



FOLIO LAW GROUP PLLC

Patent Owner's Demonstrative Exhibit - Not Evidence

PATENT OWNER'S DEMONSTRATIVES

APRIL 30, 2025 ORAL ARGUMENT

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

CASE No. IPR2024-00478 | US PATENT 9,430,042

Patent Owner's Demonstrative Exhibit - Not Evidence

Roadmap

1. Background of the invention
2. Claim construction
3. Prior art overview
4. Ground 3: Rosenberg does not anticipate
5. Ground 1: Ichinose-Levin does not render obvious
6. Ground 2: Wang-Ichinose does not render obvious
7. Ground 4: Rosenberg-Goldenberg is “not relevant”

Patent Owner's Demonstrative Exhibit - Not Evidence

Background of the invention

- Provide vibrotactile feedback that simulates a mechanical detent (DE 14, POR, 6-7)

FIELD OF THE INVENTION

The present invention generally relates to vibrotactile feedback. More particularly, the present invention relates to methods and systems for providing virtual detents through vibrotactile feedback.

Ex. 1001, 1:14-17.

With many traditionally mechanical functions being replaced by electronics, operation of electronic controls has been made less intuitive to users. For example, without click-stops or “detents,” or otherwise a sense of mechanical resistance, it may be difficult to obtain a similar experience from an electronic substitute for a traditional mechanical control device or even effectively and efficiently operate such a device. A detent, such as a mechanical detent, can refer to the resistance of rotation of a wheel or shaft. A detent can be used to divide a rotation into discrete increments, or may be used to arrest rotation in a direction. For instance, a mechanical detent can be constructed from a notched wheel and a small gravity or spring-actuated lever.

Ex. 1001, 1:30-43.

Patent Owner's Demonstrative Exhibit - Not Evidence

Background of the invention

- Plurality of subsystems provide “context” (DE 14, POR, 31-38)

The processor **206** can be configured to determine a specific detent signal to generate. The detent signal may be based at least in part on the system which is actively being controlled. For example, if the video system **210a** is being controlled, the processor **206** may generate one type of detent signal, such as a click effect. Alternatively, if the stereo system **210b** is being controlled, the processor **206** may generate a second type of detent signal, such as a hard stop virtual detent.

Ex. 1001, 8:41-46.

Background of the invention

- Plurality of subsystems provide “context” (DE 14, POR, 31-38)

FIG. 2 is a block diagram illustrating a second system for providing virtual detents through vibrotactile feedback in one embodiment of the invention;

Ex. 1001, 2:16-18.

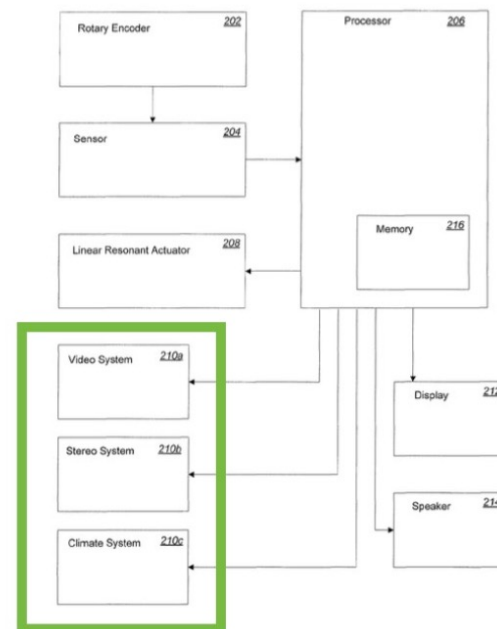


Figure 2

Ex. 1001, Fig. 2 (annotations added)

Patent Owner's Demonstrative Exhibit - Not Evidence

Background of the invention

- Plurality of subsystems provide “context” (DE 14, POR, 32)
15. A system comprising:
an input device configured to control one of a plurality of systems, wherein the input device comprises a touch-pad;
a processor in communication with the input device, the processor configured to receive an input signal and a detent profile associated with one of the systems, the detent profile comprising haptic data associated with a virtual detent, the processor further configured to generate a detent signal; and
at least one actuator coupled to the input device, the at least one actuator configured to receive the detent signal and produce a vibrotactile effect to the input device, the vibrotactile effect comprising the virtual detent.

Background of the invention

- Plurality of subsystems provide “context” (DE 14, POR, 31-38)
- Software code “may” be a “system”—if they provide “context” (DE 18, Sur-reply, 5)

The processor **106** can also generate one or more signals. For example, a processor may generate a signal when a valid input signal is received. In the embodiment shown in FIG. **1**, as the input device **102** is manipulated, the processor **106** may generate a signal at the same time or immediately after the manipulation. In one embodiment, the processor **106** may process software code running as an application on the processor and utilize the input signal in the context of the software code to generate signals configured to cause virtual detents.

