



PATENT OWNER'S DEMONSTRATIVES

JULY 29, 2025 ORAL ARGUMENT

VALVE CORP., PETITIONER,
V.
IMMERSION CORP., PATENT OWNER

CASE No. IPR2024-00714 | US PATENT 10,627,907

Patent Owner's Demonstrative Exhibit - Not Evidence ²

Valve Corp. v. Immersion Corp.

IPR2024-00714

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Page 2 of 86

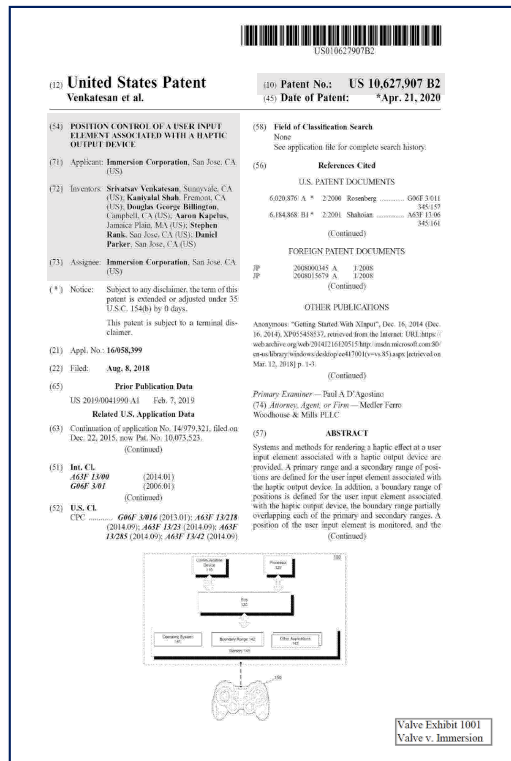
Roadmap

- Background of the Invention
- Claim Construction and Plain Meaning of “defining position and range information”
- The Petition’s Grounds Fail
 - Rosenberg (Grounds 3-5)
 - Goldenberg (Grounds 1-2)
 - Levin (Ground 6), including plain meaning construction of “in response to”

Background of the Invention

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴

The '907 Patent



(10) **Patent No.:** **US 10,627,907 B2**

(54) **POSITION CONTROL OF A USER INPUT ELEMENT ASSOCIATED WITH A HAPTIC OUTPUT DEVICE**

(71) Applicant: **Immersion Corporation**, San Jose, CA
(US)

(72) Inventors: **Srivatsav Venkatesan**, Sunnyvale, CA (US); **Kaniyalal Shah**, Fremont, CA (US); **Douglas George Billington**, Campbell, CA (US); **Aaron Kapelus**, Jamaica Plain, MA (US); **Stephen Rank**, San Jose, CA (US); **Daniel Parker**, San Jose, CA (US)

(73) Assignee: **Immersion Corporation**, San Jose, CA
(US)

Ex. 1001 at face page

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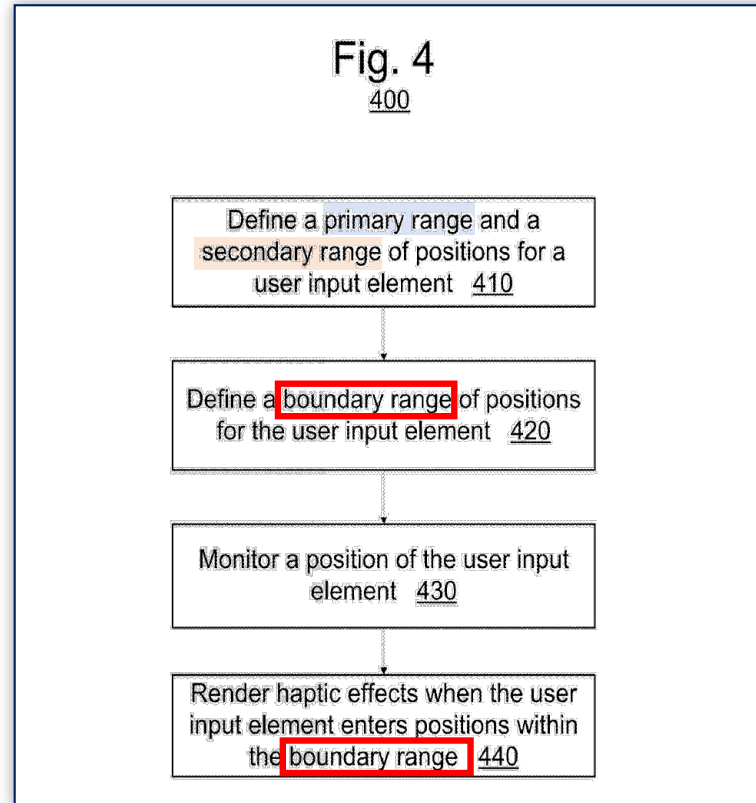
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 5 of 86

The '907 Patent: Haptic Effect in Boundary Range



Ex. 1001 at Fig. 4; POR at 4-8

Patent Owner's Demonstrative Exhibit - Not Evidence

6

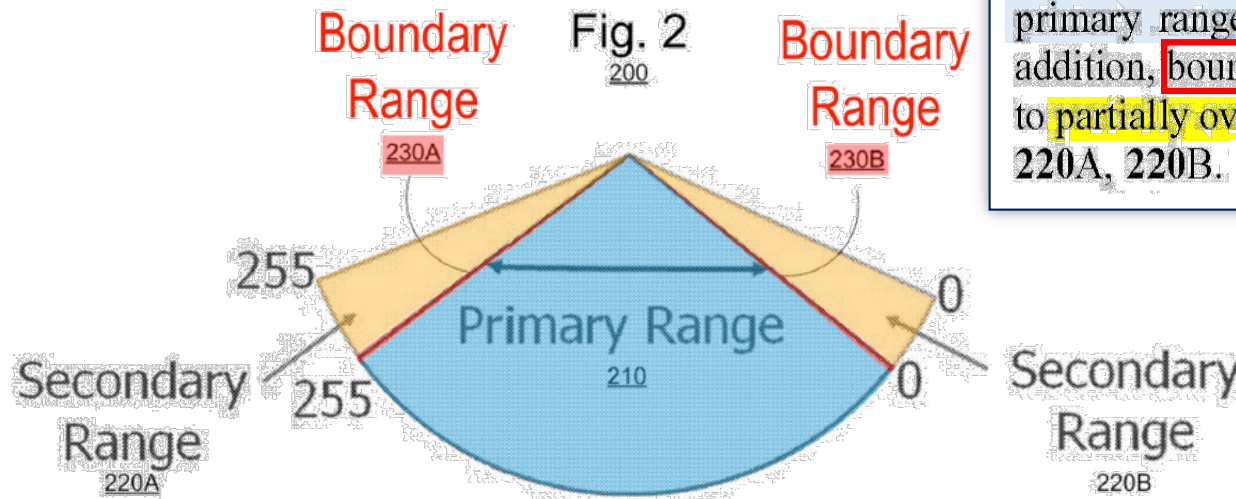
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 6 of 86

The '907 Patent: Haptic Effect in Boundary Range



As shown in FIG. 2, range of motion 200 may include a primary range 210 and secondary ranges 220A, 220B. In addition, boundary ranges 230A, 230B may be defined so as to partially overlap primary range 210 and secondary ranges 220A, 220B.

Ex. 1001 at 5:19-23, Fig. 2; Pet. at 4; POR at 4-8

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 7 of 86

The '907 Patent: Claim 1 – A Method of Controlling a User Input Element

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

Ex. 1001 at claim 1

Patent Owner's Demonstrative Exhibit - Not Evidence

8

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 8 of 86

The '907 Patent: Claim 1 – Defining Position and Range Information

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

Ex. 1001 at claim 1

Patent Owner's Demonstrative Exhibit - Not Evidence

9

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 9 of 86

The '907 Patent: Claim 1 – Boundary Range “Partially Overlaps”

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

Ex. 1001 at claim 1

Patent Owner's Demonstrative Exhibit - Not Evidence 10

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 10 of 86

The '907 Patent: Claim 1 – Rendering a Haptic Effect in Response to . . .

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

Ex. 1001 at claim 1

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 11 of 86

The '907 Patent: Claim 8

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for:
defining position and range information for a user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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
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.

Ex. 1001 at claim 8

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 12 of 86

The '907 Patent: Claim 15

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for:
defining position and range information for a user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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
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.

Ex. 1001 at claim 15

Patent Owner's Demonstrative Exhibit - Not Evidence 13

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 13 of 86

Claim Construction:

“defining position and range information”

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 14 of 86

Patent Owner's Construction of “defining position and range information”

“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”

Petitioner offers no competing construction

“defining position and range information”: Claim Language

1. A method for controlling a user input element associated with a haptic output device, the method comprising:
defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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
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.

Ex. 1001 at claim 1; POR at 20-23; Sur-Reply at 1-3

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 16 of 86

“defining position and range information”: Claim Language

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for: defining position and range information for a user input element associated with the haptic output device,

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for: defining position and range information for a user input element associated with the haptic output device,

Ex. 1001 at claims 8 and 15; POR at 20; Sur-Reply at 2-3

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 17 of 86

“defining position and range information”: Claim Language

2. The method of claim 1, wherein one of the primary range of positions, the secondary range of positions, and the boundary range of positions is calculated based on a movement of the user input element from a maximum out position to a grounding position.

Ex. 1001 at claim 2, 9, 16; POR at 21; Sur-Reply at 3

Patent Owner's Demonstrative Exhibit - Not Evidence 18

Valve Corp. v. Immersion Corp.

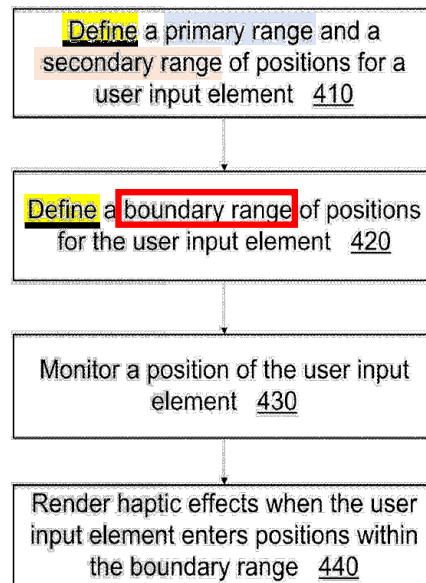
IPR2024-00714

Immersion Exhibit 2010

Page 18 of 86

“defining position and range information”: Specification

Fig. 4
400



At the outset, functionality 400 may **define** a **primary range** and a **secondary range** of positions for the user input element associated with the haptic output device, at 410.

Next, at 420, functionality 400 may **define** a **boundary range** of positions for the user input element associated with the haptic output device, the boundary range partially overlapping each of the primary and secondary ranges.

