

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.

IPR2022-00334
Patent 8,816,994 B2

Before BARBARA A. PARVIS, NABEEL U. KHAN, and
JOHN D. HAMANN, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively “Petitioner”) filed a petition for *inter partes* review of claims 6–9 (the “challenged claims”) of U.S. Patent No. 8,816,994 B2 (Ex. 1001, “the ’994 patent”). Paper 3 (“Pet.”). Power2B, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). With our authorization, Petitioner filed a Preliminary Reply to the Preliminary Response (Paper 10, “Prelim. Reply”) relating to whether Petitioner correctly identifies an exhibit, and Patent Owner filed a Preliminary Sur-reply in response to the Preliminary Reply (Paper 11, “Prelim. Sur-reply”).

Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018); *see* 37 C.F.R. § 42.108. Upon consideration of the papers, we conclude that the information presented shows that there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one challenged claim of the ’994 patent.

A. *Real Parties-in-Interest*

The parties identify themselves as the real parties-in-interest. Pet. 1–2; Paper 5, 2.

B. *Related Matters*

The parties identify *Power2B Inc. v. Samsung Electronics Co.*, Case No. 2:21-cv-00348 (E.D. Tex.) as a matter that may affect, or be affected by, a decision in this proceeding. Pet. 2; Paper 5, 2. Patent Owner asserts and Petitioner does not dispute that U.S. Patent No. 7,952,570 (“the ’570

patent”) and U.S. Patent No. 8,547,364 B2 (“the ’364 patent”) are grandparent and parent patents, respectively, to the ’994 patent. Prelim. Resp. 27. Petitioner has filed petitions for *inter partes* review of the ’570 patent (IPR2022-00300); the ’364 patent (IPR2022-00405); and two additional patents that are related to the ’994 patent, i.e., U.S. Patent No. 10,664,070 B2 (IPR2022-00315) and U.S. Patent No. 9,946,369 B2 (IPR2022-00325).

C. The Challenged Patent

The ’994 patent relates to computer navigation and particularly, to facilitating navigation of software stored on an apparatus where its display is small. Ex. 1001, 1:18–21. According to the ’994 patent, “[i]t is known to provide small, hand-held computer devices such as pocket organisers, Personal Digital Assistants . . . , cellular phones or the like.” *Id.* at 1:23–25. “Smaller devices are more easily carried and generally require reduced power supply,” however, “the reduced size forces a reduction in the size of the user interface, and particularly in the size of the screen or display used to display information or data stored on or processed by the device.” *Id.* at 1:25–31. “Those familiar with such pocket devices will appreciate the problem of displaying all of the necessary information on a relatively small display, particularly where the user is able to select specific functions from a large number of options.” *Id.* at 1:40–43.

The ’994 patent discloses that “[c]onventionally, the selection of one option, for example, results in a new ‘window’ opening which displays further options and sub options.” *Id.* at 1:44–46. And “devices having smaller screens tend to use data ‘layers’ or ‘levels’ whereby the selection of one option having a number of sub options causes the full screen to display the sub options fully eclipsing the original menu.” *Id.* at 1:48–52. According

to the '994 patent, “[i]t would be advantageous to provide a pocket computer or hand held device which incorporates means for enabling easier access to data on the device and improves the user interface of the device.” *Id.* at 1:55–58.

Figure 4, shown below, illustrates an embodiment of the '994 patent. *Id.* at 2:30–33.

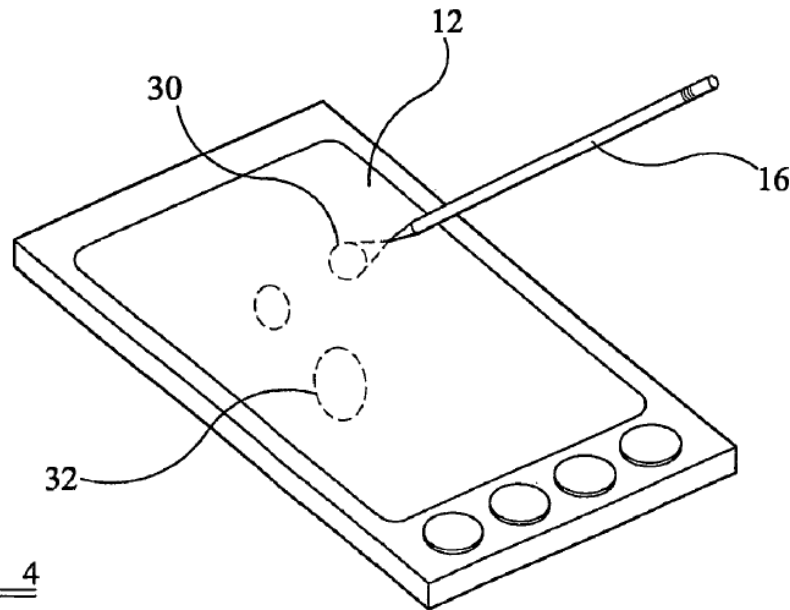


FIG 4

Figure 4, above, “shows illustratively one embodiment in which the stylus when moved closer to the display produces a circle or ellipse of smaller dimensions than the circle or ellipse formed when the stylus is moved away.” *Id.* As illustrated, “the stylus 16 is a so-called ‘smart stylus’ which contains a source of electromagnetic radiation,” and “emits a beam of light, for example infrared or other spectrum light, from a circular, spherical, or other shaped tip.” *Id.* at 4:43–48. “The light is sensed by a sensitive layer (not shown) positioned over, or incorporate[d] in, the display 12.” *Id.* at 4:48–50. The '994 patent discloses that “[a]s the stylus 16 is moved across the display 12, only certain parts of the sensitive layer will be illuminated by the beam of light emitted by the stylus 16 and this will be detected by the

sensitive layer.” *Id.* at 4:52–55. “The sensitive layer determines the appropriate X-Y coordinates of the stylus 16” *Id.* at 4:55–56.

In addition, as illustrated, “[t]he stylus 16 when moved closer to the display produces a circle or ellipse 30 of smaller dimensions than the circle or ellipse 32 formed when the stylus is moved away.” *Id.* at 4:59–62. According to the ’994 patent, “[t]he same eccentricity of the ellipse means that the input stylus is at the same angle to the display and the size of the area indicates the distance of the stylus from the display.” *Id.* at 4:62–65. “In a different embodiment, . . . the device 10 is provided with a plurality of light sensors 20 positioned around the perimeter of the display 12 . . . such that as the stylus 16 moves towards or away from the display 12, different or segments or layers of the light sensors will be illuminated by the conical beam emitted by the stylus 16.” *Id.* at 6:18–24.

D. Challenged Claims

Among the challenged claims, claims 6, 8, and 9 are independent. Claim 7 depends directly from claim 6. The independent claims read as follows:

6. [6

```
pre]]1 A method for making an electronic input device, comprising:
```

[6[A]] providing an input object;

[6[B]] providing a physical input area;

[6[C]] providing a sensor array positioned at least partially circumscribing and immediately proximate the input area;

¹ Petitioner’s designations to reference the elements of the claims 6 and 9 are set forth in brackets. Pet. 26–43. Herein we refer to the elements of the independent claims using Petitioner’s designations.

- [6[D]] projecting electromagnetic radiation from the input object on to the input area to create an electromagnetic radiation pattern on the input area;
- [6[E]] sensing a portion of the electromagnetic radiation by the sensor array;
- [6[Fi]] providing an output indication of position and [6[Fii]] at least two of orientation, shape, and size of the sensed portion of the electromagnetic radiation; and
- [6[Gi]] providing input circuitry that receives the output indication and provides an electronic input [6[Gii]] representing at least one of two-dimensional position, three-dimensional position, and orientation of the input object.

Ex. 1001, 8:32–49.

