

Patent Owner's Preliminary Response
IPR2024-00714 (U.S. Patent No. 10,627,907)

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VALVE CORPORATION,

Petitioner,

v.

IMMERSION CORPORATION,

Patent Owner.

Case IPR2024-00714
Patent 10,627,907

**PATENT OWNER'S RESPONSE
TO PETITION FOR INTER PARTES REVIEW**

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EXHIBIT LIST

Exhibit No.	Exhibit Description
2001	Declaration of Craig Rosenberg, Ph.D. in Support of Immersion Corporation's Patent Owner Preliminary Response, dated July 30, 2024
2002	<i>Curriculum Vitae</i> of Craig Rosenberg, Ph.D.
2003	<i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-000712-TL, Joint Claim Construction Statement (Exhibit A), Dkt. # 68-1
2004	Declaration of Robert Akl, D.Sc., in Support of Immersion Corporation's Patent Owner Response, dated January 21, 2025
2005	<i>Curriculum Vitae</i> of Robert Akl, D.Sc.
2006	Rough draft transcript of the January 10, 2025, deposition of Jean Renard Ward
2007	Cambridge Online Dictionary
2008	Merriam-Webster Online Dictionary

I. INTRODUCTION

Patent Owner Immersion Corporation (“Immersion”) respectfully requests that the Board affirm the challenged claims 1-20 of Immersion’s U.S. Patent No. 10,627,907 (EX1001 or the “’907 patent”) as Valve Corporation (“Petitioner”) has failed to show that those claims are unpatentable.

It is unsurprising that Petitioner bases all of its grounds on Immersion patents. This is because since 1993, Immersion has been widely known as the pioneering and leading innovator of haptic technology with many different families of patents covering many different inventions.

The ’907 patent is directed to devices, such as video game controllers, medical devices, automotive controls, remote controls, and other similar devices, that provide haptic feedback. As detailed in the Background section of the patent, Immersion’s inventors recognized that providing haptic feedback to a user enhances and simplifies the user’s experience. Such haptic feedback can provide the user with cues, alerts, or realistic feedback that provide greater sensory immersion within a simulated or virtual environment. To better provide these benefits, the ’907 patent discloses methods and devices that enable a user to customize their own experience by adjusting the input positions and range information as they correspond to input Analog-to-Digital (ADC) values for a haptic feedback controller or device using software.

The '907 patent teaches *defining* primary, secondary, and boundary ranges of positions for a user *input* element (e.g., a control on a device such as a button, trigger, knob, etc.) which then determines when a device renders a haptic effect. Thus, the invention allows changing the input control position and ranges of a haptic device while in use. By contrast, Petitioner's asserted prior art discloses *designing* force feedback profiles that mimic detents on *output*. Such mere depictions or descriptions of ranges of values, however, do not constitute "defining."

The only grounds asserted by Petitioner against the challenged independent claims of the '907 patent are Grounds 1, 3, and 6 based on anticipation by and/or obviousness over the Goldenberg, Rosenberg, and Levin references, respectively.¹ Petitioner has also asserted obviousness combinations against the dependent claims

¹ For each of Grounds 1, 3, and 6, Petitioner has asserted that certain claims, including the independent claims, of the '907 patent are "anticipated by and/or obvious over" the asserted reference. However, Petitioner has failed to provide any arguments or evidence of obviousness regarding the independent claims aside from unsupported, conclusory statements. Accordingly, Petitioner has not met its burden of proving obviousness with respect to the independent claims, and only anticipation is at issue for those claims.

(Grounds 2, 4, 5), but each of those grounds rely on either Goldenberg or Rosenberg to meet the elements of the underlying independent claims. Since Goldenberg, Rosenberg, and Levin each fail to disclose at least one limitation of the challenged, independent claims, all of the asserted grounds fail.

A common theme across the Petitioner's anticipation grounds is their failure to give full effect to all claim terms. Most notably, the Petitioner has failed to map where in all three anticipation references the "defining position and range information for the user input element associated with the haptic output device" element is allegedly met. Petitioner equates "defining" with the graphical depictions of force effects/force profiles disclosed in the anticipation references. But "defining" for input purposes is not the same as "describing" or "depicting" output profiles.

In the context of the '907 patent, "defining" is a discrete step or feature allowing settings to be adjusted to change how the input controls a haptic device. Claim 1 is directed to a method that requires the step of "defining position and range information," whereas the other two independent claims, 8 and 15, require a computer program with instructions (i.e., software) for "defining position and range information." The specification of the '907 patent also discloses that the user inputs the position and range information through software, such as firmware. The anticipatory references do not disclose input position and range information that can be accordingly "defined." Rather, the references disclose a variety of force effects

that cannot be changed by a *user* because they instead result from the detents the profiles are designed to mimic. All of these attributes of the prior art are the exact opposite of the flexibility provided by the invention of the '907 patent. Petitioner fails to identify any disclosure from the three references that allows a user or the device to define position and range information used for rendering haptic effects.

As detailed in this Patent Owner's Response, all grounds of the Petition commonly suffer from a key deficiency, which is the failure to disclose "defining position and range information" for a haptic effect as claimed by the '907 patent. The references also suffer from other deficiencies as shown below. Therefore, the Board should affirm the challenged claims.

II. BACKGROUND

A. Summary of the '907 Patent

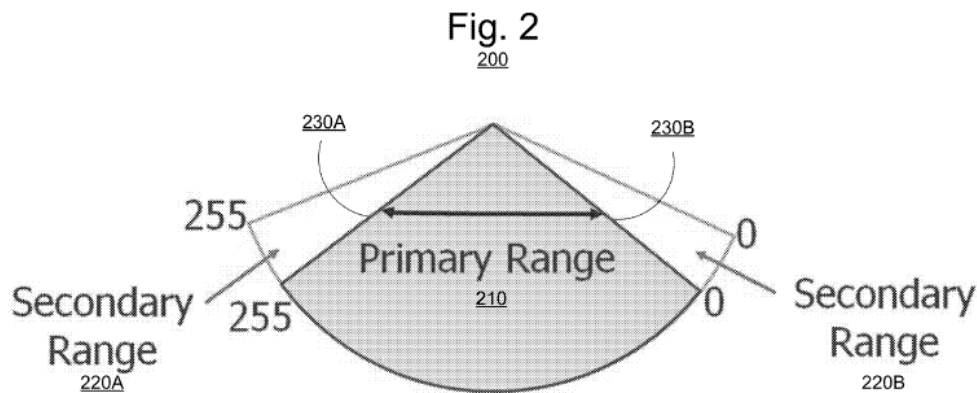
The '907 patent discloses systems and methods for controlling a boundary range of a user input element associated with a haptic output device. EX1001, 2:39-41. Physical input devices, such as video game devices and controllers, typically use visual and auditory cues to provide feedback to a user, but some interface devices use haptic feedback or haptic effects, which sometimes include kinesthetic or tactile feedback. *Id.*, 1:21-27. This haptic feedback can enhance and simplify a user's interaction with a video game controller, or other electronic device, for example, by alerting the user to specific events or providing realistic feedback to allow greater

sensory immersion in a simulated or virtual environment. *Id.*, 1:28-33. Other types of devices may also benefit from haptic feedback, including medical devices, automotive controls, remote controls, and others. *Id.*, 1:34-38. The inventors of the '907 patent recognized that they could substantially improve upon prior art input devices by adding functionality allowing a user or device to define various ranges of positions for a user input element (e.g., a knob, joystick, etc.) such that when the user input element enters certain positions within a defined boundary range, the user input device renders a haptic effect. *Id.*, 1:41-58.

Generally, the claimed invention of the '907 patent provides for defining position and range information for the user input element of a haptic output device, including a primary, a secondary, and a boundary range of positions. In an embodiment, the defined boundary range partially overlaps with each of the defined primary and secondary ranges, and a haptic effect is rendered in response to entry of the user input element into one or more positions within the boundary range of positions. *Id.*, cl. 1, 8, 15. This improves upon the prior art by extending the range and capabilities of the user input elements and enabling the user to experience a wider range of haptic effects. *Id.*, 9:36-39.

Fig. 2, shown below, depicts an embodiment of the invention with a range of motion 200 that includes a primary range 210 and two secondary ranges, 220A and 220B. *Id.*, 5:19-20. Figure 2 also shows two boundary ranges, 230A and 230B. *Id.*,

5:20-21. The boundary ranges are represented by lines in Fig. 2, but the patent discloses that they are defined ranges that partially overlap with the primary range and the secondary range, and the primary range may also overlap with the secondary range in some instances. *Id.*, 5:21-25.



The specification explains that the “defining position and range information” element of the claims is carried out by a computer processor 120 that executes computer programs, including a boundary range module 142. *Id.*, 3:11-20. As shown below in Fig. 1, the boundary range module 142 controls the boundary range of user input elements of the controller 150. *Id.*, 3:28-30. By permitting position and range information to be defined based on user input, the invention of the '907 patent significantly improves upon the prior art which saddles users with previously determined profiles that can only mimic particular detents.

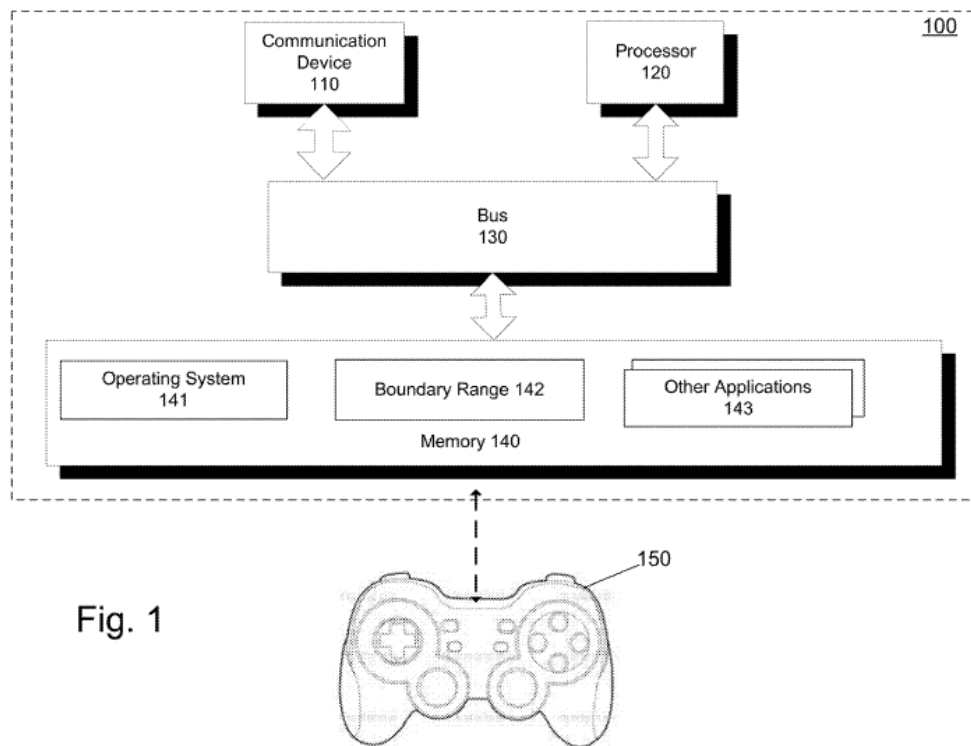


Fig. 1

The primary, secondary, and boundary ranges are software defined and may be fixed or variable (*id.*, 5:29-30), meaning that user or device can either set the range and position information to fixed values (*id.*, 5:30-38) or define initial position and range information (*see id.*, 9:44-51) that can later be changed based on factors such as movement of the user input device from the maximum out position to the grounding position (*see id.*, 9:44-51) or variations in the resting position of the user input element. *Id.*, 10:4-13 and cl. 7, 14, and 20. Both embodiments require “defining” the ranges based on present user input, not predetermined profiles. The ’907 patent explains, “[t]rigger engine 316 may receive haptic data, such as a haptic effect definition, and may *modify* the haptic data *based on user input data*, such as trigger data 323.” *Id.*, 7:1-3 (emphasis added). “Trigger data 323, as previously

described, is data that includes one or more parameters that indicate a position and/or range of one or more triggers of controller 330 (e.g., triggers L and R of FIG. 3 [shown below]).” *Id.*, 8:10-13.

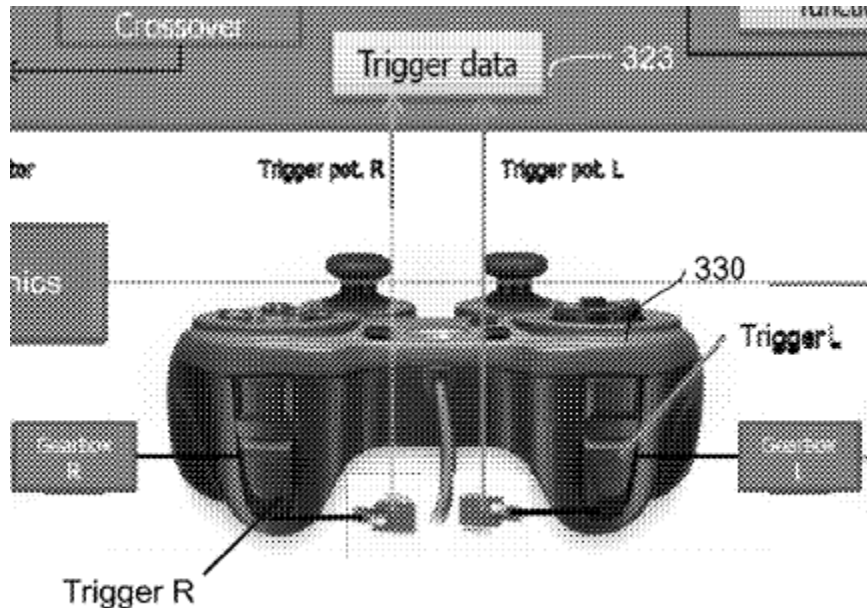


Fig. 3
300

B. Claims

Petitioner challenges claims 1-20 of the '907 patent, including independent claims 1, 8, and 15. Independent claim 1 recites:

1. [1PRE] A method for controlling a user input element associated with a haptic output device, the method comprising:

[1A] Defining position and range information for the user input element associated with the haptic output device, including

[1A1] a primary range of positions,

[1A2] a secondary range of positions, and

[1A3] a boundary range of positions, wherein the boundary range of positions partially overlaps each of the primary range of positions and the secondary range of positions; and

[1B] rendering a haptic effect in response to an entry of the user input element to one or more positions within the boundary range of positions.