Ex. 1001 at 9:21-27, Fig. 4; POR at 21-22; Sur-Reply at 4

Patent Owner's Demonstrative Exhibit - Not Evidence 19

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 19 of 86

“defining position and range information”: Specification

Fig. 4
400

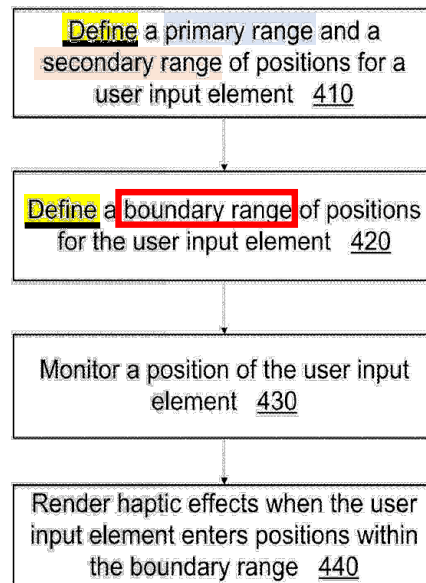


FIG. 4 illustrates a flow diagram of functionality 400 for controlling a user input element

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element

Ex. 1001 at 9:8-11, Fig. 4, claim 1; POR at 21-22; Sur-Reply at 4

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 20 of 86

“defining position and range information”: Specification

For example, primary range, secondary range(s), and boundary range(s) may be initially set. In some instances, these values may be calculated based on the movement of the user input device from the maximum out position to the grounding position.

Ex. 1001 at 9:47-51; POR at 21; Sur-Reply at 4-5

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 21 of 86

“defining position and range information”: Specification

For example, primary range, secondary range(s), and boundary range(s) may be initially set. In some instances, these values may be calculated based on the movement of the user input device from the maximum out position to the grounding position.

A user input element may refer to any interface device manipulated by the user to interact with host computer 804. Example user input elements include analog or digital joy stick 810, button 814, trigger 818, and the like.

Petitioner's Expert on “user input element”



Jean Renard Ward

49. A POSITA would have understood that user input devices broadly include a class of electro-mechanical devices that permit a user of the device to provide some input to an associated system.

85. A “user input element” is a portion of an electronic device that “a user interacts with” to cause an action associated with the device. EX1001, 1:34-35.

Ex. 1003 ¶¶49, 85; see also POR at 21; Sur-Reply at 4-5

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 23 of 86

“defining position and range information”: Specification

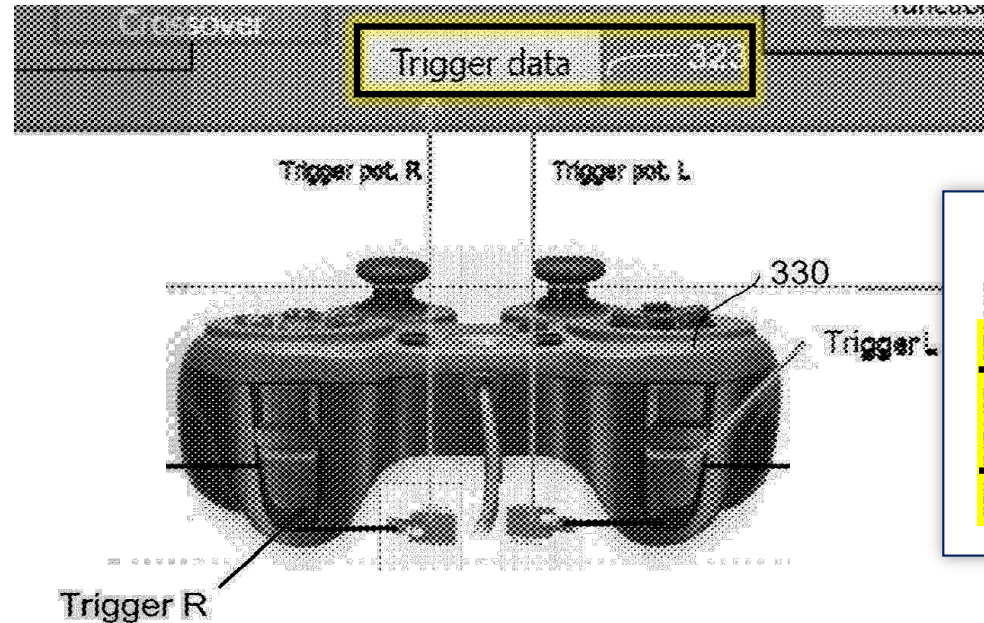


Fig. 3
300

Trigger 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. Trigger data 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).

Ex. 1001 at 7:1-6, Fig. 3; POR at 21; Sur-Reply at 5

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 24 of 86

“defining position and range information”: Specification

Trials@uspto.gov
571-272-7822

Paper: 9
Date: October 28, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VALVE CORPORATION,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

IPR2024-00714
Patent 10,627,907 B2

Before WILLIAM V. SAINDON, MICHAEL R. ZECHER, and
CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

As to Patent Owner’s argument that *defining* would exclude something that is pre-defined, Patent Owner provides no evidence of this in the ’907 patent, its prosecution history, or extrinsic evidence. We find the proposition that something “pre-defined” is not “defined” illogical, and we see nothing in the challenged claims explicitly limiting *when* the recited ranges of positions must be defined. The ranges evidently could, for example, be defined in firmware.

ID at 10-11; POR at 22; Sur-Reply at 5

Patent Owner's Demonstrative Exhibit - Not Evidence ²⁵

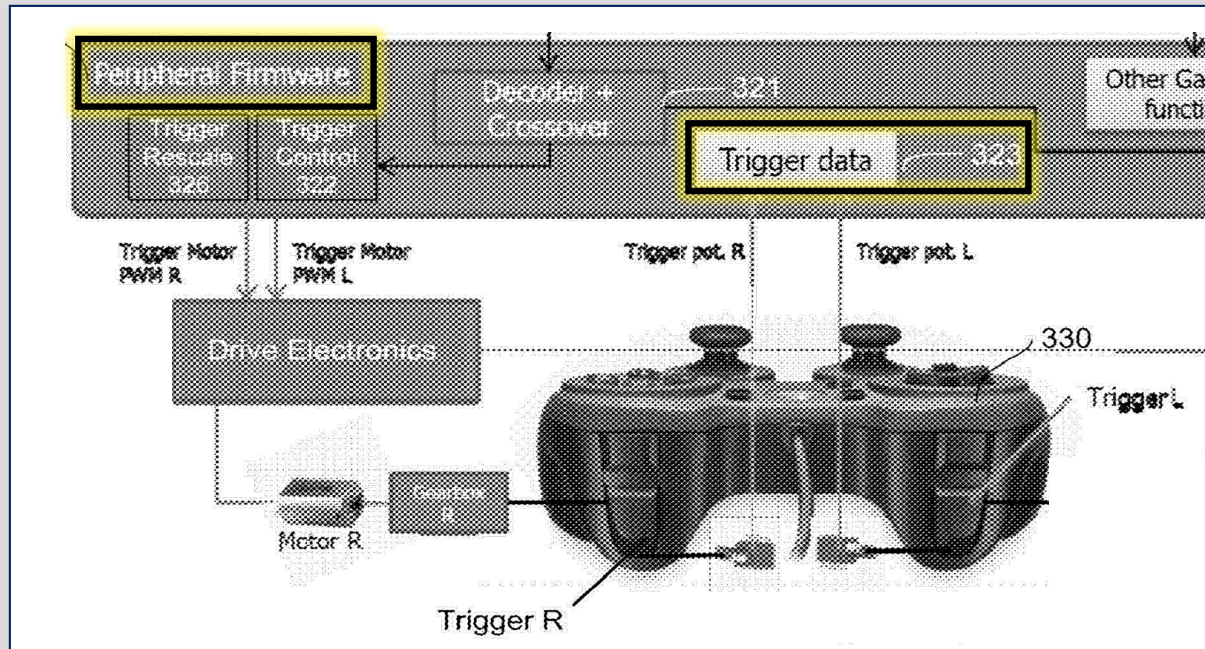
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 25 of 86

“defining position and range information”: Specification



“program containing instructions for: defining”

ranges of positions must be defined. The ranges evidently could, for example, be defined in firmware.

ID at 10-11; Ex. 1001 at Fig. 3; POR at 22; Sur-Reply at 5

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 26 of 86

“defining position and range information”: Specification

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Further, the '907 patent discloses that the primary and secondary ranges at least “may be fixed or variable.” Ex. 1001, 5:29–30. This 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.

unclaimed embodiment

ID at 10; POR at 22-23; Sur-Reply at 5-6

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 27 of 86

Patent Owner's Construction of “defining position and range information”

“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”

Petitioner offers no competing construction

Plain Meaning of “defining position and range information”

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.

Plain Meaning of “defining position and range information”

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for: defining position and range information for a user input element associated with the haptic output device,

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for: defining position and range information for a user input element associated with the haptic output device,

Plain Meaning of “defining position and range information”

FIG. 4 illustrates a flow diagram of functionality 400 for controlling a user input element associated with a haptic output device according to an example embodiment of the present invention. In some instances, the functionality of the flow diagram of FIG. 4 (and FIG. 5 below) may be implemented by software stored in memory or other computer readable or tangible media, and executed by a processor. In other embodiments, the functionality may be performed by hardware (e.g., through the use of an application specific integrated circuit (“ASIC”), a programmable gate array (“PGA”), a field programmable gate array (“FPGA”) etc.), or any combination of hardware and software.

**“program containing
instructions for: defining”
(claims 8 and 15)**

**all challenged claims
(including claim 1)**

Plain Meaning of “defining position and range information”

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571-272-7822

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“defining” performed by software and/or hardware at some point in time

ID at 10-11; POR at 22; Reply at 7; Sur-Reply at 5-8

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 32 of 86

Plain Meaning of “defining position and range information”

Relevant to all of the Petition’s Grounds

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.

No Anticipation or Obviousness

Patent Owner's Demonstrative Exhibit - Not Evidence ³⁴

Summary of the Petition's Grounds

- **Grounds 3-5: Rosenberg does not render disclose/render obvious “defining position and range information”** (POR at 55-59; Sur-Reply at 19-23)
- **Grounds 1-2: Goldenberg does not disclose/render obvious numerous claim limitations** (POR at 38-55; Sur-Reply at 9-19)
- **Ground 6: Levin does not disclose/render obvious numerous claim limitations** (POR at 59-71; Sur-Reply at 23-27)

**No Anticipation or Obviousness:
Rosenberg (Ground 3)**

**No Obviousness:
Rosenberg + Roberts (Ground 4)**

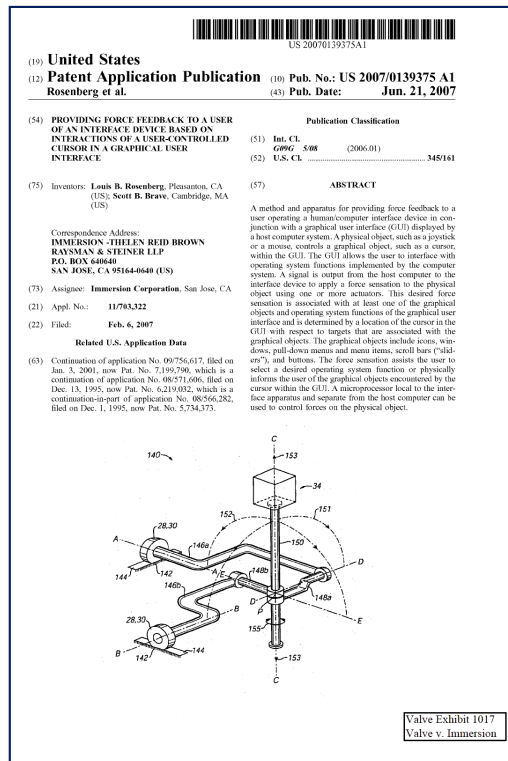
**No Obviousness:
Rosenberg + Roberts + Cruz-Hernandez
(Ground 5)**

Rosenberg: Summary

Rosenberg does not disclose or render obvious:

“defining position and range information”

Rosenberg: Restoring Force Profiles



[0165] A restoring force applied to user object 34 always points back towards an origin position O (or “neutral position”) of the user object along a degree of freedom. For example, the origin position for a joystick can be the joystick’s center position, as shown in FIGS. 7 and 8. The magnitude of restoring force, specified by the magnitude command parameter, generally remains constant in either direction for the range 316 along the degree of freedom of the user object. . . .