- 8. [8[pre]] An electronic input device, comprising:
 - [8[A]] an input area;
 - [8[B]] an input object projecting a beam of electromagnetic radiation on the input area;
 - [8[Ci]] a sensor array positioned outside the input area [8[Cii]] operative to sense and provide an output indication of position and [8[Ciii]] at least two of orientation, shape and size of said electromagnetic radiation pattern on the input area produced by the input object;
 - [8[D]] wherein the electromagnetic radiation pattern includes an elliptical shape having a size that is a function of the distance of the input object relative to the input area; and
 - [8[Ei]] input circuitry receiving the output indication and providing an electronic input [8[Eii]] representing at least one of two-dimensional position, three-dimensional position, and orientation of the input object.

Id. at 8:54–9:2.

- 9. [9[pre]] An electronic input device, comprising:
 - [9[A]] an input object emitting electromagnetic radiation;

[9[B]] an input area;

[9[Ci]] a sensor array positioned outside the input area
[9[Cii]] operative to sense and provide an output indication of position and [9[Ciii]] at least two of orientation, shape, and size of an electromagnetic radiation pattern on the input area produced by the input object;

[9[Di]] input circuitry receiving the output indication and providing an electronic input [9[Dii]] representing at least one of two-dimensional position, three-dimensional position and orientation of the input object;

[9[E]] wherein the electronic input representing orientation includes an electronic input representing angular orientation of the input object relative to the input area; and

[9[Fi]] the input object includes a source of the electromagnetic radiation, and [9[Fii]] wherein the sensing array senses the electromagnetic radiation pattern correlating to an elliptical pattern produced by a conical beam that intersects the input area in a pattern forming the ellipse having properties that are a function of at least one of position, distance and orientation of the input object.

Id. at 9:3–10:4.

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims 6–9 of the '994 patent are unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. § ²	Reference(s)/Basis
6–9	103(a)	Bird, ³ Ishii ⁴

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '994 patent issued from an application having an effective filing date before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability.

³ US 5,959,617, issued Sept. 28, 1999 (Ex. 1009, “Bird”).

⁴ EP 0572182 B1, issued Sept. 20, 2000 (Ex. 1010, “Ishii”).

Claim(s) Challenged	35 U.S.C. § ²	Reference(s)/Basis
6–9	103(a)	Geaghan, ⁵ Ishii

Pet. 3. Petitioner submits the Declaration of Benjamin B. Bederson, Ph.D. in support of its arguments (Ex. 1002).

II. DISCRETION UNDER 35 U.S.C. § 325(d)

The parties present arguments concerning the Board’s potential exercise of discretion under 35 U.S.C. § 325(d). Pet. 18–24; Prelim. Resp. 25–45; Prelim. Reply 1–3; Prelim. Sur-reply 1–3. For the reasons discussed below, we decline to exercise our discretion to deny institution of *inter partes* review under 35 U.S.C. § 325(d).

A. Legal Framework of 35 U.S.C. § 325(d)

The Director has discretion to institute an *inter partes* review, and has delegated that discretion to the Board. *See* 35 U.S.C. § 314(a); *see also* 37 C.F.R. § 42.4(a). Under § 325(d), in determining whether to institute an *inter partes* review, we “may take into account whether, and reject the petition . . . because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d).

In evaluating arguments under § 325(d), we use a two-part framework,

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

⁵ US 2005/0110781 A1, published May 26, 2005 (Ex. 1013, “Geaghan”).

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) (addressing in a two part framework the factors presented in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, Case IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III(C)(5), first paragraph)).

B. Analysis

We first focus on the asserted ground that involves Bird and Ishii. Pet. 3. This ground covers all the challenged claims. *Id.*

As to the first part of the framework, Petitioner states that it “acknowledges that the first *Advanced Bionics* prong may be met as to Ground 1, based on the Bird-Ishii combination, because Bird was previously applied by the Examiner in certain claim rejections during the prosecution of the ancestor ’570 Patent.” Pet. 19 (citing Ex. 1023). Petitioner, therefore, does not dispute that Bird and Ishii were presented previously to the Office. *Id.* at 18–23.

Patent Owner asserts that the parties do not dispute that the first part of the *Advanced Bionics* framework is met. Prelim. Resp. 26. In its argument, Patent Owner relies on the prosecution histories of the ’570 patent and the ’364 patent. Prelim. Resp. 26–43.

We agree with Patent Owner that the parties do not dispute that the first part of the *Advanced Bionics* framework is met. Pet. 19; Prelim. Resp. 26. We, thus, turn to the second part of the framework and evaluate whether Petitioner demonstrates that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics*, Paper 6 at 8, 10. More specifically, we evaluate whether the Examiner erred by overlooking express teachings in Bird and Ishii, as Petitioner argues. *See* Pet. 23–24. In

doing so, we look to *Becton, Dickinson* “factors (c), (e), and (f)[, which] relate to whether the petitioner has demonstrated a material error by the Office.” *Id.* at 10.

Under *Becton, Dickinson* factor (c) we consider “the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection.” *Becton, Dickinson*, Paper 8 at 17. For example, whether a reference was the basis for a rejection is probative of whether the Examiner misapprehended or overlooked a specific teaching contained in the reference. Here, Bird was the basis for a prior rejection. *See, e.g.*, Ex. 1023, 22–36 (Office Action rejecting claims over Bird), 69–85 (same).⁶ The parties agree that Ishii was listed on an Information Disclosure Statement (“IDS”). Pet. 20; Prelim. Resp. 28 (citing Ex. 2022, 30, 155–159, 186–196). Neither party provides that IDS in the instant proceeding. *See* Ex. 1023 (condensed prosecution history of the ’570 patent omitting the IDS); Prelim. Resp. 28 (citing Exhibit 2022, which has not been filed in the instant proceeding). Nonetheless, we find that this factor weighs somewhat in favor of exercising our discretion to deny institution.

Under *Becton, Dickinson* factor (e) we consider “whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art.” *Becton, Dickinson*, Paper 8 at 18. Petitioner argues that the claim amendments added to overcome the rejections based on Bird during the prosecution of the ancestor ’570 patent were carried over into the

⁶ The Examiner refers to “Bird et al” as “US 5,959,616.” Ex. 1023, 26, 71. The inventor of U.S. Patent No. 5,959,616 is David Carroll Challener. As stated above, Bird is U.S. Patent No. 5,959,617. We treat the Examiner’s reference to a patent number that is the same as Bird’s except for the last digit as a harmless typographical error.

application that led to the '994 patent and were not meaningfully altered during prosecution. Pet. 19 (citing Ex. 1023). Petitioner relies on those claim amendments in arguing that the Examiner erred with respect to the '994 patent.

In particular, Petitioner argues that the Examiner erred in overlooking Bird's express teachings of having (i) a sensor array comprising at least one sensor positioned outside said input area, and (ii) a radiation pattern on said sensor array in the form of an ellipse having elliptical eccentricity that is a function of orientation of said input object in a plane perpendicular to said sensor array. *Id.* at 19–21 (citing Ex. 1023). In addition, Petitioner argues that the Examiner erred in overlooking “Bird's express teaching to use Ishii,” which “unambiguously describes a light sensing display with peripheral light sensors.” *Id.* at 20.

Patent Owner argues that Petitioner does not provide evidence supporting that the alleged material errors occurred. Prelim. Resp. 32 (citing Pet. 18–23). More specifically, regarding the first material error, Patent Owner argues “Petitioner fails to demonstrate the ‘peripheral light sensors’ in Bird-Ishii correspond to the challenged claim recitals.” *Id.* at 33 (emphasis omitted). Regarding the second material error, Patent Owner argues that Petitioner does not explain how Bird's disclosure of size and shape of the elliptical pattern teaches the overlooked “function of orientation.” *Id.* at 38–41. Patent Owner also argues that the challenged claims of the '994 patent differ from the claims considered by the Examiner and the differences are not addressed by Petitioner. *Id.* at 38 (“Petitioner admits the second alleged material error was not made with regard to independent claim 6”), 41 (arguing “even if Bird teaches an ellipse having elliptical eccentricity that is a function of orientation, Petitioner has failed to show Bird discloses an

elliptical shape or size that is some function of ‘location’ (claim 7), ‘distance’ (claim 8), or ‘position’ (claim 9).”).

