word "with" in place of "as" in this sentence, since that is what Geva itself teaches and what I relied on in forming my opinions. Regardless, as shown, and as would have been obvious from Geva's description, Geva's planar element sits on top of Keely's LCD display, and receives the light input shined onto it from Geva's light pen. This placement of Geva, with respect to Keely, would have been obvious because, as I explained, Geva "must work effectively with a liquid crystal display (LCD) screen, it must protect the LCD polarized surface and it should accurately simulate the sense of pen and paper." Ex-1002 ¶¶64, 73, 74, 78 (citing Geva, Ex-1011, 1:15–18). Placing Geva's planar element on top of the LCD would have protected the surface of Keely's LCD because Geva's pen may touch only the planar element (rather than the surface of Keely's LCD) when a user writes on the surface to simulate "the sense of pen and paper," as taught by Geva.

Ex. 1044 ¶ 13.

In response, Patent Owner quotes paragraph 75 of Dr. Bederson's original Declaration (Ex. 1002) and states that it is evidence supporting that "Petitioner incorrectly assumed Keely's LCD could be substituted for Geva's planar element and thus, the Petition did not include Geva's planar

element to satisfy the claimed *display screen* (1[B]/10[B]/16[B]).” Sur-reply 6. Patent Owner argues that the Reply introduces “a new Keely-Geva combination” including “Geva’s ‘planar element’ ‘placed on top of Keely’s conventional LCD.’” *Id.* at 1. Patent Owner argues “the Reply fails to provide evidence or arguments in the Petition that support the new Keely-Geva combination.” *Id.* at 8–11. Patent Owner also argues that Dr. Bederson’s Reply Declaration includes “supplemental testimony from Dr. Bederson that admits the description of the initial Keely-Geva combination lacks the required precision and particularity.” *Id.* at 9 (citing Ex. 1044 ¶ 13).

We find that paragraph 75 of Dr. Bederson’s original Declaration that his testimony “show[s] *how Keely’s touch-sensitive plane can be used as Geva’s planar element*” (Ex. 1002 ¶ 75 (emphasis added)) is consistent with Patent Owner’s position that the proposed combination in the Petition does not include Geva’s planar element 14. We find that Dr. Bederson’s testimony that “[p]erhaps I could have been more precise by using the word ‘with’ in place of ‘as’ in this sentence, since that is what Geva itself teaches and what I relied on in forming my opinions” (Ex. 1044 ¶ 13) is not a clarification of his initial testimony, but, instead, is a clear revision of his testimony and his opinion. Dr. Bederson’s testimony regarding “using the word ‘with’ in place of ‘as’” (*id.*) is improper new testimony in his Reply Declaration. Furthermore, Dr. Bederson’s testimony that his new opinion is supported by “what Geva itself teaches” (*id.*) is not consistent with Geva’s teachings. Geva does not refer to Keely’s LCD or any LCD similar to that in Keely with a digitizer grid, but instead, Geva describes “[a]dvantageously, the position-determining input device does not require a specific, active board with in-built sensors for determining positions.” Ex. 1011, 3:7–9.

“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” 37 C.F.R. § 42.65(a). Here, Dr. Bederson’s original Declaration (Ex. 1002) does not disclose facts or data showing a reliance on Geva’s planar element 14 or any LCD other than the LCD described in Keely, which incorporates by reference the hardware of Keely II.

We turn to Petitioner’s post-hearing briefing discussing why the arguments in its Reply are not new. Paper 31. There, Petitioner argues “[t]he Petition explains ‘[a]s shown in Figure 1, Keely’s tool icons from Figure 6 have been superimposed to show how *the display screen (outlined in red) forms a touch-sensitive plane which is compatible with Geva’s planar element 14 (annotated in red).*’” *Id.* at 2 (citing Pet. 23). Petitioner argues that “[c]ompatible’ means they are capable of working together.” *Id.* That argument, however, is unsupported attorney-argument in the Petition. Petitioner relies on the testimony of Dr. Bederson. Pet. 23 (citing Ex. 1002 ¶ 75). And, as discussed above, Dr. Bederson testifies that his annotation shows “how Keely’s touch-sensitive plane can be used as Geva’s planar element,” which is testimonial evidence that is contrary to Petitioner’s position. Ex. 1002 ¶ 75.