As the object is moved toward the origin position O, the applied force is constant until the user object is moved within a localized region R about the origin position. When the user object is in the localized region R, the applied force rapidly drops to zero or a small value. Thus, the restoring force profile provides a constant “restoring sensation” that forces the user object back to the origin position when the object is in range 316. This restoring forces then diminishes or vanishes as the object nears and reaches the origin position.

Ex. 1017 ¶[0165]; Pet. at 35-46; Reply at 14-16

Patent Owner's Demonstrative Exhibit - Not Evidence 38

Rosenberg: Restoring Force Profiles with and without “Deadband”

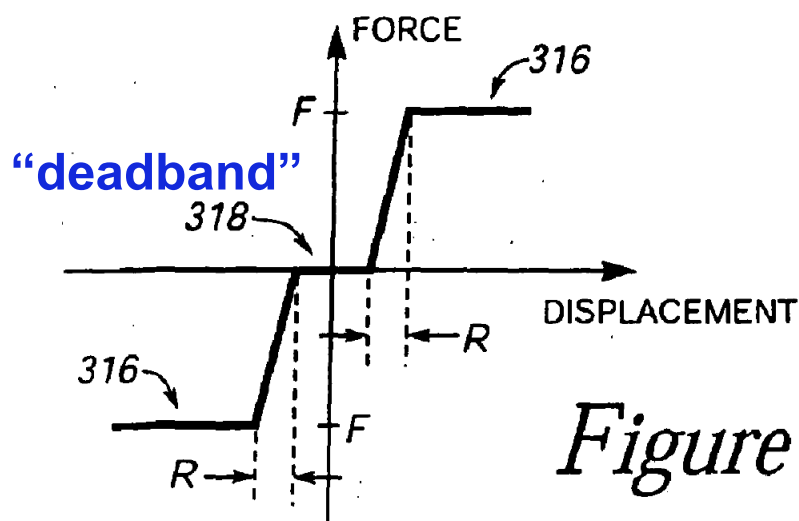


Figure 10c

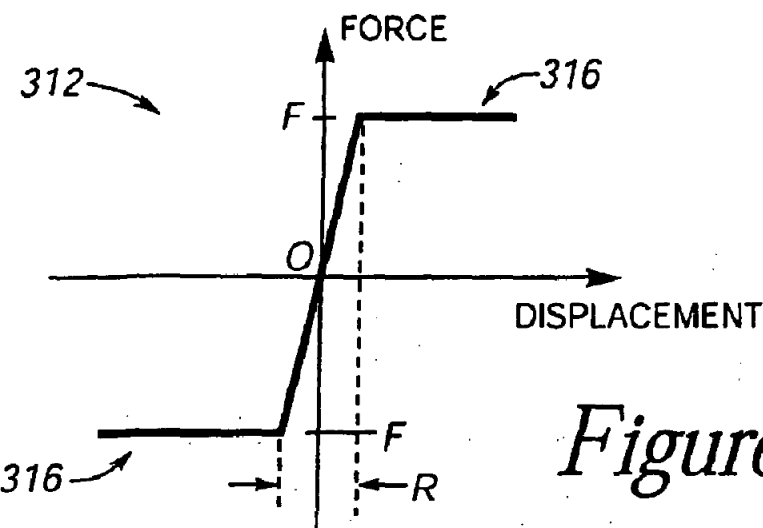


Figure 10a

Ex. 1017 at Figs. 10(a) and 10(c); Pet. at 35-46; Reply at 14-16

Patent Owner's Demonstrative Exhibit - Not Evidence ³⁹

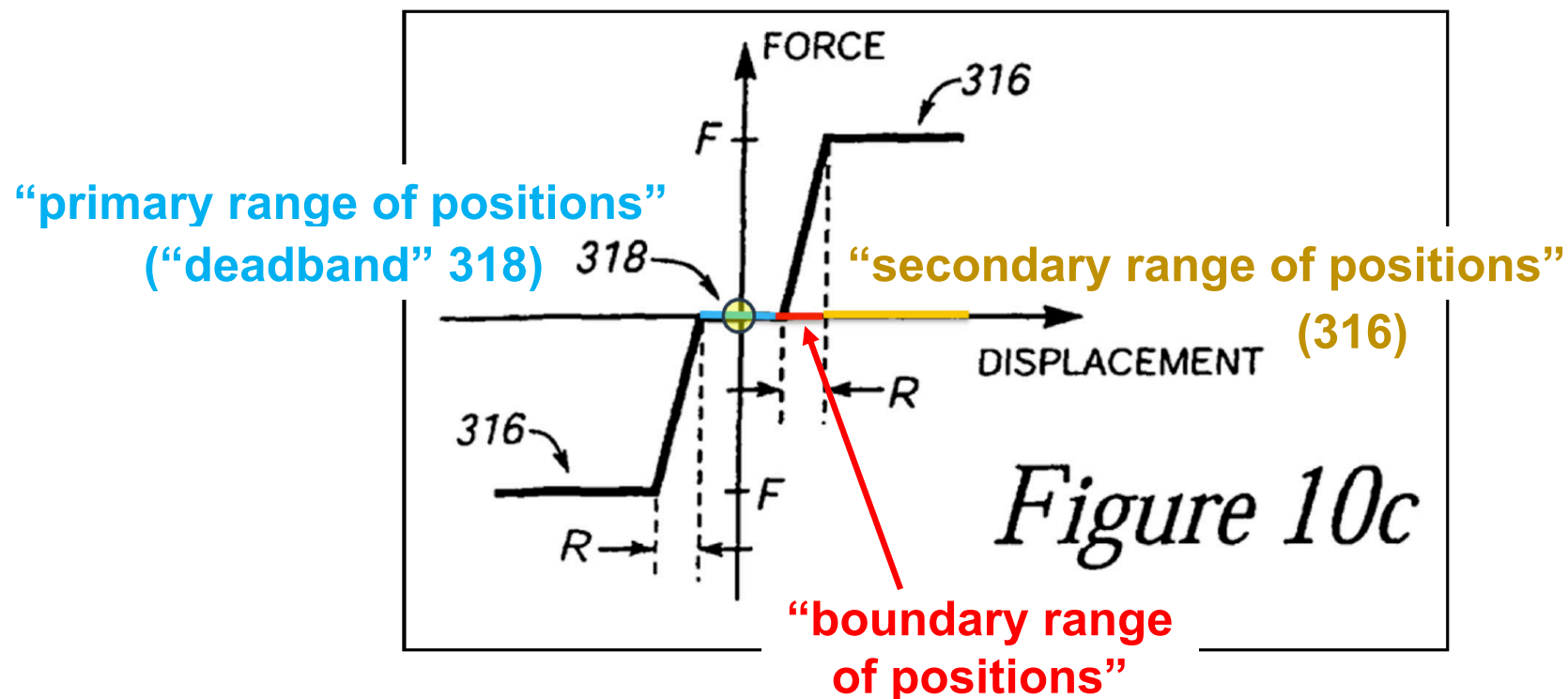
Valve Corp. v. Immersion Corp.

IPR2024-00714

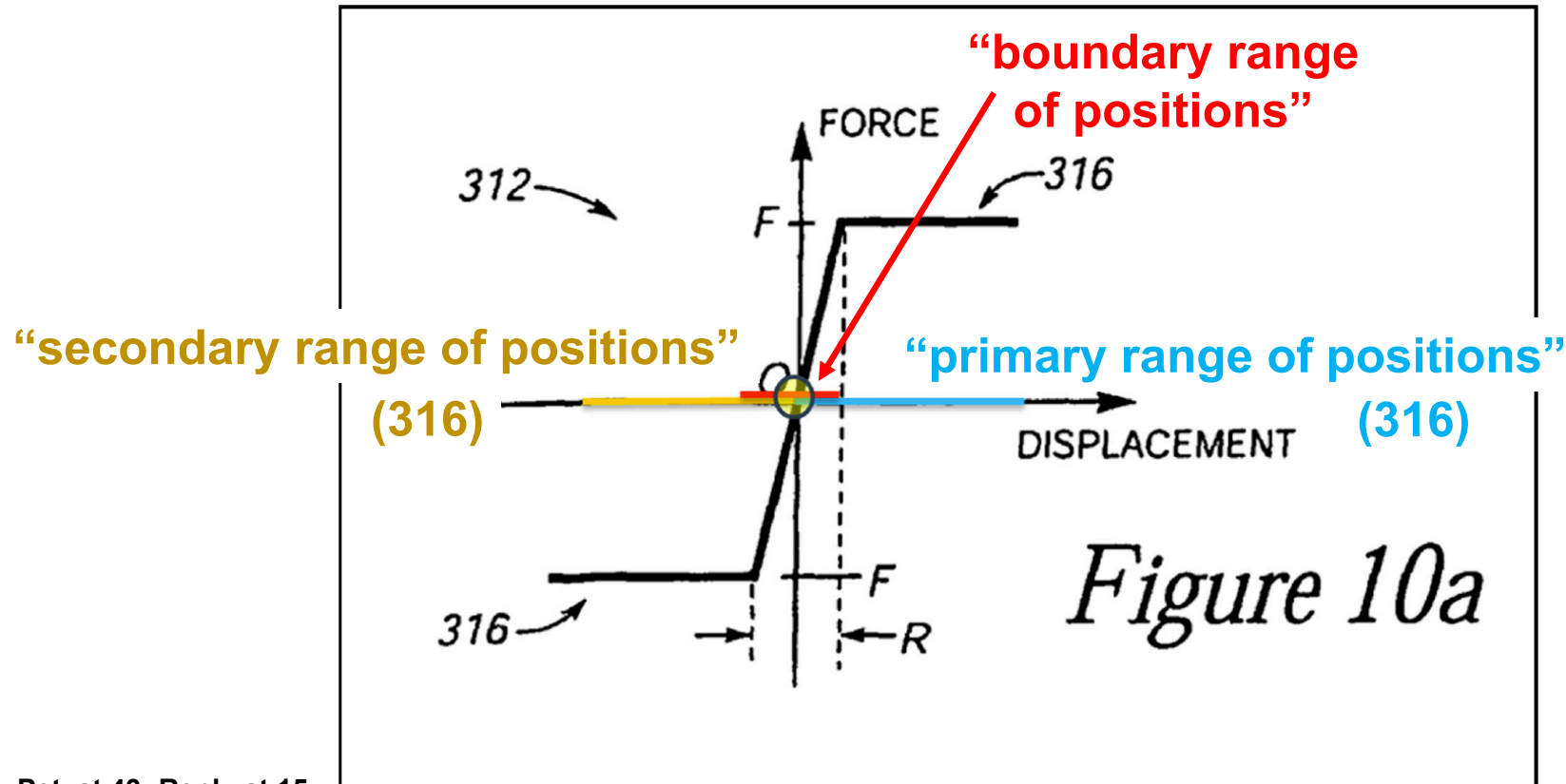
Immersion Exhibit 2010

Page 39 of 86

Rosenberg: Restoring Force Profiles – Petition’s Mapping – With “Deadband”



Rosenberg: Restoring Force Profiles – Petition's Mapping – Without “Deadband”



Pet. at 43; Reply at 15

Patent Owner's Demonstrative Exhibit - Not Evidence 41

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 41 of 86

Rosenberg: No “Defining Position and Range Information”

Under 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”

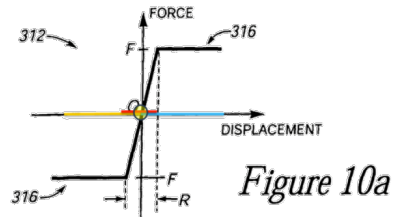


Figure 10a

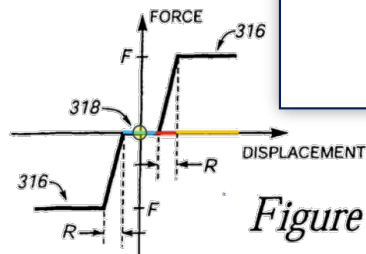


Figure 10c

Immersion concedes Rosenberg’s force profiles are “predetermined commands stored in a table.” POR, 57 (*citing* Rosenberg, [0105]).