Claim 8 is substantially the same as claim 1, except it has a different preamble (i.e., “A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for:”). Claim 15 includes substantially the same limitations as claim 1 but has a different preamble (i.e., “A device comprising:”), and two additional limitations immediately following the preamble (i.e., “a processor; and a memory storing a program for execution by the processor, the program including instructions for:”).

The bracketing labels shown in claim 1 refer to the labels used in the Petition for claim 1. Since independent claims 8 and 15 contain substantially the same limitations, all discussion below applies equally to claims 1, 8, and 15 unless otherwise stated.

C. Prosecution History

The '907 patent's application was filed on August 8, 2018, claiming priority to Provisional Application No. 62/096,251, filed December 23, 2014. The application originally contained a single claim, independent claim 1, but the applicant filed a Preliminary Amendment on July 22, 2019, adding new claims 2-20 and substantially amending claim 1.

On July 25, 2019, the Patent Office issued a Non-Final Office Action rejecting claim 1 on Section 102 grounds but not addressing newly added claims 2-20 or the amended version of claim 1. Per an August 7, 2019, Applicant Initiated Interview Summary, the Patent Office agreed to withdraw the July 25 Office Action and the pending Section 102 rejection and submit a new first Office Action in view of the applicant's timely-submitted Preliminary Amendment. The Patent Office subsequently rejected independent claims 1, 8, and 15 on the ground of non-statutory double patenting as being unpatentable over claims 1 and 7 of U.S. Patent No. 10,073,523 in a September 12, 2019, Office Action. The Patent Office further noted that it objected to claims 2-7, 9-14, and 16-20 as being dependent on rejected base claims but stated that those dependent claims would be allowable if rewritten in independent form including all limitations of the base claims and any intervening claims.

On December 12, 2019, the applicant submitted a terminal disclaimer to traverse the non-statutory double patenting rejection. Accordingly, the Patent Office issued a Notice of Allowability for claims 1-20 on January 15, 2020, and the '907 patent issued on April 21, 2020, subject to a terminal disclaimer.

III. PERSON OF ORDINARY SKILL IN THE ART (POSA)

Petitioner identifies a person of ordinary skill in the art (“POSA”) as one who would have possessed a bachelor’s degree in electrical engineering, computer science, or a related field, plus at least two years of industry or graduate level experience with software engineering, haptics programming, and/or human-computer interaction, or other relevant experience. Pet., 6 (citing Declaration of Jean Renard Ward, EX1003 (“Ward”), ¶¶ 38-42).

Immersion submits that a POSA at the time of the '907 patent would have had a bachelor’s degree in electrical engineering or computer science or equivalent degree and two years of practical or industry experience in the field of human computer interaction (HCI), including implementation of computer-based systems and software for providing haptic feedback effects to a user. EX2004, ¶27. Also, a person could have qualified as a POSA with more formal education and less practical or industry experience, or vice versa. *Id.*, ¶28. In any event, the Petition fails to show that any challenged claim of the '907 patent is unpatentable under either Petitioner’s or Immersion’s definition of a POSA. *Id.*, ¶29.

IV. CLAIM CONSTRUCTION

In the current parallel district court proceeding, Immersion and Petitioner have agreed to the following constructions with respect to the claims of the '907 patent.

Claim Term	Agreed Proposed Construction in District Court ²
“range” claims 1, 2, 5, 8, 9, 12, 15, 16, 18	“a sequence, series, or scale between limits”
“primary range” claims 1, 2, 8, 9, 15, 16	“range” as construed above, but otherwise plain and ordinary meaning
“secondary range” claims 1, 2, 5, 8, 9, 12, 15, 16, 18	“range” as construed above, but otherwise plain and ordinary meaning
“boundary range” claims 1, 2, 5, 8, 9, 12, 15, 16, 18	“range” as construed above, but otherwise plain and ordinary meaning

The parties have not proposed constructions for any other claim terms of the '907 patent in the parallel district court proceeding. Here, Petitioner believes no terms require construction. Pet., 7. For the purposes of this Response, Patent Owner believes that the terms listed above may be given their agreed construction. In

² See EX2003; *Immersion Corporation v. Valve Corporation*, No. 2:23-cv-00712-TL, Dkt. No. 68-1 (W.D. Wash. Mar. 29, 2024).

addition, for the purpose of this Patent Owner's Response, Patent Owner proposes the following claim term constructions.

Claim Term	Patent Owner's Proposed Construction
"defining position and range information" (Claims 1, 8, and 15)	A step taken by, or a feature allowing, a user or device to change the settings of a controller to adjust the claimed ranges based on user input.
"partially overlaps" (Claims 1, 8, and 15)	Overlap between two ranges is less than total, such that neither range is completely overlapped by the other.
"in response to" (Claims 1, 8, and 15)	Plain and ordinary meaning, which requires a cause-and-effect relationship between a second event (e.g., a haptic effect) that occurs in reaction to a first event (e.g., entry of the user input element to one or more positions within the boundary range of positions).

These proposed constructions are appropriate and supported by the '907 patent, as explained below in Sections IV.A-C.

Patent Owner believes that all terms not listed in the tables above may be given their ordinary and customary meaning, as understood by a POSA, in the context of the patent specification, and that no argument herein requires a special construction for any other term.

A. “Defining Position and Range Information”

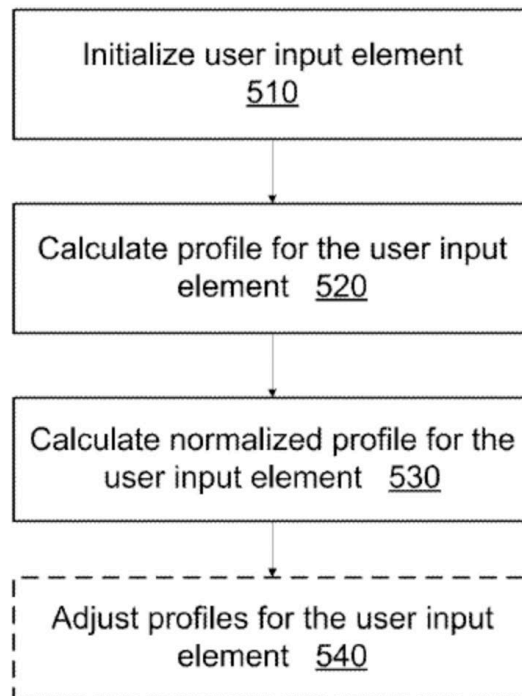
For the reasons provided below “defining position and range information” should be construed as a step taken by, or a feature allowing, a user or device to change the settings of a controller to adjust the claimed ranges based on user input—rather than using default or pre-existing or predetermined position and range profiles or settings.

1. The '907 patent does not claim “force profiles”

By mapping “force profile” from Patent Owner’s other patents to the claimed “defining input position and range information,” Petitioner improperly broadens the scope of the claim term to a construction that is unsupported by the intrinsic evidence. Indeed, neither the '907’s specification nor the claims mention the term “force profile” or “haptic profile.” The only “profile” that the '907 patent teaches and recites is the separate *ADC input* profile which is defined for the user input element—not a *force* profile. *See, e.g.*, EX1001, Fig. 5, 9:44-10:13. Thus, the '907 patent should not be improperly construed to include force profiles. *See e.Digital Corp. v. Futurewei Techs., Inc.*, 772 F.3d 723, 726-727 (Fed. Cir. 2014) (unrelated patents, even from the same patentee, with different written descriptions disclosing different inventions require a new claim construction inquiry); *see also In re Berg*, 140 F.3d 1428, 1435 (Fed. Cir. 1998) (noting that for two applications filed by the same patentee that were unrelated by continuation, continuation-in-part, or

divisional, filing such separate applications imply that each application is independent and patentably distinct); EX2004, ¶¶34-35.

Fig. 5
500



In other words, the '907 patent does not teach force profiles. EX2004, ¶35. The absence of the term “force profile” was not unintentional. When Patent Owner intended to cover the concept of “force profiles,” it did so by clearly stating the term in certain of its other applications. For example, one of Patent Owner’s other applications, the Rosenberg reference presently asserted by Petitioner, uses the term “*force values* that have been previously calculated or sampled and stored as a

digitized ‘*force profile*’ in memory.” EX1017, ¶[0103]. At most, Petitioner has identified in the prior art a predetermined haptic profile that defines what happens in the y-axis for haptic *output* but not any functionality or step for “defining position and range information for the *input element*” that is used in rendering the effects, e.g., allowing the user to define the x-axis. These differences in specification disclosure demonstrate the differences in inventions. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005) (“The specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the *single best guide* to the meaning of a disputed term.”) Construing the claims to cover force profiles improperly broadens claim scope in a way that lacks any support in the written description. *See Ruckus Wireless, Inc. v. Innovative Wireless Solutions, LLC*, 824 F.3d 999, 1004 (Fed. Cir. 2016) (“*Because the specification made no mention* of wireless communications, construing the instant claims to encompass that subject matter would likely render the claims invalid for lack of written description.”) (declining to construe claims to encompass certain subject matter since doing so “would likely render the claims invalid for lack of written description”); EX2004, ¶¶34-36.

2. As a matter of grammar, the claim term, “defining,” excludes the use of predetermined profiles.

The claim term “defining,” as it is used in the independent claims, is the present continuous tense of “define” as shown by the suffix “ing.” *See Ex parte Ivo Nelson, et al.*, Appeal 2012-010369, 2015 Pat. App. LEXIS 8061, at *23 (PTAB Aug. 31, 2015) (concluding that present continuous tense “is a critical fact” for construing the meaning of the term); EX2004, ¶¶37-39. The present continuous tense (i.e., “defining”) is used to refer to an event happening *now*, as opposed to the past tense (i.e., “defined,” etc.), which refers to an event that has already happened. *Id.*; EX2007, 3, 6. Therefore, the user or device must be capable of “defining position and range information” in the present rather than using information that was already predetermined as in the prior art. EX2004, ¶¶37-39; *see, e.g.*, EX1016, cl. 1 (Goldenberg claiming “predetermined position in the degree of freedom”), ¶[0107] (“a change in the output of a force model or effect when the rotational velocity of acceleration of the knob is outside a particular, predetermined range”). This is only possible if the ranges can be set during use based on user inputs as in the '907 patent.

This intentional choice of wording should be given weight.³ *See Innova/Pure Water, Inc. v. Safari Water Filtration Sys.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004) (“a claim construction analysis must begin and remain centered on the claim language itself, for that is the language the patentee has chosen to particularly point out and distinctly claim the subject matter which the patentee regards as his invention.”) (internal citations and quotations omitted). Construing the claims to include using predetermined information would disregard the inventors’ decision to use the present continuous tense of “define” and render the term superfluous. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (reversing district court claim construction that rendered term superfluous). By contrast, Patent Owner’s proposed construction would give full effect to the claim language, and “[a] claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.” *Id.*

³ The specification uses the term “pre-defined” only once to describe haptic data, such as the haptic signal sent to the motor or actuator of the invention to render a particular type of effect (e.g., the strength, duration, etc. of a vibration), but it is never used to describe “position and range information.” EX1001, 6:22-35.

The use of the present continuous tense means that practicing the method of claim 1 requires actually “defining” the ranges rather than simply using the values that result from a predetermined force profile, meaning that a user must be able to perform this step for themselves. Since each of the independent claims 1, 8, and 15 recite substantially identical “defining” limitations with only one insignificant difference⁴, they should be interpreted in the same way. *American Permahedge, Inc. v. Barcana, Inc.*, 105 F.3d 1441, 1446 (Fed. Cir. 1997) (“[I]t is well-settled that identical claim terms used in different claims must be interpreted consistently.”). As the Federal Circuit has explained:

[A term] cannot be interpreted differently in different claims because claim terms must be interpreted consistently. Interpretation of a disputed claim term requires reference not only to the specification and prosecution history, but also to other claims. The fact that we must look to other claims using the same term when interpreting a term in an asserted claim mandates that the term be interpreted consistently in all claims.

⁴ The “defining” limitation in claim 1 recites “the user input element” whereas that limitation in claims 8 and 15 recite “a user input device,” but each refers to the same “user input element.” Compare EX1001, claim 1 (13:58-64), claim 8 (14:22-31), and claim 15 (14:61-7).

Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1579 (Fed. Cir. 1995) (internal citations omitted). Thus, in claim 8, the instruction of the program stored on a non-transitory computer readable storage medium must permit the user to presently define the position and range information rather than using predetermined information. Similarly, the device of claim 15 must be capable of defining the position and range information in the present, rather than merely using only stored, predetermined settings.

