

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 B2

PATENT OWNER'S SUR-REPLY

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PATENT OWNER'S 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
2009	Final transcript of the January 10, 2025, deposition of Jean Renard Ward

I. INTRODUCTION

The challenged claims are patentable over the Petition's Grounds.

II. CLAIM CONSTRUCTION

A. **"defining position and range information"**

Patent Owner's construction—"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"—reflects the phrase's meaning in the context of the '907 patent. But even if the Board does not adopt this construction, predetermined "position and range information" loaded into memory is outside the scope of this term's plain meaning.

1. **The record evidence supports Patent Owner's proposed construction.**

- a) The claim language indicates Patent Owner's construction is correct.

"[D]efining position and range information" appears in each of challenged independent claims 1, 8, and 15. Claim 1 is directed to "[a] method *for controlling a user input element*¹ ... comprising defining the position and range information for the user input element" EX1001 13:56-64. This "defining" step must therefore be performed as part of a method of "*controlling* a user input element"—there must

¹ All emphases added unless otherwise noted.

be “control” by a user that in turn causes “the settings of a controller to adjust the claimed ranges.”

Similarly, claim 8 is directed to “[a] non-transitory computer readable storage medium storing a ... *program comprising instructions for: defining* the position and range information.” *Id.* 14:22-31. And claim 15 is directed to “[a] device comprising ... memory storing a ... *program comprising instructions for: defining*” *Id.* 14:61-15:4. That the “storage medium” and “device” contain instructions to perform the “defining” step makes clear these claims are not directed to “position and range information” preloaded into memory, but rather information “defin[ed]” by the claimed “program” based on input from a user of that device. POR 20.

In its Institution Decision, the Board found “nothing in these claims [8 and 15] requires that th[e claimed] program has any interaction with the user.” ID 10. But Patent Owner’s construction does not require that the user directly interacts with the “program.” Rather, the user takes action to adjust the claimed ranges, which action in turn provides inputs to the “program” so that the ranges are “defin[ed].” And claim 1 makes clear the “defining” step is part of a method of “controlling the user input element” (EX1001 13:56-57), such that a user must take a “controlling” action that in turn causes “the settings of a controller to adjust the claimed ranges.” Even if claims 8 and 15 do not explicitly contain the same limitation, claim 1’s disclosure is relevant because “[o]ther claims of the patent in question ... can also be valuable

sources of enlightenment as to the meaning of a claim term. Because claim terms are normally used consistently throughout the patent, the usage in one claim can often illuminate the meaning of the same term in other claims.” *Phillips v. AWH*, 415 F.3d 3103, 1314 (Fed. Cir. 2005) (citation omitted); see *Phil-Insul Corp. v. Airlite Plastics Co.*, 854 F.3d 1344, 1359 (Fed. Cir. 2017) (quoting *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001)) (“[A] claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent.”); POR 19-20.

The dependent claims further support Patent Owner’s construction. Claims 2, 9, and 16 provide an example of a type of user input that can be used in the “defining” step: the three ranges can be “calculated ***based on movement of the user input element*** from a maximum out position to a grounding position.” EX1001 14:1-5, 14:35-40, 15:8-12. These claims describe the user moving a portion of the controller (“the user input element”) in a certain way, such that the “defining” step is ***based on*** this user input.

On reply, Petitioner ignores the full context of the claim language, focusing largely on what impact verb tense has on claim interpretation. Reply 3-7. Regardless of what verb tense “defining” is written in, what matters is that the claim language supports Patent Owner’s construction.

- b) The specification further supports Patent Owner's construction.

Figure 4 and accompanying text describe “functionality 400,”² which performs the claimed “defining” step: “functionality 400 may *define a primary range and a secondary range of positions*” and “*a boundary range of positions* for the user input element.” EX1001 9:21-27. The specification further makes clear that, just as with the claims, “functionality 400 [is] *for controlling a user input element*” (*id.* 9:8-11), reinforcing that the claimed functionality itself must “defin[e]” the ranges in response to a user action. POR 21-22.