Contrary to Patent Owner’s argument, the Examiner’s findings during prosecution of the ’570 patent are consistent with Petitioner’s contentions. For instance, the Examiner found “Bird does not expressly disclose said sensor array comprising at least one sensor positioned outside said input area.” Ex. 1023, 72. The Examiner also found that Bird “does not expressly disclose . . . an elliptical pattern having elliptical eccentricity which is a function of the orientation of said input object in a plane perpendicular to said input area.” *Id.* at 80.

As we discuss below, Petitioner analyzes the challenged claims of the ’994 patent in view of Bird and Ishii, and shows sufficiently, *inter alia*, how Bird and Ishii teach the two claim limitations that the Examiner found were not expressly disclosed in Bird. *See infra* Section VI(C). To the extent the challenged claims differ from those considered by the Examiner, Petitioner also shows that the combination of Bird and Ishii teaches those differences. We thus find that Petitioner sufficiently points out how the Examiner materially erred. This factor weighs against exercising our discretion to deny institution.

Becton, Dickinson factor (f) asks whether new evidence that was not before the Examiner justifies the Office reconsidering the patentability of the claims. *Becton, Dickinson*, Paper 8 at 18. Petitioner presents new testimonial evidence in the form of the declaration testimony of Dr. Bederson that one of ordinary skill in the art, for example, (i) “would have understood that Ishii’s photosensors . . . are at the end of each optical waveguides . . . and the optical waveguides define the extent of the input area,” and (ii) “would have found it obvious to include such positioning of Ishii’s photosensor display in

Bird's light input system because Bird expressly teaches using Ishii's 'sets of row and column light waveguides' 'which conduct input light to peripheral light sensors.'" Ex. 1002 ¶¶ 92–93. Dr. Bederson also testifies that in Bird "elongating the ellipse increases its eccentricity, while contracting it decreases the eccentricity" and, thus, "the eccentricity of Bird's elliptical light spot depends on ('is a function' of) the light pen's ('input object') orientation and distance." *Id.* ¶ 113–114. Under these circumstances, we find that this factor weighs against exercising our discretion to deny institution.

In light of the above, we find that Petitioner demonstrates that the Office erred in a manner material to the patentability of the challenged claims for the ground of obviousness over Bird and Ishii. Because this ground covers all challenged claims, we determine that the statutory purpose of § 325(d) is not sufficiently implicated so as to be undermined by instituting on all challenges. *See Consolidated Trial Practice Guide* (November 2019)⁷ ("CTPG"), 62 ("Whether to deny institution of trial on the basis of 35 U.S.C. § 325(d) is a fact-dependent decision, in which the Board balances the petitioner's desire to be heard against the interest of the patent owner in avoiding duplicative challenges to its patent," and "takes into account the 'efficient administration of the Office'"); SAS Q&A's, Part D1, Effect of SAS on Future Challenges that Could Be Denied for Statutory Reasons (June 5, 2018)⁸ ("The panel will evaluate the challenges and determine whether § 325(d) is sufficiently implicated that its statutory

⁷ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

⁸ Available at: https://www.uspto.gov/sites/default/files/documents/sas_qas_20180605.pdf.

purpose would be undermined by instituting on all challenges.”). Thus, we need not make further determinations with respect to the ground of obviousness over Geaghan and Ishii and 35 U.S.C. § 325(d).

Accordingly, we decline to exercise discretion to deny institution under 35 U.S.C. § 325(d).

III. LEVEL OF ORDINARY SKILL IN THE ART

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

Petitioner argues that one of ordinary skill in the art “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. 5 (citing Ex. 1002 ¶¶ 32, 53–63). Patent Owner does not identify a proposed level of skill in the art that one would have had at the time of the invention of the ’994 patent or identify any specific shortcoming in Petitioner’s formulation. *See generally* Prelim. Resp.

For purposes of this Decision, and based on the current record, we adopt Petitioner’s assessment of the level of skill for one of ordinary skill in the art, except we decline to adopt “at least” as that language is vague and open-ended. Pet. 5. This assessment is consistent with the ’994 patent and the asserted prior art, and we apply it in our analysis below.

IV. CLAIM CONSTRUCTION

Because the Petition was filed after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

The parties do not provide proposed constructions for any claim terms. Pet. 13; *see generally* Prelim. Resp. Patent Owner, however, asserts that Petitioner proposes implicit constructions for certain claim terms. Prelim. Resp. 10–11. For the most part, Patent Owner disagrees with certain arguments in the Petition without explaining how its disagreement is based on any construction either implicit or express of a claim term. *Id.* at 10–12.

One exception is that Patent Owner asserts that Petitioner “argues the term ‘outside’ means the same thing as ‘at least partially circumscribing and

immediately proximate the input area.”” *Id.* at 11 (citing Pet. 49). Patent Owner points to Petitioner’s statement that “[a] POSITA would have understood that Ishii’s photosensors (red) are positioned both ‘outside’ and ‘at least partially circumscribing and immediately proximate to’ the input area.” *Id.* That Petitioner asserts the prior art teaches two different recitations does not mean Petitioner argues implicitly those recitations have the same meaning. Nonetheless, for the reasons given below, we determine Petitioner’s showing is sufficient at this stage for both recitations.

Based on the record before us at this early stage in the proceeding, we do not discern a need to provide any express constructions because doing so would not change the outcome of the analysis below. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’”).

V. PRINCIPLES OF LAW

A 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 of the invention to a person having ordinary skill in the art. *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) objective evidence

of non-obviousness, if present.⁹ *See Graham*, 383 U.S. at 17–18. When evaluating a claim for obviousness, we also must “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

VI. OBVIOUSNESS OVER BIRD AND ISHII

Petitioner argues that the combination of Bird and Ishii renders claims 6–9 obvious. Pet. 3. For the reasons that follow, we determine that Petitioner establishes a reasonable likelihood that it would prevail in showing that the combination Bird and Ishii renders these claims obvious.

A. *Summary of Bird*

Bird “relates to a light pen input system comprising a light pen which emits a light beam and a light sensing device comprising a planar array of light sensing elements in rows and columns over which the light pen is moved, the light beam emitted from the light pen producing a light spot on the array which is sensed by the sensing elements.” Ex. 1009, 1:4–10. Bird teaches that objects of its invention are “to provide a light pen input system which is capable of offering greater flexibility in use,” and “in which the light pen offers more functionality.” *Id.* at 2:13–18. Figure 1, shown below, illustrates an embodiment of Bird’s invention. *Id.* at 3:40–41.

⁹ Patent Owner does not present arguments or evidence of such objective evidence of non-obviousness. *See generally* Prelim. Resp.