3. Patent Owner's proposed construction is consistent with the intrinsic evidence.

Each independent claim has just two limitations directed to method steps or functionality. The first, is the “defining” limitation. The second, is the “rendering a haptic effect” limitation. Both limitations begin with the present continuing tense of a verb meaning that both must be capable of being performed in the present during use. If “defining” were not performed in the present by a user or device, that step would have to be performed by, for example, the manufacturer, while “rendering” would occur when the controller is in use at a different place and time. The inventors’ use of the same verb tense for both limitations indicates that they are meant to be performed while a user operates the controller, not at different times by different entities. EX2004, ¶39.

This construction is also consistent with the specification. The only way of “defining the position and range information” disclosed by the '907 patent requires the device to actively define (i.e., “defining”) such information based on user input. For example, the '907 patent discloses “primary range, secondary range(s), and boundary range(s) may be initially set” and that these values may be “*based on the movement of the user input device* from the maximum position to the grounding position.” *Id.*, 9:44-51 (emphasis added). That is, for example, the range values may be set by pulling the controller trigger at runtime.

As also explained in the specification, “[t]rigger engine 316 may receive haptic data, such as a haptic effect definition, and may *modify* the haptic data *based on user input data*, such as trigger data 323.” *Id.*, 7:1-3 (emphasis added). “Trigger data 323, as previously described, is data that includes one or more parameters that indicate a position and/or range of one or more triggers of controller 330 (e.g., triggers L and R of FIG. 3).” *Id.*, 8:10-13.

In addition, Figure 4 of the patent contains a flow chart with steps described in language similar to the claims (e.g., “Define a primary range and a secondary range of positions for a user input element 410”). Figure 4 shows that the steps of defining the primary, secondary, and boundary ranges are immediately followed by monitoring the position of the user input element and then rendering haptic effects,

which indicates that each of these steps are performed during use, not using predetermined profiles provided by, for example, the manufacturer. EX2004, ¶40.

In the Institution Decision, the Board states that “this trigger data appears to be collected by firmware, suggesting that the user’s involvement in creating trigger data consists of simply pulling or pushing the triggers of the controller.” DI at 10. Even in this example, the user’s input is required for “creating trigger data” in the present during use rather than simply using predetermined profiles. Regardless of whether the position and range data are created by firmware, a user interface, or something else, the claims necessarily require user input, which is fundamentally different from using predetermined settings. EX2004, ¶40.

The Board notes that the '907 patent discloses that the primary and secondary ranges “may be fixed or variable” and states “[t]his suggests that an embodiment in which all the range information is fixed (i.e., unalterable by a user) would be within the scope of the claimed invention.” DI at 10. However, construing the claims to include range information that is unalterable by a user would improperly read the present continuing tense of “defining” out of the claims. *See Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1369 (Fed. Cir. 2005) (holding that it is improper to read out a limitation required by the claim language and specification); *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562 (Fed. Cir. 1991) (“All the limitations of a claim must be considered meaningful.”). Moreover, as explained in Section II.A, in the

context of the '907 patent, a range may be “fixed” or variable” (EX1001, 5:29-30) because the ranges can be defined as either being fixed ranges that do not change after being set (*see, e.g., id.*, 5:30-38) or variable ranges which are initially set but may change based on various factors (*see id.*, 9:44-51). Both embodiments require the defining of the ranges based on present user input, not predetermined profiles. EX2004, ¶41.

4. Patent Owner's proposed construction is consistent with the extrinsic evidence.

Dictionaries treat the present tense and the past tense of “defining” as different words with different meanings. *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343, 1348 (Fed. Cir. 2010) (“In determining the ordinary and customary meaning of the claim term as viewed by a person of ordinary skill in the art, it is appropriate to consult a general dictionary definition of the word for guidance.”). For example, the prefix “pre” modifies the meaning of a word to indicate something that happened earlier than, prior to, or before a time or an event. *See* EX2007, 4-5; EX2008, 3-4. Since “defining” is in the present continuous tense and describes an event happening now, it necessarily excludes something that uses only range information that already happened in the past, e.g.:

- “Define” means “to explain and describe the meaning and exact limits of something.” EX2007, 6. But “predetermine” as in the prior art (e.g., EX1016, cl. 1, ¶[0107]) means “to decide or arrange something at an earlier time.” EX2007, 1; *see also* EX2008, 1 (“to determine beforehand”).

These definitions establish that “defining” requires an active step or function that can be performed in the present which excludes, for example, predetermined profiles created in the past.

B. “Partially Overlaps”

The independent claims require that “the boundary range of positions partially overlaps each of the primary range of positions and the secondary range of positions.” *See*, e.g., EX1001, 13:62-64. To avoid rendering claim scope ambiguous, “claims are interpreted with an eye toward giving effect to all terms in the claims.” *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (rejecting construction that would read a limitation out of the claim). It is a principle of claim construction “that claim language should not be treated as meaningless.” *Id.*, 951. “All claim terms are presumed to have meaning in a claim.” *Innova*, 381 F.3d at 1119. Therefore, each term of this limitation, including “partially,” must be given meaning, and “partially overlaps” should be construed as an overlap between two ranges that is less than total, such that neither range is completely overlapped by the other. EX2004, ¶¶42-43, 92, 96.

“Partially” is a commonly used term that means “not completely” (EX2007, 9) and “to some extent.” (EX2008, 5). Based on similar dictionary definitions, the Federal Circuit has held that “the ordinary and customary meaning of the term ‘partially’ excludes ‘totally.’” *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008). In fact, “partially” is an **antonym** of “totally,” “all,” “completely,” “entirely,” and “wholly.” EX2007, 11. Therefore, if one range “partially overlaps” another range, the overlap must be less than total.

Construing the claims such that the overlap between the boundary range and either of the primary or secondary ranges could be total would improperly deprive “partially” of meaning and would render it superfluous. *See Intel Corp. v. Qualcomm, Inc.*, 21 F.4th 801, 809-810 (Fed. Cir. 2021) (refusing to adopt claim construction which would render claim language superfluous). Nothing in the patent or file history supports such an interpretation or treats the boundary range as simply a subset of either the primary or secondary range. EX2004, ¶¶42-43, 92, 96. In fact, Fig. 2 of the patent identifies the boundary ranges 230A and 230B as distinct from the primary range 210 and secondary ranges 220A and 220 B rather than simply being inside either range. And the inventors’ decision to qualify “overlaps” with “partially” rather than “at least partially” or no qualification at all strongly indicates that total overlap with the boundary range is outside the intended claim scope.

Petitioner argues that the specification discloses an embodiment in which the primary range may be extended to render haptic effects within the secondary range or the boundary ranges and concludes that for the primary range to extend into the secondary range, it would need to extend through the entirety of the boundary range. Pet., 15. However, Petitioner's conclusion reads "partially" out of the claims and misinterprets the specification. EX2004, ¶¶42-43, 92, 96. The patent discloses one embodiment with a 39-degree range of motion, which includes a secondary range at 0-7 degrees, a primary range at 7-29 degrees, and another secondary range at 29-39 degrees. EX1001, 5:29-38. While the patent does not expressly state the boundary ranges for this embodiment, if, for example, one boundary range were defined as 4-10 degrees, the boundary range would partially overlap both the primary range and the initial secondary range, and the primary range would extend one degree (and up to 3 degrees) into the secondary range without the boundary range being entirely within the primary range or secondary range. Such an embodiment would be consistent with disclosure of a primary range extending into a secondary range without rendering the term "partially" superfluous. EX2004, ¶¶42-43, 92, 96.

C. "In Response to"

The term "in response to" should be given its plain and ordinary meaning, which requires a cause-and-effect relationship between a second event (e.g., a haptic effect) that occurs in reaction to a first event (e.g., entry of the user input element to

one or more positions within the boundary range of positions). EX2004, ¶44. The Federal Circuit has held that the plain and ordinary meaning of “in response to” requires a connection between two events that is causal and not merely coinciding. In *American Calcar, Inc. v. American Honda Motor Co.*, the Court explained that “[i]n response to” connotes that the second event occur in reaction to the first event.” *American Calcar, Inc. v. American Honda Motor Co.*, 651 F.3d 1318, 1339-40 (Fed. Cir. 2011). Similarly, the Board recently held that “‘in response to’ requires some degree of causality, not just concurrence.” *Peloton Interactive, Inc. v. Johnson Health Tech Co., Ltd.*, IPR2023-01165, 2024 Pat. App. LEXIS 4370, Paper 38 at *16 (PTAB Nov. 20, 2024). Accordingly, if a second event occurs in reaction to something other than the first event, even if it coincides with the first event, it is not “in response to” the first event.

Construing “in response to” as requiring a cause-and-effect relationship is also consistent with dictionaries, which define “response” as “an answer or reaction ... as a result of” (EX2007, 12-14); EX2008, 7 (“something constituting ... a reaction.”). These dictionaries demonstrate that the plain and ordinary meaning of “in response to” requires causality, not mere coincidence.

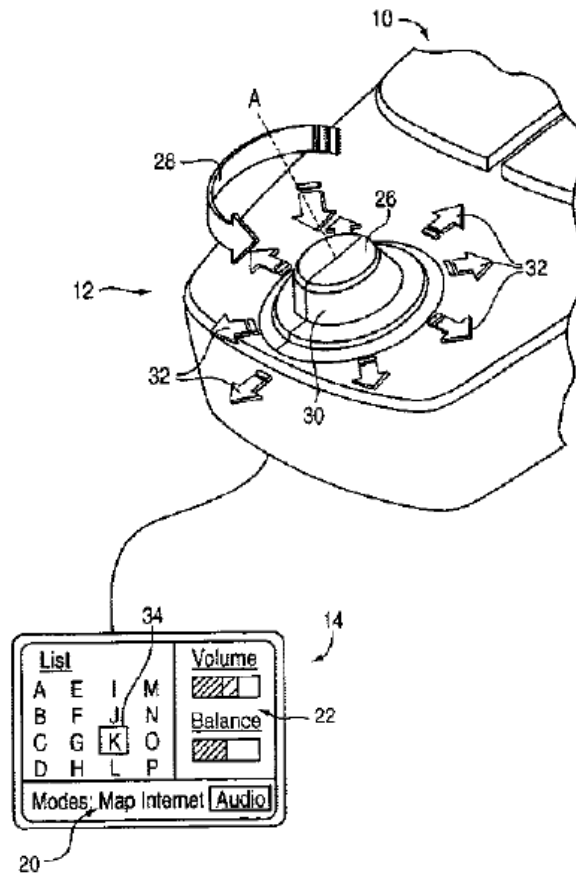
Finally, Petitioner’s expert has testified that “in response to” requires a cause-and-effect relationship (EX2006, 30:13-31:2) and that a person of ordinary skill in

the art would understand “in response to” to require more than mere coincidence (EX2006, 32:8-11) or one event merely happening after another. EX2006, 32:17-21.

V. THE ASSERTED REFERENCES

A. Goldenberg (EX1016)

Goldenberg (U.S. Patent Application Publication No. 2004/0032395) describes “haptic sensations for a haptic feedback device and especially for a rotational device such as a knob.” EX1016, Abstract. According to Goldenberg, “force effects such as a hill force effect and barrier force effect allow easier selection of menu items, menus, values, or other options by the user.” *Id.* The knob is disclosed to be a rotatable thumbstick, as shown below:



Id., Fig. 1.

In *Goldenberg*, force feedback is associated with events such as user interaction with menu items—e.g., “A detent force can be output when the cursor moves from one menu item to a different menu item.” *Id.*, [0012]. *Goldenberg* further states, “[f]or example, each successive item in a linear menu 306 can be provided with a detent, where the detent force profile overlaps with the beginning of the next items detent force profile as a way to provide a more compelling feel to the user and, in some cases, to reduce selection overshoot.” *Id.*, [0085]). The input

position and range information (in the x-axis) of such detent is predetermined by the nature of the detent.

Goldenberg summarizes the problem that it is meant to address as follows:

many of the well known force feedback sensations, such as detents, are applied in simple ways that are often inadequate for dealing with some of the selection functions required from a knob, where often complex control over functions and options must be provided with limited knob motion. For example, selecting options from a menu and navigating between menus can be difficult for a user when only simple detents are output. The user may accidentally skip menus or selections or may have to move a cursor through many undesired selections to reach a desired selection.

Id., [0009].

Goldenberg attempts to solve the problem using a predetermined “‘force process’ that may be stored in local memory 206 and includes calculation instructions, formulas, force magnitudes (force profiles), and/or other data.” *Id.*, [0066]. The force profiles are meant to simulate physical or mechanical force effects such as a hill effect in which the knob encounters an increasing resistive force (i.e., moving up the slope of the hill) followed by an assistive force (i.e., moving down the slope of the hill). *Id.*, [0011]. Goldenberg also discloses a jog shuttle control model in which a first spring effect centered around an origin position applies over the knob’s entire predetermined range of motion and biases the knob back to an

origin position, and a second spring effect (also centered around, and biased toward, the origin position) is stiffer and output over a smaller range around the origin. *Id.*, [0014], [0116].