Ex. 1001, 4:25-34.

Exemplary Claim 1

1. A method comprising:
receiving an input signal comprising information associated with a manipulation of an input device configured to control a plurality of systems, wherein the input device comprises a touch-pad;
receiving a detent profile associated with one of the systems, the detent profile comprising haptic data associated with a virtual detent; and
generating a vibrotactile signal configured to cause an actuator to produce a vibrotactile effect to the input device, the vibrotactile effect comprising the virtual detent.

Claim construction: “virtual detent”

Patent Owner's Demonstrative Exhibit - Not Evidence

Claim construction: “virtual detent”

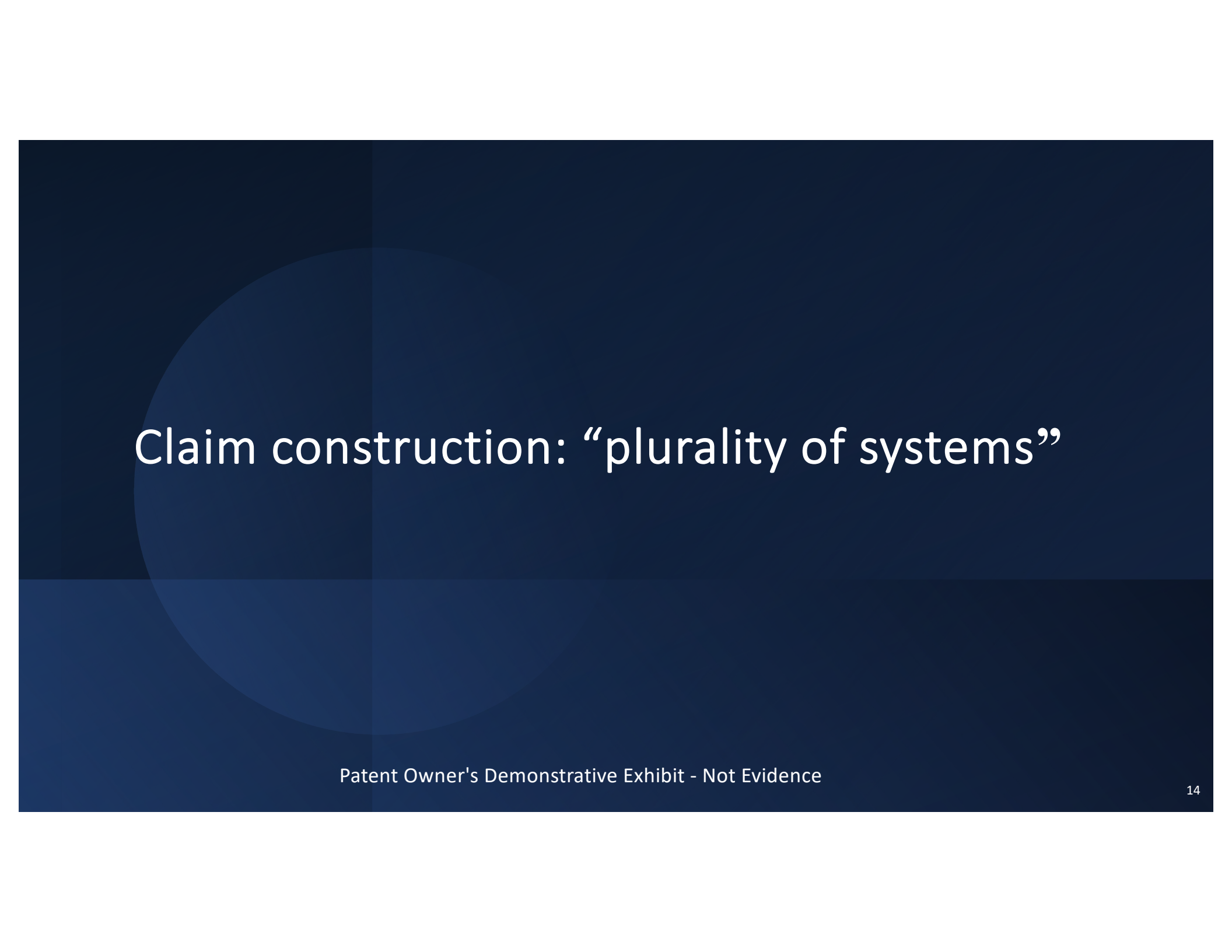
- “virtual detent” (DE 18, Sur-reply, 3-4):
 - Agreed plain meaning: “vibrotactile feedback that simulates a mechanical detent”
 - “vibrotactile feedback” and “virtual detent” are separate terms with different scope

Claim construction: “detent profile”

Patent Owner's Demonstrative Exhibit - Not Evidence

Claim construction: “detent profile”

