

United States Patent and Trademark Office
Before the Patent Trial and Appeal Board

Valve Corporation

(Petitioner)

v.

Immersion Corporation

(Patent Owner)

Inter Partes Review

No. IPR2024-00582 | **U.S. Patent No. 11,175,738**

Petitioner's Demonstrative Exhibits

June 23, 2025

Valve Exhibit 1043
Valve v. Immersion
IPR2024-00582

The Challenged Patent: U.S. Patent No. 11,175,738

Petition at 5

United States Patent



Patent No. US 11,175,738 B2
Date of Patent: Nov. 16, 2023

INVENTORS

Reinhold K. Schaller, Jr.

BY

Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

Attorney

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Reinhold K. Schaller, Jr.

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Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

Attorney

Reinhold K. Schaller, Jr.

What is claimed is:

1. A device comprising:

a proximity sensor capable of detecting a non-contact interaction with a touch-sensitive device and outputting a first sensor signal;

a touch sensor capable of detecting a touch with the touch-sensitive input device and outputting a second sensor signal;

a haptic output device configured to receive a haptic output signal and output a haptic effect in response to the haptic output signal; and

a processor configured to:

receive the first sensor signal and the second sensor signal;

generate a haptic output signal based at least in part on the first and second sensor signals; and

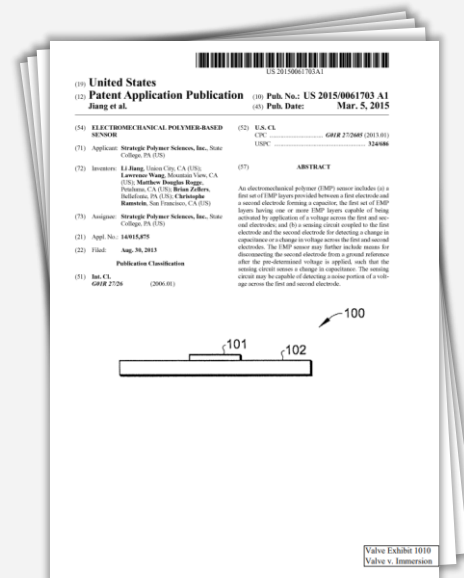
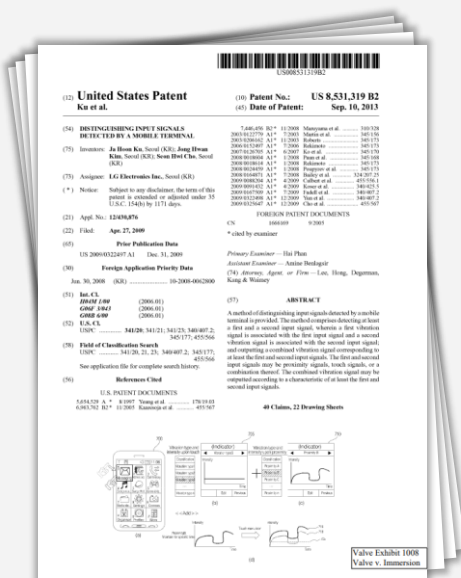
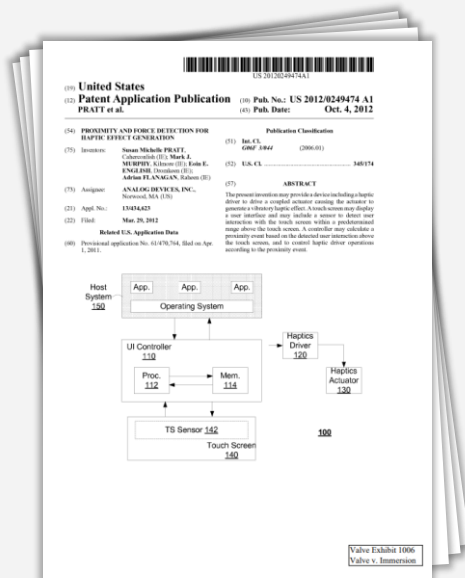
transmit the haptic output signal to the haptic output device.