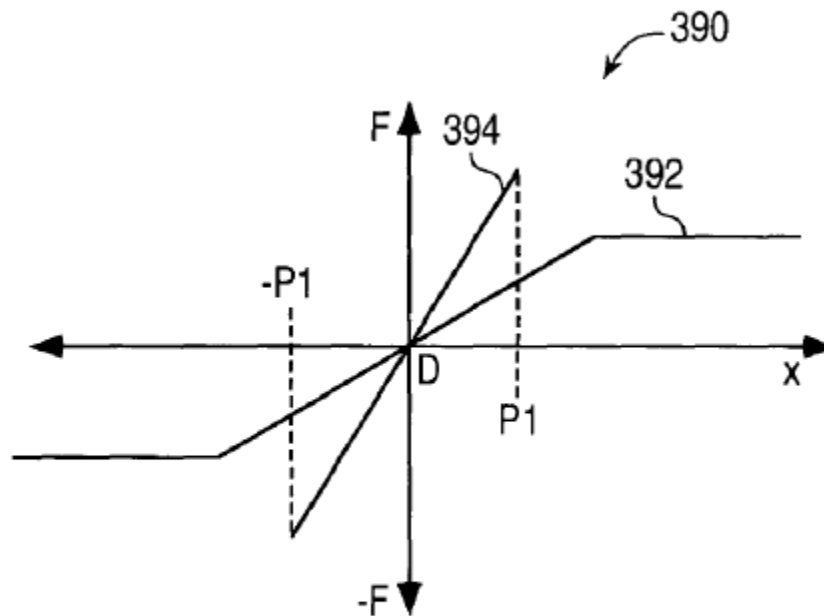


FIG. 8

Id., Fig. 8

B. Rosenberg (EX1017)

Rosenberg (U.S. Patent Application Publication No. 2007/0139375) describes “a method and apparatus for providing force feedback to a user operating a human/computer interface device in conjunction with a graphical user interface (GUI) displayed by a host computer system.” Ex. 1017, Abstract. More specifically, Rosenberg explains that, “[p]referably, the force sensation applied to the physical

object is at least partially determined by a location of the cursor in the GUI with respect to targets associated with the graphical objects in the GUI.” *Id.*, [0012]. Rosenberg discloses that, “[t]hese targets may include or be associated with such graphical objects as icons, windows, pull-down menus and menu items, scroll bars (‘sliders’), and buttons.” *Id.* According to Rosenberg, “[t]he force sensation output to the physical object is associated with targets that affect the cursor,” and the “force preferably assists the user to select the desired operating system function that is associated with the force.” *Id.* The physical “object” operated by the user may be a joystick, such as the one shown below in Figure 7, but it can also be a “mouse, trackball, stylus, steering wheel, medical instrument (laparoscope, catheter, etc.), pool cue, hand grip, knob, button, or other article.” *Id.*, [0082]; *see also* [0026]. The input position and range information (in the x-axis) for such input devices is predetermined.

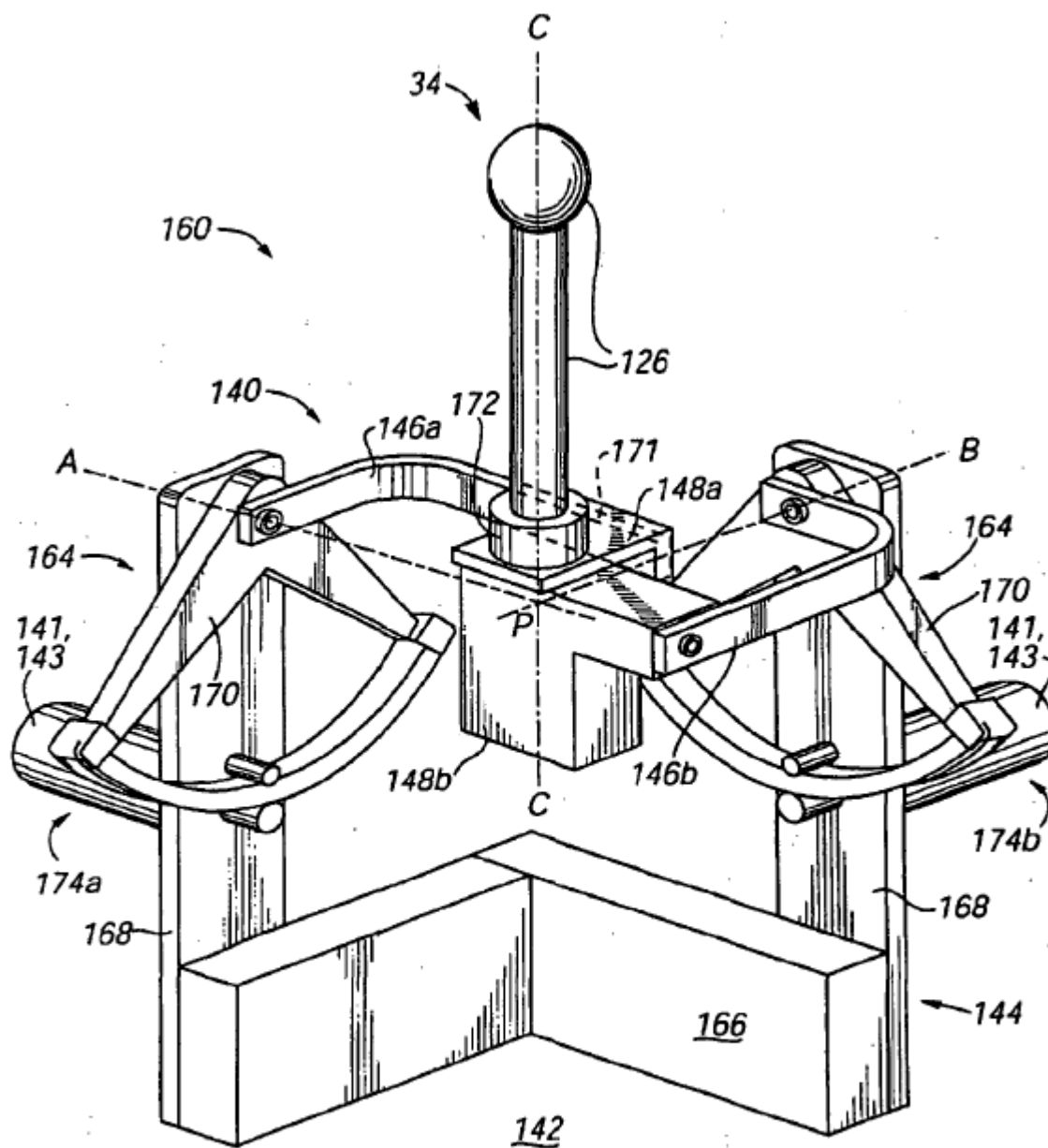


Figure 7

Id., Fig. 7.

The problem that Rosenberg attempts to solve is in the context of moving a cursor of a GUI to a desired target, such as icon, window, etc. According to Rosenberg,

[t]he movement of a cursor onto various displayed graphical objects of a GUI may require significant dexterity. Users may move the cursor too far over an object and have to backtrack their cursor. Or, particular graphical objects might be mistakenly selected when the user does not wish to select the object due to pressing a button or moving the cursor by accident. In addition, a user may become confused as to which window a cursor is position in if the user is viewing other data on the screen at the same time as moving the cursor.

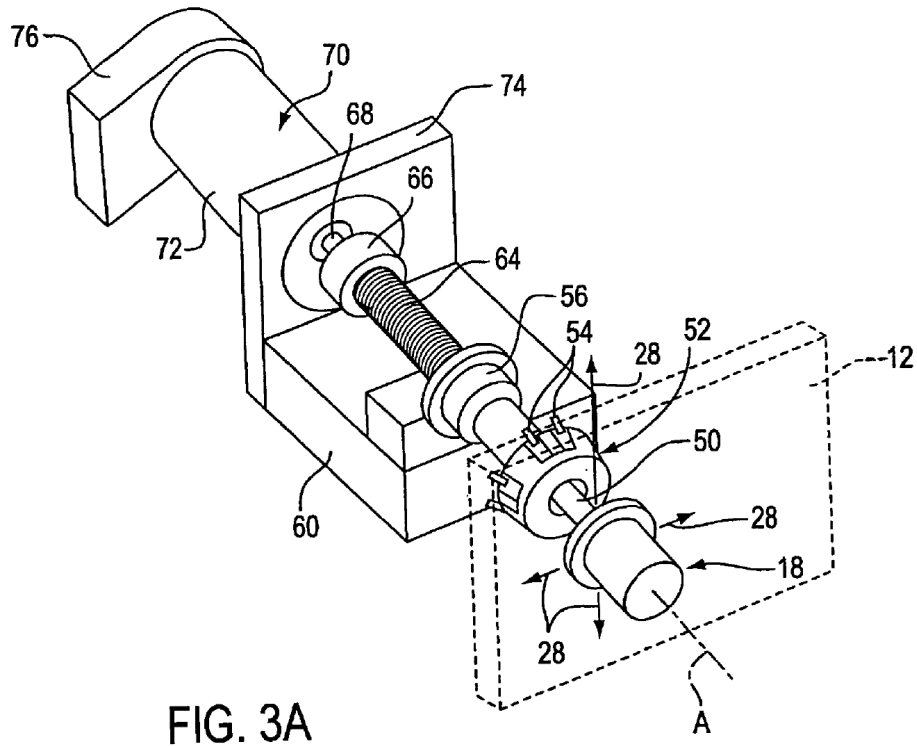
Id., [0007]. Rosenberg states that interacting with a GUI may be particularly difficult for persons with neuromotor disabilities because they may “lack the fine motor coordination required to manually position the computer cursor accurately and efficiently.” *Id.*, [0008].

Rosenberg attempts to solve this problem by providing “a computer system and interface device that will allow all users to more accurately and efficiently perform cursor movement activities and manipulating operating system and other functions within a GUI.” *Id.*, [0009]. To that end, Rosenberg’s invention simulates force effects by using “force values [in the y-axis] that have been previously calculated or sampled and stored as a digitized ‘force profile’ in memory or other

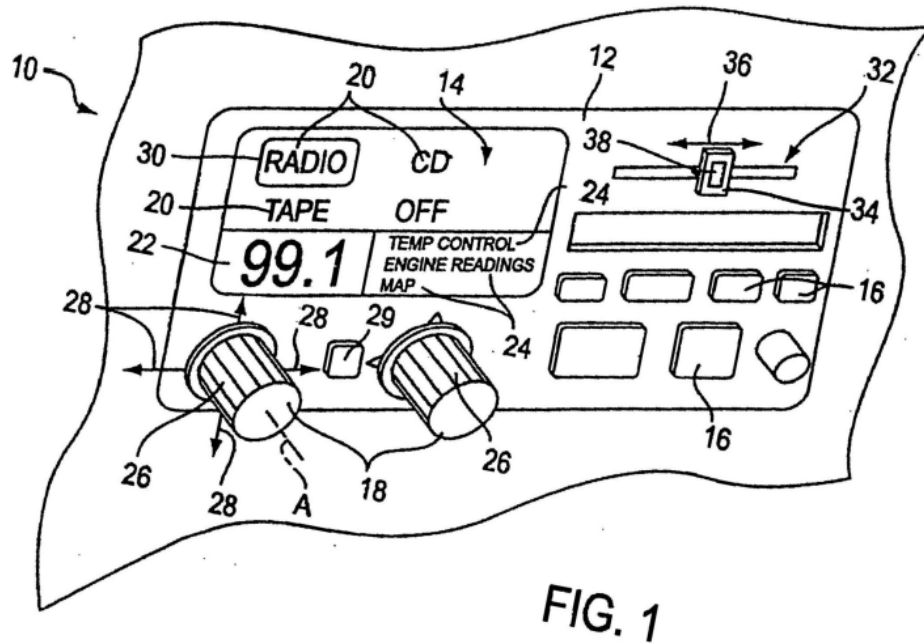
storage device. These force values may have been previously generated using an equation or algorithm...or provided by sampling and digitizing forces.” *Id.*, [0103]. In other words, Rosenberg uses pre-existing, predetermined input and range information as well as predetermined force profiles to improve a user’s interactions with a GUI but does not disclose the capability of “defining position and range information” at the time of use.

C. Levin (EX1006)

Levin (U.S. Patent Application Publication No. 2007/0152988) describes a “control knob on a device that allows a user to control functions of the device.” EX1006, Abstract. The control knob is described to be “rotatable in a rotary degree of freedom and moveable in at least one transverse direction approximately perpendicular to the axis.” *Id.* Fig. 3A below shows an embodiment of a physical mechanism for implementing the control knob of Levin’s invention. *Id.*, [0015].



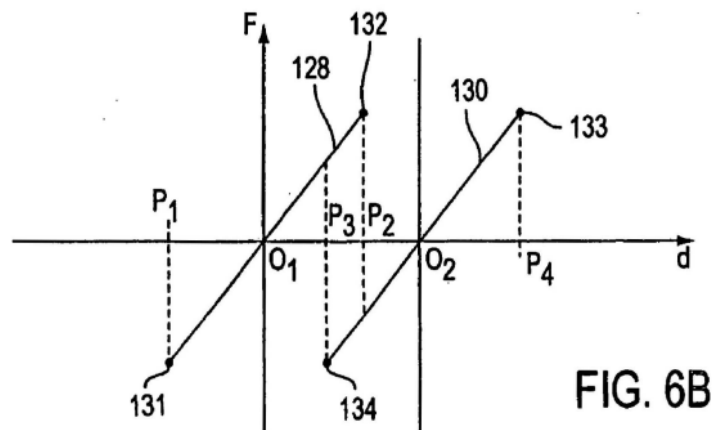
Id., Fig. 3A. This mechanical knob could be used, for example, as part of a radio embodiment of Levin's invention, as shown below in Fig. 1.



Id., Fig. 1, [0013]. Levin explains that in such an embodiment, moving the knob left or right controls the radio frequency, and it outputs force detents for each station or for each preset station. *Id.*, [0036].

According to Levin, “[o]ne problem occurring in control knobs of the prior art is that the knobs are limited to basic rotary motion. This limits the control options of the user to a simple, one-degree-of freedom device that does not allow a variety of selection options. The input position and range information (in the x-axis) for the control knob is predetermined.