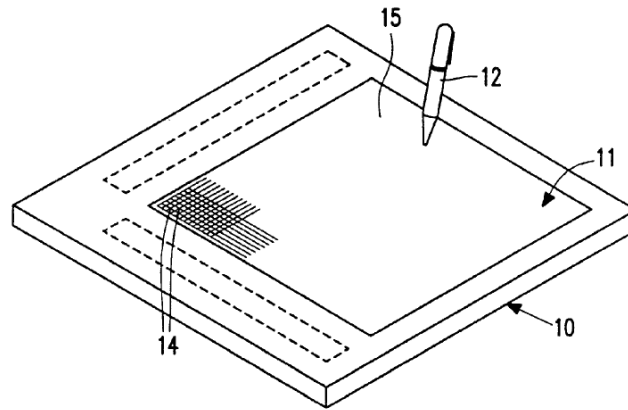


FIG. 1

Figure 1, above, “shows schematically an embodiment of a light pen input system according to the invention” of Bird. *Id.* As shown in Figure 1, Bird teaches a “system [which] comprises a light sensing device 10 which consists of a large area two-dimensional X-Y array of light sensing elements 14 defining a sensing area 11 having a writing surface over the surface of which a light pen 12 can be moved by a user to input information.” *Id.* at 3:59–63. Bird teaches that “[t]he light sensing device can be of any known kind having a row and column, planar, array of light sensing elements.” *Id.* at 4:12–13. “In this particular embodiment [of Figure 1], the device 10 is of the type in which the light sensing element array is integrated in a liquid crystal display panel to form a single unit 15 providing input and display output functions.” *Id.* at 4:15–19. “The sensing elements may comprise any suitable photosensitive device such as a photoresistor or photodiode.” *Id.* at 4:14–15. Bird also teaches that instead “the light sensing element array may be of a kind which does not use a photoelectric device at each sensing element location but instead uses sets of row and column light waveguides which define at the intersections a planar array of light sensing elements and which conduct input light to peripheral light sensors.” *Id.* at 4:43–49.

Bird teaches that “light pen 12 includes a light source, for example an LED or a semiconductor laser.” *Id.* at 4:51–52. “Light from the light source, which may be visible or non-visible, for example, infra-red light, is emitted from the pen in the form of a shaped light beam by optical means contained in the pen.” *Id.* at 4:59–62. “The light beam emitted from the pen is such that with the pen, and thus the main optical axis of the emitted beam, perpendicular to the plane of the array, the light spot produced on the array by the beam in operation is substantially non-circular.” *Id.* at 4:63–67. Bird teaches, for example, that “the shapes of the spots [can be] rectangular, elliptical, elongated (isosceles) triangular, ovoid, and non-rectangular parallelogram.” *Id.* at 6:38–40.

Bird teaches that “[t]he light beam emitted by the light pen 12 causes a response in the sensing elements.” *Id.* at 3:64–66. “The X-Y position of the light spot on the array and movement of the light spot in X-Y directions over the sensing element array corresponding to movement of the light pen are detectable” *Id.* at 2:40–44. Moreover, “[b]y monitoring the sensing elements outputs the changing pattern of illuminated elements can be detected and the direction of rotation of the beam determined, which information can then be used to provide functionality in addition to that obtained in the conventional manner of use merely by moving the light pen over the array and sensing the pen’s position on the array in two coordinates.” *Id.* at 5:65–6:5.

B. Summary of Ishii

Ishii “relates to a display unit of an input integral type for a handwriting input used in an office automation (OA) equipment and an audio visual device.” Ex. 1010 ¶ 1. Ishii’s invention provides “a display unit having a liquid crystal display panel and an input means[,] the liquid crystal

display panel comprising two substrates, . . . wherein the input means comprises signal conductors arranged in a matrix of X-conductors and Y-conductors . . . [that] are optical waveguides for guiding light parallel to the surfaces of the substrates.” *Id.* ¶ 23. The waveguides are “formed in the shape of a matrix and approximately guide[] light having a predetermined wavelength in parallel with a surface of a display substrate,” and thus, “the position of an optical pen can be detected by an inputting operation thereof.” *Id.* ¶ 24.

C. Independent Claims 6, 8, and 9

1. Electronic Input Device—Preambles

Each independent claim recites an “electronic input device” in the preamble and Petitioner points to Bird’s teaching for this recitation. Pet. 26. More specifically, Petitioner argues that Bird teaches an electronic input device as “light sensing device 10.” *Id.* (citing Ex. 1009, 3:59–60, Fig. 1; Ex. 1002 ¶¶ 83–84).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner at this stage of the proceeding, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that Bird teaches an “electronic input device.” In light of our finding, we need not, and thus do not, reach whether the preambles of the independent claims are limiting.

2. Input Object—Elements 6[A], 6[D], 8[B], 9[A], and 9[Fi]

Petitioner argues that Bird teaches elements 6[A], 6[D], 8[B], 9[A], and 9[Fi]. Pet. 27–28, 32–33. Each of elements 6[A], 8[B], and 9[A] recites “an input object.” Petitioner argues that Bird teaches “‘light pen 12’ that is an input object used by a user to input information.” *Id.* (citing Ex. 1009,

3:62–63). Petitioner argues that “[t]he light pen includes a light source such as ‘an LED or a semiconductor laser’ and a power supply for the light source.” *Id.* (citing Ex. 1009, 4:51–52, Fig. 9).

Each of elements 6[D], 8[B], and 9[A] recites that the input object projects or emits electromagnetic radiation. Element 6[D] recites that the electromagnetic radiation is projected “on to the input area to create an electromagnetic radiation pattern on the input area.” Element 8[B] recites that the input object projects “a beam of electromagnetic radiation on the input area.” Element 9[Fi] recites “the input object includes a source of the electromagnetic radiation.”

According to Petitioner, Bird teaches that “[a] light source is a source of electromagnetic radiation.” *Id.* at 28 (citing Ex. 1009, 1:58–60). Petitioner also asserts that Bird teaches that the “light is projected onto an input area, specifically sensing area 11.” *Id.* (citing Ex. 1009, 3:62). Petitioner also points to Bird’s disclosure that “[t]he beam of light is directed through the pen tip 24 via an optical system 25 which includes an aperture 26 that determines the required shape of the light spot.” *Id.* at 32–33 (citing Ex. 1009, 7:40–43, Fig. 9).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner at this stage of the proceeding, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that Bird teaches elements 6[A], 6[D], 8[B], 9[A], and 9[Fi].

3. *Input Area—Elements 6[B], 8[A], and 9[B]*

Petitioner argues that Bird teaches “an input area,” as recited in each of elements 6[B], 8[A], and 9[B]. Pet. 28–29. More specifically, Petitioner argues that Bird teaches “‘sensing area 11’ with a writing surface in which

the user can move light pen 12 to input information.” *Id.* at 29 (citing Ex. 1009, 3:61–63, Fig. 1).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner at this stage of the proceeding, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that Bird teaches elements 6[B], 8[A], and 9[B].

4. *Sensor Array—Elements 6[C], 8[Ci], and 9[Ci]*

Element 6[C] recites “providing a sensor array positioned at least partially circumscribing and immediately proximate the input area.” Each of elements 8[Ci] and 9[Ci] recites “a sensor array positioned outside the input area.”

a) *Petitioner’s Arguments*

Petitioner argues that the combination of Bird and Ishii teaches elements 6[C], 8[Ci], and 9[Ci]. Pet. 30–31. Petitioner acknowledges that the sensor array illustrated in Figure 1 is not positioned outside the input area. *Id.* at 30 (citing Ex. 1009, 3:60–61, 3:66–4:4, Fig. 1). Petitioner, instead, relies on Bird’s disclosure that ““the light sensing element array may be of a kind which . . . uses sets of row and column waveguides . . . and ***which conduct input light to peripheral light sensors, for example as described in aforementioned EP-A-0572 182 [Ishii].***”” *Id.* (quoting Ex. 1009, 4:44–50) (alterations in original).

As to Ishii, Petitioner annotates Figure 9, reproduced below, in support of its arguments. Pet. 31.