And like claims 2, 9, and 16, the specification describes how the ranges “may be calculated *based on the movement of the user input device* from the maximum out position to the grounding position.” EX1001 9:47-51; POR 21. Petitioner claims because “the passage never says the *user* moves the input device[, t]his passage is entirely consistent with the calculations being performed at the factory when the device is made or automatically (*e.g.*, by software) when the device is powered on.” Reply 9 (emphasis in original). Petitioner ignores the specification’s disclosure as a whole, which makes clear the claimed “user input element” “refer[s] to any interface

² Bolded numbering in the challenged patent and prior art, as well as Petitioner’s italicization of claim terms, removed throughout this brief for clarity.

device *manipulated by the user* to interact with the host computer 804.” EX1001 12:40-42; EX1003 ¶¶49, 86 (Petitioner’s expert agreeing with this interpretation of “user input element”); POR 21. Thus, where the specification discusses “movement of the user input device,” it is referring to movement of that *user* input device by the *user*.

Other portions of the specification describe how software (here, “[t]rigger engine 316”) “may modify the haptic data *based on user input data*, such as trigger data,” which “includes one or more parameters that indicate a position and/or range of one of more triggers of controller.” EX1001 7:1-6; POR 21. This passage indicates “trigger data,” a type of “user input data,” can be used in defining position and range information. That “trigger data [may] be collected by firmware” does not contradict Patent Owner’s construction (ID at 10); rather, what matters is that “trigger data,” which is based on user input, is what results in “defini[tion of] position and range information.” POR at 22.

Both the Board (ID 10) and Petitioner (Reply 7-8) point to the specification’s disclosure that “[i]n some embodiments, primary range 210 and secondary range 220A, 220B may be *fixed or variable*.” EX1001 5:29-31. The Board concluded “[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 invention.” ID 10. Not so. First, a “fixed” range is not necessarily “unalterable by a user.” The user could

initially define the ranges such that they do not change after that initial definition. POR 23; EX2003 ¶41. Second, as for a scenario in which the user could not alter ranges preloaded into memory by a manufacturer (Reply 8), that is simply an unclaimed embodiment that is outside the scope of the claims, and must be excluded from a proper claim construction. *MyMail v. Am. Online*, 476 F.3d 1372, 1376-78 (Fed. Cir. 2007) (affirming district court construction excluding unclaimed embodiments from the claim term's scope); *Roche Diagnostics v. Lifescan*, 660 F. App'x 932, 937-38 (Fed. Cir. 2016) (same); POR 22.

The Board should construe “defining position and range information” 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” because this construction is reflective of the meaning of the phrase in the context of the intrinsic record.

2. The plain and ordinary meaning of “defining...” excludes predetermined position and range information loaded into memory.

If the Board rejects Patent Owner's construction, it must nevertheless give “defining position and range information” its plain and ordinary meaning in light of its surrounding claim language. *Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 261-62 (Fed. Cir. 2022). Setting aside whether user input is required or not, the intrinsic record establishes that predetermined position and range information that is loaded into memory is excluded from the claim scope.

Both claims 8 and 15 expressly require a “program comprising *instructions for: defining* position and range information.” EX1001 14:22-3, 14:61-15:4. This language makes clear these claims are not directed to “position and range information” preloaded into memory and then *used* by the claimed “program,” but rather to “position and range information” “*defin[ed]*” by the “program” itself. POR 20. This is true whether or not the Board adopts Patent Owner’s construction requiring the defining step be “based on user input.” *Supra* §II.A.1.

The specification confirms it is the claimed “program” that “defin[es] position and range information.” Just like the “storage medium” of claim 8 and “device” of claim 15, functionality 400, which is used to define position and range information, “may be implemented by software stored in memory or other computer readable or tangible media, and executed by a processor.” EX1001 9:8-14. “In other embodiments, the functionality may be performed by hardware ..., or any combination of hardware and software.” *Id.* 9:14-20. The specification does not disclose any embodiment where this information is “defined” by loading predetermined information into memory.

Although claim 1 does not expressly contain the same “program” limitation as claims 8 and 15, the “defining” limitation should be understood in claim 1 in an analogous way. First, it is well-established that “[a] claim term should be construed consistently with its appearance in other places in the same claim or in other claims

of the same patent.” *Phil-Insul*, 854 F.3d at 1359. Second, as discussed immediately above, the '907 patent's disclosure does not contemplate loading predetermined position and range information into memory and then using that information in rendering haptic effects.

Put simply, the intrinsic record demonstrates claims 8 and 15 require “defining” be done by software on the “storage medium”/“device,” and claim 1 is slightly broader in that its “defining” can be done by software and/or hardware.

On reply, Petitioner argues “[n]othing in th[e] plain meaning limits when information can be defined. Anything pre-defined was actively defined at some point.” Reply at 7. Even if one were to accept Petitioner's premise, it is beside the point. The plain meaning of the claims require that, at some point in time, software and/or hardware perform the “defining position and range information” step.