- “detent profile” (DE 18, Sur-reply, 3):
 - Valve’s construction: “computer code or actuator characteristics that represent a virtual detent”
 - Immersion’s construction: plain and ordinary meaning
 - No issues depend on construction



Claim construction: “plurality of systems”

Patent Owner's Demonstrative Exhibit - Not Evidence

Claim construction: “plurality of systems”

- “input device configured to control a plurality of systems”
 - Valve’s construction: plain and ordinary meaning, includes ***all*** software applications (DE 17, Reply, 20)
 - No support from intrinsic evidence
 - Based on infringement contentions
 - Fatal to Valve’s arguments

Claim construction: “plurality of systems”

- Sole support comes from infringement contentions, EX1021:

Rosenberg-I touchpad is also “*configured to control a plurality of systems*” under the interpretation of that phrase that patent owner is advancing in the pending district court litigation. Specifically, patent owner has taken the position that “*a plurality of systems*” includes two different software applications running on the same device, *e.g.*, a web-browsing application and gaming application running on one videogame device. EX1021; *10X Genomics, Inc. v. Bio-Rad Labs*, IPR2020-00086, Paper 8 at 19 (Apr. 27, 2020) (“[J]udicial efficiency will be enhanced by allowing Petitioner to rely upon a claim construction that Patent Owner is relying upon...to assert infringement.”).⁶

DE 2, Petition, 52

Patent Owner's Demonstrative Exhibit - Not Evidence

Claim construction: “plurality of systems”

- Valve cites no intrinsic evidence for including ***all*** applications
- Sole support comes from infringement contentions (DE 14, POR, 30)
 - *Neomagic Corp. v. Trident Microsystems*, 287 F.3d 1062, 1074 (Fed. Cir. 2002) (establishing that claims may ***not*** be construed by reference to infringement read)

Claim construction: “plurality of systems”

- Valve’s case law does not apply
- Immersion does ***not*** take the position that ***all*** applications are “systems”
 - Only those that provide ***context***

Claim construction: “plurality of systems”

- “input device configured to control a plurality of systems”
 - Immersion’s construction: “an input device configured to control a plurality of systems, where each system to be manipulated provides **context** for virtual detents.”
(DE 18, Sur-reply, 3) (emphasis added)

Claim construction: “plurality of systems”

- Each subsystem provides “context” (DE 14, POR, 29-38)

The processor 206 can be configured to determine a specific detent signal to generate. The detent signal may be based at least in part on the system which is actively being controlled. For example, if the video system 210a is being controlled, the processor 206 may generate one type of detent signal, such as a click effect. Alternatively, if the stereo system 210b is being controlled, the processor 206 may generate a second type of detent signal, such as a hard stop virtual detent.

Ex. 1001, 8:41-46.

Claim construction: “plurality of systems”

- Immersion’s construction does not cover *all* software applications – only those that provide “context” (DE 18, Sur-reply, 4-7)

The processor **106** can also generate one or more signals. For example, a processor may generate a signal when a valid input signal is received. In the embodiment shown in FIG. 1, as the input device **102** is manipulated, the processor **106** may generate a signal at the same time or immediately after the manipulation. In one embodiment, the processor **106** may process software code running as an application on the processor and utilize the input signal in the context of the software code to generate signals configured to cause virtual detents.

Ex. 1001, 4:25-34.

Patent Owner's Demonstrative Exhibit - Not Evidence

Claim construction: “plurality of systems”

- Immersion’s construction does not require system-specific or application-specific detent profiles. (DE 17, POR, 37 n. 2)
 - Each subsystem or application has a profile
 - Profiles may be shared

Claim construction: “plurality of systems”

- None of Valve’s Reply cites state “based on the input signal *alone*”

The specification repeatedly describes embodiments where the processor generates detent signals (triggering virtual detents) based on the input signal *alone*.

EX1001, 4:50-60; 11:39-49; 12:33-38; FIGS. 5-6; Ward-Reply, ¶¶64-67. Requiring

DE 17, Reply, 21 (emphasis original) (annotations added)

Claim construction: “plurality of systems”

- Not “based on the input signal *alone*” (DE 17, Reply, 21)

The processor **106** may generate a signal by accessing a detent profile stored in a memory (not shown in FIG. 1). In one embodiment, the processor **106** may access a specific detent profile based at least in part on the input signal. In certain embodiments, the processor **106** may determine which of a plurality of simulated mechanical detents to generate. For example, the processor **106** may analyze the input signal and determine that a hard stop is appropriate. Further, the processor **106** may then access the hard stop virtual detent profile in a memory, and generate a detent signal based on the hard stop virtual detent profile.

EX1001, 4:50-60

Claim construction: “plurality of systems”

- Not “based on the input signal *alone*” (DE 17, Reply, 21)

In step **504**, a signal is generated by the processor. The signal can be configured to cause an actuator to produce a vibrotactile effect to the input device, the vibrotactile effect comprising a simulated mechanical detent, and based at least in part on the detent signal. The signal comprises information relating to a specific virtual detent to be generated by an actuator.