Petitioner also argues “[i]n all, Geva’s planar element is discussed 10 times in the Petition grounds.” Paper 31, 3. Consistent with Patent Owner’s argument (Paper 32, 5), upon consideration of all discussion of Geva’s planar element in the Petition, we find that nothing in the Petition indicates that Petitioner’s proposed combination is placing Geva’s planar element on top of Keely’s display. Additionally, and contrary to Petitioner’s position, Keely’s position determining is discussed throughout the Petition, as set

forth above, and that position determining is performed by Keely II's hardware.

Petitioner's post-hearing briefing discussing why the arguments in its Reply are not new (Paper 31) does not meaningfully address Patent Owner's assertion that replacing Keely II's hardware is a new argument. More specifically, Petitioner does not address Patent Owner's arguments that the combination in the Petition is "add[ing] Geva's linear arrays at the edges of Keely's LCD," which results in a "redundant" Keely and Geva sensor combination (*see, e.g.*, Resp. 34) and that Petitioner's elimination of Keely's digitizer in the Reply is a new argument (Sur-reply 6, 16).

During the hearing and in its subsequent paper, Petitioner argues that Patent Owner could have deposed Dr. Bederson to attempt to gain clarification regarding Petitioner's proposed combination. *See, e.g.*, Paper 31, 1, 6; Tr. 15:21–23, 15:25–16:3. Nonetheless, as Petitioner acknowledges (Tr. 18:2–6), Petitioner was required to advance its proposed combination in the Petition.

We recognize that a petitioner may set forth alternative positions as to how the prior art teaches the elements of the claims. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) ("As both the Board and Realtime recognized, HP also argued in the alternative that Nelson disclosed some of the elements in the claims at issue."). That, however, is not Petitioner's approach in the instant proceeding. Indeed, Petitioner acknowledges that it did not set forth alternative positions arguing that the Patent Owner Response addresses the "[w]rong [c]ombination of Keely and Geva." Reply 1.

Importantly, to prevail in its challenge to Patent Owner's claims, Petitioner must demonstrate that the claims are unpatentable, and that burden

never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012)); *see also Intelligent Bio-Sys.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” (quoting 35 U.S.C. § 312(a)(3))).

Based on the complete record now before us, we find that the Petition includes argument and evidence indicating clear reliance on Keely’s teachings of determining pen position, consistent with Patent Owner’s contentions. We further find that the Petition does not include Petitioner’s newly-raised Reply arguments regarding Geva’s planar element. We conclude that the Petition does not set forth Petitioner’s proposed combination of Keely and Geva argued in the Reply and, therefore, the Reply includes improper, new argument. With respect to Patent Owner’s argument that Petitioner’s Reply and Reply declaration should be disregarded (Sur-reply 3; Paper 32, 1), we need not reach that decision because, as discussed below (*see* § III.D.3.b), even upon consideration of Petitioner’s Reply arguments Petitioner does not demonstrate that claim 1 is unpatentable.

To the extent Patent Owner has not fully explained its opposition to the Petition in its Patent Owner Response, Petitioner must demonstrate that the claims are unpatentable, and that burden never shifts to the patentee. *Dynamic Drinkware*, 800 F.3d at 1378. We had cautioned Patent Owner that

arguments not raised in its Patent Owner Response “may be deemed waived.” Paper 8, 9. We determine any such waiver is not appropriate here because the Petition does not include Petitioner’s newly-raised, improper Reply arguments.

b) Has Petitioner Shown that the Combination of Keely and Geva Teaches Element 1[B]?

We turn to whether Petitioner has shown that the combination of Keely and Geva teaches element 1[B]. Element 1[B] recites “a display screen disposed in a housing, the display screen displaying one or more selectable icons, the display screen forming a touch-sensitive display plane.”

We start with the Petition. Petitioner asserts that Keely teaches element 1[B] and cites as supporting evidence the testimony of Dr. Bederson. Pet. 23 (citing Ex. 1002 ¶ 75). Regarding “a display screen disposed in a housing” recited in element 1[B], Petitioner relies on (*id.*) Keely’s teaching that “notebook or notepad computer includes a liquid crystal display 10, as depicted in FIG. 1, with a display area 12 of a size and shape approximating a piece of paper.” Ex. 1006, 3:50–56. Regarding the recitation that the screen display “one or more selectable icons,” Petitioner relies on (Pet. 23) Keely’s teaching that “[t]he interface includes a core task tool region adjacent to the page where tool icons are partially visible until the pen is brought near one of the icons, at which time it becomes fully visible.” Ex. 1006, 2:28–31. Regarding the recitation that the screen form “a touch sensitive display plane,” Petitioner relies on a portion of Keely that describes buttons that can be provided as physical buttons “or touch-screen buttons that appear in the tool region alongside or below the displayed page.” Ex. 1006, 12:47–48 (cited in Pet. 23).