B. “in response to”

The phrase “in response to” appears in each challenged independent claim: “rendering a haptic effect *in response to* entry of the user input element to one or more positions within the boundary range of positions.” EX1001 13:65-67, 14:32-34, 15:5-7. This language indicates there must be “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).” POR 13.

That “in response to” requires “a cause-and-effect relationship” is also supported by the extrinsic evidence. First, English language dictionary definitions support this interpretation. POR 27. Second, at deposition, Petitioner’s expert was asked: “So it’s your understanding that ‘in response to,’ as it is used in this limitation, would require some form of *causal relationship* between rendering a haptic effect and entry of the user input element to one or more positions within the boundary range of positions?” Response: “Yes, sir. That’s a fair statement.” EX2009 34:8-19. He also agreed “*a causal relationship*, as connoted by ‘in response to,’ require[s] *more than mere coincidence*” because “a person of skill in the art would understand it that way.” *Id.* 36:5-21; POR 27-28.

III. GROUNDS 1-2: THE PETITION’S GOLDENBERG GROUNDS FAIL

The Petition alleges Goldenberg anticipates or renders obvious claims 1-6, 8-13, and 15-19 (Ground 1), and Goldenberg/Cruz-Hernandez render obvious dependent claims 7, 14, and 20 (Ground 2). Pet. 7-32. The Petition fails to prove Goldenberg discloses or renders obvious numerous limitations of each challenged claim.

A. The Petition does not show Goldenberg discloses “defining position and range information.”

1. The Petition does not show Goldenberg discloses this limitation under Patent Owner's proposed construction.

Petitioner focuses its analysis of this claim limitation on Goldenberg's “jog shuttle force model” embodiment. *Id.* 10-12; Reply 17. Petitioner alleges Goldenberg's “jog shuttle force model” defines various points and ranges, but none is defined *based on user input*. Petitioner admits, as it must, that Goldenberg uses “*predetermined* ranges,” rather than ranges based on user input. Reply 18.

In its Institution Decision, the Board stated it “underst[oo]d Petitioner's argument to be that Goldenberg's system explicitly defines jog shuttle force model 390 as shown in Figure 8, including all of its position and range information.” ID 16. Even if Goldenberg's system can be viewed as “defining” the jog shuttle force model, that does not mean that it does so *based on user input*. Neither Petitioner nor the Board point to any disclosure in Goldenberg indicating that is the case because none exists.

2. The Petition fails to show Goldenberg discloses this limitation even if the Board does not adopt Patent Owner's construction.

The intrinsic record makes clear that predetermined position and range information that is loaded into memory is outside the scope of the challenged claims. *Supra* §II.A.2. Both claims 8 and 15 expressly require a claimed “program” that contains “*instructions for: defining* the position and range information.” EX1001

14:22-31, 14:61-15:4. But the Petition does not point to any such instructions, rather only alleging “Goldenberg’s force profiles ... are implemented by ‘microprocessor 202’ which ‘process[es] sensor signals to determine appropriate output actuator signals by following the instructions of a *‘force process’ that may be stored in local memory.*” Pet. 25 (quoting EX1016 ¶[0066]); *id.* 26 (“[F]orce profiles can be stored in a memory device”) (quoting EX1016 ¶[0073]) (first alteration in Petition); *id.* 27; POR 41-44.

That Goldenberg’s force models may be “stored computer instructions—that command an actuator to output force feedback” does not help Petitioner. Reply 17. Here, Petitioner is pointing to “stored computer instructions” that cause haptic effects to be output, rather than “stored computer instructions” that cause “position and range information” to be “defined.” Indeed, Petitioner admits Goldenberg uses “*predetermined* ranges” (*id.* 18), rather than “position and range information” “defined” according to instructions embodied in software and/or hardware that is part of Goldenberg’s system.

3. Petitioner’s new reply arguments fail.

Petitioner claims for the first time on reply “Goldenberg also permits a user to change from one force profile (*e.g.*, a standard detent profile) to another (*e.g.*, the jog-shuttle profile),” and such alleged disclosure meets this limitation. *Id.* 19 (citing EX1016 ¶¶[0012], [0108], [0115]-[0117]). This argument fails for two reasons.

First, none of the cited portions of Goldenberg discloses switching between force models, let alone using user input to do so. Paragraph 12 describes providing force feedback as a user scrolls through menu items. And paragraphs 108 and 115-117 describe the “detent model” and “jog shuttle model.”