EX1001, 11:39-49

Claim construction: “plurality of systems”

- Not “based on the input signal *alone*” (DE 17, Reply, 21)

A processor **106** can generate the detent signal. The detent signal may be based at least in part on the manipulation or change in position of the input device. For example, a first detent signal may correspond to a small change in position of the input device, whereas a second detent signal may correspond to a larger change in position of the input device.

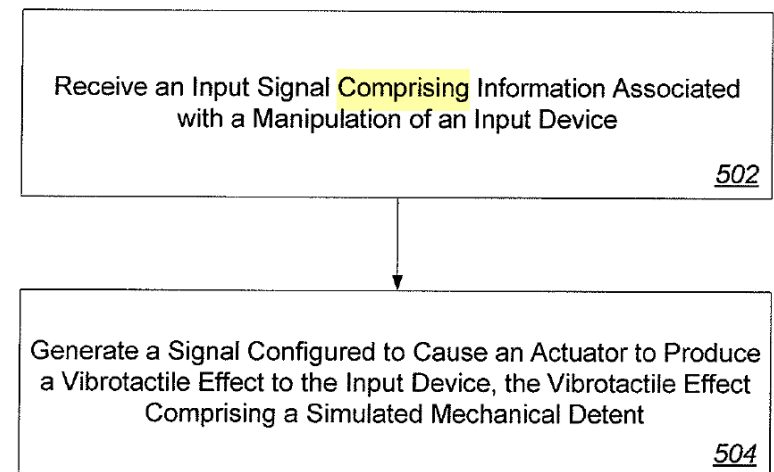
EX1001, 12:33-38

Claim construction: “plurality of systems”

- Not “based on the input signal *alone*” (DE 17, Reply, 21)

In step 504, a signal is generated by the processor. The signal can be configured to cause an actuator to produce a vibrotactile effect to the input device, the vibrotactile effect comprising a simulated mechanical detent, and based at least in part on the detent signal. The signal comprises information relating to a specific virtual detent to be generated by an actuator.

EX1001, 12:33-38



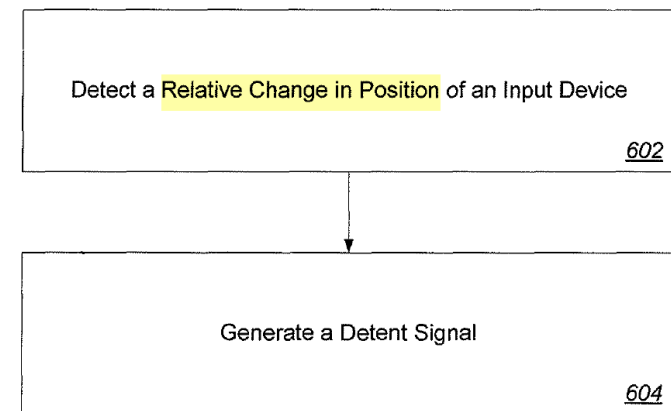
EX1001, Fig. 5

Claim construction: “plurality of systems”

- Not “based on the input signal *alone*” (DE 17, Reply, 21)

A processor 106 can generate the detent signal. The detent signal may be based at least in part on the manipulation or change in position of the input device. For example, a first detent signal may correspond to a small change in position of the input device, whereas a second detent signal may correspond to a larger change in position of the input device.

EX1001, 12:33-38



EX1001, Fig. 6

Patent Owner's Demonstrative Exhibit - Not Evidence

Prior art overview

Patent Owner's Demonstrative Exhibit - Not Evidence

Prior art overview

- Hindsight reconstruction by combining two classes:
(1) touchpads with only “vibrotactile effects”;
(2) physical controls (sliders and knobs) (DE 14, POR, 1)

sought to virtualize in the '042 Patent. By asserting art that only discloses the mechanical detent control appendages that the '042 Patent's virtual controls were intended to replace, the Petition merely identifies the problem the invention solved, rather than demonstrate that the prior art renders the challenged claims obvious.