EX1001 at Claim 1 (cited by Petition at 5)

The Prior Art and the Petition's Grounds

Petition at 4

GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103



The Disputed Issues

Disputes for Which Immersion's Claim Construction Is Irrelevant

- Ground 1 (Pratt):
 - Does Pratt's **rate-of-approach** embodiment anticipate and/or render obvious the challenged claims?
- Ground 3 (Ku):
 - Does an obvious implementation of Ku's **Figures 7 and 12** render the challenged claims obvious?
- Ground 2 (Pratt + Ku) and Ground 4 (Ku + Jiang):
 - Did Valve establish a motivation to combine (a) Pratt and Ku, and (b) Ku and Jiang?
 - *Need not be considered if the Board resolves the first two questions in Valve's favor.*

Disputes for Which Immersion's Claim Construction Is Relevant

- Ground 1:
 - Does Pratt's **bubble-effect** embodiment anticipate the challenged claims?

Ground 1 – Pratt's Rate-of-Approach Embodiment

GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103

BACKGROUND

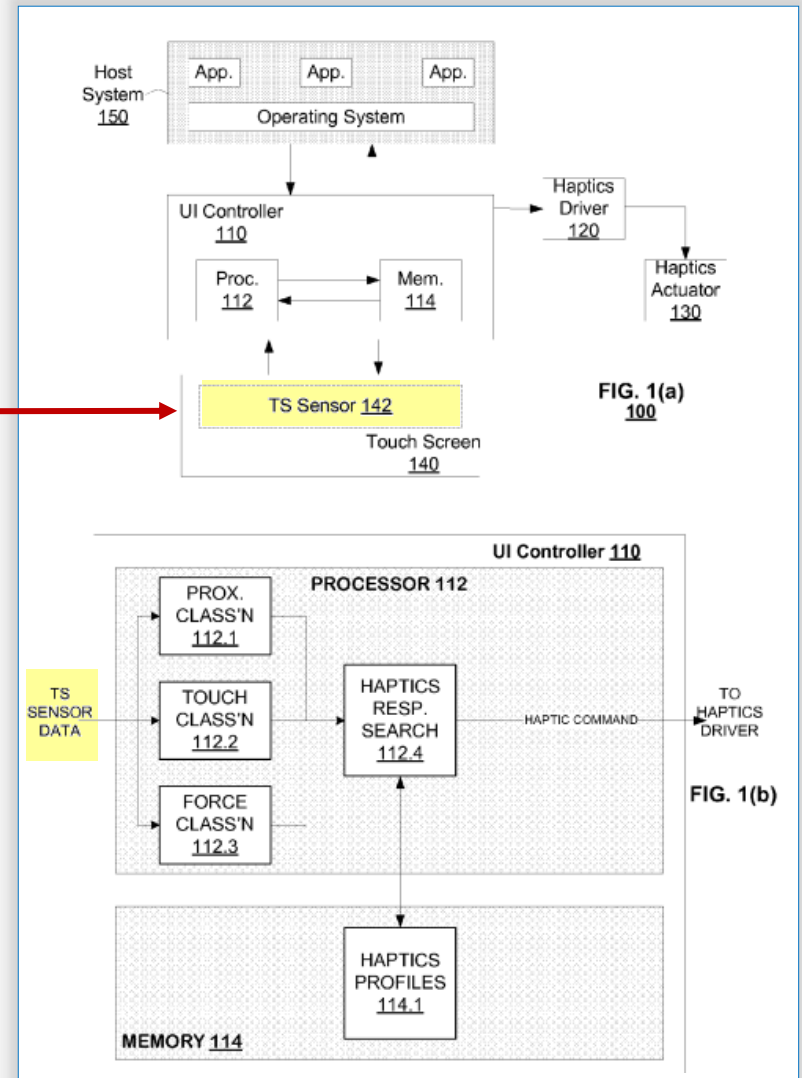
[0002] The present invention relates to user interface control, in particular to haptic effect generation techniques based on proximity, touch, and/or force detection.

type of touch screen 140 and TS sensor 142. For example, if the touch screen 140 and the TS sensor 142 is provided as a capacitive touch screen and corresponding capacitive sensor (or grid of capacitive sensors), the proximity classification module 112.1 may calculate changes in respective capacitive fields for detecting proximity events. Further, the proximity

142. For example, if the touch screen 140 and the TS sensor 142 is provided as a capacitive touch screen and corresponding capacitive sensor (or grid of capacitive sensors), the touch classification module 112.2 may calculate changes in respective capacitive fields for detecting touch events. Further, the

the type of touch screen 140 and TS sensor 142. For example, if the touch screen 140 and the TS sensor 142 is provided as a capacitive touch screen and corresponding capacitive sensor (or grid of capacitive sensors), the force classification module 112.3 may calculate changes in respective capacitive fields for detecting force events. Further, the touch classifica-