Second, even assuming Goldenberg did disclose using user input to select a force model as Petitioner asserts, this selection would not “define position and range information” as required by the claims. That “definition” must define three ranges of positions. EX1001 13:58-64, 14:25-31, 14:65-15:4. Simply switching between force profiles does not *define* any positions or ranges.

The Petition fails to demonstrate Goldenberg discloses “defining position and range information.” The Petition also fails to establish Goldenberg renders this limitation obvious, as it presents no obviousness arguments concerning it. Pet. 10-12. Ground 1 thus fails.

B. The Petition does not point to “a primary range” and “a secondary range of positions” in Goldenberg.

The Petition relies exclusively on Goldenberg’s “jog shuttle force model” for alleged disclosure of both ranges, mapping the “primary range” to what is in blue, and the “secondary range” to what is in orange:

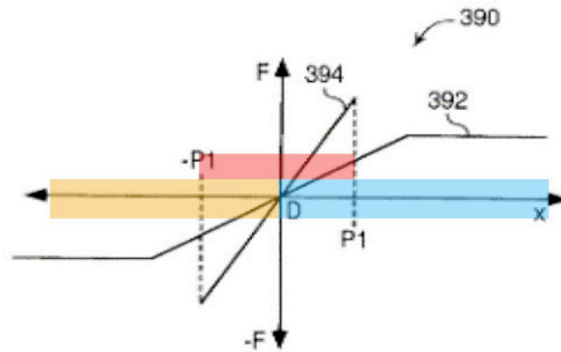


FIG. 8

Id. 12-14 (citing EX1016 Fig. 8, highlighting in Petition). In other words, the Petition maps the “primary range” to positive values right of the origin and the “secondary range” to negative values left of the origin. The Petition ignores Goldenberg’s disclosure by arbitrarily chopping up what is a single range into two to meet its needs.

Goldenberg states “[t]he first spring effect, shown as curve 392 [in Fig. 8], can be output over the entire range of the knob, and can have a medium amount of stiffness.” EX1016 ¶[0116]. Goldenberg’s “first spring effect” spans the entire x-axis both left and right of the origin—it is a *single range* that spans “over the entire range of the knob” because there is a *single force effect* that spans this entire range. EX2004 ¶86. A more apt depiction of the range of the “first spring effect” is shown below, in yellow:

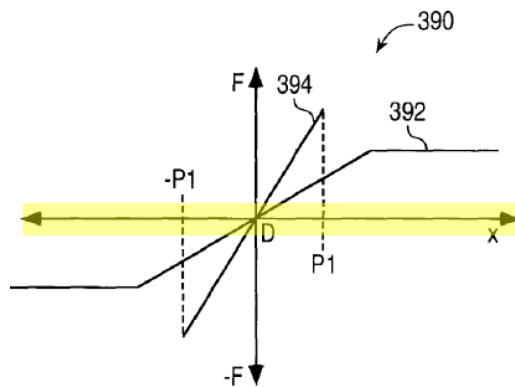


FIG. 8

POR 48 (citing EX1006 Fig. 8, highlighting in POR).

Petitioner claims the range of Goldenberg's "first spring effect" can be split into two ranges because values right of the origin represent "clockwise rotation," which "corresponds to moving a video or audio forward, which is a primary function of a jog shuttle" and values left of the origin represent "counterclockwise rotation," which "corresponds to moving video or audio backwards, which is a secondary function (i.e., re-winding) of a jog shuttle." Pet. 12-14; Reply 21 (citing EX1016 ¶¶[0115]-[0117]).

Goldenberg's disclosure does not support Petitioner's "re-winding/fast-forwarding" and "clockwise/counterclockwise" theories. First, Goldenberg does not mention "re-winding/fast-forwarding," and provides "scrolling through a list or controlling a function or value" as the sole exemplary uses of the jog shuttle model. EX1016 ¶¶[0115]-[0117]. Second, Goldenberg does not disclose that values right of

the origin correspond with clockwise rotation, and values left of the origin correspond with counterclockwise rotation. Critically, nothing in Goldenberg states or implies that when the user switches rotational direction, the knob is reset to the origin point, as would be required by Petitioner's theory. And Petitioner's expert admits there is indeed no such "reset" to origin. Rather, he explains, consistent with Figure 8's depiction of the jog shuttle force profile, after there has been clockwise rotation such that the knob is right of the origin, if "the jog shuttle is turned back counterclockwise, the advancement of the video frames slows down until the jog shuttle returns to the origin point" after which point "the frames will begin to rewind." EX1003 ¶118. Put simply, there can be both clockwise and counterclockwise rotation of Goldenberg's knob both to the left and the right of the origin.