Patent Owner argues “Keely requires the digitizer to provide a touch-sensitive display and detect the location of a ‘touching’ input pen/stylus from the digitizer grid.” Sur-reply 16 (citing, e.g., Ex. 1006, 3:49–52, 4:60–63, 5:1–3, 6:3–6, 6:54–58). Patent Owner argues “the Reply now argues the new Keely-Geva combination eliminates Keely’s ‘sensor array’/digitizer.” *Id.* at 17. Patent Owner argues that the new Keely-Geva combination “cannot satisfy the claimed ‘display screen forming a touch-sensitive display plane.’” *Id.* We agree with Patent Owner.

As discussed above (*see supra* § III.D.3.a), Keely’s “touch-screen buttons” are examples of button tools 380. Ex. 1006, 12:5–10, 12:44–48. Keely describes that its tool display process “involves obtaining the pen location from the digitizer grid control process of the computer.” *Id.* at 6:3–6. Keely also describes it “is directed to interface elements of a pen based, notepad or notebook computer, the hardware of which is described in detail in” Keely II. Ex. 1006, 3:50–53. Keely II teaches that “[t]he *digitizer grid 60 and pen controller 72* operate by producing an electromagnetic field which interacts with one or more coils in the pen *from which the pen position, angle, and stylus pressure are determined.*” Ex. 1015, 4:22–26 (emphases added).

The Petition’s reliance on Keely for element 1[B] is consistent with Patent Owner’s argument that Petitioner proposes “add[ing] Geva’s linear arrays at the edges of Keely’s LCD,” rather than replacing Keely’s sensors with Geva’s linear sensor array, which results in “redundant” sensors. *See, e.g.,* Resp. 34. The Petition is not consistent with Petitioner’s argument in its Reply that it “does not rely on any aspect of Keely II’s alternative digitizer approaches.” Reply 2. For this reason alone, we find that Petitioner’s showing in its Petition is deficient.

For completeness and as an independent reason for our determination herein, we find that the Petition does not provide articulated reasoning with a rational underpinning to combine the teachings of Keely and Geva, including Keely’s position determining teachings, i.e., the teachings of the proposed combination argued by Patent Owner, including redundant Keely and Geva sensors. We consider that combination with one difference, specifically, we include planar element 14. We start with a sub-section in the Petition titled “[a] **POSITA would be motivated to combine the teachings of Keely and Geva.**” Pet. 19. That sub-section describes how Keely and Geva are similar. Petitioner’s contentions pointing to similarities in Keely and Geva do not suffice as an articulated reason with rational underpinning to combine their respective teachings—more is required to support the legal conclusion of obviousness. *See KSR*, 550 U.S. at 418. The Federal Circuit has concluded that merely asserting that references were drawn from the same field of art is “simply too conclusory” to show that the skilled artisan would have combined these references in the way of the claimed invention. *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 976 (Fed. Cir. 2017); *see Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 990 (Fed. Cir. 2016) (determining that “the Board correctly concluded” that a petitioner “did not articulate a sufficient motivation to combine” where the only reason given was “that references were directed to the same art or same techniques”).

We turn to Petitioner’s argument and evidence regarding reasoning to combine set forth in its element-by-element analysis. For element 1[A], Petitioner argues “Geva teaches its invention as an ‘improved alternative’ to the several well-known digitizing technologies at the time.” Pet. 22. Petitioner relies on a quote from Geva as follows: “Geva teaches that a ‘light

[based input device], has low power consumption, is immune to noise and does not produce radio frequency interference (RFI) noise.” *Id.* (citing Ex. 1011, 2:37–39). Petitioner relies on substantially the same arguments for its reasoning to combine with respect to element 1[C]. *Id.* at 25–26 (citing Ex. 1011, 1:16–18, 2:19–21, 2:37–39).