DE 11, POR, 3

Patent Owner's Demonstrative Exhibit - Not Evidence

Prior art overview

- Touchpads with only “vibrotactile effects” lack:
 - “virtual detents”
 - “detent profiles”
 - “plurality of systems”
- Sliders and knobs lack “virtual detents”

Prior art overview

- Ground 3: Rosenberg's laptop has no "virtual detents," no "detent profiles," and no "plurality of systems"
- Ground 1: Ichinose's touchpad and Levin's knob are "incompatible" and lack "virtual detents"
- Ground 2: Combining Ichinose's vibrotactile touchpad and Wang's knob still lacks "virtual detents"
- Ground 4: no longer relevant

Ground 3: Rosenberg does not anticipate

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 3: Rosenberg

- Mere laptop with “vibrotactile effects” does not anticipate (DE 18, Sur-reply, 2-3)

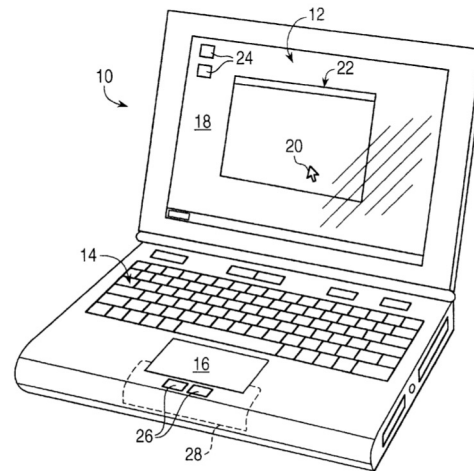


FIG. 1

EX1009, Fig. 1

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 3: Rosenberg

- No “virtual detents” (DE 18, Sur-reply, 7-12)
 - Only “vibrotactile effects”
 - Despite Valve’s cherry-picking, full disclosures do **not** disclose a mechanical detent to simulate at all

Ground 3: Rosenberg

- No “detent profiles” (DE 18, Sur-reply, 12-14)
 - Only “force profiles” from Rosenberg-II
- Does not disclose “applications” as “plurality of systems” (DE 18, Sur-reply, 14-15)
 - No construction required
 - No detent profile “associated with one of the systems”

Ground 3: Rosenberg

- No “virtual detents” (DE 18, Sur-reply, 7-12)
- Valve claims Rosenberg-I ***explicitly*** discloses providing confirmation when “pressing a physical button”

mechanical resistance. EX1001, 6:16-17. Regardless, Rosenberg-I ***explicitly*** teaches its “pulse[s]” provide the “physical confirmation” users expects to feel when, *e.g.*, “pressing a physical button,” *i.e.*, mechanical resistance. EX1009, 13:41-54; Ward-Reply, ¶¶108-109.

DE 17, Reply, 25-26 (emphasis original) annotations added.

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 3: Rosenberg

- No “virtual detents”
(DE 18, Sur-reply, 7-12)
- Valve’s support expressly states the *opposite*
- User does *not* press a button
- Nothing to “simulate” with a hover

A software designer may want to allow a user to be able to select options or a software function by positioning a cursor over an area on the screen using the touchpad, but not require pressing a physical button or tapping the touchpad to actually select the option. Currently, it is problematic to allow such selection because a user has physical confirmation of execution when pressing a physical button. A pulse sent to the touchpad of the present invention can act as that physical confirmation without the user having to press a button or other control for selection. For example, a user can position a cursor over a web page element, and once the cursor is within the desired region for a given period of time, an associated function can be executed. This is indicated to the user through a tactile pulse sent to the pad **16**.

EX1009 13:41-54

Ground 3: Rosenberg

- No “virtual detents” (DE 18, Sur-reply, 7-12)
- Valve claims Rosenberg-I discloses the '042's “hill virtual detent”

Rosenberg-I further describes outputting a “pulse...to indicate the end of [a] range,” *e.g.*, volume, “has been reached.” 12:53-57; Ward, ¶307. It also discloses that the “strength and/or frequency of a vibration can be correlated with the adjustment of a control to indicate current magnitude of the volume or other adjusted value.” 12:61-64. This latter effect corresponds to the “hill virtual detent” depicted in the '042 patent's Figure 9C. EX1001, 13:63-14:5; Ward, ¶308.

DE 17, Reply, 25-26 (emphasis original) annotations added.

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 3: Rosenberg

- No “virtual detents” (DE 18, Sur-reply, 7-12)
- Valve claims Rosenberg-I discloses the '042's “hill virtual detent”
 - Anticipation compares against *claims*—not specification
- Despite Valve's cherry-picking, the full disclosures do *not* disclose a mechanical detent to simulate at all

Ground 3: Rosenberg

- No “virtual detents” (DE 18, Sur-reply, 7-12)
- No mention of “hill” effect
- “Scrolling” “through use of the cursor” has no mechanical control to simulate
- Pulses merely “indicate” or inform

In other related interactions, when a rate control or scrolling function is performed with the touchpad (through use of the cursor), a vibration can be displayed on the device to indicate that scrolling is in process. When reaching the end of a numerical range that is being adjusted (such as volume), a pulse can be output to indicate that the end of the range has been reached. Pulse sensations can be used to indicate the location of the “ticks” for discrete values or settings in the adjusted range. A pulse can also be output to inform the user when the center of the range is reached.