Fig. 9

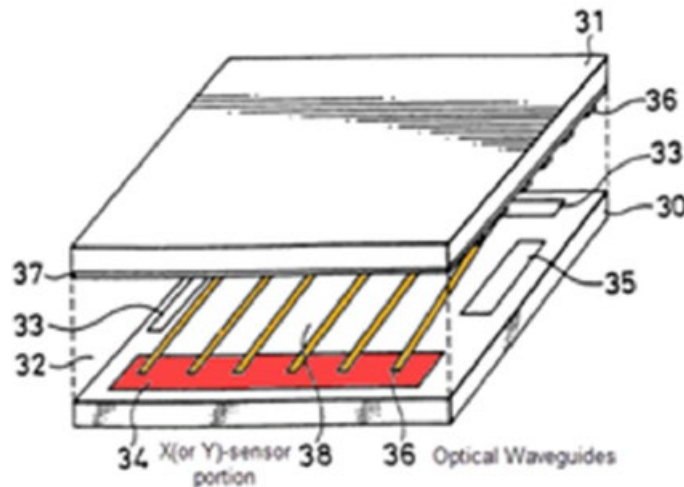


Figure 9 “is a perspective view showing a display unit of an input integral type in accordance with an[] embodiment of” Ishii’s invention. Ex. 1010 ¶ 27. As shown, Petitioner (i) labels reference numeral 34 with “X (or Y)-sensor portion” and colors the portion in red, and (ii) labels reference numeral 36 with “Optical Waveguides” and colors them in orange. Pet. 31 (annotating Ex. 1010, Fig. 9).

Petitioner argues that Ishii teaches a photosensor “formed in an end portion of each of the optical waveguides on the silicon substrate in the X and Y directions.” *Id.* at 30 (quoting Ex. 1010 ¶ 51). Petitioner adds that Ishii teaches “[a]n optical waveguide 36, an X (or Y)-sensor portion 34 and a Y (or X)-sensor portion 35 formed in an’ end portion.” *Id.* at 31 (quoting Ex. 1010 ¶ 45). According to Petitioner, one of ordinary skill in the art “would have understood that Ishii’s photosensors (red) are at the end of each optical waveguides (orange) and the optical waveguides define the extent of the input area.” *Id.* (citing Ex. 1002 ¶¶ 92–93). Petitioner argues that the photosensors thus are positioned “both ‘at least partially circumscribing and

immediately proximate’ and ‘outside’ the input area,” as recited in elements 6[C], 8[Ci], and 9[Ci], respectively. *Id.* at 31.

In addition, Petitioner argues that one of ordinary skill in the art “would have found it obvious to include such positioning of Ishii’s photosensor display in Bird’s light input system because Bird expressly teaches using Ishii’s ‘sets of row and column light waveguides,’ ‘which conduct input light to peripheral light sensors.’” *Id.* (citing Ex. 1009, 4:46–50). According to Petitioner, one of ordinary skill in the art “would have found it obvious to follow this express teaching.” *Id.* (citing Ex. 1002 ¶ 93).

b) Patent Owner’s Arguments

Patent Owner asserts that Petitioner “argues the term ‘outside’ means the same thing as ‘at least partially circumscribing and immediately proximate the input area.’” Prelim. Resp. 11 (citing Pet. 49). For the reasons given above (*see* § IV), we are not persuaded that Petitioner’s position is that the terms have the same meaning. Patent Owner then argues that the combination of Bird and Ishii does not teach sensing light outside of the input area and, therefore, does not teach the recitations of the claims of the ’570 patent. Prelim. Resp. 33–38. Patent Owner’s arguments referencing the ’570 patent are made with respect to 35 U.S.C. § 325(d). In order to provide guidance to the parties, for purposes of only this Decision, we discuss Patent Owner’s arguments with respect to elements 6[C], 8[Ci], and 9[Ci] recited in the claims of the ’994 patent, to the extent Patent Owner’s arguments are applicable to those elements.

Patent Owner argues that “Bird discloses Ishii (along with other references) as example light sensing devices ‘in which the light sensing element array is *integrated with* a liquid crystal display array to provide a combined display output and light sensing input.’” *Id.* at 34 (quoting

Ex. 1009, 1:11–15) (alteration in original). More specifically, Patent Owner argues that “Bird in view of Ishii teaches ‘two sets of optical light guides are provided extending in X and Y directions respectively, which define *at their intersections a two-dimensional, X-Y, matrix of sensing elements.*’” *Id.*

(quoting Ex. 1009, 1:25–28) (alteration in original). According to Patent Owner, “Bird also teaches that the sets of light guides in Ishii ‘are connected *at their ends to respective photosensing circuits* which produce an electrical signal in response to light being conducted thereto by the light guides.’” *Id.*

(quoting Ex. 1009, 1:28–31 (alteration in original). “Thus, Bird in view of Ishii teaches a sensor array or ‘matrix of sensing elements’ having ‘photosensing circuits’ connected to their ends,” according to Patent Owner. *Id.* at 34–35.

In addition, Patent Owner argues that Petitioner’s annotated Figure 9 shows “Ishii’s integrated sensor-array is within the input area.” *Id.* at 35. In particular, “Ishii’s waveguides are formed ‘between picture element electrode portions’ in a display substrate, which is within the input area rather than outside of the input area,” according to Patent Owner. *Id.* (citing Ex. 1009 ¶ 45). Patent Owner adds that “Petitioner’s expert states with regards to Figure 9 that ‘[t]he Ishii system collects light for sensing in the display area which is different than the ’994 Patent which collects and senses light in the periphery of the display area.’” *Id.* at 36 (quoting IPR2022-00300, Ex. 1002 ¶ 113). “Thus, by Petitioner and its expert’s own admission the Ishii system operates by sensing light within the input area rather than outside of the input area as claimed in the ’570 [p]atent,” according to Patent Owner. *Id.*

c) Our Analysis

We find, at this stage of the proceeding and based on the current record, that Petitioner sufficiently demonstrates that the combination of Bird and Ishii teaches elements 6[C], 8[Ci], and 9[Ci]. Pet. 30–31. More specifically, for purposes of institution, we agree with Petitioner and find that Bird teaches “us[ing] sets of row and column light waveguides . . . which conduct input light to peripheral light sensors,” as described in Ishii. Ex. 1009, 4:44–50. We also agree with Petitioner and find, at this stage of the proceeding, that Ishii teaches employing peripheral light sensors. More specifically, Ishii teaches the following:

A photosensor is formed in an end portion of each of the optical waveguides on the silicon substrate in the X and Y directions. An end portion of the optical waveguide formed on the glass substrate in the Y or X direction is recessed or projected to leak light onto the silicon substrate. The photosensor on the silicon substrate is formed in a position for receiving this leaked light.

Ex. 1010 ¶ 51; *see also id.* Fig. 9, ¶ 45 (“An optical waveguide 36, an X (or Y)-sensor portion 34 and a Y (or X)-sensor portion 35 are formed in an X or Y direction.”).

We also credit the testimony of Petitioner’s expert, Dr. Bederson, that one of ordinary skill in the art “would have understood that Ishii’s photosensors (red) are at the end of each optical waveguides (orange) and the optical waveguides define the extent of the input area,” as we find this testimony consistent with Ishii’s teachings. *Compare* Ex. 1002 ¶¶ 92, with Ex. 1010 ¶¶ 45, 51, Fig. 9. Dr. Bederson testifies that Ishii’s photosensors “are thus positioned both ‘at least partially circumscribing and immediately proximate’ and ‘outside’ the input area.” *Id.* In sum, we agree with Petitioner that Bird and Ishii teach a sensor array (i.e., “an X (or Y)-sensor portion 34

and a Y (or X)-sensor portion 35”) positioned “at least partially circumscribing and immediately proximate the input area” as recited in element 6[C] and “outside the input area” as recited in elements 8[Ci] and 9[Ci].

In addition, at this stage of the proceeding, we find that Petitioner has provided sufficiently articulated reasoning with rational underpinning to support Petitioner’s modifications of Bird with Ishii. *See Kahn*, 441 F.3d at 988. In particular, at this stage of the proceeding, we agree with Petitioner and find that Bird expressly teaches “us[ing] sets of row and column light waveguides which define at the intersections a planar array of light sensing elements and which conduct input light to peripheral light sensors, for example as described in” Ishii. Ex. 1009, 4:46–50.