Rosenberg’s profiles are thus pre-defined sets of “*position and range information*”

Reply at 15-16

Rosenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

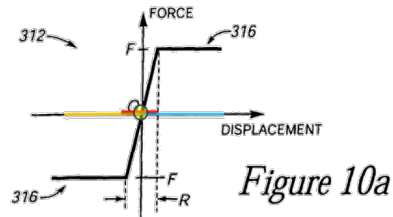


Figure 10a

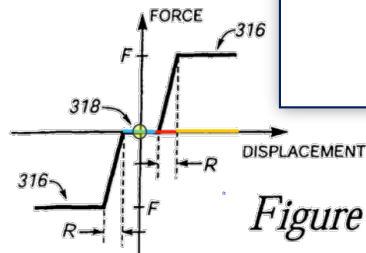


Figure 10c

Immersion concedes Rosenberg’s force profiles are
“predetermined commands stored in a table.” POR, 57 (*citing* Rosenberg, [0105]).

Rosenberg’s profiles are thus pre-defined sets of “*position and range information*”

Reply at 15-16

Plain Meaning of “defining position and range information”

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for: defining position and range information for a user input element associated with the haptic output device,

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for: defining position and range information for a user input element associated with the haptic output device,

Rosenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

**No “program
comprising
instructions
for:
defining ...”**

Rosenberg’s local memory 27, which can be RAM and/or ROM ([0063]), is “a non-transitory computer readable storage medium storing a program configured to be executed by a processor,” where the program is the set of software instructions executed by Rosenberg’s microprocessor to implement its force profiles. [0125] (explaining local microprocessor causes actuator to output forces based on “reflex processes” that are “stored local to microprocessor 26 in, for example, memory 27 such as RAM or ROM” and include “algorithms, stored force profiles or values, conditions, etc.”); [0178] (“force profile” is “stored in memory”); [0280] (“assigned force ranges, magnitudes and models can also be stored in memory 27....”)

**No software
and/or
hardware for
“defining ...”**

Pet. at 50 (citing Ex. 1017 ¶¶[0125], [0178], [0280]); see also POR at 20, 55-58; Sur-Reply at 20-21

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁵

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 45 of 86

Rosenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

**No “program
comprising
instructions
for:
defining ...”**

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.

**No software
and/or
hardware for
“defining ...”**

Rosenberg: No “Defining Position and Range Information”

**New Reply
Argument**

Rosenberg meets “*defining position and range information*” even under Immersion’s construction. Rosenberg’s system includes multiple force profiles like the distinct profiles illustrated in Figures 10a and 10c. When Rosenberg’s system switches from utilizing one profile to a different profile based on how the user is interacting with the system, the system is “*defining position and range information*” for haptic feedback under Immersion’s construction because the system changes from one set of predefined position/ranges to a different set during use. Rosenberg, [103]; [0121] (“The user’s manipulations of object 34 may have caused a new type of force to [be] required.”); Pet., 47. For example, when the host computer sends a command to switch from the Figure 10a profile to the Figure 10c profile, that command defines *during use* new primary, secondary, and boundary ranges of positions for the input device’s range of motion. See Rosenberg, [166].



**No disclosure
re changing
from one
force profile
to another**

Reply at 14 (citing Ex. 1017 ¶¶[0103], [0121], [0166]); see also Sur-Reply at 21-22

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁷

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 47 of 86

Rosenberg: No “Defining Position and Range Information”

New Reply Argument

Rosenberg meets “*defining position and range information*” even under Immersion’s construction. Rosenberg’s system includes multiple force profiles like the distinct profiles illustrated in Figures 10a and 10c. When Rosenberg’s system switches from utilizing one profile to a different profile based on how the user is interacting with the system, the system is “*defining position and range information*” for haptic feedback under Immersion’s construction because the system changes from one set of predefined position/ranges to a different set during use. Rosenberg, [103]; [0121] (“The user’s manipulations of object 34 may have caused a new type of force to [be] required.”); Pet., 47. For example, when the host computer sends a command to switch from the Figure 10a profile to the Figure 10c profile, that command defines *during use* new primary, secondary, and boundary ranges of positions for the input device’s range of motion. See Rosenberg, [166].

No user input
to “define”
the three
claimed
ranges of
positions

No software
and/or
hardware for
“defining ...”

Reply at 14 (citing Ex. 1017 ¶¶[0103], [0121], [0166]); see also Sur-Reply at 21-22

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁸

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 48 of 86

**No Anticipation or Obviousness:
Goldenberg (Ground 1)**

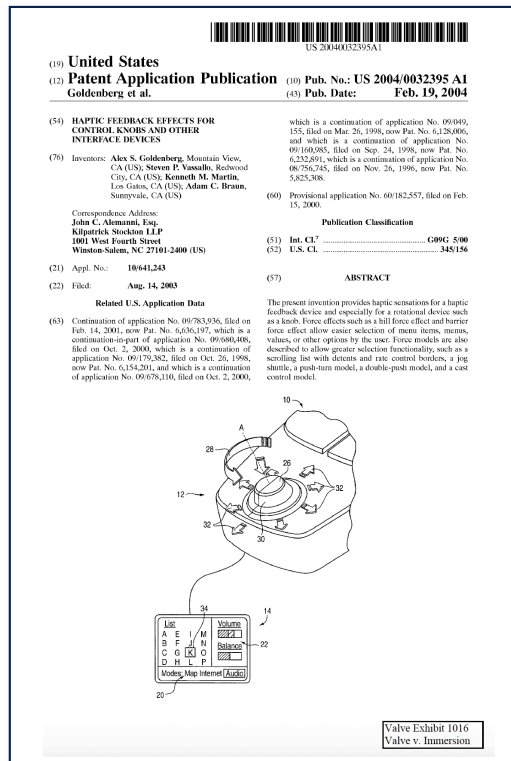
**No Obviousness:
Goldenberg + Cruz-Hernandez (Ground 2)**

Goldenberg: Summary

Goldenberg does not disclose or render obvious:

1. “defining position and range information”
2. “primary range” and “secondary range of positions”
3. “boundary range of positions”

Goldenberg: Jog Shuttle Model



Jog Shuttle Model

[0115] The jog shuttle model allows a user a different control paradigm for scrolling through a list or controlling a function or value. The output force effects provide a simulated jog shuttle, in which 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. Thus, a spring force is preferably output when the knob is moved in either direction away from the origin position, and the spring force is output over the entire movement range of the knob.

Ex. 1016 ¶[0115]; Pet. at 9-17; Reply at 17-25

Patent Owner's Demonstrative Exhibit - Not Evidence

51

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 51 of 86

Goldenberg: Jog Shuttle Model – First Spring

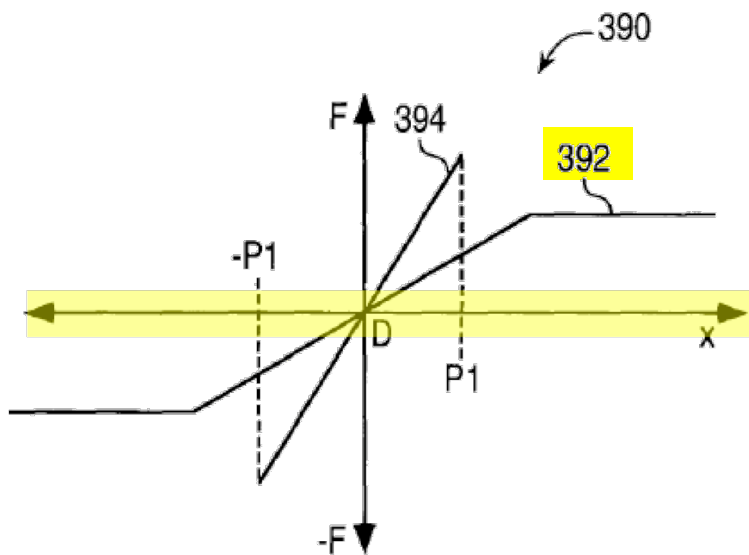


FIG. 8

[0116] FIG. 8 is a force vs. position profile 390 illustrating a jog shuttle model of the present invention. To best simulate a mechanical jog shuttle having mechanical springs, the force feedback knob is preferably provided with two spring effects. The first spring effect, shown as curve 392, can be output over the entire range of the knob, and can have a medium amount of stiffness. The force resists motion away from the origin O and increases in magnitude as the knob is moved away from the origin until the saturation level is reached, at which point the force is no longer increased in magnitude but still resists motion away from the origin.