EX1006 at [0002], [0022]-[0024] (cited by Petition at 8)



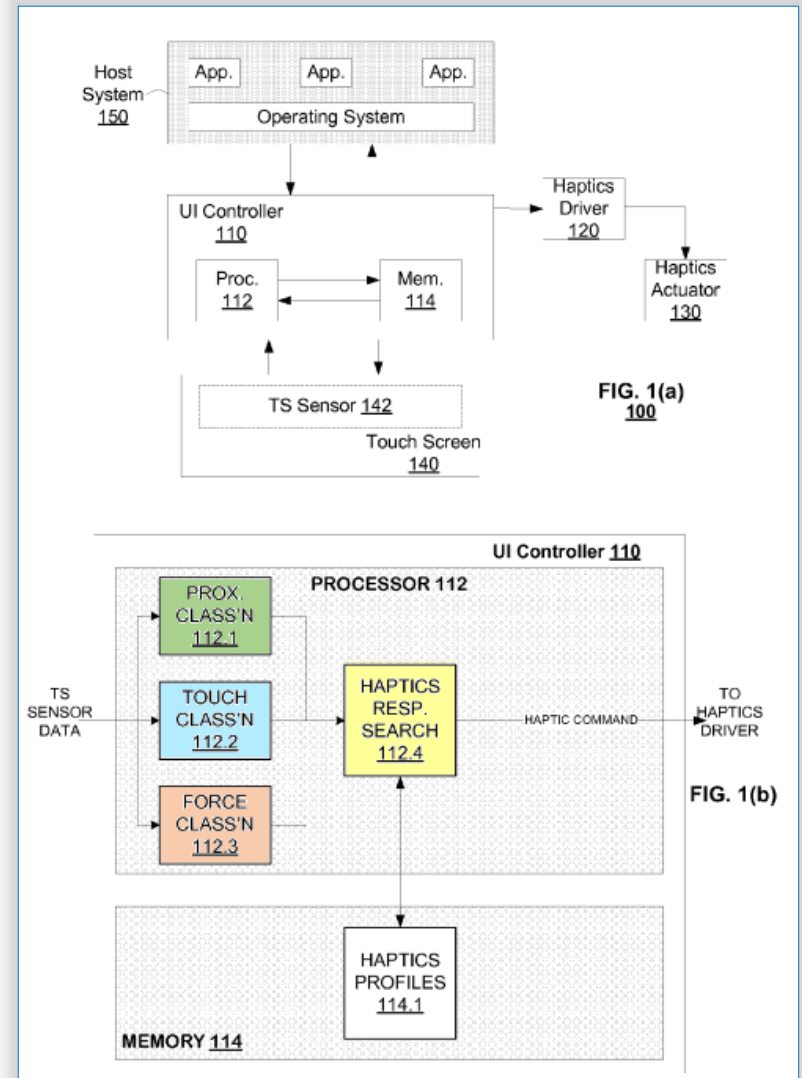
EX1006 at FIG. 1 (cited by Petition at 8)

[0020] FIG. 1(b) is a functional block diagram of the UI controller 110 according to an embodiment of the present invention. The processor 112 in the UI controller 110 may include a proximity classification module 112.1, a touch classification module 112.2, a force classification module 112.3 and a haptics response search module 112.4. The memory 114 in the UI controller 110 may include haptics profiles data 114.1. The data may be stored as look-up-tables (LUTs). The proximity classification module 112.1, touch classification module 112.2, and the force classification module 112.3 may receive the TS sensor data. Based on the TS sensor data, the classification module may calculate corresponding proximity, touch, and/or force event(s).

EX1006 at [0020] (cited by Petition at 12)

[0024] The haptic response search module 112.4 may receive proximity, touch, and/or force events as calculated by the modules 112.1-112.3, and may generate a haptic command based on the haptics profile data 114.1. For example, the haptic response search module 112.4 may match the calculated proximity, touch, and/or force event data to a stored haptic profile and may generate a haptic command associated with the matched haptic profile.