In addition, if force feedback is provided on the knob, the limited control functionality of the knob limits the user from fully taking advantage of the force feedback to provide more control over desired functions.” *Id.*, [0004]. To address this problem, Levin discloses using predetermined detent force profiles where the detents are centered around detent origins. *Id.* [0067]. Levin also discloses a detent profile “in which the detent forces of two successive detents are partially overlapped due to the detents, and provide a hysteresis-like force effect.” *Id.*, [0070]. The illustration below depicts a detent profile in which detent 128 centered around point O_1 overlaps detent 130 centered around point O_2 .



Id., Fig. 6B.

VI. GROUND 1: GOLDENBERG DOES NOT ANTICIPATE OR RENDER OBVIOUS ANY OF THE CHALLENGED CLAIMS

In Ground 1, Petitioner relies on Goldenberg to allege anticipation and/or obviousness of certain of the challenged claims, including claims 1-6, 8-13, 15-19. As detailed below, Goldenberg does not disclose at least three key limitations of the challenged claims—(1) “defining position and range information for the user input element”; (2) “a secondary range of positions”; and (3) “wherein the boundary range of positions partially overlaps each of the primary range of positions and the secondary range of positions.” Goldenberg instead discloses predetermined force profiles that cannot be adjusted by the user, which incidentally include two predetermined ranges, one of which is entirely (not partially, as the claim requires) overlapped by the other.

A. Claim [1A]: Goldenberg Fails to Disclose “Defining Position and Range Information”

Under the appropriate construction (*see* Section IV.A, *supra*), Goldenberg fails to disclose “defining position and range information,” as Goldenberg instead discloses unrelated “force profiles” that merely describe various force effects. *See*, e.g., EX1016, [0021], [0066]; EX2004, ¶¶73-75. As explained in Section IV.A, the proper construction of the “defining” element excludes the use of predetermined force profiles, as the ’907 patent’s disclosure of “defining” is completely unrelated to Goldenberg’s teach of “force profiles.” *See e.Digital Corp.* 772 F.3d at 726-727 (unrelated patents, even from the same patentee, with different written descriptions disclosing different inventions require a new claim construction inquiry); *see also In re Berg*, 140 F.3d at 1435 (noting that for two applications filed by the same patentee that were unrelated by continuation, continuation-in-part, or divisional, filing such separate applications imply that each application is independent and patentably distinct).

Further, identification of incidental input ranges in a haptic force profile, or even using that range, does not disclose a method or device for actually “defining” that range during use, and the ranges and the process for defining them must be treated as separate terms. *See Bd. of Regents v. BENQ AM. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) (“Different claim terms are presumed to have different

meanings.”). Petitioner cannot map this element to an actual process or function in Goldenberg for “defining position and range information.”

Petitioner improperly conflates the claimed “defining position and range information” and the prior art’s force profile that incidentally uses predetermined ranges. *See* Pet., 10-16, citing Ward, ¶90. However, the existence and use of the claimed ranges are separate and distinct from the process of defining them. *See, e.g.,* EX1001, Cl. 1, 8, 15; EX2004, ¶¶75-77. “Claims are interpreted with an eye toward giving effect to all terms in the claim.” *Bicon*, 441 F.3d at 950. “In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings.” *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. Kg*, 224 F.3d 1308, 1317 (Fed. Cir. 2000). Here, nothing in the patent or file history suggests that “defining” is redundant with the claimed ranges or that the disclosure of one necessitates disclosure of the other. *Becton, Dickinson & Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention.”) (internal citations and quotations removed). Deeming the mere disclosure of range information as also disclosing a process or feature for “defining” that information would treat “defining” as a superfluous term indistinct from the claim ranges and would improperly render the scope of the claims ambiguous. *Bicon*, 441 F.3d at 950;

see also EX2004, ¶78. Petitioner never identifies anything in Goldenberg disclosing an actual process or functionality for “defining position and range information for the user input element” as described in Figures 4 and 5 of the '907 patent.

1. Goldenberg's Force Profiles Fail to Disclose “Defining Position and Range Information”

As explained in Section II.A, the '907 patent discloses that a user “defining position and range information” according to the claims does so using software, such as firmware. Claims 8 and 15 expressly reference software. *See, e.g.,* EX1001, 14:24-25 (“the program comprising instructions for: defining...”), 14:64-65 (“the program including instructions for: defining...”). Claim 1, a method claim, requires the step of “defining position and range information,” and the enabling disclosure describes using software to perform this step. Rather than merely describing potential ***haptic effects*** relative to a predetermined input range as in the prior art, the '907 patent discloses computer architecture and components (e.g., a “boundary range module 142”) for ***defining*** position and range information for the user input element used in rendering those haptic effects. EX1001, 3:11-20, 28-30; EX2004, ¶79. It also discloses that haptic effects may be ***modified*** “based on user input data” which includes position and range information for one or more buttons, triggers, etc. on a controller. EX1001, 7:1-3, 8:10-13; EX2004, ¶79.

By contrast, Petitioner fails to identify any such disclosure in Goldenberg for “*defining* position and range information for the user input element.” EX2004, ¶80. Rather, Petitioner contends that “Goldenberg’s method uses ‘force profiles’ that define, *inter alia*, ‘position and range information’” (Pet., 10, citing Ward, ¶89), but the force profiles use input position and range information (i.e., the x-axis of the force profile graph) that is predetermined, with graphical *descriptions* of certain *force effects*—they do not define position and range information for the user input element as required by the claims because Goldenberg does not provide the user or claimed device with any flexibility to adjust the input position and range information. EX2004, ¶80. Indeed, Petitioner’s citations to Goldenberg regarding the force profiles demonstrates that they are simply “graphs,” “illustration[s],” and “diagram[s]” of various force effects rather than disclosures of “defining position and range information for the user input element.” *See, e.g.*, Pet., 10, citing EX1016, [0021]-[0029]; EX2004, ¶81. Goldenberg uses the phrase “force magnitudes (force profiles)”, which demonstrates that force profile is a synonym for force magnitude. EX1016, [0066]; EX2004, ¶81. At most, Petitioner has identified a predetermined haptic profile that defines what happens in the *y-axis* for haptic effects themselves but not any functionality or step for “defining position and range information for the input element” that is used in rendering the effects, e.g., allowing the user to define the *x-axis*. EX2004, ¶81. Moreover, Petitioner makes no attempt to show how the

line graphs that it points to disclose the method step of “defining position and range information for the user input element.”

Further, in its Institution Decision, the Board identifies four examples from the specification as “preliminary support” for Goldenberg’s disclosure of “defining position and range information” (DI at 16), but none of them disclose actually “defining” that information. For example, storing a *force profile* in local memory does not disclose “defining position and range information.” EX1016, ¶66. In addition, implementing *force effects* is also not the same as “definition position and range information.” *Id.*, ¶102. In another example, an application program can apply a predetermined force model, but Goldenberg does not disclose that it is capable of “defining position and range information.” *Id.*, ¶104. In the final example, a host processor applies predetermined detents to a knob device, but it does not permit “defining position and range information.” Thus, none of these examples discloses the “defining” element.

2. Goldenberg’s Jog Shuttle Model Fails to Disclose “Defining Position and Range Information”

Petitioner focuses mostly on Goldenberg’s “jog shuttle model.” Petitioner claims “Goldenberg’s jog shuttle model (‘force vs. position profile 390’) defines an ‘origin O’ position dividing the knob rotational positions into two ranges.” Pet., 11;

Ward, ¶93. But “force vs. position profile 390” cited by Petitioner is a graph of the jog-shuttle model shown in Fig. 8 of Goldenberg as shown below:

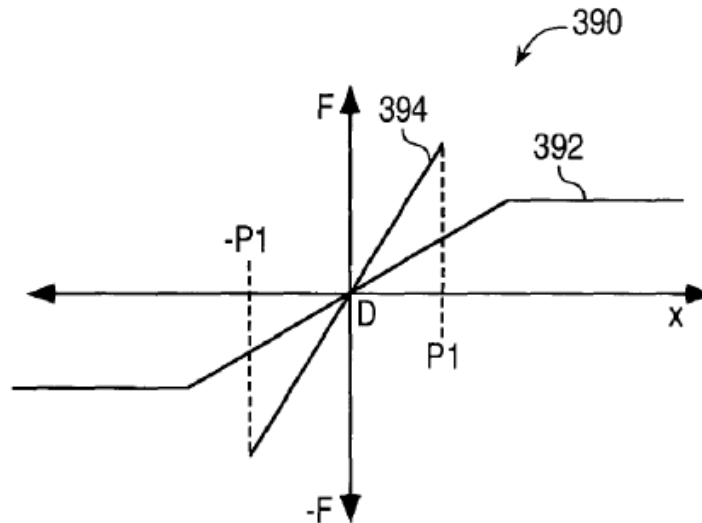


FIG. 8

This diagram depicts ranges in the abstract but fails to disclose a method for, or device capable of, actually “**defining** position and range information.” EX2004, ¶79. Despite Petitioner’s statement to the contrary (Pet., 11), Goldenberg never discloses “defining” an “origin O” for the jog shuttle model because it fails to provide the user or device with the ability to change the relevant values. EX1016, [0115]-[0117]; EX2004, ¶82. Goldenberg’s discussion refers to an “origin” or an “origin O” only with respect to **force effects** centered around the origin,” but they do not disclose “defining” the origin or any other position or range information in the x-axis. EX1016, [0116]; EX2004, ¶82.

Petitioner also claims that the jog force model of Figure 8 “defines ‘positions -P1 and P1,’” (Pet., 12; Ward, ¶94), but Figure 8 only *describes* those two points in the abstract. EX2004, ¶83. Neither Figure 8, nor the relevant paragraphs disclose a method or functionality for *defining* any points. See EX1016, [0115]-[0117]; EX2004, ¶83. Since the jog shuttle model is meant to “best simulate a mechanical jog shuttle having mechanical springs,” -P1 and P1 are a predetermined consequence of a simulated spring effect and are not themselves *defined* or adjustable. EX1016, [0116]; EX2004, ¶83.

Finally, Goldenberg’s *description* of the jog shuttle model precludes disclosure of the “defining” element. EX2004, ¶80. The claims require “defining position and range information ...including a primary range...a secondary range...and a boundary range.” EX1001, cl. 1, 8, 15. Therefore, if a reference does not disclose defining these three ranges, it does not disclose all elements of the claim. The jog shuttle model discloses two spring effects (*see* Section V.A), one of which Petitioner argues corresponds to the “primary range of positions” and the “secondary range of positions.” Pet. 12-14. However, Goldenberg discloses that that “spring force is output over the entire movement range of the knob.” EX1016, [0115]; EX2004, ¶80. Regardless of whether the first spring effect includes one or two ranges, it is predetermined to cover the entire range of the knob, which precludes “defining position and range information.” EX2004, ¶84.

B. Claims [1A1], [1A2], and [1A3]: Petitioner Fails to Show that Goldenberg Discloses the Three Claimed Ranges

Petitioner argues that Goldenberg's jog shuttle model discloses all three of the claimed ranges, but that model expressly discloses only *two* ranges corresponding to a first and second spring effect, so at least one of the alleged claim ranges is absent. EX2004, ¶85. Petitioner attempts to mask this deficiency by dividing the range of the first spring effect into two ranges, while still treating the range of the second spring effect as a single, intact range. Pet., 12-15. However, Petitioner's argument conflicts with Goldenberg's disclosure and is internally inconsistent for the reasons discussed below.

1. Goldenberg Discloses that the Range of the First Spring Effect Is a Single Range

The jog shuttle simulates two spring effects applied to a knob, but Petitioner argues that the range of the first effect is actually two ranges. For support, Petitioner relies on statements from the '907 patent's prosecution history, specifically from one page of a non-final office action, which Petitioner characterizes as "finding that 'distances in proximity to boundaries' are ranges and that any range can constitute first and second ranges.'" Pet., 13-14, citing EX1002, 100. These statements are taken out of context and should be given no weight because they were made by the Examiner, not the inventor, as part of an anticipation rejection based on U.S. Pat. Pub. No. 2006/0142657 to Quaid et al. in an office action that the Examiner

subsequently withdrew. EX1002, 114, 220. The '907 patent's application originally included only claim 1, which was written in a different form from the issued version of claim 1. EX1002, 59. But the applicant timely submitted a preliminary amendment that substantially revised claim 1 and added new claims *before* receiving that non-final office action. EX1002, 91-94. Therefore, the Examiner agreed to issue a new first office action as to the new claims (EX1002, 114) which expressly *supersedes* the earlier filed office action. *Id.*, 220. In the new first office action, the Examiner did not reject any of the claims in view of Quaid or any other prior art did not reiterate the language relied on by Petitioner. In other words, Petitioner relies on an Examiner's statements that appear only in a *superseded* office action regarding a prior art rejection asserted against only an *unprosecuted* version of claim 1. The applicant never had to traverse Quaid, never amended the claims to overcome a rejection, and never made any statements adopting or conceding the Examiner's quoted language. Accordingly, the language quoted by Petitioner from the file history should be disregarded.

Petitioner argues that the range of positions clockwise from the origin is "a primary range of positions" (Pet. 12-13, citing Ward, ¶95), and the range of positions counterclockwise from the origin is a "secondary range of positions." Pet., 13-14, citing Ward, ¶ 96. Fig. 8 below shows the range of the first spring effect highlighted in yellow.