Goldenberg: Jog Shuttle Model – Second Spring

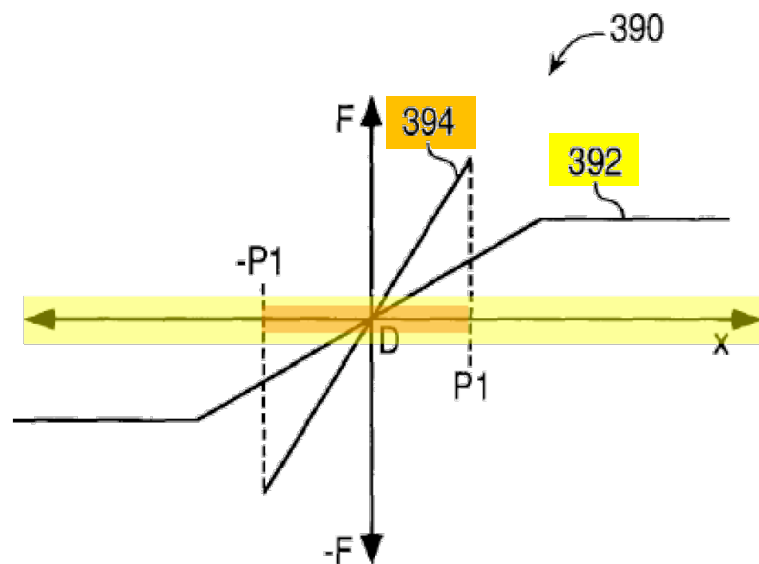
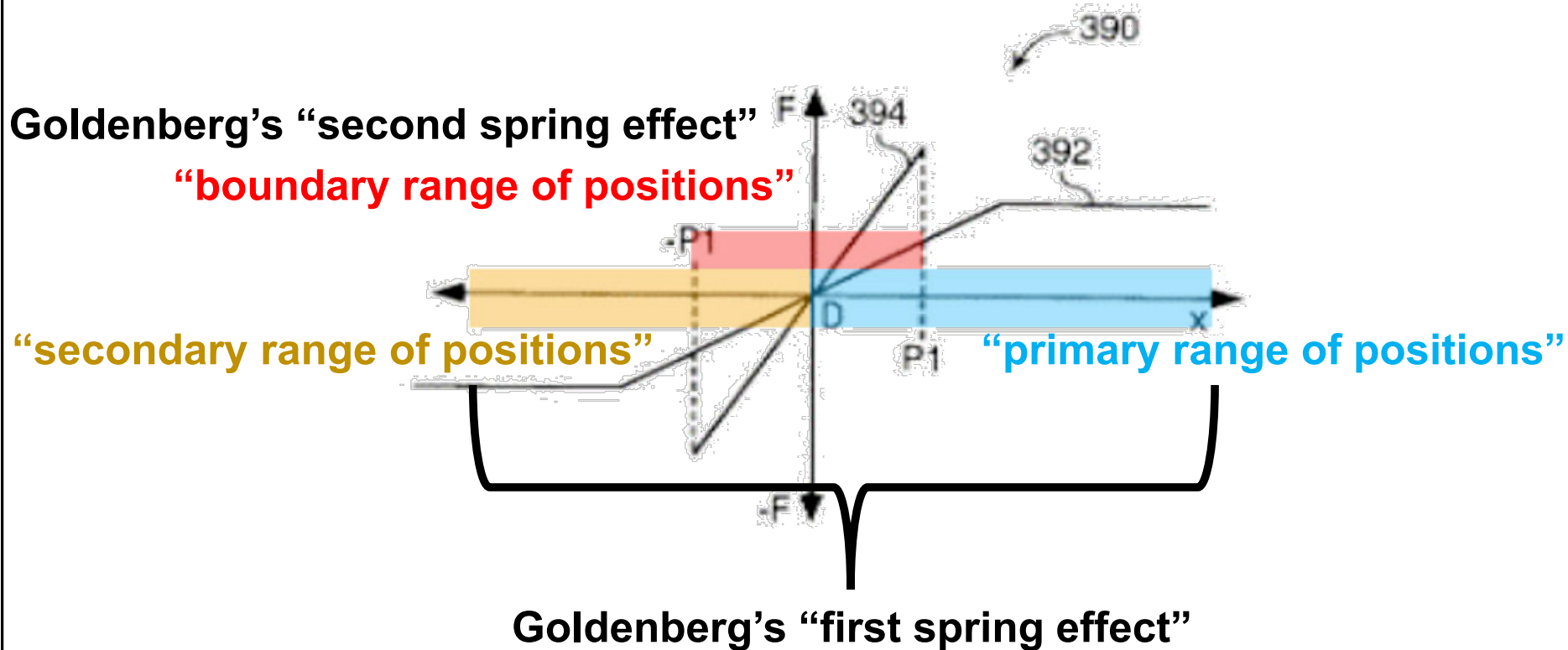


FIG. 8

The second spring, shown as curve 394, can overlap the first spring effect but is only in effect over a small range between positions $-P1$ and $P1$ around the origin position. This provides the perception of a rotational preload. The second spring is preferably much stiffer than the first spring, requiring a greater amount of force from the user to overcome. This second spring provides a more “quality” feel to the knob since the knob is less likely to feel loose to the user around the origin position (the transition of moving from the second spring to first spring or vice-versa can be made not discernible by the user).

Goldenberg: Jog Shuttle Model – Petition’s Mapping



Pet. at 9-15; Reply at 17-25

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54

Valve Corp. v. Immersion Corp.

IPR2024-00714

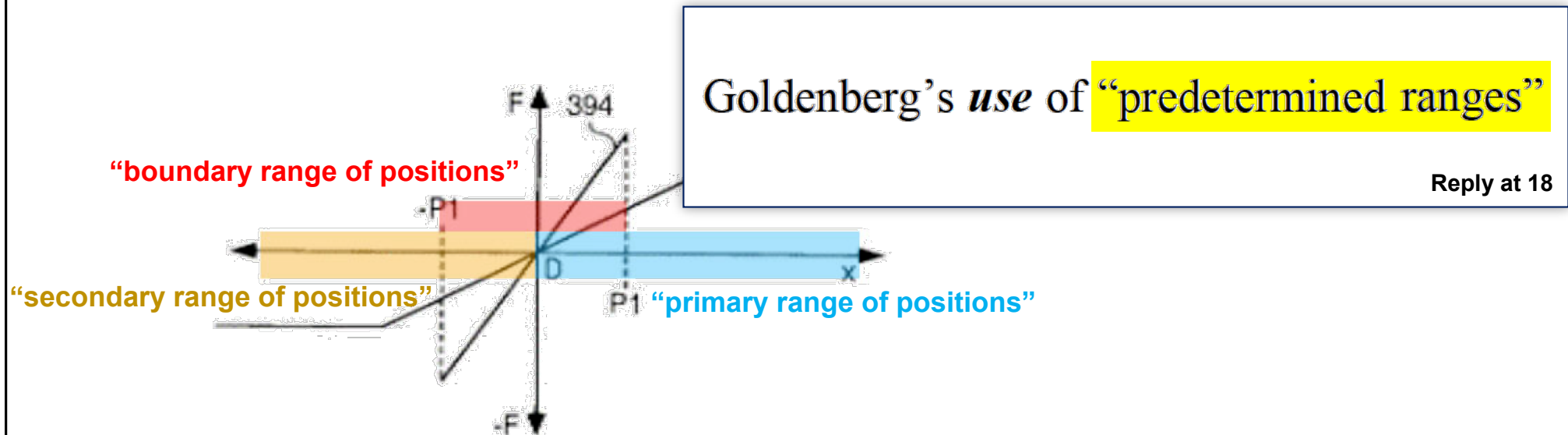
Immersion Exhibit 2010

Page 54 of 86

Goldenberg: No “Defining Position and Range Information”

Under 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”



Pet. at 9-15; POR at 39-45; Sur-Reply at 10

Patent Owner's Demonstrative Exhibit - Not Evidence 55

Valve Corp. v. Immersion Corp.

IPR2024-00714

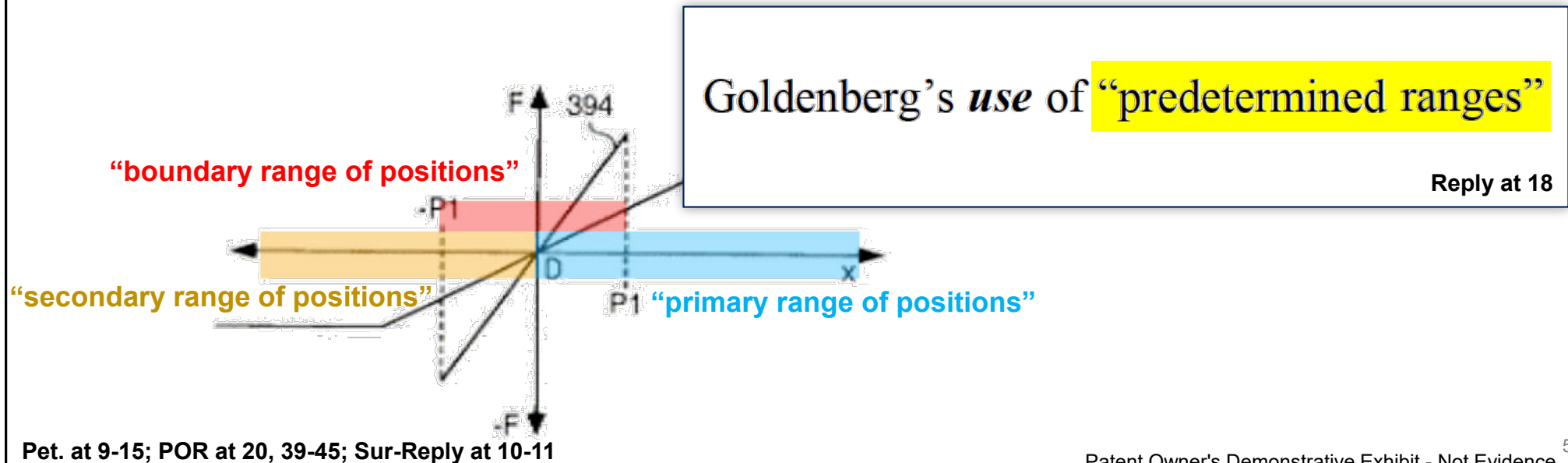
Immersion Exhibit 2010

Page 55 of 86

Goldenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory



Plain Meaning of “defining position and range information”

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for: defining position and range information for a user input element associated with the haptic output device,

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for: defining position and range information for a user input element associated with the haptic output device,

Goldenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

No “program comprising instructions for: defining ...”

Goldenberg’s force profiles (e.g., the jog shuttle profile/model) 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 206 and includes calculation instructions, formulas, force magnitudes (force profiles), and/or other data.” [0066]; see FIG. 3 (local microprocessor 202); [0073] (“[F]orce profiles can be stored in a memory device on the device and a particular set can be provided on the knob 26 by a microprocessor.”).

Pet. at 25-26 (citing Ex. 1016 ¶¶[0066], [0073], Fig. 3)

No software and/or hardware for “defining ...”

Goldenberg: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

**No “program
comprising
instructions
for:
defining ...”**

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.

**No software
and/or
hardware for
“defining ...”**

Sur-Reply at 11 (citing Reply at 17)

Patent Owner's Demonstrative Exhibit - Not Evidence ⁵⁹

Goldenberg: No “Defining Position and Range Information”

**New Reply
Argument**

Separately, Goldenberg discloses the “*defining*” limitation even under Immersion’s proposed construction. Similar to Rosenberg, 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). Goldenberg, [0012], [0108] (“detent model”), [0115]-[0117] (“jog shuttle model”). When Goldenberg’s system switches from utilizing one profile to a different profile based on a user’s interaction with the system, the system is “*defining position and range information*” for haptic feedback under Immersion’s construction because the system changes from one set of predefined position/ranges to a different set during use.

X

**No disclosure
re changing
from one
force profile
to another**

Reply at 19 (citing Ex. 1016 ¶¶[0012], [0108], [0115]-[0117]); see also Sur-Reply at 11-12

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 60 of 86

Goldenberg: No “Defining Position and Range Information”

New Reply Argument

Separately, Goldenberg discloses the “*defining*” limitation even under Immersion’s proposed construction. Similar to Rosenberg, 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). Goldenberg, [0012], [0108] (“detent model”), [0115]-[0117] (“jog shuttle model”). When Goldenberg’s system switches from utilizing one profile to a different profile based on a user’s interaction with the system, the system is “*defining position and range information*” for haptic feedback under Immersion’s construction because the system changes from one set of predefined position/ranges to a different set during use.

No user input
to “define”
the three
claimed
ranges of
positions

No software
and/or
hardware for
“defining ...”