At this stage of the proceeding, we find unavailing Patent Owner’s arguments to the extent that they rely on teachings in Bird that relate to embodiments that do not employ peripheral sensors. Petitioner relies on Bird’s embodiment that employs peripheral sensors. *See* Pet. 30–31 (contrasting Bird’s embodiment illustrated in Figure 1 with Bird’s embodiment employing peripheral sensors, such as taught in Ishii).

At this stage of the proceeding, we also find unavailing Patent Owner’s argument that Ishii’s Figure 9 shows “Ishii’s integrated sensor-array is within the input area.” Prelim. Resp. 35. Patent Owner’s argument is premised on the location of the waveguides, which is inapposite. *Id.* (citing Ex. 1009 ¶ 45). Ishii teaches that the waveguides guide light, but it is Ishii’s photosensors that sense the light. *See* Ex. 1010 ¶¶ 45, 51, 53. Element 6[C] recites “providing a sensor array positioned . . .” and each of elements 8[Ci] and 9[Ci] recites “a sensor array positioned . . .” Hence, the location of the photosensors is what matters. *See In re Hiniker Co.*, 150 F.3d 1362, 1369

(Fed. Cir. 1998) (finding “the name of the game is the claim”); *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (stating limitations not appearing in the claims cannot be relied upon for patentability).

The ’994 patent’s Specification speaks to this distinction between light emitting devices and light sensing devices, i.e., that “[t]he light emitted by the light emitters are sensed by the opposing light sensors.” *See* Ex. 1001, 6:34–36. At this stage of the proceeding, we find that Ishii’s waveguides are sources of light (albeit indirectly), rather than being part of the sensor. *See id.*; Ex. 1010 ¶ 53.

In addition, at this stage of the proceeding, we are not persuaded by Patent Owner’s arguments relying on Dr. Bederson’s testimony in his Declaration filed in IPR2022-00300. Prelim. Resp. 36 (citing IPR2022-00300, Ex. 1002 ¶ 113). That Declaration has not been made of record in the instant proceeding and will not be considered here.

In sum, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that the combination of Bird and Ishii teaches elements 6[C], 8[Ci], and 9[Ci].

5. *Operative to Sense and Provide an Output Indication—
Elements 6[E], 6[Fi]. 6[Fii], 8[Cii], 8[Ciii], 9[Cii], and
9[Ciii]*

Each of elements 6[E], 6[Fi], 8[Cii], and 9[Cii] recite sensing by the sensor array and providing an output indication or that the sensor array is operative to sense and provide an output indication. Petitioner argues that Bird teaches elements 6[E], 6[Fi], 8[Cii], and 9[Cii]. Pet. 33. More specifically, Petitioner argues that “Bird senses the electromagnetic radiation and provides an output of the stylus position.” *Id.* at 33. In particular, Bird teaches sensing “[t]he X-Y position of the light spot on the array and

movement of the light spot in X-Y directions over the sensing element array corresponding to movement of the light pen are detectable,” according to Petitioner. *Id.* (quoting Ex. 1009, 2:40–44). Petitioner adds that “[b]y incorporating the alternative peripheral light sensor array of Ishii, the Bird-Ishii combination also detects the X and Y positions of the light incident on the display surface.” *Id.* (citing Ex. 1010 ¶ 53).

Each of elements 6[Fii], 8[Ciii], and 9[Ciii] recites that the output indication is of “position and at least two of orientation, shape[, /]and size” of the electromagnetic radiation. Petitioner argues that Bird teaches elements 6[Fii], 8[Ciii], and 9[Ciii]. Pet. 34–36. Although the claims recite sensing “at least two of” orientation, shape, and size of the electromagnetic radiation, Petitioner argues “Bird discloses all three.” *Id.* at 34. Regarding sensing “orientation,” Petitioner argues that “Bird explains that the sensor array provides an output of the ‘rotation of the pen/light beam around its axis’ which ‘can readily be detected by virtue of different sensing elements 14.’” *Id.* at 35 (quoting Ex. 1009, 6:46–48); *see also id.* (citing Ex. 1009, Fig. 5).

Regarding sensing the “shape,” Petitioner argues that Bird teaches that “[b]y tilting the light pen away from the perpendicular, the shape of the light spot produced on the array can be distorted so as to elongate (or further elongate) the spot or contract the spot if desired thus providing additional flexibility to an operator.” *Id.* (quoting Ex. 1009, 7:28–31). Petitioner argues that “[t]he sensors thus detect whether the shape of the illumination spot is ‘elongated’ to provide additional user flexibility.” *Id.*

Regarding sensing the “size” of the spot, Petitioner argues that Bird teaches that “the size of the incident light spot on the array relative to the sensing elements may be varied.” *Id.* at 36 (quoting Ex. 1009, 8:25–26). According to Petitioner, “Bird explains that the ‘spot size on the array could

conceivably be such as to cover just two adjacent sensing elements in the row direction and one element in the column direction.” *Id.* (quoting Ex. 1009, 8:31–34).

In addition, Petitioner argues that “[b]y incorporating the peripheral light sensor array of Ishii, which Bird teaches as an alternative, the Bird-Ishii combination also detects orientation, shape, and size of the light incident on the display surface.” *Id.* (citing Ex. 1010 ¶¶ 58–60, Fig 11 (64)).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner at this stage of the proceeding, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that the combination of Bird and Ishii teaches elements 6[E], 6[Fi], 6[Fii], 8[Cii], 8[Ciii], 9[Cii], and 9[Ciii].

6. *Input Circuitry—Elements 6[Gi], 6[Gii], 8[Ei], 8[Eii], 9[Di], 9[Dii], and 9[E]*

Each of elements 6[Gi], 8[Ei], and 9[Di] recite “input circuitry” that receives “the output indication” and provides “an electronic input.” Petitioner argues that the combination of Bird and Ishii teaches elements 6[Gi], 8[Ei], and 9[Di]. Pet. 37. More specifically, Petitioner argues that Bird’s “Figure 10 discloses ‘detection circuitry 40’ as input circuitry.” *Id.* (citing Ex. 1009, 8:2–7, Fig. 10). According to Petitioner, Bird states that the “[i]nput information to the light sensing array [] is detected by the associated detection circuit, here referenced at 40, which detects X-Y position and twist of the pen and provides outputs accordingly to a central processing unit 42 via an input/output interface 41.” *Id.* (quoting 1009, 8:2–7). Petitioner adds that “Ishii similarly discloses circuit 61 for determining output indication and providing an input to character recognizing section 64.” *Id.* (quoting Ex. 1010 ¶ 62, Fig. 11).

Each of elements 6[Gii], 8[Eii], and 9[Dii] recites the electronic input “representing at least one of two-dimensional position, three-dimensional position[, /] and orientation of the input object.” Petitioner argues that the combination of Bird and Ishii teaches elements 6[Gii], 8[Eii], and 9[Dii]. Pet. 38–40. Petitioner argues that “Bird discloses an electronic input representing both a two-dimensional position and orientation of said input object.” *Id.* at 39 (citing Ex. 1002 ¶¶ 106–109). Petitioner argues, for example, that “Bird discloses that ‘[t]he X-Y position of the light spot on the array and movement of the light spot in X-Y directions over the sensing element array corresponding to movement of the light pen are detectable.’” *Id.* (quoting Ex. 1009, 2:40–44); *see also id.* (citing Ex. 1009, Fig. 5).

In addition, Petitioner argues that “Bird also teaches determining ‘orientation’ when it senses that . . . ‘the direction of rotation of the beam [is] determined’ by monitoring the sensing elements outputs.” *Id.* at 40 (quoting Ex. 1009, 5:65–6:5). According to Petitioner, “Bird explains that the sensing elements provide[] an output of the ‘rotation of the pen/light beam around its axis’ which ‘can readily be detected by virtue of different sensing elements 14.’” *Id.* (quoting Ex. 1009, 6:46–48). Petitioner argues that “[t]he Bird-Ishii combination also detects the X and Y positions of the light incident on the display surface and orientation, which is same as the position of the input object on the surface.” *Id.* (citing Ex. 1010 ¶¶ 53, 58–60). According to Petitioner, one of ordinary skill in the art “would have adapted the input circuitry of Bird to respond to the sensor configuration of Ishii.” *Id.* (citing Ex. 1002 ¶ 109).