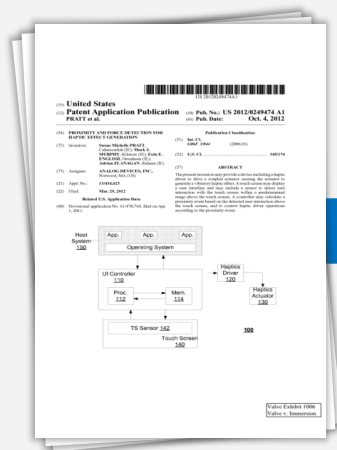
EX1006 at [0024] (cited by Petition at 9)



EX1006 at FIG. 1 (cited by Petition at 9)

Pratt's Rate-of-Approach Embodiment Anticipates or Renders the Claims Obvious

Petition at 26-28



Pratt

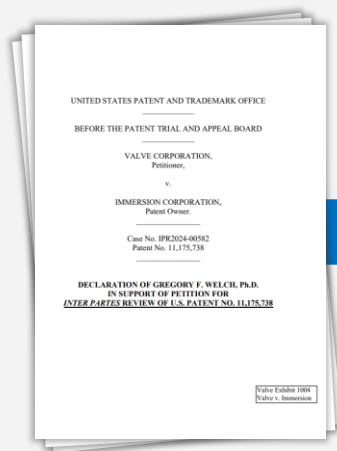
[0041] In an embodiment, haptic selection may also be based on sensor measurements. For example, haptic effect types may be selected based on the rate of approach of the user's finger as it moves toward a touch screen—a first haptic effect may be selected in response to a relatively “fast” velocity and a second haptic effect may be selected in response to a relatively “slow” velocity.

[0039] At time t1, the device may detect the finger at a predetermined distance (Threshold P) from the touch surface. At this time t1, the device may initiate pre-charging the haptic actuator. The haptic actuator may be pre-charged according to a haptic profile for the anticipated time and location of the touch. At time t2, the device may detect the finger making contact with the touch surface via Threshold T. The device, consequently, may be generating X,Y,Z coordinates based on the touch results. At this time t2, the device may drive the haptic actuator with the a corresponding haptic effect voltage based on the haptic effect profile associated with the touch characteristics. Therefore, the device may generate the haptic effect faster upon touch screen contact because of pre-charging the haptic generating components, and thereby reducing latency between the user touching the screen and feeling the corresponding haptic feedback.

EX1006 at [0039], [0041] (cited by Petition at 27)

Pratt's Rate-of-Approach Embodiment Anticipates or Renders the Claims Obvious

Petition at 26-28



Welch Decl.

Id. A POSA would understand that the rate of approach is based on signals from the proximity sensor, e.g. based on the time rate of change of the “Z” coordinate generated from the proximity sensor results. *Id.*, [0034]. While the type of haptic effect is selected based on the proximity sensor signal, a POSA would understand that the actual “haptic selection” referenced in paragraph 41 does not occur until after the user’s finger touches the touch screen, such that the haptic output signal is based on signals from both the proximity *and* touch sensors. In particular,

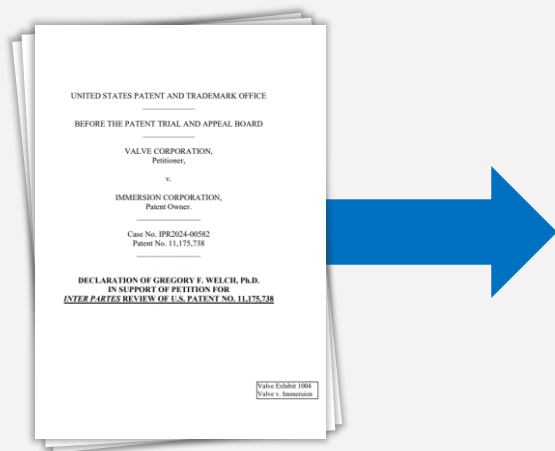
EX1004 (Welch Decl.) at [0149] (cited by Petition at 27)

the anticipated touch. Indeed, a POSA would understand that both of the haptic effects described in paragraph 41 (one reflecting a “fast” rate of approach as the finger approaches the screen and the other a comparatively “slow” approach) were intended to be produced only after the finger actually touches because otherwise the finger would not feel the haptic effect.