Reply at 19 (citing Ex. 1016 ¶¶[0012], [0108], [0115]-[0117]); see also Sur-Reply at 11-12

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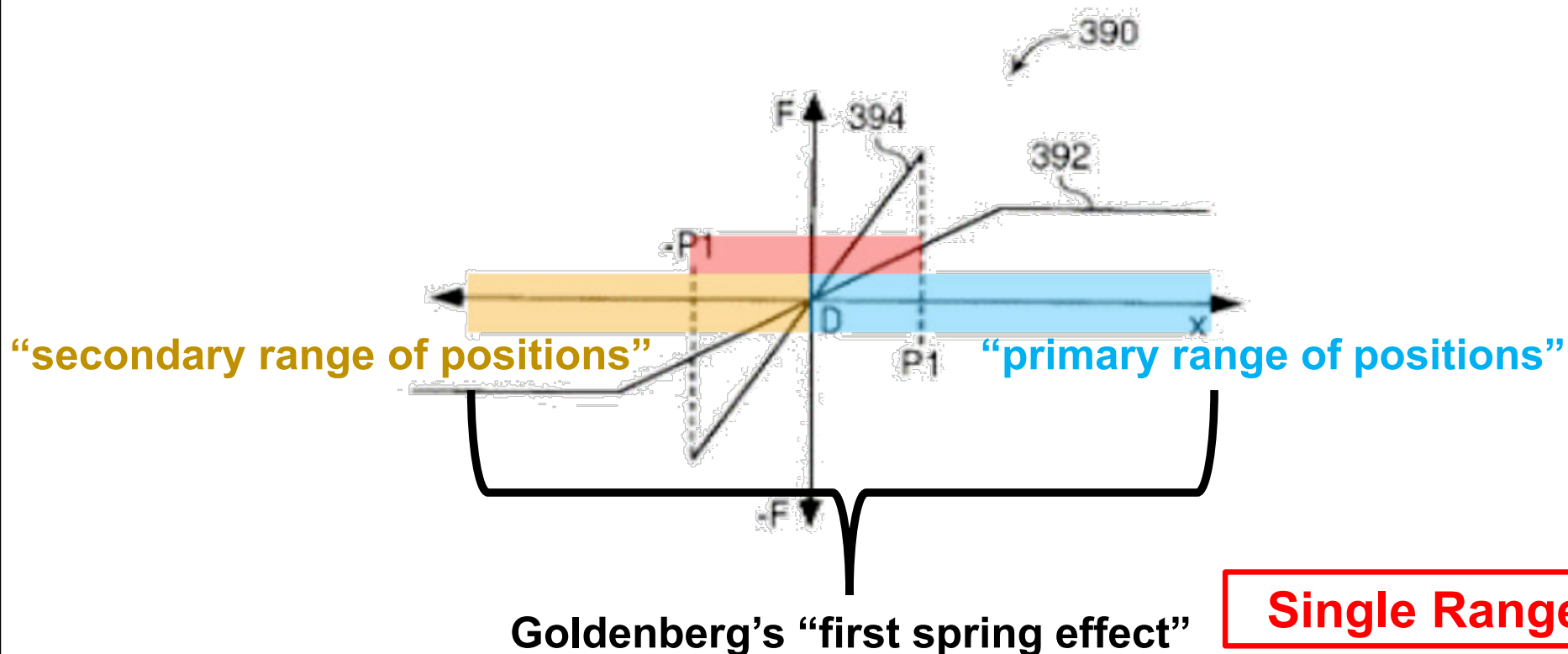
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 61 of 86

Goldenberg: No “Primary Range” and “Secondary Range”



Pet. at 9-15; POR at 46-49; Reply at 19-21; Sur-Reply at 12-16

Patent Owner's Demonstrative Exhibit - Not Evidence

62

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 62 of 86

Goldenberg: Jog Shuttle Model – First Spring

Single Range

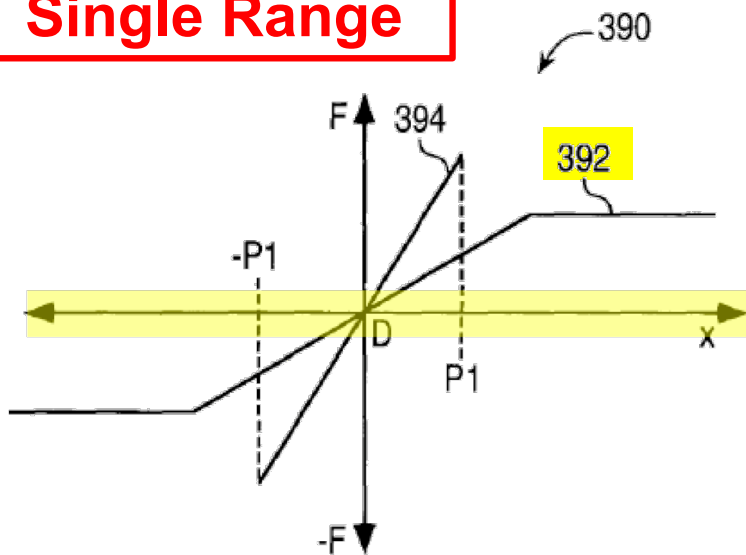


FIG. 8

[0116] FIG. 8 is a force vs. position profile 390 illustrating a jog shuttle model of the present invention. To best simulate a mechanical jog shuttle having mechanical springs, the force feedback knob is preferably provided with two spring effects. The first spring effect, shown as curve 392, can be output over the entire range of the knob, and can have a medium amount of stiffness. The force resists motion away from the origin O and increases in magnitude as the knob is moved away from the origin until the saturation level is reached, at which point the force is no longer increased in magnitude but still resists motion away from the origin.

Goldenberg: No “Primary Range” and “Secondary Range”

No support for “rewinding/fastforwarding” and “clockwise/counterclockwise” theories

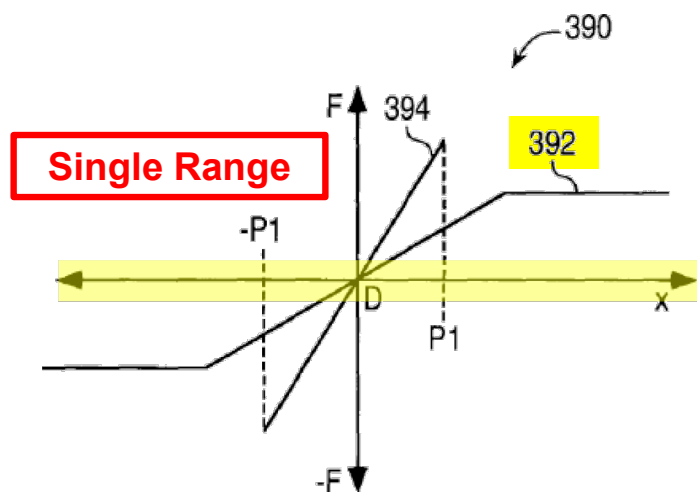


FIG. 8

[0117] When the user moves the knob, a rate control paradigm is preferably implemented, where the greater the amount of rotation away from the origin position, the greater is the speed or rate of change of the controlled value or function. The jog shuttle model can be used to scroll through a list of items or a sequence of items or units, similarly to the rate control borders of the scrolling list model described above. In some embodiments, the host processor can output a pop for each item or division that scrolls by. The user can also in some embodiments be haptically notified when the knob is at the origin position by outputting a pop or detent force at the origin position.

Goldenberg: No “Primary Range” and “Secondary Range”

No support for “rewinding/fastforwarding” and “clockwise/counterclockwise” theories

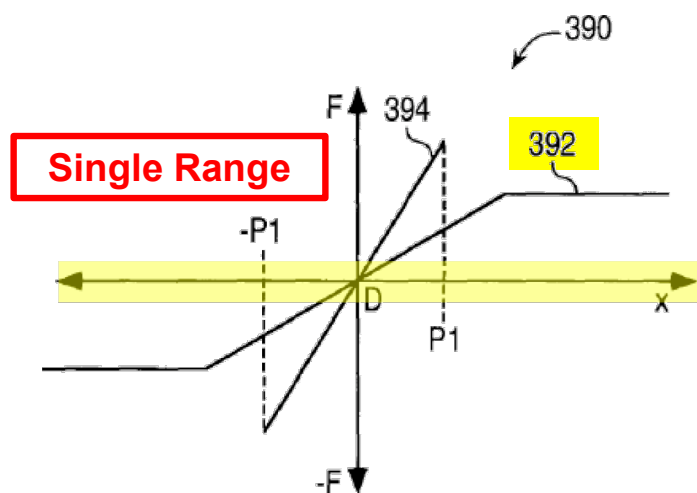


FIG. 8

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.

Sur-Reply at 15 (quoting Ward Decl.)

Ex. 1016 at Fig. 8; Pet. at 12-14; POR at 46-49; Reply at 21;

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Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 65 of 86

Goldenberg: No “Boundary Range”

Goldenberg’s “second spring effect”

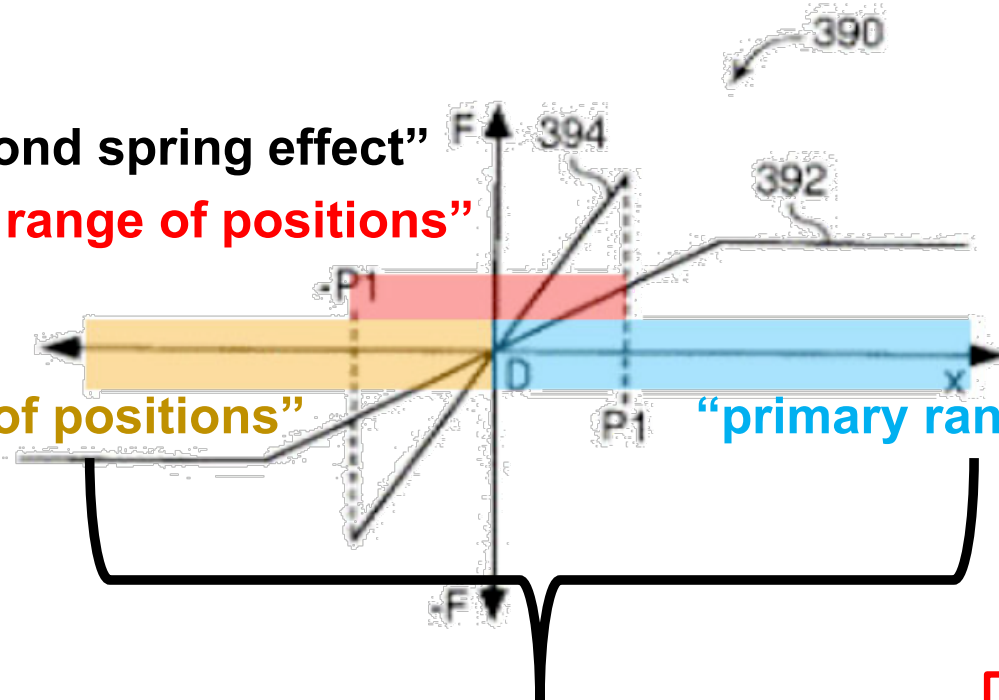
“boundary range of positions”

“secondary range of positions”