We find that Geva’s description of its advantages does not pertain to combining Keely’s position determining with Geva’s position determining with the result being redundant Keely and Geva position determining hardware. Ex. 1011, 2:19–21 (describing that its “invention seeks to provide an improved *alternative* arrangement for determining the position of digitizer input elements such as computer pens” (emphasis added)), 2:37–39 (describing advantages that would not be achieved with redundant, duplicative sensors including “low power consumption,” “immun[ity] to noise,” and no production of “radio frequency interference (RFI) noise”). Petitioner does not offer articulated reasoning to combine Keely’s “touch-screen buttons” (Ex. 1006, 12:5–10, 12:44–48) or others of Keely’s tools, all of which involve “obtaining the pen location from the digitizer grid control process of the computer” (*id.* at 6:3–6) with Geva’s position-determining input device.

We turn to the combination Petitioner argues in its Reply, i.e., that “Geva’s sensor arrays *and* planar element would simply be placed on top of Keely’s conventional LCD, with Keely providing the user interface features based on the output of Geva’s input detection system.” Reply 3. Petitioner’s combination in its Reply does not include “any aspect of Keely II’s alternative digitizer approaches.” Reply 2. Petitioner does not identify teachings in Geva with respect to “the display screen forming a touch-sensitive display plane” recited in element 1[B] in either the Petition or the

Reply. Pet. 23; *see generally* Reply. The Petition includes one sentence that mentions Geva and cites to Dr. Bederson’s testimony that “Keely’s touch-sensitive plane can be used as Geva’s planar element.” Pet. 23; Ex. 1002

¶ 75. For this reason alone, the Petition is deficient.

In its Reply, with respect to dependent claims 9 and 12, Petitioner again relies on Keely. Claim 9 depends from claim 1 and recites “wherein the sensor plane is substantially parallel to the *touch-sensitive display plane*” (emphasis added). Claim 12 depends from claim 10 and includes a similar recitation. For claims 9 and 12 in the Reply, Petitioner argues that “Keely’s LCD” “forms a touch-sensitive display plane.” Reply 24. Like its arguments in the Petition, Petitioner’s reliance on Keely for element 1B is not consistent with Petitioner’s combination set forth on pages 2–3 of its Reply and is deficient for the reasons given above.

For completeness and for an independent reason for our determination herein, we consider teachings in Geva Petitioner relies on in its Petition for other elements recited in claim 1, including element 1[C], which recites in part “a sensor array disposed in the housing and forming a sensitive layer in a sensor plane proximate to the display screen.” Petitioner relies on Geva’s teachings relating to its position-determining device that determines the position of a light emitting device using intensity/distance computation function 17. *Id.* at 21–34 (citing, e.g., Ex. 1011, 5:12–16, 5:22–23, 7:32–8:5, 8:32–9:7, 9:17–21, 9:23–31, 9:35–10:6, Figs. 3, 4, 6, 7).

Geva describes that “[i]n operation, the light emitting cursor device 10, e.g., an active light pen, emits a beam of light on to the planar element 14.” Ex. 1011, 5:22–23. Geva describes that “light sensor arrays 12 and 28” “are disposed at first and second edges of planar element 14” and are “coupled to optical lenses 15 and 32 through band-pass optical filters 34 and

36 which are arranged to select only the desired light source.” Ex. 1011, 8:32–9:3. Geva explains that “[e]ach light sensing element 11, 13, 31 and 33 within the light sensor arrays 12 and 28 provides signals responsive to light incident thereon” and the “intensity/distance computation function 17 of the processing device 16 determines which light sensing elements receive the highest intensity of incident light.” Ex. 1011, 9:14–20. Geva determines the position of light emitting cursor device 10, which emits a beam of light onto planar element 14, from this determination. Ex. 1011, 5:22–23, 9:14–21.

Element 1[B] recites “the display screen forming a *touch-sensitive* display plane” (emphasis added). Petitioner has not made any showing that an emission of a beam of light onto a surface constitutes touching that surface. *See generally* Pet. As discussed above, Petitioner, instead, relies on only Keely for element 1[B]. *Id.* at 23. As shown in Figure 7 of Geva, reproduced below, light emitting cursor device 10 does not touch planar surface 14 in embodiments involving calculating of position in a third dimension. *See* Ex. 1011, Fig. 7, 7:32–35.