EX1004 (Welch Decl.) at [0149] (cited by Petition at 27)

Pratt's Rate-of-Approach Embodiment Anticipates or Renders the Claims Obvious

Petition at 26-28



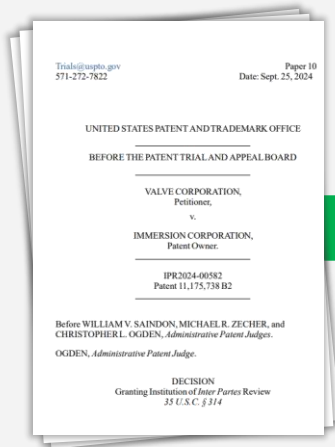
Welch Decl.

150. At minimum, it would have been obvious to implement paragraph 41 this way (in other words, incorporating Pratt's pre-charging operation as described in paragraph 39). Such a combination would differentiate between touches based on quick movements versus touches based on slower movements during approach (as discussed in paragraph 41) while minimizing the amount of latency between when the user's finger makes contact and when the user feels the haptic effect (as described in paragraph 39). Indeed, Pratt teaches that its "embodiments may be implemented [] in combination." *Id.*, FIG. 1(b), [0016]-[0017], [0053].

EX1004 (Welch Decl.) at [0150] (cited by Petition at 28)

The Board Was Right at Institution

Institution Dec. at 16-18



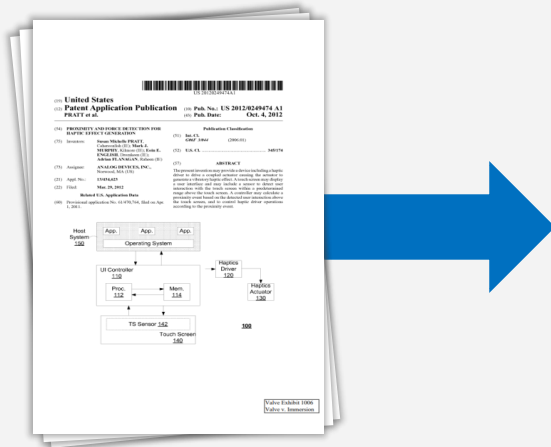
Institution Decision

At this stage, we find sufficiently persuasive Valve’s argument that Pratt discloses, or at least makes obvious, that its ultimate haptic effect, which occurs after the touch, may be different depending on whether the approach to the surface was fast or slow. See Ex. 1006 ¶ 24 (“[T]he haptic response search module . . . may match the calculated proximity, touch, and/or force event data to a stored haptic profile that may generate a haptic command associated with the matched haptic profile.”); ¶¶ 39–40 (“At . . . time t2, the device may drive the haptic actuator with . . . a corresponding haptic effect voltage based on the haptic effect profile associated with the touch characteristics. . . . In an embodiment, haptic selection may also be based on sensor measurements. For example, haptic effect types may be selected based on the rate of approach”); see also *id.*, claims 16 and 19 (claiming a user interface controller that receives “sensor data” including proximity data such as “a rate of approach” (claim 17) as well as “a user touch on the touch screen” (claim 19), and “a processor to calculate user interaction properties from the sensor data, to match a haptic profile from [a] memory to the user interaction properties, and to generate a haptic command associated with the haptic profile”). Thus, we disagree at this stage with Immersion’s contention that the purpose, or sole purpose, of Pratt’s rate-of-approach information is to convey information to the user prior to the touch.

Institution Decision at 17

The Board Was Right at Institution

Institution Dec. at 16-18



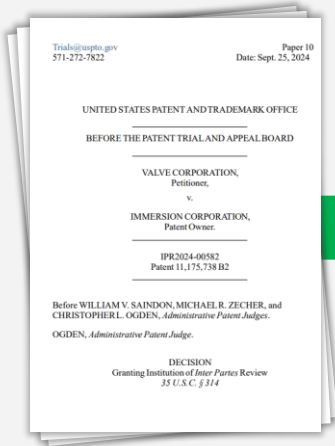
Pratt

16. A user interface controller, comprising:
a sensor input to receive sensor data related to user interaction above a touch screen within a predetermined range;
a memory to store program instructions and a plurality of haptic profiles;
a processor to calculate user interaction properties from the sensor data, to match a haptic profile from the memory to the user interaction properties, and to generate a haptic command associated with the haptic profile; and a haptic driver output to send the haptic command.
17. The user interface controller of claim 16, wherein the user interaction properties include a rate of approach.
18. The user interface controller of claim 16, wherein the haptic command includes an instruction to pre-charge an actuator.
19. The user interface controller of claim 16, wherein the sensor data also includes also relates to a user touch on the touch screen and to an amount of force of the user touch.