Petitioner claims an Office Action supports that "any range can 'constitute first and second ranges.'" Pet. 13 (quoting EX1002 100). Even if the Examiner said what Petitioner claims, the statement should be afforded little weight. The Federal Circuit has cautioned against "rely[ing] too heavily on examiner statements over those of the patentee" when relying on the file history to understand claim scope. *3M v. Tredegar*, 725 F.3d 1315, 1332 (Fed. Cir. 2004). The Examiner's statements are, "at most, representative of how one of skill in the art would understand the term" and it is improper to assign meaning to claim terms "based on isolated statements of one

of skill in the art.” *Id.* This is particularly true where, as here, the statement (at least in the way Petitioner interprets it) would conflict with the parties’ agreed-upon claim construction of “range.” *Little Giant Ladder Sys. v. Trucam Indus.*, 2024 U.S. Dist. LEXIS 55881, at *35-36 (D. Minn. 2024) (“[T]he examiner’s comments are entitled to limited weight” because his “interpretation ignores and conflicts with language that the parties agreed should be included in the proper construction”).

The sole case Petitioner cites on reply does not support affording heavy weight to Examiner statements, either here or as a matter of course. Reply 21. In *Ventana Medical v. Biogenex Labs*, the Examiner stated the claims were not limited to a specific embodiment. 473 F.3d 1173, 1182-83 (Fed. Cir. 2006). In response to a rejection, in apparent agreement, the Applicant did not rely on that specific embodiment in distinguishing the art. *Id.* 1183. This is distinguishable from the situation here, where Petitioner is relying on statements made by the Examiner in a withdrawn Office Action that Patent Owner never responded to. POR 46-47.

The Petition fails to demonstrate Goldenberg discloses the claimed “primary” and “secondary” ranges. The Petition also fails to establish Goldenberg renders obvious these ranges, as it presents no obviousness arguments concerning them. Pet. 12-14. Ground 1 fails for this additional reason.

C. The Petition does not establish Goldenberg discloses the “boundary range of positions.”

As with the “primary” and “secondary” ranges, the Petition relies exclusively on Goldenberg’s “jog shuttle force model” for alleged disclosure of the “boundary range,” mapping it to what is in red:

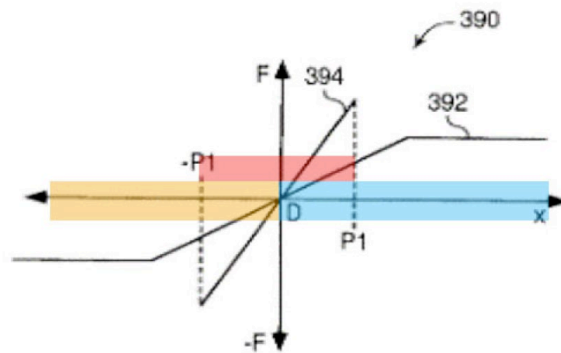


FIG. 8

Id. 14-16 (citing EX1016 Fig. 8, highlighting in Petition). This red portion corresponds to Goldenberg’s “second spring,” which 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]. The Petition alleges the range of the “second spring” is the claimed “boundary range” because it “*partially* overlaps” each of the primary and secondary ranges. Pet. 16.

As an initial matter, Petitioner’s theory is internally inconsistent—Petitioner splits up Goldenberg’s “first spring effect” into two ranges left and right of the origin (*supra* §III.B), but does not apply the same logic to the “second spring effect.” This

is because if it would have, it would be unable to prove invalidity in view of Goldenberg. The portion of the red “boundary range” to the left of the origin would not have any overlap with the Petition’s blue “primary range,” and the portion of the red “boundary range” to the right of the origin would not have any overlap with the Petition’s orange “secondary range”—neither portion of the split-up “boundary range” would “partially overlap” with each of the mapped “primary” and “secondary” ranges, as required by all challenged claims. POR 52-54.