Element 9[E] recites “wherein the electronic input representing orientation includes an electronic input representing angular orientation of the input object relative to the input area.” Petitioner asserts “[n]ote that 9[E]

is only reached if the ‘electronic input representing at least one of’ is the ‘orientation of input object.’” Pet. 39 n. 8.

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner at this stage of the proceeding, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that the combination of Bird and Ishii teaches at least elements 6[Gi], 6[Gii], 8[Ei], 8[Eii], 9[Di], and 9[Dii].

7. *Electromagnetic Radiation Pattern (Elliptical)—
Elements 8[D] and 9[Fii]*

Element 8[D] recites “wherein the electromagnetic radiation pattern includes an elliptical shape having a size that is a function of the distance of the input object relative to the input area.” Element [9[Fii]] recites “wherein the sensing array senses the electromagnetic radiation pattern correlating to an elliptical pattern produced by a conical beam that intersects the input area in a pattern forming the ellipse having properties that are a function of at least one of position, distance and orientation of the input object.”

a) Petitioner’s Arguments

Petitioner argues that Bird teaches elements 8[D] and 9[Fii]. Pet. 41–43. First, Petitioner argues that Bird teaches that the beam is conical and produces an elliptical pattern or shape. *Id.* at 41–42 (citing Ex. 1009, Fig. 9 (annotating and labeling the figure showing a light path)). Petitioner argues that Bird teaches that “[t]he beam of light is directed through the pen tip 24 via an optical system 25 which includes an aperture 26 that determines the required shape of the light spot.” *Id.* at 41 (quoting Ex. 1009, 7:40–43). Petitioner adds that “[t]he beam has an elliptical shape.” *Id.* (citing Ex. 1009, 6:38–46, 9:6–7 (claim 6)).

Second, Petitioner asserts that “it is a matter of basic geometry that, as the distance from the input area to input object increases, the conical beam of the light pen (like that of a flashlight) widens in diameter.” Pet. 41 (citing Ex. 1002 ¶ 111). Petitioner provides annotations to Figure 9 of Bird, reproduced below, to illustrate the widening of diameter as the distance from the input area to input object increases.

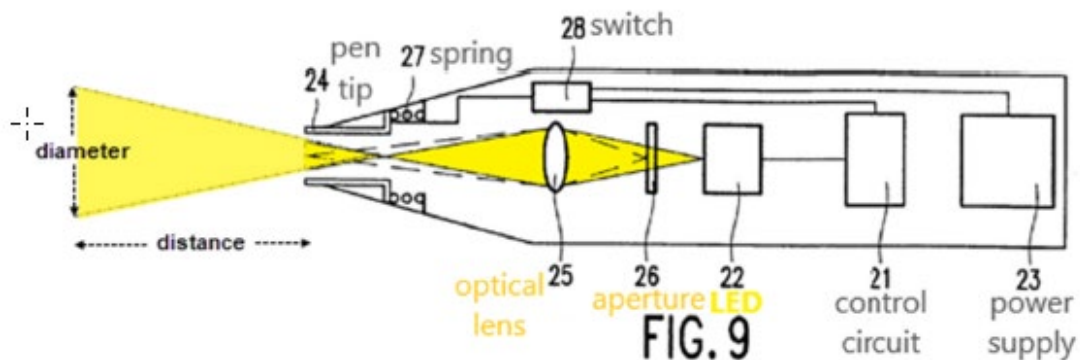


Figure 9, above, shows schematically the components of light pen 12 including power supply 23 from which power is supplied via control circuit 21 to light source 22, such as a light emitting diode (LED) or semiconductor laser, that upon being energized emits a beam of light. Ex. 1009, 3:46–48, 7:36–40. Petitioner’s annotation of Figure 9 includes yellow highlighting of light from light source 22 passing from aperture 26 via optical lens 25 through the end of tip 24. *Id.* at 7:40–45; Pet. 41–42. Petitioner’s annotations of Figure 9 also include yellow highlighting of the conical beam extended beyond the end of tip 24 to a location that Petitioner indicates is an “arbitrary distance” from the end of tip 24. *Id.* Petitioner’s annotations of Figure 9 further include the label “distance” for the “arbitrary distance” and “diameter” for the diameter of the light incident on a plane at that arbitrary distance away from the end of tip 24. *Id.*

Third, Petitioner argues “the ellipse has properties based on the orientation of the input object.” *Id.* at 42. More specifically, Petitioner argues that Bird teaches that “[i]t will be understood, of course, that if the pen is held inclined to that plane, the shape of the light spot produced is distorted.” *Id.* (quoting Ex. 1009, 3:24–26) (alteration in original). Petitioner argues Bird teaches that “[b]y tilting the light pen away from the perpendicular, the shape of the light spot produced on the array can be distorted so as to elongate (or further elongate) the spot or contract the spot.” *Id.* (quoting Ex. 1009, 7:28–32); *see also id.* at 43 (Petitioner annotating Ex. 1009, Fig. 5).

Petitioner also argues that “as a matter of geometry, that elongating the ellipse increases its eccentricity, while contracting it decreases the eccentricity.” *Id.* at 42 (citing Ex. 1002 ¶ 113). Petitioner argues that Bird teaches that “in the case of an elliptical spot, the spot may be distorted to approximate a circular spot.” *Id.* (quoting Ex. 1009, 3:28–30). And “[a] circle is an ellipse of eccentricity zero,” according to Petitioner. *Id.* (citing Ex. 1002 ¶ 113; Ex. 1001, 5:8–10 (arguing that the ’994 patent teaches that “eccentricity of 0 is indicative of a circle”). Petitioner argues “[t]hus, the eccentricity of Bird’s elliptical light spot depends on (‘is a function’ of) the light pen’s (‘input object’) orientation.” *Id.* at 43.

b) Patent Owner’s Arguments

Patent Owner disputes that Petitioner shows that Bird teaches elements 8[D] and 9[Fii]. Prelim. Resp. 38–41. More specifically, Patent Owner argues that “Petitioner does not explain how the disclosure of size and shape of the elliptical pattern supposedly teaches the overlooked ‘function of orientation’ disclosure in Bird.” *Id.* at 41 (citing Pet. 20–21). Patent Owner also argues “even if Bird teaches an ellipse having elliptical

eccentricity that is a function of orientation, Petitioner has failed show Bird discloses an elliptical shape or size that is some function of ‘location’ (claim 7), ‘distance’ (claim 8), or ‘position’ (claim 9).” *Id.*

c) Our Analysis

We find, at this stage of the proceeding and based on the current record, that Petitioner sufficiently demonstrates that Bird teaches that the source of said electromagnetic radiation (light pen 12) produces a conical beam. *See* Ex. 1009, 4:51–52, 7:40–43, Fig. 9. We also find, at this stage of the proceeding, that Bird teaches that the beam intersects the input area in an elliptical shape or a pattern forming an ellipse. *See id.* at 6:38–46 (describing that the shapes of the spots shown in Figure 5 are “elliptical”), 9:6–7 (reciting “[a] light pen input system . . . characterised in that the light spot has an elliptical shape”).