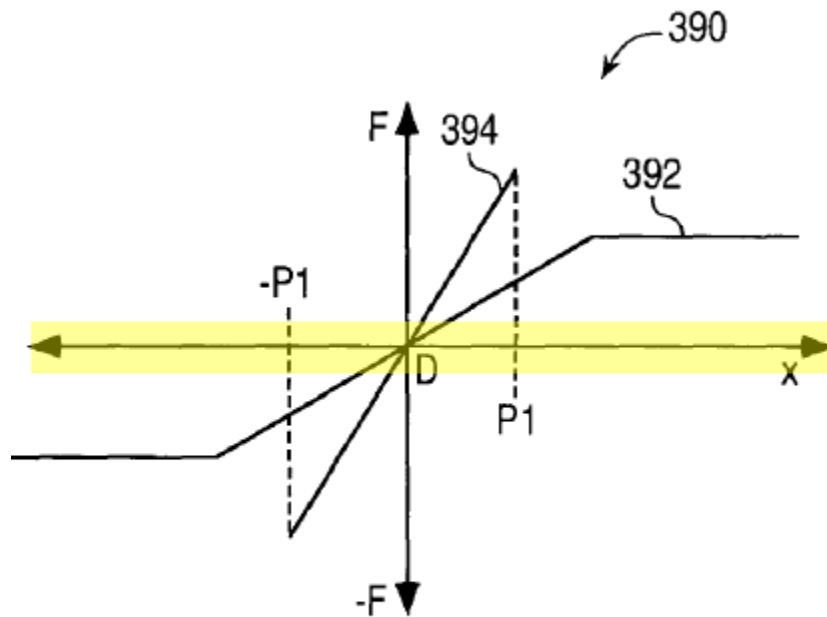


FIG. 8

Goldenberg describes the first spring effect as having just a single range centered on an origin point, that always biases the knob toward a single origin point: “the knob is provided with a centering spring force at all points of its rotation, the spring force biasing the knob toward an origin rest position,” and the first spring effect is “preferably output when the knob is moved in either direction away from the origin position.” EX1016, [0115]; EX2004, ¶86. Goldenberg discloses that the first spring effect is output over a range equal to the entire range of the knob, rather than being divided into multiple ranges on either side of the origin. *See, e.g.,* EX1016, [0115] (“the spring force is output over the entire movement range of the knob”); [0116] (“The first spring effect, shown as curve 392, can be output over the entire range of

the knob...."); EX2004, ¶86. Petitioner's own expert has conceded that "what [Goldenberg] states is that the [first] spring effect is output over the entire rotational range of the knob." EX2006, 20:7-16. Accordingly, Goldenberg does not disclose three ranges.

2. Claim [1A3]: Goldenberg Fails to Disclose "a Boundary Range of Positions, Wherein the Boundary Range of Positions Partially Overlaps Each of the Primary Range of Positions and the Secondary Range of Positions"

Petitioner argues that the range of the second spring effect is the boundary range, and it would be entirely enveloped by the alleged primary and/or alleged secondary range as shown in the highlighted diagram on page 15 of the Petition. Pet., 15; EX2004, ¶85. Petitioner's expert has testified that the range of the second spring effect is "within a portion of the entire rotational range of the knob." EX2006, 21:17-22. In Petitioner's view, the jog shuttle model would not disclose a "boundary range" that "partially overlaps" each of the primary and secondary ranges because the overlap would be total. EX2004, ¶¶92, 95. As explained in Section IV.B, the proper construction of "partially overlaps" excludes the total overlap disclosed by Goldenberg. Moreover, "boundary range" is its own claim term separate from the "primary range" and the "secondary range," and it too must be given effect such that the boundary range is not simply a part of the other two claimed ranges, regardless of the degree of overlap. *See* EX1001, 5:20-23 ("...boundary ranges 230A, 230B

may be defined so as to partially overlap primary range 210 and secondary ranges 220A, 220B.”); EX2004, ¶90; *see also*, *Bicon*, 441 F.3d at 950.

3. Petitioner's Argument Is Internally Inconsistent

Petitioner's interpretation of what constitutes a range varies depending on its need at a given moment, which is best shown by its variable characterization of the jog shuttle model's spring effects depending on which claim element it is trying to meet. Goldenberg's jog shuttle model has two spring effects, both of which are centered around, and biased toward, an origin point. Section V.A; EX1016, [0115], [0116]; EX2004, ¶87. The only differences between the two are that the first spring effect is “output over the entire range of the knob” and has “a medium amount of stiffness,” while the second spring effect “is only in effect over a small range between positions -P1 and P1 around the origin position” and “is preferably much stiffer than the first spring.” EX1016, [0116]; EX2004, ¶87. In other words, the first spring effect covers the entirety of the knob's range, and the second spring effect covers only a small part of the knob's range and is within the first range. In Fig. 8 below, the range of the second spring effect is highlighted in orange and is encompassed by the range of the first spring effect shown in yellow.

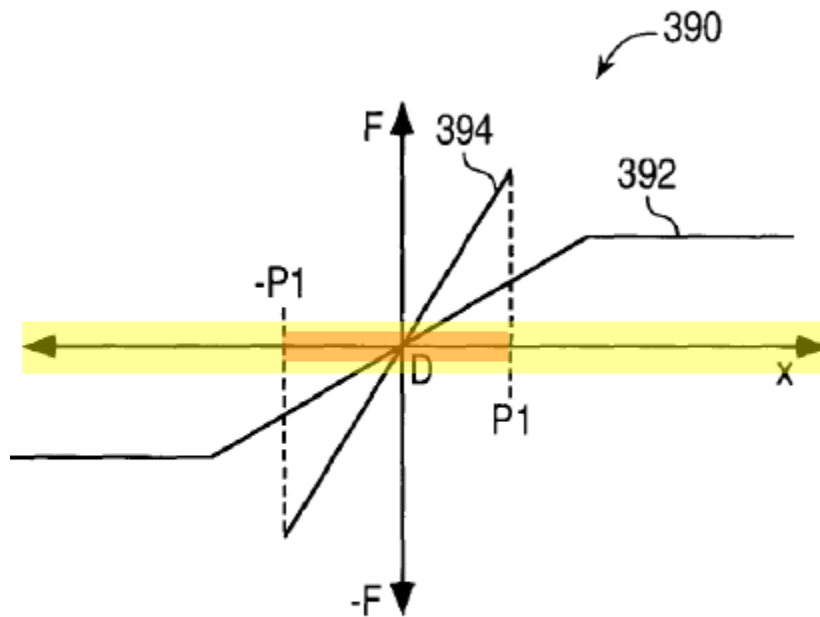


FIG. 8

Petitioner improperly attempts to divide the range of the first spring force into “a primary range of positions” to the right of the origin and “a secondary range of positions” to the left of the origin. *See* Section VI.B.1; Pet. 12-14, citing Ward, ¶¶95-96; EX2004, ¶88. Rather than dividing the second spring effect in a similar way, Petitioner treats the spring force as a single, undivided range that it argues is the claimed “boundary range of positions.” Pet. 15-16, citing Ward ¶¶97-100; EX2004, ¶88. Petitioner makes no attempt to explain why the first and second spring forces, which are both centered around and biased toward an origin, should be treated differently. EX2004, ¶88. When the ranges of the two forces are treated consistently,

Goldenberg fails to disclose the three required claimed ranges as well as a boundary range that “partially overlaps” each of the primary and secondary ranges.

If the first and second spring force effects are viewed as each having a single range centered around an origin as shown above in Fig. 8, Petitioner's argument fails for two reasons. EX2004, ¶89. First, the jog shuttle model would not disclose “a primary range,” “a secondary range,” and “a boundary range” because it would disclose only two ranges (i.e., one range for each spring force). *Id.* Second, the jog shuttle model would not disclose the limitation “the boundary range partially overlaps each of the primary range of positions and the secondary range of positions” because there would be no secondary range for the boundary range to overlap, and, under the proper construction of “partially overlaps,” the range of the second spring force would **completely**, not “partially,” overlap the range of the first spring effect. *Id.* Accordingly, Petitioner's argument fails if each spring force is treated as having a single range.

Petitioner's argument also fails if one were to divide both spring force ranges at the origin because any boundary range would be unable to partially overlap both the primary and secondary ranges, as required by the claims, as shown in the diagram below. EX2004, ¶90. In Petitioner's view, the ranges do not include the point of origin. Petitioner contends that the “primary range” is “a range of the knob's rotary positions moving clockwise from the origin which correspond to positions **to the**

right of the origin” (Pet., 12-13, citing Ward, ¶95 (emphasis added) and the “secondary range” is “a range of the knob’s rotary positions moving counterclockwise of the origin which correspond to positions *to the left of the origin position*.” *Id.*, 13-14, citing Ward, ¶96 (emphasis added). These alleged ranges are represented in the diagram below in yellow and blue, respectively. Petitioner alleges that “the knob’s rotary positions between ‘positions -P1 and P1’...that form ‘a small range...around the origin position’” corresponds to the claimed “a boundary range of positions.” Pet., 15, citing Ward, ¶99. Splitting this range into a first range “which corresponds to positions to the right of the origin” (*see id.*, 12) and a second range “which corresponds to positions to the left of the origin position” (*id.*, 13) results in two more ranges separated by the origin. EX2004, ¶90. These two ranges are represented below in red and green, respectively. Consistent with Petitioner’s treatment of the first spring effect range, the ranges of the second spring effect do not meet at the origin and, therefore, do not overlap. *Id.*

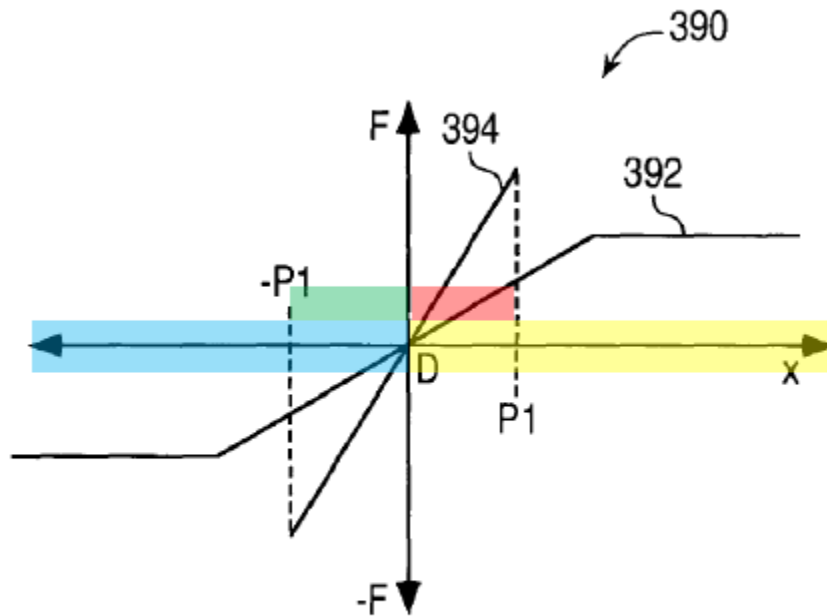


FIG. 8

EX1016, Fig. 8. The diagram above, consistent with Petitioner's methodology for the first spring effect range, demonstrates that each alleged boundary range entirely overlaps with either the alleged primary or secondary range of positions, but not both. EX2004, ¶91. When the disclosed ranges of the jog shuttle are treated consistently, Goldenberg does not disclose a boundary range that "partially overlaps" each of the primary and secondary ranges.

VII. GROUND 2: GOLDENBERG-CRUZ-HERNANDEZ DOES NOT RENDER OBVIOUS ANY OF THE CHALLENGED CLAIMS

Ground 2 pertains to claims 7, 14, and 20, which are dependent on independent claims 1, 8, and 15. For the reasons provided in Section VII with respect to claims

1, 8, or 15, the Goldenberg-Cruz-Hernandez combination does not disclose all required elements. EX2004, ¶97. Accordingly, Petitioner has not met its burden of demonstrating obviousness as to claims 7, 14, and 20 in view of the Goldenberg-Cruz-Hernandez combination.

VIII. GROUND 3: ROSENBERG DOES NOT ANTICIPATE OR RENDER OBVIOUS ANY OF THE CHALLENGED CLAIMS

In Ground 3, Petitioner relies on Rosenberg to allege anticipation and/or obviousness of certain of the challenged claims, including claims 1-4, 6, 8-11, 13, 15-17, 19. As detailed below, Rosenberg does not disclose these claims including at least the claim elements “defining position and range information for the user input element.”