EX1009 12:50-59

Ground 3: Rosenberg

- No “detent profiles” (DE 18, Sur-reply, 12-14)
 - Only “force profiles” from Rosenberg-II
 - No “profiles” “associated with one of the systems”
 - *Net MoneyIN Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (holding that anticipatory references must “disclose those elements ‘***arranged as in the claim***’”)

Ground 3: Rosenberg

- No “plurality of systems” under a plain and ordinary meaning or Immersion’s construction (DE 14, POR, 53; DE 18, Sur-reply, 14-15)
 - Only a single host “system” EX1009, 1:20-21, 1:66-67, 3:47, 6:7-13, 7:8-9
- “[I]nvalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention.” *Xerox Corp. v. 3Com Corp.*, 458 F.3d 1310, 1322 (Fed. Cir. 2006)

Ground 3: Rosenberg

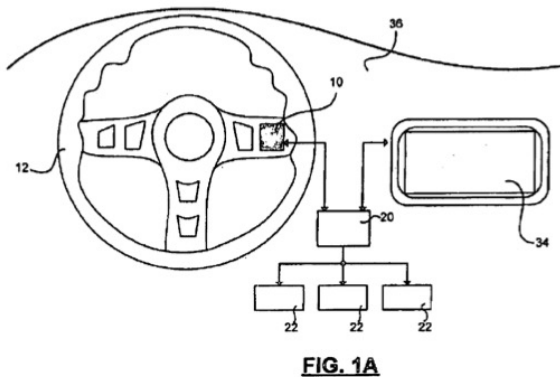
- Valve's arguments hinge on its improper construction that includes ***all*** applications (DE 18, Sur-reply, 14-15)
- No intrinsic support
- Improperly based on infringement contentions

Ground 1: Ichinose-Levin does not render obvious

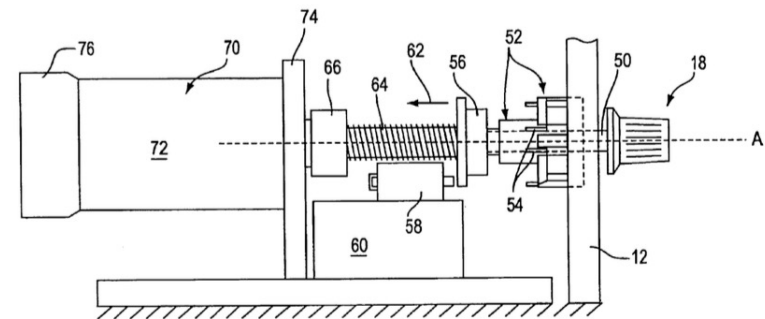
Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 1: Ichinose-Levin

- Combining Ichinose's vibrotactile touchpad with Levin's knob with force profiles does not render obvious (DE 18, Sur-reply, 1-2)



EX1015, Fig. 1A



EX1016, Fig. 3B

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 1: Ichinose-Levin

- Board correctly found (DE 18, Sur-reply, 21-22):

As such, the detent force profile of Figure 6A does not appear to produce a vibrotactile effect as required by the claim. Based on the current record, we fail to see how or why one of ordinary skill in the art would have applied the assisting and resisting forces from the detent force profile of Figure 6A to touchpad 10 of Ichinose. It is not clear that the Petition explains sufficiently how one of ordinary skill in the art would implement the assisting and resisting forces taught by Levin into Ichinose's touchpad 16 that is manipulated by the user sliding a finger across. *See* Pet. 18–20;

Ex. 1003 ¶¶ 131–139.¹¹

DE 11, DI, 30

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 1: Ichinose-Levin

- Ichinose: no “virtual detents”
 - Only “vibrotactile effect”
- Levin: no “detent profiles”
 - Only “incompatible” force profiles

Ground 1: Ichinose-Levin

- Valve argues Levin discloses “jolts” as vibrational effects

Opening”), ¶71 (“a jolt sensation is a vibrotactile sensation”); *infra* pp. 16-20. And Immersion’s suggestion that Levin’s “force feedback” is different from vibrotactile feedback (POR, 22) is wrong because Levin uses the term “force feedback” to refer to various “physical sensations” provided to a user, including vibrations. EX1016, 1:36-38, 10:11-21, 14:26-29; Ward-Reply, ¶¶34-37.

DE 17, Reply, 6.

Ground 1: Ichinose-Levin

- No new arguments to disturb Board's findings (DE 18, Sur-reply, 16)
- The Board did not rely on finding that Levin only disclosed "force feedback"

¹¹ We note that our comments here do not rely upon a finding that Levin's sensations are "force feedback" specifically, and we do not wish to imply that the issue comes down to a debate between "force feedback" versus "vibrotactile" sensations, to the extent there is any difference between the two. Instead, we agree, on this record, with Patent Owner's argument that the types of sensations provided by Levin appear to be incompatible with the types of sensations provided by Ichinose due to the way in which they are delivered.

DE 11, DI, 30 fn 11.