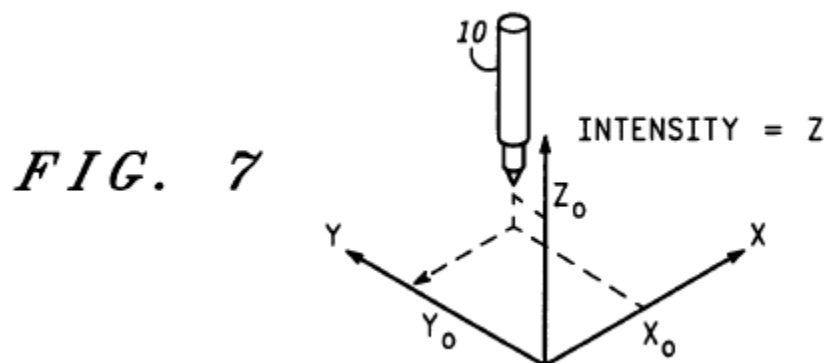


Figure 7 illustrates a three-dimensional graph depicting a position of light emitting cursor device 10 and calculating that position in x, y, and z dimensions. Ex. 1011, 9:35–10:6.

For element 1[A], Petitioner cites to a portion of Geva that includes a teaching regarding an embodiment in which a light emitting cursor device touches planar element 14. Pet. 21 (citing, e.g., Ex. 1011, 7:32–8:5). In particular, Geva teaches “[w]hen the light emitting cursor device 10 touches the planar element 14 and emits a beam of light, the light will be less dispersed between the light sensing elements 11 and 13.” Ex. 1011, 8:2–5. Geva teaches that this is “[a]n optional feature” and that in this embodiment “light emitting cursor device 10” emits “a beam of light *only when the light emitting cursor device 10 touches the planar element 14.*” *Id.* at 5:33–35. Petitioner has not identified or explained this teaching sufficiently with respect to element 1[B] and for that reason alone, Petitioner’s showing is deficient.

Furthermore, Geva expressly describes that its teaching relating to light emitting cursor device 10 touching planar element 14 is limited to two-dimensional position determining and does not apply to other teachings in Geva that Petitioner relies on. Specifically, Geva expressly describes that its teachings regarding providing “an indication *of the position* in a third ‘z’, dimension of the light emitting cursor device 10” apply only “[i]f the light emitting cursor device 10 *does not touch the planar element 14*, when emitting a light beam.” *Id.* at 7:32–35 (emphasis added). Petitioner relies on Geva’s teachings of determining a three-dimensional position for other recitations in claim 1. *See, e.g.*, Pet. 29–31. Petitioner does not offer articulated reasoning to combine the teachings of the two distinct Geva embodiments and, indeed, Geva expressly describes them as not operating together.

Element 1[C] recites “a sensor array disposed in the housing and forming *a sensitive layer in a sensor plane proximate to the display screen*”

(emphasis added). The recitation of “the display screen” derives antecedent basis from element 1[B], which recites “a display screen disposed in a housing, the display screen displaying one or more selectable icons, the display screen forming a touch-sensitive display plane.” Patent Owner argues it is improper to rely on the same teaching “to satisfy *both* the ‘touch-sensitive display plane’—formed by the display—and the ‘sensitive layer’—formed by the ‘sensor array.’” Resp. 32 (citing Pet. 24–25). Petitioner has not offered any claim construction or argument suggesting a contrary position. Based on the complete record now before us, we agree with Patent Owner that element 1[B] is a separate recitation, which is not shown in Petitioner’s new combination on pages 2–3 of the Reply.

As a further reason for our determination herein, we note Patent Owner argues as follows:

In the Reply, Petitioner now adds Geva’s planar element on top of Keely’s display screen, which interposes a barrier between Keely’s “touch-sensitive” display and any input object, which would prevent any object from touching Keely’s display. Put simply, Keely’s alleged “touch-sensitive” display cannot perform touch operations if it can’t be touched. *See* Ex-1011, 1:17–18.

Sur-reply 15.

Consistent with Patent Owner’s argument (*id.*), in accordance with Petitioner’s proposed combination on pages 2–3 of its Reply, Petitioner argues that its “combination is that Geva’s sensor arrays and planar element would simply be placed on top of Keely’s conventional LCD.” Reply 3. In addition to the deficiencies discussed above, we agree with Patent Owner that Petitioner has not shown that any touch-screen capabilities would be maintained with Geva’s planar element 14 on top of Keely’s display. Indeed, Geva teaches “[a]dvantageously, the position-determining input device does

not require a specific, active board with in-built sensors for determining positions.” Ex. 1011, 3:7–9.

After consideration of the assertions and the evidence of record based on the complete record now before us, we determine that Petitioner has not shown that the combination of Keely and Geva teaches element 1[B].