EX1006 at claims 16-19 (cited by Institution Decision at 17)

The Board Was Right at Institution

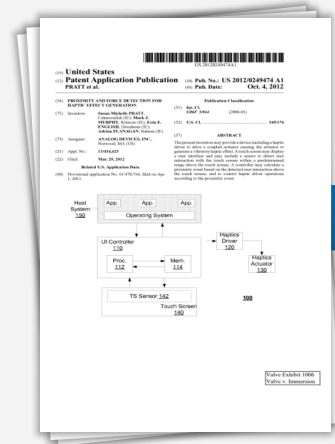
Institution Dec. at 18-19



Institution Decision

We agree with Immersion that Pratt's second general statement is in the context of Figure 5. However, the statement is consistent with Pratt's first general statement, which appears to be applicable to Pratt's entire disclosure, including the "bubble" effect and "rate of approach" embodiments. In describing the processor, apparently used in all embodiments, Pratt discloses that the processor may generate a "haptic command" associated with a stored haptic profile matching "the calculated proximity, touch, and/or force event data." Ex. 1006 ¶ 24. We are sufficiently persuaded, at this stage, that a person of ordinary skill in the art would have understood this to disclose that a single stored haptic profile can be selected based on both proximity and touch signals.

Institution Decision at 18-19



Pratt

[0024] The haptic response search module 112.4 may receive proximity, touch, and/or force events as calculated by the modules 112.1-112.3, and may generate a haptic command based on the haptics profile data 114.1. For example, the haptic response search module 112.4 may match the calculated proximity, touch, and/or force event data to a stored haptic profile and may generate a haptic command associated with the matched haptic profile.

EX1006 at [0024] (cited by Institution Decision at 18-19)

Immersion's Patent Owner Response Ignored the Petition's Evidence and the Board's Prior Reasoning

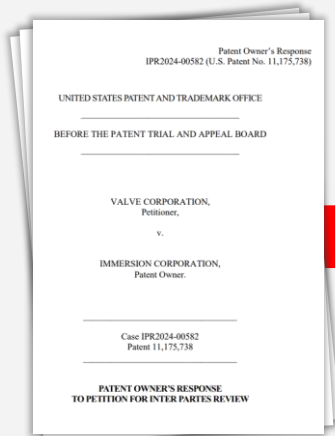
Reply at 5-8

Patent Owner Response (at 35)

C. Challenged Claims 1-3, 5-6, 14-15, and 19 are not rendered obvious by Pratt's "rate of approach" embodiment

The Institution Decision concluded that Pratt's "rate of approach" embodiment renders the Challenged Claims obvious because it would have been obvious to modify Pratt to change the ultimate haptic effect based on whether the rate of approach was fast or slow. DI at 16-17.

The Institution Decision refers to a quotation in Pratt that is out of context, however. In particular, the Decision quotes the following sentence: "For example, haptic effect types may be selected based on the rate of approach" DI at 17 (quoting EX1006, ¶41). However, that sentence is in reference to the embodiment where the haptic effect is generated based on proximity alone, not touch. Further, the purpose of the haptic effect disclosed in this embodiment of Pratt is to convey information *before* the user touches the menu icon. EX2008, ¶¶96-97. Thus, a POSA would understand that in the context of that embodiment, one would not wait to convey that information until after they have touched the menu icon. EX2008, ¶97. Therefore, Pratt's "rate of approach" embodiment does not render the Challenged Claims obvious. *Id.*



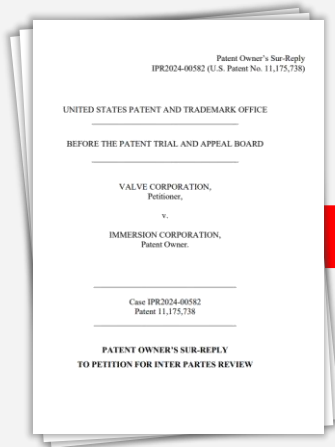
Patent Owner Response

Immersion's Sur-Reply Makes Improper New Arguments, But The Arguments Fail Nonetheless

Sur-Reply (at 8, 10-11)

B. It Would Not Have Been Obvious to Combine Pratt's "Latency" Embodiment with the "Rate-of-Approach" Embodiment

1. Pratt paragraphs 39 and 41 disclose different, incompatible embodiments.



Sur-Reply

feedback.” *Id.* (emphasis added); POR, 2. Thus, there are two attributes to the embodiment disclosed at paragraph 39: (1) it uses proximity *not* to generate or change the haptic effect but only to pre-charge the actuator to reduce latency and (2) it delivers the haptic effect only *after* the user touches the surface.