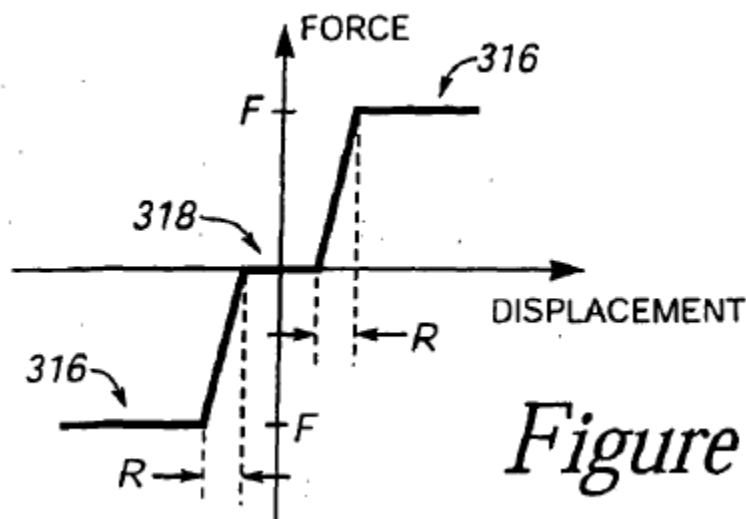
A. Claim [1A]: Petitioner Has Failed to Show that Rosenberg Teaches “Defining Position and Range Information for the User Input Element Associated with the Haptic Output Device”

Petitioner identifies the “defining” element as “Rosenberg’s restoring force command with a deadband region (Figure 10(c))” (Pet., 36, citing Ward, ¶161; *id.*, 38, citing Ward, ¶166) or, in the alternative, “Rosenberg’s force restoring command without a deadband (Figure 10(a)).” Pet., 40, citing Ward, ¶169; EX2004, ¶103. However, Figs. 10(a) and 10(c) and their related disclosure merely describe particular force effects but not any functionality or process for “defining range and position information for the user input.” Rather than explaining how or why either

force restoring command permits “defining position and range information for the user input element,” Petitioner and its expert merely point to pre-existing force profiles. *See, e.g., id.*, 37-40, citing Ward, ¶¶161-162, 164-169); *see also* EX2004, ¶103. But as previously discussed, the ’907 patent does not teach or claim force profiles, and showing force profiles to meet the challenged claims is improper and insufficient. Merely describing “graphs,” “illustration[s],” and “diagram[s]” of various force effects relative to input ranges, i.e., force profiles, is not the same as the claimed “defining position and range information for the user element.” Petitioner’s only discussion of “defining position and range information” are its unsupported assertions that the restoring force command defines an origin and the claimed ranges. Pet., 36, 38, 40, citing Ward, ¶¶161, 166, 169; *see also* EX2004, ¶103.

As an example of Petitioner’s misguided focus on force profiles and describing rather than “defining input position and range information,” Petitioner points to Paragraph [0165] and Fig. 10(c) of Rosenberg as disclosing a “restoring force command with a deadband region” that “defines an origin (neutral) O position for the user object.” Pet., 36, citing Ward, ¶161; EX2004, ¶104. But while Paragraph [0165] and FIG. 10(c) describe a force effect with respect to an origin point, nowhere does it disclose how one would practice “defining position and range information for the user input element” in the x-axis. EX1017, [0165]; *see also* Sections IV.A

and V.B; EX2004, ¶104. FIG. 10(c), shown below, is a “diagrammatic representation[] of [a] restoring force profile[]” (EX1017, [0029]), and Petitioner fails to explain how an abstract picture of input range and a restoring force profile discloses “defining position and range information for the user input element.” EX2004, ¶104.



Rosenberg does not disclose the “defining” element because its input position and range profile is predetermined. Also, the force commands, including the restoring force commands relied on by Petitioner and shown in Figs. 10a-c, are predetermined commands stored in a table. EX2004, ¶105. For example, Rosenberg states in the context of Figs. 10a-c that certain parameters are preferably “specified with...the style parameter 308 of the command 306 shown in table 300.” EX1017, [0164]; EX2004, ¶106. Rosenberg explains that its invention uses “force values that have been previously calculated or sampled and stored as a digitized ‘force profile’

in memory or other storage device,” not position and range information for the input defined by a user. EX1017, [0103]; EX2004, ¶106. Thus, the force profiles identified by Petitioner do not disclose a method or device for “defining.”

B. Claim [1A]: Petitioner Has Failed to Separately Map “Defining Position and Range Information for the User Input Element Associated with the Haptic Output Device”

Petitioner does not separately map “defining position and range information” and the claimed ranges but rather maps both elements to the same figures in Rosenberg—i.e., Figs. 10a, 10c. Pet. 37-44; EX2004, ¶107. But each of the claimed ranges and the process or feature for defining them must be treated as separate terms. *See BENQ AM.*, 533 F.3d at 1371; EX2004, ¶107. Petitioner cannot meet its burden because it has failed to properly map “defining position and range information” separately from the claimed ranges.

IX. GROUND 4: THE ROSENBERG-ROBERTS COMBINATION DOES NOT RENDER ANY OF THE CHALLENGED CLAIMS OBVIOUS

Ground 4 pertains to claims 5, 7, 12, 14, 18, and 20, which are dependent on independent claims 1, 8, or 15. For the reasons provided in Section IX with respect to claims 1, 8, and 15, the Rosenberg-Roberts combination does not disclose all required elements. EX2004, ¶108. Accordingly, Petitioner has not met its burden of demonstrating obviousness as to claims 5, 7, 12, 14, 18, and 20 in view of the Rosenberg-Roberts combination.

X. GROUND 5: THE ROBERTS-ROSENBERG-CRUZ-HERNANDEZ COMBINATION DOES NOT RENDER ANY OF THE CHALLENGED CLAIMS OBVIOUS

Ground 5 pertains to claims 7, 14, and 20, which are dependent on independent claims 1, 8, or 15. For the reasons provided in Section IX with respect to claims 1, 8, and 15, the Rosenberg-Roberts-Cruz-Hernandez combination does not disclose all required elements. EX2004, ¶109. Accordingly, Petitioner has not met its burden of demonstrating obviousness as to claims 7, 14, and 20 in view of the Rosenberg-Roberts-Cruz-Hernandez combination.

XI. GROUND 6: LEVIN DOES NOT ANTICIPATE OR RENDER OBVIOUS ANY OF THE CHALLENGED CLAIMS

In Ground 6, Petitioner relies on Levin to allege anticipation and/or obviousness of certain of the challenged claims, including claims 1, 3-4, 6, 8, 10-11, 13, 15, 17, 19. As detailed below, Levin does not disclose at least three key limitations of the challenged claims—(1) “defining position and range information for the user input element”; (2) “a boundary range of positions wherein the boundary range of positions partially overlaps each of the primary range of positions and the secondary range of positions”; and (3) “rendering a haptic effect in response to an entry of the user input element to one or more positions within the boundary range of positions.”

A. Claim [1A]: Levin Discloses Only Predetermined Force Effects, but the Claims Require “Defining Position and Range Information”

Levin fails to disclose “defining position and range information” because it uses pre-existing, predetermined force detent profiles stored in memory. EX1006, [0048]-[0049], [0070]; Pet. 69, citing Ward, ¶251; *see also* EX2004, ¶112. Under the proper construction of “defining position and range information,” Levin cannot anticipate the challenged claims because they require “defining position and range information for the user input element,” not simply using predetermined input range and force effects stored in a memory. EX2004, ¶112. The specification of the '907 patent also explains that the claimed boundary ranges are changeable. *See, e.g.,* EX1001, 5:29-30, 7:1-3, 8:10-14; EX2004, ¶112. Again, Petitioner incorrectly focuses on “force profiles,” but as previously discussed, the '907 patent does not teach or claim force profiles, and showing force profiles to meet the challenged claims is improper and insufficient. While Levin discloses instructions for implementing detent force profiles, the underlying input position and range information is predetermined. Moreover, those profiles are pre-existing and predetermined and cannot be changed. EX2004, ¶112. Petitioner fails to point to any part of Levin disclosing instructions for actually “defining position and range information.”

According to Petitioner, “Levin’s detent force profiles define ranges, including” a range around a first detent and a range around a second detent. Pet., 70. Petitioner makes this unsupported statement in conclusory fashion, unable to point to any disclosure of “defining.” *Id.*, 69-70, Ward, ¶¶252-253; EX2004, ¶113. As with its discussion of Goldenberg and Rosenberg, Petitioner’s cursory discussion of this element simply points to descriptions of force profiles but does not show how they would disclose a process or functionality for “defining position and range information for the user input element.” Pet., 69-70, Ward, ¶¶252-253; EX2004, ¶113.

B. Claim [1A3]: Petitioner Fails to Identify a Separate “Boundary Range of Positions, wherein the Boundary Range of Positions Partially Overlaps Each of the Primary Range of Positions and the Secondary Range of Positions”

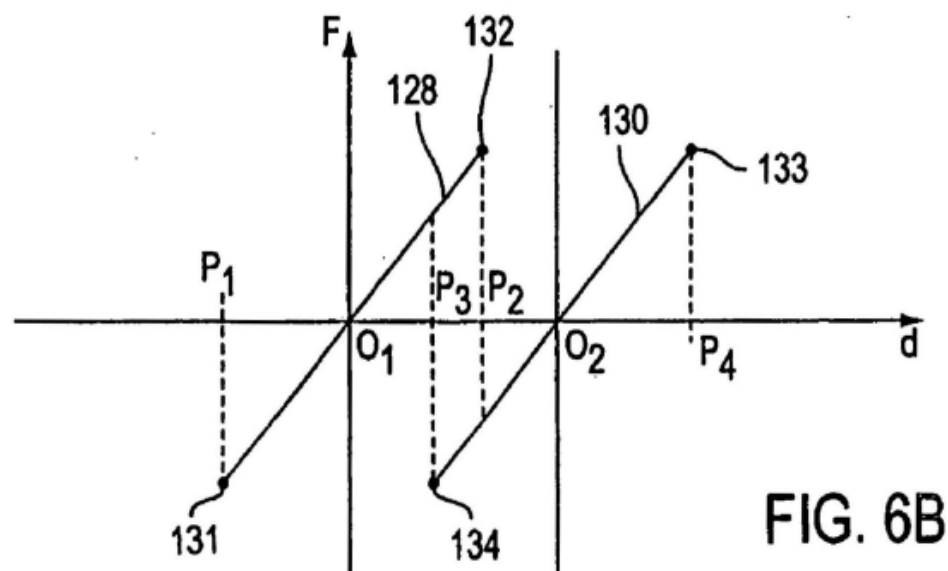
Petitioner wrongly identifies the overlap of two detents as the boundary range recited in the challenged claims, which improperly reads “boundary range” and “partially overlaps” out of the claims.

1. Equating “Boundary Range” with an Overlap between Two Detents Would Improperly Deprive that Term of Meaning

Petitioner admits that what it points to as the claimed “boundary range” is nothing more than “[a] portion of the range of the first detent overlap[ping] a portion of the range of the second detent.” Pet., 73, citing EX1006, [0009], Ward, ¶259; EX2004, ¶114. Thus, in Petitioner’s view, any overlap between two ranges would

become a boundary range. EX2004, ¶114. Petitioner's argument is inconsistent with Levin's disclosure and would render "boundary range" superfluous.

Petitioner points to Fig. 6B of Levin and related disclosure to attempt to show disclosure of various elements including "a boundary range of positions" that "partially overlaps each of the primary range...and the secondary range." Pet., 74, citing Ward, ¶¶ 259-260. Fig. 6B, shown below, shows a system with two detent points, O_1 and O_2 . EX1006, [0070].



Lines 128 and 130 are "detent curves," which show how the force of the detent changes with position. EX2004, ¶¶115-116. Levin discloses that the "two successive detents are partially overlapped due to the detents and provide a hysteresis-like force effect." EX1006, [0070]. Although Petitioner equates Levin's reference to an "overlapped zone" with the "boundary range" (Pet., 74, citing Ward, ¶¶ 259-260),

Levin simply refers to the overlap between two detent ranges, and not a third, separate range. *See* EX1006, [0070]; EX2004, ¶116. Levin states that “[t]he overlapped zone is between positions P3 and P2,” which is simply the area where the first and second detents overlap (i.e., P2 is the end of the first detent, and P3 is the beginning of the second detent). EX1006, [0070]; EX2004, ¶116.

Petitioner conflates any overlap between two ranges with the separate “boundary range” recited in the claims. EX2004, ¶117. However, the claims are not directed simply to any two overlapping ranges of forces effects. *Id.* They require three specific and distinct ranges of positions: a primary range, a secondary range, and a boundary range. EX1001, cl. 1, 8, 15; EX2004, ¶117. Nowhere does the ’907 patent equate the boundary range with the mere overlap of two other ranges. EX2004, ¶117. Indeed, the ’907 patent discloses embodiments where the primary and secondary ranges overlap each other, but even those embodiments would still have a boundary range distinct from the overlap between the primary and secondary ranges: “primary range 210 may be extended to render haptic effects within secondary ranges 220A, 220B and/or boundary ranges 230A, 230B.” EX1001, 5:23-25; *see* Section IV.B, *supra*; EX2004, ¶117.

Petitioner’s argument would improperly deprive the “boundary range” term of its meaning. *Cat Tech LLC v. TubeMaster, Inc.*, 528 F.3d 871, 885 (Fed. Cir. 2008) (refusing to adopt a claim construction that would render claim limitation

meaningless). If a boundary range recited in the challenged claims is simply the overlap between two other ranges, it would be an unnecessary claim term since it would add nothing to the claim that would be distinct from the primary and secondary ranges. EX2004, ¶118. “Boundary range” is its own claim term that, according to the '907 patent specification and claims, is separate from, and has different functionality than, the primary and secondary ranges. *See, e.g.*, EX1001, 3:28-34, 5:19-28, and 9:21-39; EX2004, ¶118. The fact that the claims require that the “boundary range...partially overlaps each of the primary range...and the secondary range” further indicates that the “boundary range” itself is more than just an overlap between the primary and secondary ranges. EX2004, ¶118. By conflating “boundary range” with any overlap between two detents, Petitioner’s argument would improperly render that term superfluous.

2. Petitioner Attempts to Read “Partially” out of the Claims

Even if the overlap between the first and second detents were deemed to be a boundary range, Levin would fail to disclose that the boundary range “partially overlaps” each of the primary and secondary ranges, as required by the claims. Petitioner contends that the overlap between the two detents is “a boundary range of positions,” and that it partially overlaps the primary and secondary ranges. Pet., 74, citing Ward, ¶¶259-260. But, if the boundary range were comprised entirely of the overlap between the two detent ranges, it would entirely overlap the primary and

secondary ranges, thus reading the term “partially” out of the claims. *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1305 (Fed. Cir. 2014) (refusing to construe claim in a way that would read expressly recited term out of the claim); EX2004, ¶119. As discussed in Section IV.B, “partially overlaps” should be construed to complete overlap. EX2004, ¶119. Accordingly, Petitioner has not met its burden of showing that Levin discloses that the boundary range “partially overlaps” the first and second ranges.