Even more critically, this theory relies on the Petition’s erroneous mapping of Goldenberg’s “first spring effect” as multiple ranges. *Supra* §III.B. Goldenberg’s “first spring effect” is in yellow, and Goldenberg’s “second spring effect” (what the Petition maps to the claimed “boundary range”) is in orange:

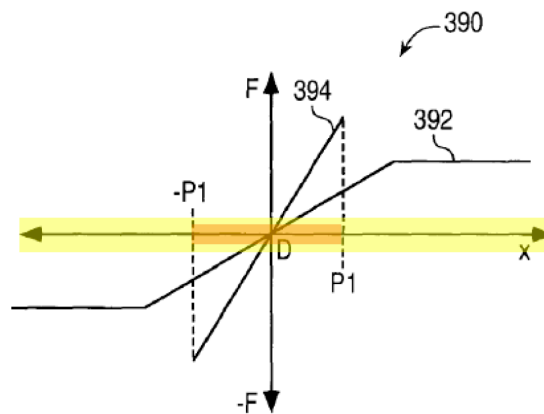


FIG. 8

POR 51 (citing EX1006 Fig. 8, highlighting in POR). Whether the range of the “first spring effect” is considered the “primary” or “secondary” range, there is complete

overlap of the “boundary range” with the range of the “first spring effect.” EX2004

¶95. At best, the Petition’s theory illustrates a “boundary range” that partially overlaps with one, but not both, of the “primary” and “secondary” ranges. POR 52.

On reply, Petitioner claims Patent Owner “alleges that Goldenberg’s range of positions corresponding to the second spring effect cannot be a ‘boundary range’ because that range ... overlaps entirely with *the combination* of the primary ... and secondary ... ranges.” Reply 21-22 (citing POR 49). This is not and has never been Patent Owner’s argument. Rather, the claims require there be *partial* overlap with *each* of the primary and secondary ranges. Nothing in the claim language or intrinsic record prohibits the boundary range from overlapping entirely with the combination of those ranges.

The Petition fails to demonstrate Goldenberg discloses the claimed “boundary range.” The Petition also fails to establish Goldenberg renders obvious this limitation, as it presents no obviousness theories concerning it. Pet. 14-16. Ground 1 thus fails for this additional reason.

Because the Petition does not present any additional argument in Ground 2 concerning the independent claims, Ground 2 fails for the same reasons as Ground 1.

IV. GROUNDS 3-5: THE PETITION’S ROSENBERG GROUNDS FAIL

The Petition alleges Rosenberg anticipates or renders obvious claims 1-4, 6, 8-

11, 13, 15-17, and 19 (Ground 3), Rosenberg/Roberts render obvious dependent claims 5, 12, and 18 (Ground 4), and Rosenberg/Roberts/Cruz-Hernandez render obvious dependent claims 7, 14, and 20. Pet. 32-65. But Rosenberg's force profiles do not meet the "defining ..." limitation for the same reasons Goldenberg's jog shuttle model does not.

A. The Petition does not show Rosenberg discloses this limitation under Patent Owner's proposed construction.

Petitioner relies exclusively on two of Rosenberg's embodiments for this limitation: a restoring force command with a deadband region (Fig. 10(c)) and without a deadband region (Fig. 10(a)). *Id.* 36-40; Reply 14-16. Petitioner alleges these restoring force commands define various points and ranges, but none of those points or ranges is defined *based on user input* of any kind. Petitioner admits, as it must, that Rosenberg uses "pre-defined sets of position and range information," rather than information based on user input. Reply 16.

B. The Petition fails to show Rosenberg discloses this limitation even if the Board does not adopt Patent Owner's construction.

As with Goldenberg, Petitioner admits Rosenberg's "position and range information" is pre-defined (*id.*), rather than defined according to instructions embodied in software and/or hardware that is part of Rosenberg's system, as required by all challenged claims (*supra* §II.A.2). The Petition points to "the set of

software instructions executed by Rosenberg's microprocessor to implement its force profiles," and describes how Rosenberg's "force profiles" are "stored in memory." Pet. 50 (quoting EX1017 ¶[0178]); *id.* ("assigned force ranges, magnitudes, and models can also be stored in memory") (quoting EX1017 ¶[0280]); *id.* 52; POR at 55-58.

But that "set of software instructions" does not "define" Rosenberg's force profiles. That "Rosenberg stores force profiles in memory and uses the profiles to command an actuator to output force-feedback effects" does not help Petitioner. Reply 14. Here, Petitioner is pointing to software instructions that cause haptic effects to be output, rather than instructions that cause "position and range information" to be "defined." As Petitioner admits, Rosenberg's system merely "implements" the predetermined force profiles stored in memory. Pet. 50.