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 1: Ichinose-Levin

- Valve's cites describe “force feedback” as assistive or resistive forces—not vibrational (DE 18, Sur-reply, 16-17)

Some control knobs have been provided with “force feedback.” Force feedback devices can provide physical sensations to the user manipulating the knob. Typically, a motor is coupled to the knob and is connected to a controller such as a microprocessor. The microprocessor receives sensor signals from the knob and sends appropriate force feedback control signals to the motor so that the motor provides forces on the knob. In this manner, a variety of programmable feel sensations can be output on the knob, such as detents, spring forces, or the like.

EX1016, 1:36-45

Ground 1: Ichinose-Levin

- Valve's cites describe “force feedback” as assistive or resistive forces—not vibrational (DE 18, Sur-reply, 16-17)

designate a particular position of the knob. The force detents can be simple jolts or bump forces to indicate the detent's position, or the detents can include forces that attract the knob to the particular rotational detent position and resist movement of the knob away from that position. The position can correspond to a particular radio station frequency or other station (e.g., television station frequency), thus making selection easier for the user. Such detents can be provided for additional functions, such as volume control for sound speakers, fast forward or rewind of a video cassette recorder or computer-displayed movie (such as a DVD movie), scrolling a displayed document or web page, etc. Force feedback “snap-to” detents can also be provided, for example, for the favorite station frequencies preprogrammed by the user, where a small force biases the knob to the detent position when it is just outside the position.

EX1016, 10:17-32

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 1: Ichinose-Levin

- Valve's cites describe “force feedback” as assistive or resistive forces—not vibrational (DE 18, Sur-reply, 16-17)
- “Other force effects,” such as vibration forces, *merely augment*

the slider control **32** in a linear degree of freedom. For example, **force detents** can be applied in a position control paradigm as the knob **34** is moved in its linear degree of freedom. In a rate control paradigm, a **spring return force can bias the knob 34** toward a center origin position, for example the center of the range of motion of the knob. The further the user moves the knob from the origin position, the greater the **spring force opposing** that motion and the greater the rate of the controlled value changes (increases or decreases). **Other force effects** include damping forces, texture forces, jolts, obstruction forces, assistive forces, periodic forces such as vibration forces, and end-of-travel forces.

EX1016, 11:21-29

Ground 1: Ichinose-Levin

- “Other force effects,” such as vibration forces, merely augment
- Vibration forces do not simulate a mechanical detent

speed in a position control mode. A small vibration can be output on the knob **18** in the rotary degree of freedom, where the frequency (or magnitude) of the vibration forces correlate with the magnitude of fan rotation speed, i.e., a high fan speed provides a fast vibration. Furthermore, detents are preferably output superimposed on the vibration forces so

EX1016, 8:11-16

Ground 1: Ichinose-Levin

- Valve's cite to Rosenberg-I confirms a "jolt" is a single "force"—not vibrational (DE 17, Reply, 11)

the cursor with displayed graphical objects. For example, a jolt or "pulse" sensation can be output, which is a single impulse of force that quickly rises to the desired magnitude and then is turned off or quickly decays back to zero or small magnitude. The touchpad 16 can be jolted in the z-axis to provide the pulse. A vibration sensation can also be output, which is a time-varying force that is typically periodic. The vibration can cause the touchpad 16 or portions thereof to oscillate back and forth on the z axis, and can be output by a host or local microprocessor to simulate a particular effect that is occurring in a host application.

EX1009, 11:29-32

Ground 1: Ichinose-Levin

- No motivation to combine

Valve's use case involving Levin's virtual slider (Reply at 14) fails for the same reasons. Levin's full disclosure explains that the virtual slider is controlled via slider knob 34 moved in the *linear direction*. Levin at 7:8-10 ("A slider control 32 includes a *slider knob 34* which is grasped by the user and moved in a *linear direction* as shown by arrow 36.") Valve continues to fail to explain why a POSA would want to apply Levin's linear forces to Ichinose's touchpad. Accordingly, Valve has failed to establish why a POSA would be motivated to combine Levin with Ichinose.

DE 18, Sur-reply, 21

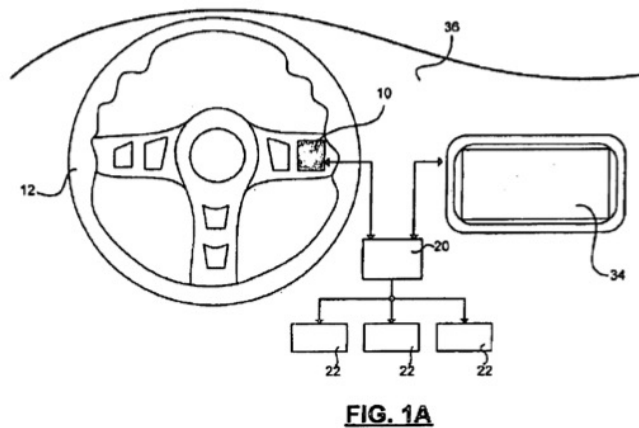
Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2:
Wang-Ichinoise does not render obvious