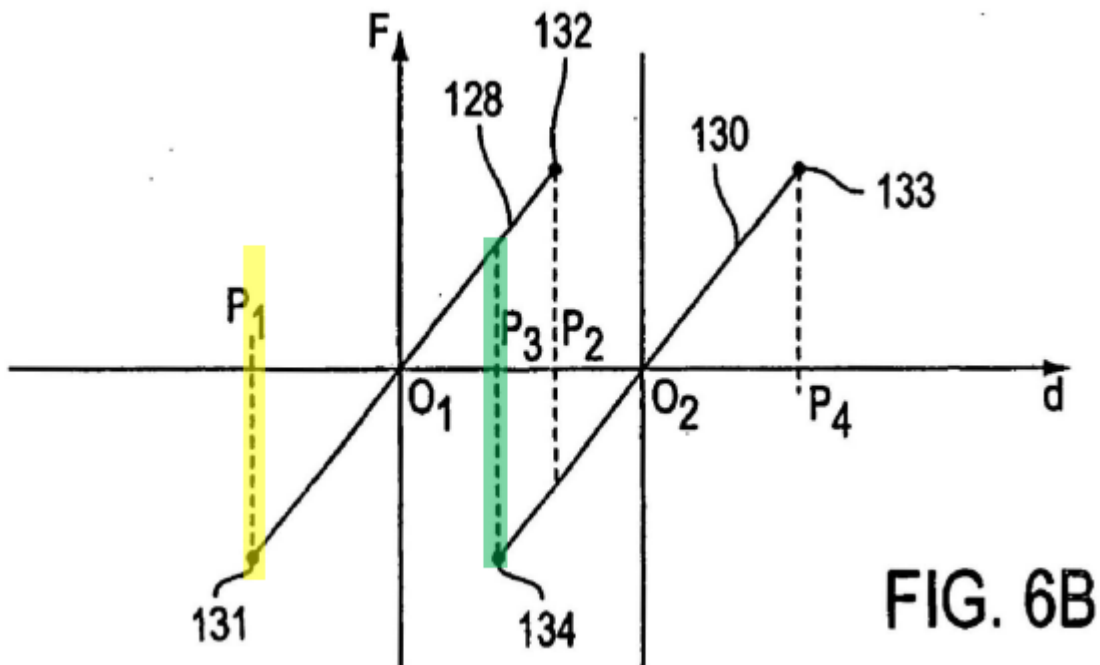
C. Claim [1B]: Levin Fails to Disclose “Rendering a Haptic Effect in Response to an Entry of the User Input Element to One or More Positions within the Boundary Range of Positions”

As explained in Section XI.B, Levin does not disclose a boundary range, and, therefore, it cannot disclose “rendering a haptic effect in response to an entry...to one or more positions within the boundary range of positions,” since that element includes a boundary range. But even if the overlap of the two detents were deemed to be a boundary range, Levin would still fail to disclose this element because Levin’s invention does not render a haptic effect “in response to” entry into the boundary range.

The challenged claims recite that the haptic effect is rendered “in response to” entering a position of the boundary range. *See* EX1001, cl. 1, 8, 15; EX2004, ¶120. The “in response to” claim term cannot be ignored and must be given effect. *Pause*

Tech., LLC v. TiVo, Inc., 419 F.3d 1326, 1334 (Fed. Cir. 2005) (“In construing claims, however, we must give each claim term the respect that it is due.”). As explained in Section IV.C, “in response to” should be construed to require causality between a first and second event, not mere coincidence. EX2004, ¶120. Petitioner virtually disregards the “in response to” claim term and only mentions it once in a sentence stating that Levin discloses that claim language. Pet., 78, citing Ward, ¶266; EX2004, ¶120.

Levin discloses an invention with one or more detents and rendering a haptic effect in response to moving a knob within the range of a detent, regardless of the overlap. EX1006, [0067]; EX2004, ¶121. In Figure 6B below, the position at which the force associated with the first detent begins is highlighted in yellow, and the position at which the force associated with the second detent begins is highlighted in green. *See* EX1006, [0070].



This diagram demonstrates that the invention renders a haptic effect for the first detent 132 starting at P₁, even though there are no prior detents overlapping with detent 132 at P₁. EX2004, ¶122. Hence, the haptic effect of detent 132 is rendered in response to entry into the range of the first detent, even in the absence of an overlap. EX2004, ¶122. The same would be true for the second detent, because it is identical to the first. *Id.* As explained by Levin, “[t]he two detent curves 128 and 130 are identical, thus allowing a single force command to create the multiple detents if desired.” EX1006, [0070]. Accordingly, the haptic effect of the second detent, as with the first detent, is rendered in response to entry into the range of the detent, regardless of the number of detents or whether they overlap. EX2004, ¶122.

Where detents overlap (e.g., between P2 and P3 in Fig. 6B), the combined haptic effects are in response to, for example, (1) travel through the first detent and (2) initial entry into the second detent and merely coincide with the overlap between the two detents. Nothing in the '907 patent suggests that its claims are directed to the combination of overlaid haptic effects. They are claims are instead directed to “rendering a haptic effect in response to an entry ... to one or more positions within the boundary range.” EX1001, cl. 1, 8, 15. The challenged claims Petitioner makes no attempt to show that Fig. 6B discloses that the haptic effect is rendered “in response to,” as opposed to coinciding with, the overlapped zone. *See* Pet., 74-75, citing Ward ¶¶ 261-263; EX2004, ¶122.

Other Levin embodiments further demonstrate that it fails to disclose “rendering a haptic effect in response to an entry...to one or more positions of the boundary ranges.” For example, Fig. 6A below, which Petitioner references but does not specifically discuss (Pet., 67, 79), shows a force profile with no overlapping detents which establishes that Levin's invention renders haptic effects in response to entering the range of each detent, even without overlap. EX2004, ¶123.

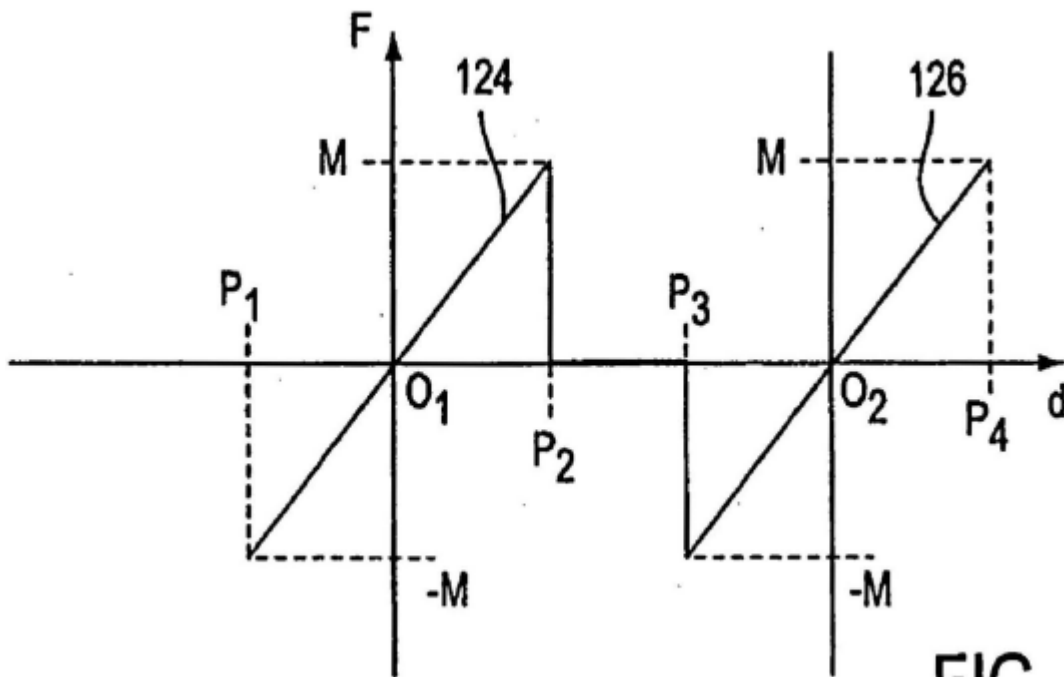


FIG. 6A

Figs. 6C and 6D, relied on by Petitioner and shown below, also demonstrate that the haptic effect is rendered when the user input control reaches the first point of the detent even when there is no overlap at all. EX2004, ¶¶124-126.

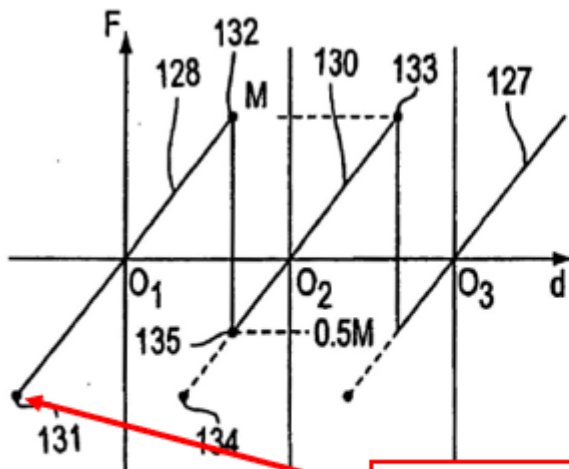


FIG. 6C

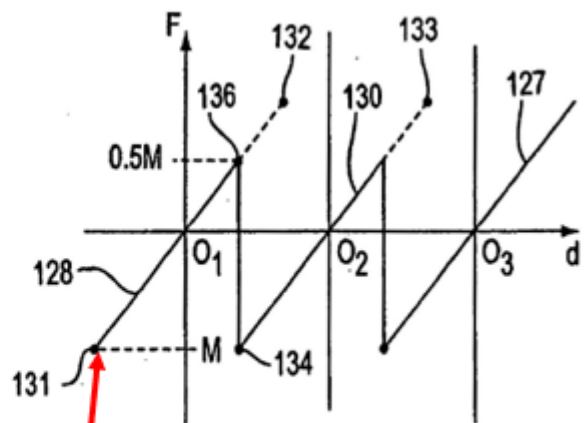


FIG. 6D

Haptic effect begins at start point 131 of first detent, despite no overlapped zone.

Regarding Fig. 6C, Petitioner contends that the force of 0.5M at point 135 “is of a ‘lesser magnitude’ than the force that would be output at the start of the second force curve [i.e., end point 134] if there was no overlapped zone” (Pet., 76, citing EX1006, [0073], Ward, ¶264), but this is a misreading of Levin. In the embodiment of Fig. 6C, Levin is trying “[t]o solve the problem of unintentionally moving past a successive detent.” EX1006, [0071]; EX2004, ¶124. To provide a solution, “the range of the second or successive detent is adjusted such that a lesser magnitude is preferably output at the beginning of the successive detent that would normally be output if the entire curve of the successive detent were used.” EX1006, [0071]. In other words, successive detents shown in Fig. 6C have a shorter range than the first detent 128. EX2004, ¶124. For example, the second detent 130 is not applied until the knob reaches end point 135, and the initial force of 0.5M would be rendered regardless of any overlap with the first detent 128. *Id.*

Petitioner argues that the embodiment of Fig. 6D discloses this element because it shows force changes in the alleged overlap. Pet., 78, citing Ward, ¶266. However, Petitioner fails to point to anything in Fig. 6D or Levin's specification teaching a separate boundary range. EX2004, ¶125. First, Levin discloses that “[t]he force output on the knob thus changes depending on the direction of the knob,” not a non-existent boundary range. EX1006, [0072]; EX2004, ¶125. Second, Levin describes force effects that begin or end at the endpoints of detent curves with no

mention of haptic effects being rendered “in response to” the overlap between detents. EX1006, [0072] (“In FIG. 6d, starting from origin O2, the force at the beginning of the range of detent curve 128 is at point 136 having a magnitude of 0.5M, which is one-half the magnitude M of the force at the other endpoint 131 of curve 128....”); EX1006, [0073]; EX2004, ¶125. The haptic effects might coincide with the overlap, but they are in response to reaching the end points of each detent.

In addition, Figs. 6C and 6D with their shortened detent ranges show overlaps of just a single point at the end points of neighboring detents, but a single point would not qualify as a “boundary range.” EX2004, ¶126. As stated in Section IV, the parties previously agreed that “range” in the context of the claims of the '907 patent, means “a sequence, series, or scale between limits.” Under this construction, a claimed range is required to have more than one point. EX2004, ¶126. Therefore, the embodiments depicted by Figs. 6C and 6D of Levin cannot disclose a “boundary range” or “rendering a haptic effect in response to entry of the user input element to one or more positions within the boundary range of positions.”

XII. CONCLUSION

Petitioner has failed to meet its burden as to anticipation and obviousness. Accordingly, challenged claims 1-20 of the '907 patent should be affirmed.

Patent Owner's Preliminary Response
IPR2024-00714 (U.S. Patent No. 10,627,907)

Respectfully Submitted,

Dated: January 21, 2025

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(Case No. IPR2024-00714)

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for all portions of the foregoing Patent Owner's Response totals 13,693 words per Microsoft Word, which complies with the requirement of 14,000 words allowed under 37 C.F.R. § 42.24(d).

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CERTIFICATE OF SERVICE

As authorized by Patent Owner's Mandatory Notice, I hereby certify that on January 21, 2025, a copy of this document has been served in its entirety by electronic mail on Petitioner's lead and backup counsel.

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