C. Petitioner's new reply arguments fail.

Petitioner claims for the first time on reply "Rosenberg's system switches from utilizing one profile to a different profile based on how the user is interacting with the system," and that such alleged disclosure meets this limitation. Reply 14 (citing EX1017 ¶¶[0103], [0121], [0166]). This argument fails for the same two reasons that Petitioner's analogous argument concerning Goldenberg fails. *Supra* §III.A.

First, none of the cited portions of Rosenberg discloses switching between force profiles, let alone using user input to do so. Paragraph 103 describes

“previously calculated” force profiles. Paragraph 121 describes determining what type of force should be output “based on the object’s current position, velocity, and/or acceleration” because “[t]he user’s manipulation of object 34 may have caused a new type of force to be required.” Paragraph 121 is thus explaining how Rosenberg’s system uses user input to know what force to apply, not that it can switch between force profiles based on user input. And paragraph 166 describes the restoring force profile with a deadband, making no indication that Rosenberg’s system can switch between the restoring force profiles with and without a deadband, based on user input or otherwise.

Second, even assuming Rosenberg did disclose using user input to select a force model as Petitioner asserts, this selection would not “define position and range information” as required by the challenged claims. The claimed “definition” must define three ranges of positions. EX1001 13:58-64, 14:25-31, 14:65-15:4. Simply switching between force profiles does not *define* any positions or ranges.

The Petition fails to demonstrate Rosenberg discloses “defining position and range information.” The Petition also fails to establish Rosenberg renders obvious this limitation, as it presents no obviousness theories concerning it. Pet. 36-40. Ground 3 thus fails.

Because the Petition does not present any additional argument in Grounds 4 or 5 concerning the independent claims, Grounds 4 and 5 fails for the same reasons as

Ground 3.

V. GROUND 6: THE PETITION'S LEVIN GROUND FAILS

The Petition alleges Levin anticipates or renders obvious claims 1, 3-4, 6, 8, 10-11, 13, 15, 17, and 19. Pet. 66-82. But the Petition fails to prove Levin discloses or renders obvious numerous limitations of each challenged claim.

A. The Petition does not show Levin discloses “defining position and range information.”

Petitioner relies exclusively on Levin's “detent force profiles” for this limitation. *Id.* 69-70; Reply 25-26.

Levin's force profiles are not based on user input, as required by Patent Owner's construction of “defining positions and range information.” *Supra* §II.A.1; POR 60-61. As with Goldenberg and Rosenberg, Petitioner admits Levin's force profiles are “pre-defined force effects stored in a memory.” Pet. 69; POR 37.

Neither are Levin's force profiles “defined” according to instructions embodied in software and/or hardware that is part of Levin's system, as required by the plain meaning of all challenged claims. *Supra* §II.A.2; POR at 49-50. The Petition points to “the set of software instructions executed by Levin's microprocessor to implement Levin's detent force profiles.” Pet. at 81-82; POR at 37. But as with Goldenberg and Rosenberg, Levin's microprocessor merely “implements” Levin's force profiles that are stored in memory; it does not define

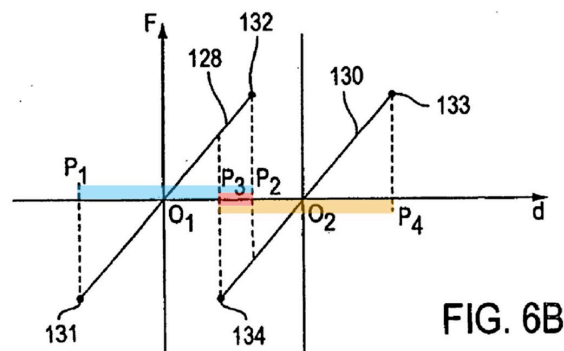
“position and range information” for them. POR at 50.

On reply, Petitioner does not even attempt to explain how Levin's disclosure anticipates or renders obvious this limitation. Reply 27.

The Petition fails to demonstrate Levin discloses “defining position and range information.” The Petition also fails to establish Levin renders obvious this limitation, as it presents no obviousness theories concerning it. Pet. 69-70.

B. The Petition does not establish Levin discloses “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 required by all challenged claims.

Petitioner relies exclusively on Levin's “detent force profiles” (*id.* 70-74; Reply 27-28), mapping the “primary range” to detent 128 (from positions 131 to 132, blue), the “secondary range” to second detent 130 (from positions 133 to 134, orange), and the “boundary range” to the overlap of those two detents (red, Levin's “overlapped zone”):



Pet. 74 (citing EX1006 Fig. 6B, highlighting in Petition). For the “rendering a haptic

effect” limitation, the Petition alleges whatever “haptic effect” happens to occur in this red range meets the “*in response to* an entry of the user input element to one or more positions within the boundary range of positions” portion of the limitation, whether there is a cause-and-effect relationship or not. *Id.* 74-75. But as explained above, and as Petitioner’s expert admitted, the “haptic effect” that is “render[ed]” must be *caused by* “entry of the user input element to one or more positions within the boundary range of positions.” *Supra* §II.C.