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that it would prevail in showing that claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Keely and Geva.

4. Independent Claims 10 and 16

Each of independent claims 10 and 16 recites “the display screen forming a touch-sensitive display plane.” For these elements, Petitioner relies on the same arguments and evidence discussed with respect to claim 1. Pet. 23–24. Petitioner’s arguments for independent claims 10 and 16 do not remedy the deficiencies discussed with respect to claim 1.

After consideration of the arguments and the evidence in the complete record now before us, we determine Petitioner has not shown that the combination of Keely and Geva teaches all elements recited in claims 10 and 16 of the ’070 patent. Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 10 and 16 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Keely and Geva.

5. Dependent Claims 2–6, 8, 9, 11–15, 17, and 18

Claims 2–6, 8, 9 and 11 depend, directly or indirectly, from claim 1. Claims 12–15 depend, directly or indirectly, from claim 10. Claims 17 and 18 depend, directly or indirectly, from claim 16. Petitioner’s contentions for

claims 2–6, 8, 9, 11–15, 17, and 18 do not remedy the deficiencies discussed with respect to independent claims 1, 10, and 16. Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 2–6, 8, 9, 11–15, 17, and 18 are unpatentable under 35 U.S.C.

§ 103(a) as obvious over the combination of Keely and Geva.

E. Unpatentability of Claims 7 and 18 under 35 U.S.C. § 103(a) as Obvious over Keely, Geva, and Kameyama

Petitioner asserts that claims 7 and 18 are unpatentable as obvious over Keely, Geva, and Kameyama. Pet. 3. We begin with an overview of Kameyama. We then turn to Petitioner’s contentions.

1. Kameyama

Kameyama relates to a three-dimensional pointing device for inputting or outputting position or posture data of a three-dimensional space into and from a computer in a simulation. Ex. 1012 ¶ 1. Figure 2 illustrates radiating light in a conical shape onto light receiving surface 5. *Id.* ¶ 19.

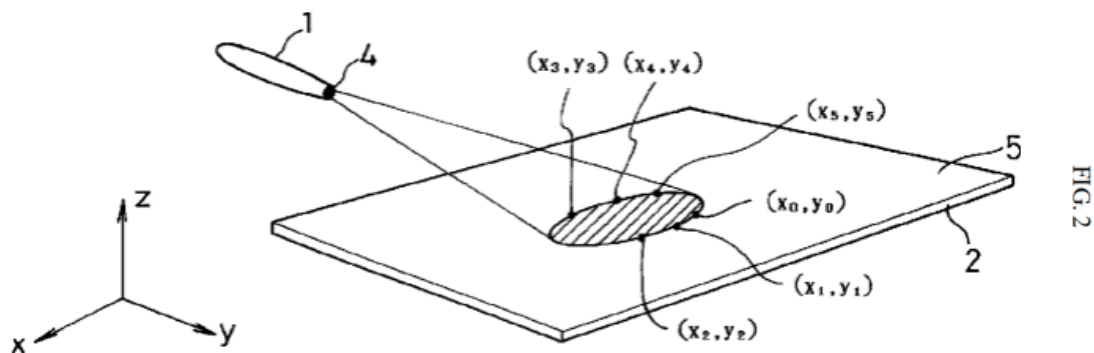


Figure 2 is a schematic diagram illustrating light radiating in a conical shape. *Id.* at 14.⁷ Kameyama describes that a spatial position (three-dimensional

⁷ This citation is to page 14 of Exhibit 1012, which does not include paragraph numbers.

position) of light source 4 can be derived based on light reception information received by the light receiving elements of the light receiving surface 5. *Id.* ¶ 31.

2. *Claims 7 and 18*

Claims 7 and 18 depend from claims 1 and 16, respectfully. Petitioner's contentions for claims 7 and 18 do not remedy the deficiencies discussed with respect to independent claims 1 and 16. Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 7 and 18 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Keely, Geva, and Kameyama.

IV. CONCLUSION

The outcome for the challenged claims is set forth below. In summary:

Claims Challenged	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–6, 8–17	103(a)	Keely, Geva		1–6, 8–17
7, 18	103(a)	Keely, Geva, Kameyama		7, 18
Overall Outcome				1–18

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–18 of the '070 patent have not been shown to be unpatentable; and

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

IPR2022-00315
Patent 10,664,070 B2

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