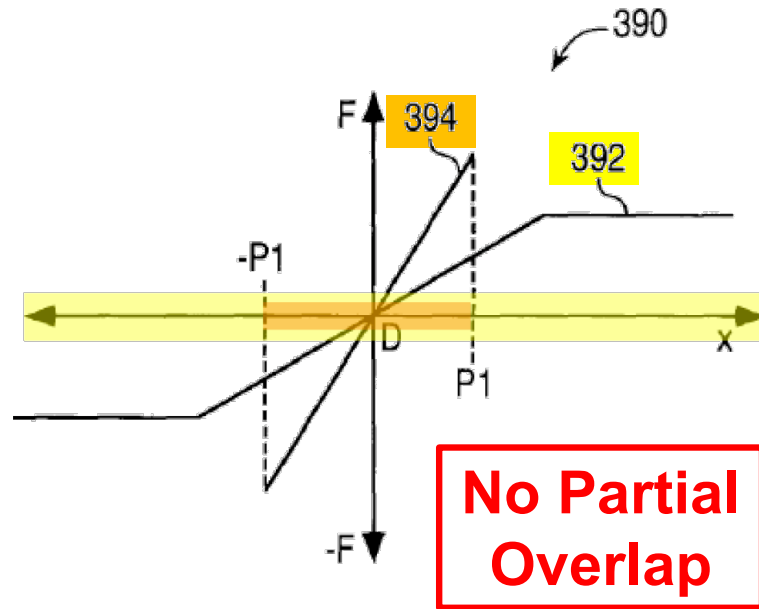
“primary range of positions”

Goldenberg’s “first spring effect”

Single Range



Goldenberg: No “Boundary Range”



1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

No Anticipation of Obviousness: Levin (Ground 6)

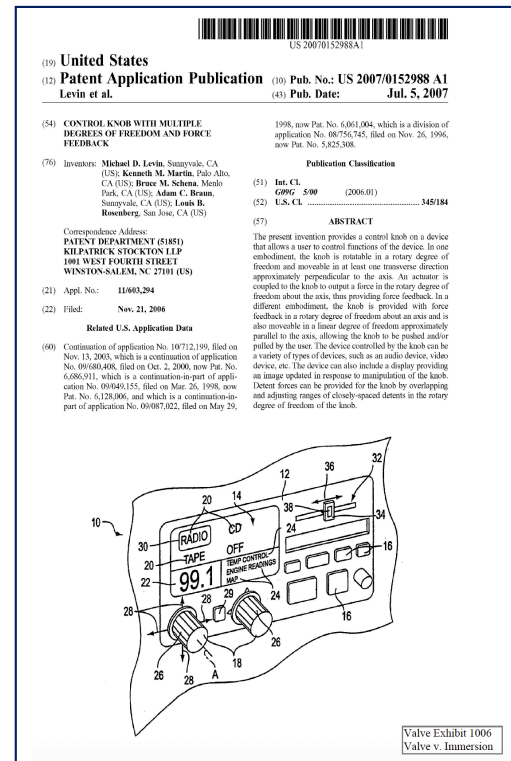
Patent Owner's Demonstrative Exhibit - Not Evidence ⁶⁸

Levin: Summary

Levin does not disclose or render obvious:

1. “defining position and range information”
2. “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”

Levin: Detent Force Profiles



Ex. 1006 ¶¶[0030], [0038]; Pet. at 66-67

[0030] Control knobs **18** are provided to allow the user a different type of control of functions and settings of device **11** than the buttons **16** allow. Knobs **18**, in the described embodiment, are approximately cylindrical objects engageable by the user.

[0038] ... In position control mode, force detents are preferably output to indicate particular settings or how far the knob **18** has been rotated.

Patent Owner's Demonstrative Exhibit - Not Evidence 70

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 70 of 86

Levin: Detent Force Profiles

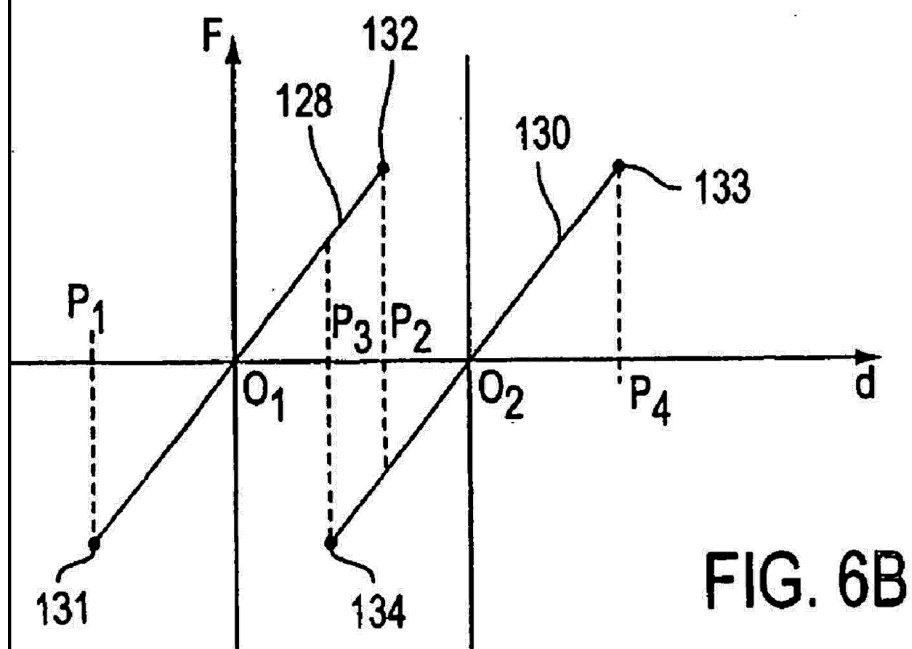


FIG. 6B

[0070] FIG. 6b shows a detent force profile of the present invention in which the detent forces of two successive detents are partially overlapped due to the detents, and provide a hysteresis-like force effect. . . .

Endpoint 131 of curve 128 is positioned at position P1 and endpoint 132 of curve 128 is positioned at position P2, where P2 is about the same distance from origin O1 as P1. Similarly, endpoint 134 of curve 130 is positioned at position P3 and endpoint 133 of curve 130 is positioned at position P4, where P4 is about the same distance from origin O2 as P3.

Preferably, the end point 132 of curve 128 is positioned well after the endpoint 134 of curve 130, such that the point 132 has a position in the middle of the range between point 134 and the origin O2. The overlapped zone is between positions P3 and P2.

Ex. 1006 ¶[0070], Fig. 6B; Pet. at 67-74; Reply at 25-29

Patent Owner's Demonstrative Exhibit - Not Evidence 71

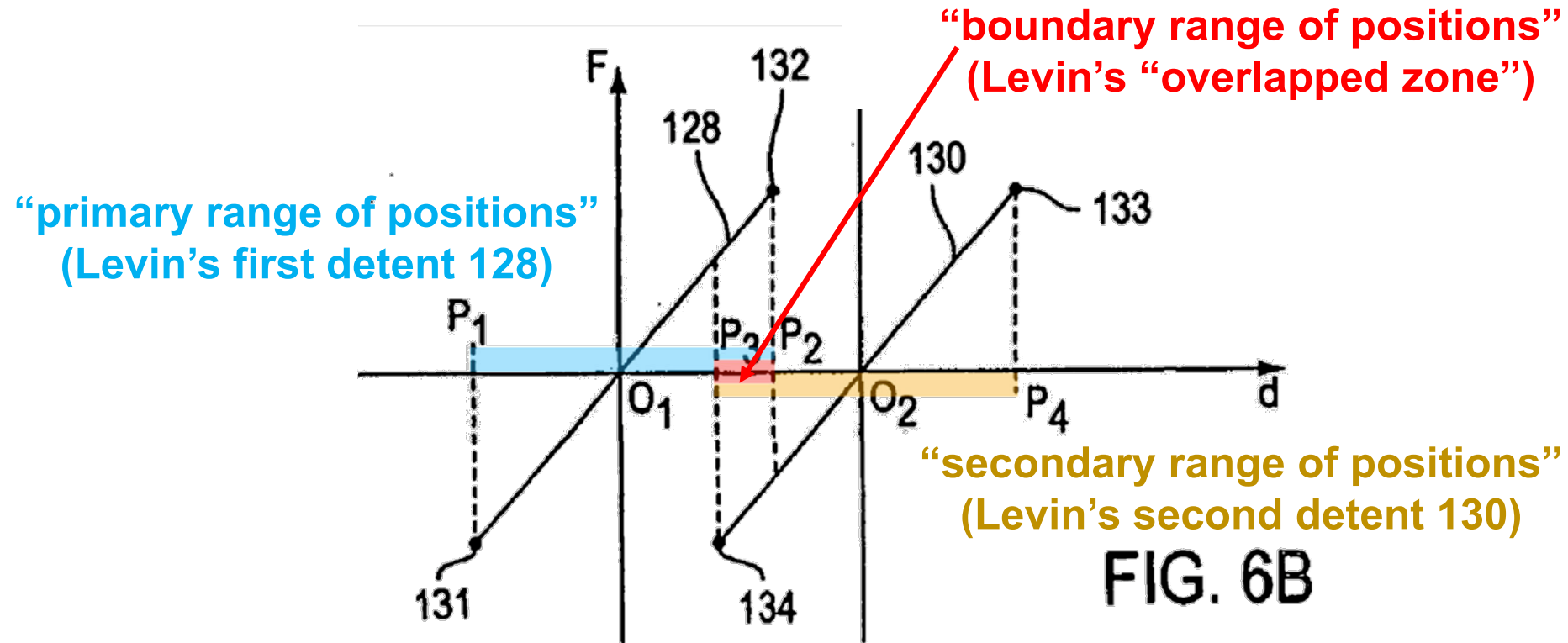
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 71 of 86

Levin: Detent Force Profiles – Petition’s Mapping



Pet. at 74; Reply at 26

Patent Owner's Demonstrative Exhibit - Not Evidence ⁷²

Valve Corp. v. Immersion Corp.

IPR2024-00714

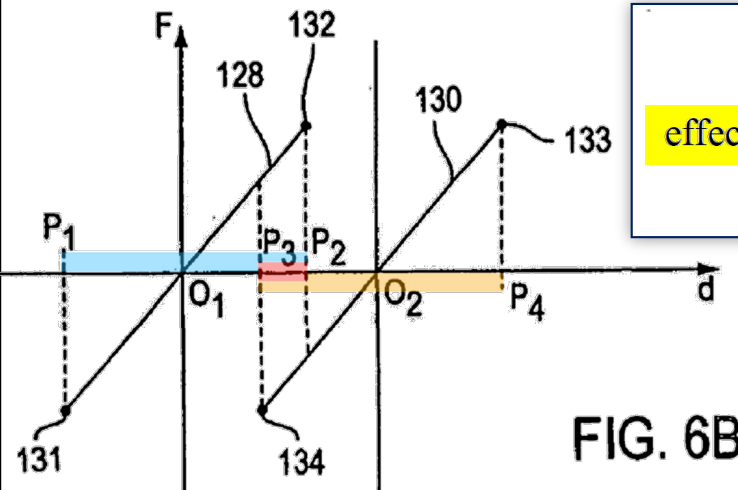
Immersion Exhibit 2010

Page 72 of 86

Levin: No “Defining Position and Range Information”

Under 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”



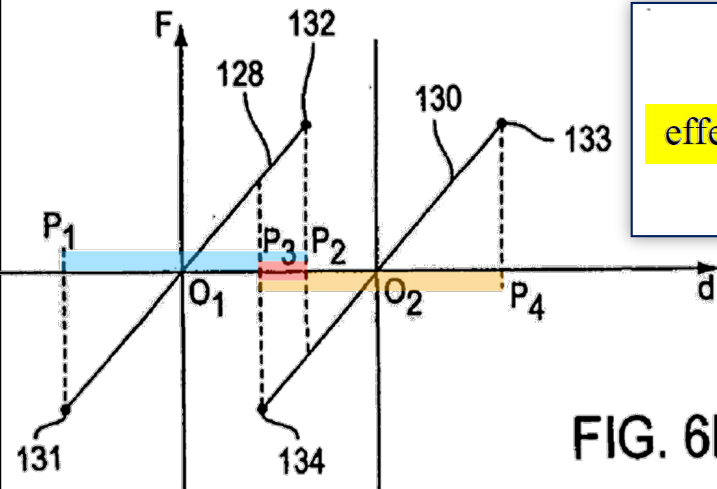
Levin’s method uses “detent force profiles,” which are pre-defined force effects stored in a memory. [0049], [0067]