Levin explains:

To solve the problem of unintentionally moving past a successive detent, 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 than would normally be output if the entire curve of the successive detent were used.

EX1006 ¶[0071]. As an example of Levin’s solution, the Petition discusses Figure 6C, explaining that moving from left to right, force feedback increases throughout the first detent 128, until the knob reaches position 132:

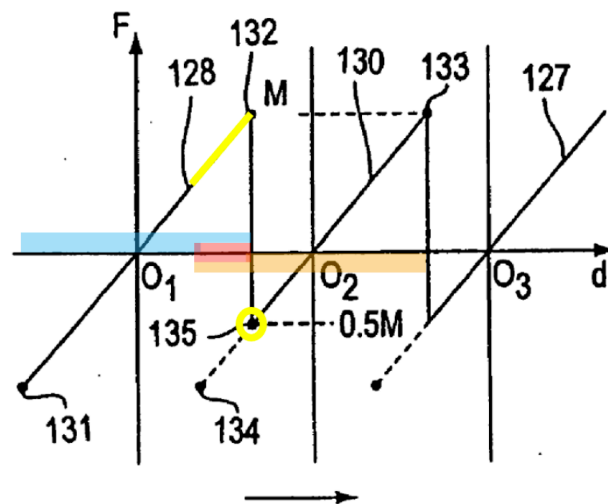


FIG. 6C

Pet. 76-77 (citing EX1006 Fig. 6C, highlighting and annotations in Petition); EX1006 ¶[0071]. Position 132 on the first detent has the same x-value as position 135 on the second detent; once this position is reached, there is a force of lesser magnitude output at the start of the second detent than if the red “overlapped zone” did not exist. Pet. 66-67. This is because the range of the second detent is adjusted such that the second detent begins at position 135 rather than 134. The Petition contains a similar description of Figure 6D in the context of right to left movement. *Id.* at 77-78; EX1006 ¶[0072]; POR 59-60.

Petitioner claims Levin meets this limitation because Levin “renders a gradual increase [in] force feedback as the knob moves (clockwise or counterclockwise) through initial positions of the boundary range, and then renders force feedback of a lesser magnitude and in the opposition direction when the knob moves to an end

position of the boundary range.” Pet. 78; Reply 30. Neither the “gradual increase in force feedback” nor “force feedback of lesser magnitude” is rendered *in response to* entry into a position within what the Petition maps to as “the boundary range.”

First, using Figure 6C for illustrative purposes, the “gradual increase in force feedback” that occurs between positions 132 and 134 is not *in response to* entry into any position in Levin’s “overlapped zone.” Rather, the “gradual increase” occurs because the knob continues moving right along first detent 128. The only purpose of Levin’s “overlapped zone” is to cause the second detent to begin at position 135 rather than 134, not to cause any haptic effect in response to entry into that overlapped zone.

Second, the change in force feedback that occurs at position 132/135 is likewise not rendered “in response to” entry into a position in the “boundary range.” Rather, the “force feedback of lesser magnitude” rendered at position 132/135 is in response to reaching the beginning of the adjusted range of the second detent, which the Petition maps to “secondary range,” not the “boundary range.”

The Petition fails to demonstrate Levin discloses “rendering a haptic effect in response to entry of the user input element to one or more positions within the boundary range of positions.” The Petition also fails to establish Levin renders obvious this limitation, as it presents no obviousness theories concerning it. Pet. 74-78.

VI. CONCLUSION

Because the Petition failed to meet its burden of demonstrating that any challenged claim is anticipated or obvious over the cited art, the Board should find all challenged claims not unpatentable.

Respectfully Submitted,

Dated: June 10, 2025

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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 5,581 words per Microsoft Word, which complies with the requirement of 5,600 words allowed under 37 C.F.R. § 42.24(c)(4).

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CERTIFICATE OF SERVICE

As authorized by Petitioner's Mandatory Notice, I hereby certify that on June 10, 2025, a copy of this document has been served in its entirety by electronic mail on Petitioner's Lead and Back-up Counsel at the following email addresses:

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