In addition, at this stage of the proceeding and based on the current record, we find that Petitioner sufficiently demonstrates that Bird teaches the electromagnetic pattern including “an elliptical shape having a size that is a function of the distance of the input object relative to the input area,” recited in element 8[D] and “the electromagnetic radiation pattern correlating to an elliptical pattern produced by a conical beam that intersects the input area in a pattern forming the ellipse having properties that are a function of at least one of position . . . of the input object” recited in element 9[Fii]. At this juncture, we are persuaded by Petitioner’s argument and evidence and we credit the testimony of Dr. Bederson that as the distance from the input area to input object increases, the conical beam of the light pen widens in diameter. Pet. 41–42 (citing Ex. 1002 ¶ 111; Ex. 1009, 7:40–43, Fig. 9). Dr. Bederson testifies that light from a point source that “is restricted by, for example, passing through a small hole or being focused by a lens . . . will

travel as a growing cone.” Ex. 1002 ¶¶ 60–61. Dr. Bederson further testifies “as the distance from a light source doubles, the area covered by that same illumination quadruples (the square of the increased distance).” *Id.* ¶ 111.

At this stage of the proceeding, we find unavailing Patent Owner’s argument that Petitioner has failed show “Bird discloses an elliptical shape or size” that is a “function of . . . ‘distance’ (claim 8) . . . or ‘position’ (claim 9.” Prelim. Resp. 41. Instead, at this juncture of the proceeding, we find that Petitioner has shown light emitted from light pen 12 travels as a growing cone and that as the distance from the input area to the position of light pen 12 increases, the conical beam of light pen 12 widens in diameter. Pet. 41–42; Ex. 1002 ¶¶ 111–112; Ex. 1009, 7:40–43, Fig. 9. Thus, the size of the elliptical shape, which is a property of the ellipse, changes in width as a function of the distance of the position of light pen 12 from the input area.

Furthermore, at this stage of the proceeding and based on the current record, we find that Petitioner sufficiently demonstrates that Bird teaches “a pattern forming the ellipse having properties that are a function of at least one of position, distance and orientation of the input object” recited in element 9[Fii]. The pattern forming the ellipse has an eccentricity that is a function of the orientation of the input object (light pen 12) in a plane perpendicular to the input area. *See* Ex. 1009, 3:24–26 (describing “if the pen is held inclined to [the plane of the sensing element array], the shape of the light spot produced is distorted” and “[f]or example, in the case of an elliptical spot, the spot may be distorted to approximately a circular spot”); Ex. 1002 ¶ 132 (“[A]s a matter of geometry, . . . elongating [an] ellipse increases its eccentricity, while contracting it decreases the eccentricity.”). We also find that Bird teaches that “[b]y tilting the light pen away from the perpendicular, the shape of the light spot produced on the array can be

distorted so as to elongate (or further elongate) the spot or contract the spot if desired thus providing additional flexibility to an operator.” *Id.* at 7:28–32.

At this stage of the proceeding, we find unavailing Patent Owner’s arguments that Petitioner does not explain how the disclosure of shape of the elliptical pattern teaches “function of orientation.” Prelim. Resp. 41 (citing Pet. 20–21). Petitioner shows “a conical beam that intersects the input area in a pattern forming the ellipse having properties that are a function of at least one of position, distance and orientation of the input object” recited in element 9[Fii]. More specifically, Petitioner shows that Bird teaches the conical beam from light pen 12 intersects the input area in a pattern forming an ellipse having a property, i.e., eccentricity that is a function of orientation, i.e., inclining or tilting light pen 12. Pet. 42–43 (citing, *e.g.*, Ex. 1009, 3:24–26, 7:28–32, Fig. 5).

In sum, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that the Bird teaches elements 8[D] and 9[Fii].

8. *Summary*

In summary, based on the current record, and for purposes of this institution decision, we determine that Petitioner shows a reasonable likelihood that it would prevail in showing that claims 6, 8, and 9 would have been obvious to one of ordinary skill in the art in view of Bird and Ishii.

D. Dependent Claim 7

Claim 7 depends from claim 6 and further recites “wherein the electromagnetic radiation pattern is created on the input area and includes an elliptical shape having a geometry which is a function of the location of the input object relative to the input area.” Ex. 1001, 8:50–53. Petitioner relies on its contentions for elements 8[D] and 9[Fii]. Pet. 43 (citing Section

XIII.A.2.j corresponding to page 41–43 of the Petition discussing elements 8[D] and 9[Fii]).

Patent Owner argues “Petitioner has failed show Bird discloses an elliptical shape or size that is some function of ‘location’ (claim 7).” Prelim. Resp. 41. At this stage of the proceeding, we find Patent Owner’s argument unavailing. For the reasons given with respect to elements 8[D] and 9[Fii], at this juncture of the proceeding, we find that Petitioner has shown light emitted from light pen 12 travels as a growing cone and that as the distance from the input area to the location of light pen 12 increases, the conical beam of light pen 12 widens in diameter. Pet. 41–42; Ex. 1002 ¶¶ 111–112; Ex. 1009, 7:40–43, Fig. 9.

In sum, we are persuaded that Petitioner demonstrates, for purposes of this institution decision, that the Bird teaches the further recitation in claim 7.

VII. OBVIOUSNESS OVER GEAGHAN AND ISHII

Petitioner argues that the combination of Geaghan and Ishii renders claims 6–9 obvious. Pet. 3. Petitioner already has demonstrated a reasonable likelihood of success in proving that at least one claim of the ’994 patent is obvious. In order to provide guidance to the parties, we address the issue of whether Geaghan is prior art to the challenged claims. *See* CTPG 6 (“If a trial is instituted, the Board generally will provide analysis of the strengths and weaknesses of all challenges in the petition in order to provide guidance to the parties for the upcoming trial.”).

The parties dispute turns on whether the challenged claims are entitled to the June 9, 2003 filing date of a PCT application (PCT/GB03/02533), of which the ’994 patent is a continuation. Ex. 1001, code (63). Petitioner cites to its Exhibit 1024 to argue that the PCT application fails to provide written

description support for the challenged claims. *See, e.g.*, Pet. 8. In so doing, Petitioner represents that Exhibit 1024 is a copy of the “Certified Foreign Priority Application PCT/GB03/02533.” *Id.* at iv. Petitioner maintained this representation during the April 29, 2022 conference call we held with the parties that led to our Order authorizing additional briefing on this issue. Paper 9, 2–3. Petitioner did not change its representation in its Preliminary Reply. *See generally* Prelim. Reply.

On its face, the patent application provided in Exhibit 1024 lists its application number as 0213215.7, and is stamped with a date of June 8, 2002. Ex. 1024, 5. This information corresponds to an underlying foreign priority document, and not the PCT application. *Compare* Ex. 1001, code (30), with *id.* at code (63). Hence, we find that Exhibit 1024 does not comprise the PCT application (PCT/GB03/02533), as Petitioner represents. Thus, Petitioner’s arguments regarding insufficient written description support are unavailing as they rely on the wrong document. *See* Pet. 8–13.

The parties should further address this issue during trial, in accordance with our Rules, including identifying what document, if any, is a true and correct copy of the PCT application, and whether it provides written description support for the challenged claims.

VIII. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated that there is a reasonable likelihood that it would prevail in proving the unpatentability of at least one of the challenged claims of the ’994 patent. We thus institute an *inter partes* review of all of the challenged claims of the ’994 patent on all grounds asserted in the Petition. *See* 37 C.F.R. § 42.108(a).

Any findings or conclusions in this Decision are made only for the purposes of institution and are not dispositive of any issue. We have not made a final determination with respect to the patentability of any challenged claim. Our final determination will be based on the record as fully developed during trial, including any evidence or argument timely presented by the parties under our Rules.

IX. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '994 patent is instituted on all challenged claims and all grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial commences on the entry date of this Decision.

IPR2022-00334
Patent 8,816,994 B2

For PETITIONER:

Ryan Yagura
Ben Haber
Nicholas J. Whilt
O'MELVENY & MYERS LLP
ryagura@omm.com
bhaber@omm.com
nwhilt@omm.com

For PATENT OWNER:

James P. Murphy
Jason A. Wietjes
Adam P. Daniels
POL SINELLI PC
jpmurphy@polsinelli.com
jwietjes@polsinelli.com
adaniels@polsinelli.com