Pet. at 69 (citing Ex. 1006 ¶¶[0049], [0067])

Levin: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory



Levin’s method uses “detent force profiles,” which are pre-defined force effects stored in a memory. [0049], [0067]

Pet. at 69 (citing Ex. 1006 ¶¶[0049], [0067])

Pet. at 74; POR at 37, 49-50; Sur-Reply at 23-24

Patent Owner's Demonstrative Exhibit - Not Evidence ⁷⁴

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 74 of 86

Plain Meaning of “defining position and range information”

8. A non-transitory computer readable storage medium storing a program configured to be executed by a processor, the program comprising instructions for: defining position and range information for a user input element associated with the haptic output device,

15. A device comprising:
a processor; and
a memory storing a program for execution by the processor, the program including instructions for: defining position and range information for a user input element associated with the haptic output device,

Levin: No “Defining Position and Range Information”

Under Plain and Ordinary Meaning:

excludes predetermined position and range information loaded into memory

**No “program
comprising
instructions
for:
defining ...”**

Levin’s “[d]etent force profiles can be implemented by a microprocessor or other controller based on instructions stored in a computer readable medium” (Levin, [0067]) which can be a “[l]ocal memory 206, such as RAM and/or ROM, ... to store instructions for microprocessor 202.” Levin, [0089], Fig. 8. Levin’s local memory is “a *non-transitory computer readable storage medium storing a program configured to be executed by a processor,*” where the program is the set of software instructions executed by Levin’s microprocessor to implement Levin’s detent force profiles. [0101]; Ward, ¶277.

Pet. at 80-81 (citing Ex. 1006 ¶¶[0067], [0089], [0101], Fig. 8)

**No software
and/or
hardware for
“defining ...”**

Claim Construction:

“in response to”

Patent Owner's Demonstrative Exhibit - Not Evidence ⁷⁷

Patent Owner's Construction of “in response to”

“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”

Petitioner does not dispute this construction
Relevant only to the Levin Ground (Ground 6)

“in response to”: Claim Language

1. A method for controlling a user input element associated with a haptic output device, the method comprising: defining position and range information for the user input element associated with the haptic output device, including a primary range of positions, a secondary range of positions, and 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 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.

Ex. 1001 at claim 1; POR at 26-28; Sur-Reply at 8-9

Patent Owner's Demonstrative Exhibit - Not Evidence ⁷⁹

Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 79 of 86

“in response to”: Dictionary Definitions

response | AMERICAN DICTIONARY

response

noun [C/U]

US  /rɪˈspɑns/

Add to word list 

**something said or done as a reaction to something that has been said or done;
an answer or reaction:**

- [C] *She's applied for admission and is still waiting for a response from the school.*
- *The law was passed by the town council **in response to** (= as a result of) complaints from residents.*

“in response to”: Petitioner’s Expert



Jean Renard Ward

13 Q. So it's your understanding that "in response
14 to," as it is used in this limitation, would require
15 some form of causal relationship between rendering a
16 haptic effect and entry of the user input element to
17 one or more positions within the boundary range of
18 positions?

19 A. Yes, sir. That's a fair statement.

“in response to”: Petitioner’s Expert



Jean Renard Ward

5 Does a causal relationship, as connoted by
6 "in response to," require more than mere
7 coincidence?

8 A. I think a person of skill in the art would
9 understand it that way, yes, sir.

17 Q. Is it your understanding that "in response
18 to" would require more than merely one event
19 happening after another?

20 A. I believe that's how a person of skill in
21 the art would understand it, yes, sir.

Ex. 2009 at 36:5-21; POR at 27-28; Sur-Reply at 9

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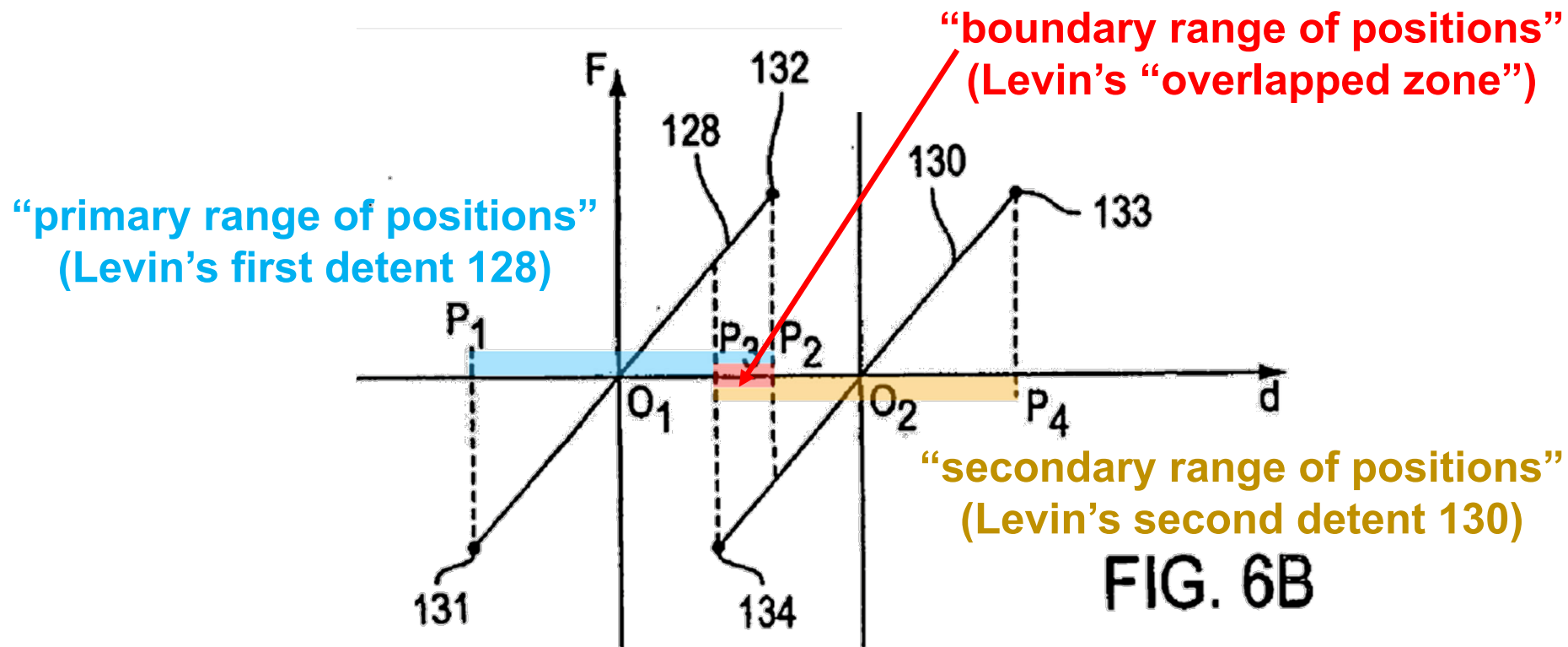
Valve Corp. v. Immersion Corp.

IPR2024-00714

Immersion Exhibit 2010

Page 82 of 86

Levin: No “Rendering a Haptic Effect in Response to . . .”



Pet. at 74; Reply at 26

Patent Owner's Demonstrative Exhibit - Not Evidence ⁸³

Valve Corp. v. Immersion Corp.

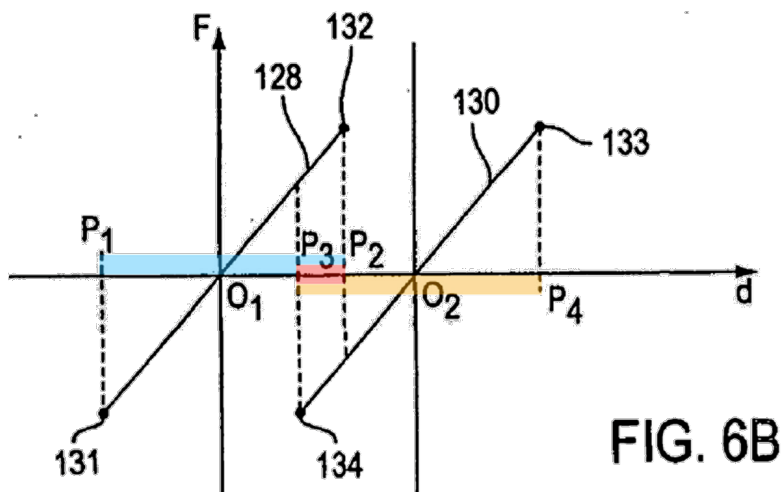
IPR2024-00714

Immersion Exhibit 2010

Page 83 of 86

Levin: No “Rendering a Haptic Effect in Response to . . .”

Problem Levin aims to solve:



[0069] A problem occurring with closely spaced detents is that often the user moves the knob from a first detent to a second detent but unintentionally moves the knob past the second detent due to the assistive detent forces of the second detent. This is because the force from the user required to move the knob past the resistive force of the first detent curve is combined with the assistive force of the second detent curve, causing the knob to unintentionally move past the second origin and past the endpoint of the second detent curve. Furthermore, the same problem occurs when the user moves the knob in the opposite direction, from the second detent to the first detent. The user must exert force to overcome the resistance at the last point of the second detent curve, which causes the knob to quickly move past the first point of the first detent curve, where the assistive force is added to the motion to cause the knob to unintentionally move past the last encountered point of the first detent.

Levin:
No “Rendering a Haptic Effect in Response to . . .”

Levin's solution:

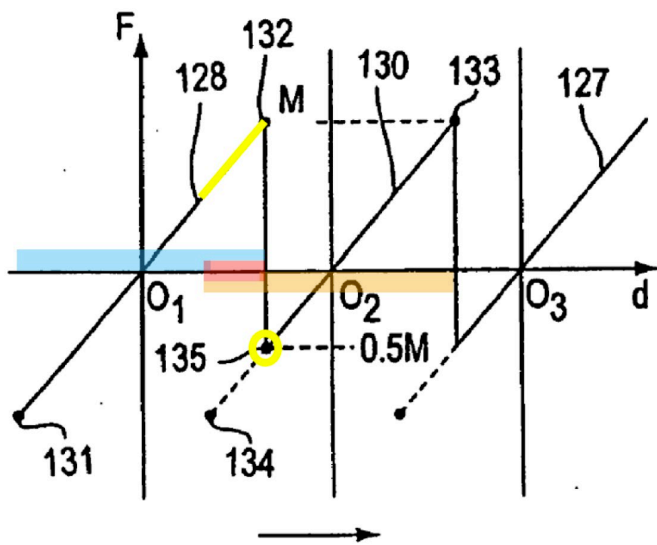


FIG. 6C

[0071] 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. . . .

As shown in FIG. 6c, when moving the knob so the knob position changes from left to right, the force at the beginning of the range of detent curve 130 is at point 135 having a magnitude of 0.5M, which is one-half the magnitude M of the force at the other endpoint 133 of the range of curve 130 (ignoring the signs or direction of the forces).

FOLIO LAW GROUP PLLC

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