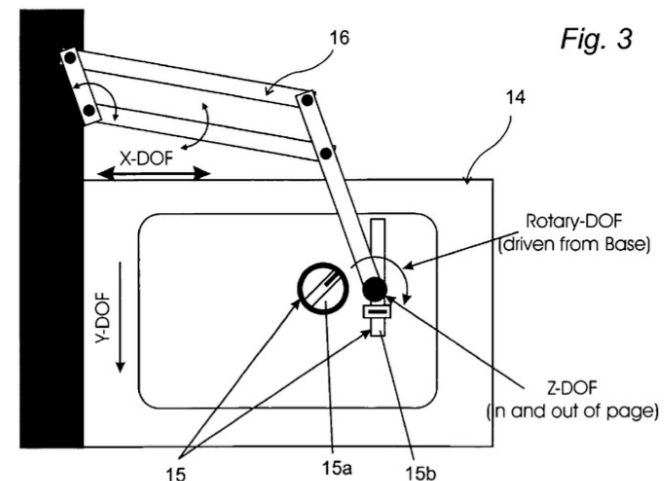
Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- Combining Ichinose's vibrotactile touchpad and Wang's knob with force detents does not render obvious (DE 17, Reply, 2)



EX1015, Fig. 1A



EX1022, Fig. 3

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- Ichinose: no “virtual detents”
- Wang: no “virtual detents”
- Combination lacks “virtual detents”

Ground 2: Wang-Ichinose

- Valve incorrectly argues that the *combination* was not addressed

Immersion's argument (at 49) that "the alleged combination only teaches force feedback" is not correct given (i) Wang's broad haptic-feedback teachings and (ii) Ichinose's specific vibrotactile-feedback teachings. Immersion's argument attacks Wang and Ichinose *individually*, but the salient question is what the proposed *combination* teaches. *Moultet*, 686 F.3d at 1332-33. In the combination, the references' teachings are combined to yield a system where Ichinose's touchpad vibrates to "emulate" the detents that Wang teaches are beneficial when controlling its virtual slider or knob. Pet., 34-39.

DE 17, Reply, 18

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- Valve incorrectly argues that the *combination* was not addressed

(Fed. Cir. 2022). Put simply, (i) Wang teaches emulating detents with haptic feedback, and (ii) Ichinose discloses a particular form of haptic feedback (vibrotactile) that POSAs had reason to implement in Wang's system. Nothing more is needed to establish obviousness.

DE 17, Reply, 19

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- The Board addressed the combination (DE 18, Sur-reply, 21-22)
 - Still missing “virtual detents,” e.g., vibrotactile signals to emulate detents

At this stage, we agree with Patent Owner that the Petition appears deficient with respect to explaining why Wang’s command signals would generate a vibrotactile signal to emulate detents. Although Ichinose discloses vibrotactile feedback, neither reference appears to disclose using vibrotactile signals to emulate a detent. It is not clear to us that the Petition explains sufficiently why the emulated detents in the proposed combination would be vibrotactile effects. Petitioner cites, but does not discuss, Mr. Ward’s testimony on this point. Pet. 39 (citing Ex. 1003 ¶¶ 233–238).

DE 11, DI, 32

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- No motivation to combine (DE 18, Sur-reply, 23-24)
- Wang discloses: “in all cases” an “actual mechanical control device” is used—not an “image”

is being rotated. Similarly, the haptic device can be used to operate sliders, push knobs, rocker switches and other common mechanical devices. In all cases, the objective is to use a multi degree of freedom haptic device to create forces on the user to make the images feel real so as to make the user think they are interfacing to an actual mechanical control device as opposed to an image of a control device. As shown in Figs. 2 to 4, the haptic device 16 can be integrated

EX1022, 6:21-26

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 2: Wang-Ichinose

- No motivation to combine (DE 18, Sur-reply, 23-24)
- Lack of physical “knobs” is a “disadvantage”

A disadvantage of a drive-by-wire approach is that the driver no longer ‘feels’ the road. Accordingly, there is a need to provide a haptic reconfigurable dashboard system, which enables the driver to feel the interaction forces between a control device and a vehicle subsystem or hardware to be controlled, as in a non drive-by-wire vehicle, and which can include all the control buttons and knobs in a vehicle.

EX1022, 1:26-2:2

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 4: Rosenberg-Goldenberg

Patent Owner's Demonstrative Exhibit - Not Evidence

Ground 4: Rosenberg-Goldenberg

- Valve contends, “Ground 4 is not relevant.” (DE 17, Reply, 28)

FOLIO LAW GROUP PLLC

Patent Owner's Demonstrative Exhibit - Not Evidence