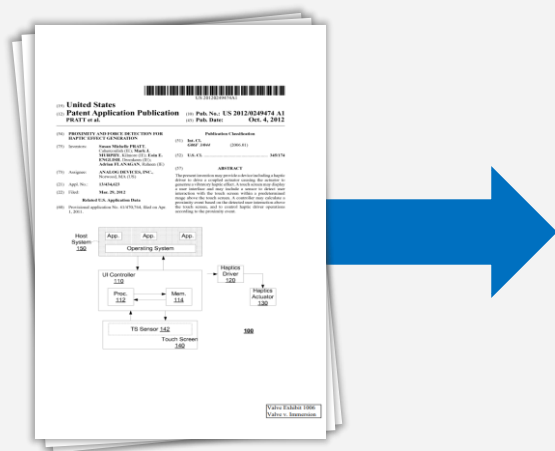


relatively ‘slow’ velocity.” EX1006, ¶[0041]. Thus, there are two attributes to the embodiment disclosed at paragraph 41: (1) it uses the rate of approach of a user’s finger to select the haptic effect and (2) it delivers the haptic effect only *before* the user touches the surface.



Pratt's Rate-of-Approach Embodiment Anticipates or Renders the Claims Obvious

Petition at 26-28



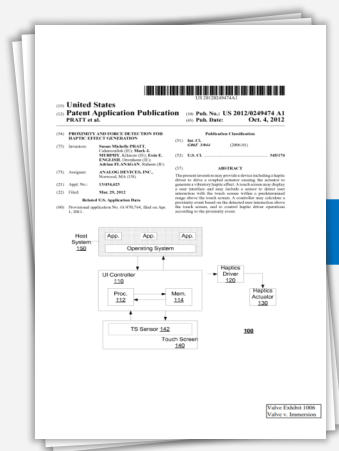
Pratt

[0041] In an embodiment, haptic selection may also be based on sensor measurements. For example, haptic effect types may be selected based on the rate of approach of the user's finger as it moves toward a touch screen—a first haptic effect may be selected in response to a relatively “fast” velocity and a second haptic effect may be selected in response to a relatively “slow” velocity.

[0039] At time t1, the device may detect the finger at a predetermined distance (Threshold P) from the touch surface. At this time t1, the device may initiate pre-charging the haptic actuator. The haptic actuator may be pre-charged according to a haptic profile for the anticipated time and location of the touch. At time t2, the device may detect the finger making contact with the touch surface via Threshold T. The device, consequently, may be generating X,Y,Z coordinates based on the touch results. At this time t2, the device may drive the haptic actuator with the a corresponding haptic effect voltage based on the haptic effect profile associated with the touch characteristics. Therefore, the device may generate the haptic effect faster upon touch screen contact because of pre-charging the haptic generating components, and thereby reducing latency between the user touching the screen and feeling the corresponding haptic feedback.

Pratt's Rate-of-Approach Embodiment Anticipates or Renders the Claims Obvious

Petition at 26-28



Pratt

[0003] Haptics refers to the sense of touch. In electronic devices, haptics relates to providing a touch sensory feedback to the user. Electronic devices incorporating haptics may include cell phones, PDAs, gaming devices, etc. The user interacts with electronic devices through a user interface, such as a touch screen; however, the user often does not know if the user's desired function was recognized or is being performed by the electronic device. Thus, electronic devices generate a haptic feedback in the form of a vibro-tactile sensation (often, a simulated "click") to alert the user of the electronic device's performance. Stated differently, haptic feedback lets the user know what is going on with the electronic device. In a gaming electronic device, for example, haptics can provide a sensory stimuli according to game interactions.

EX1006 at [0003] (cited in Welch Decl. at [0253]; see also Petition at 50, 64-65)

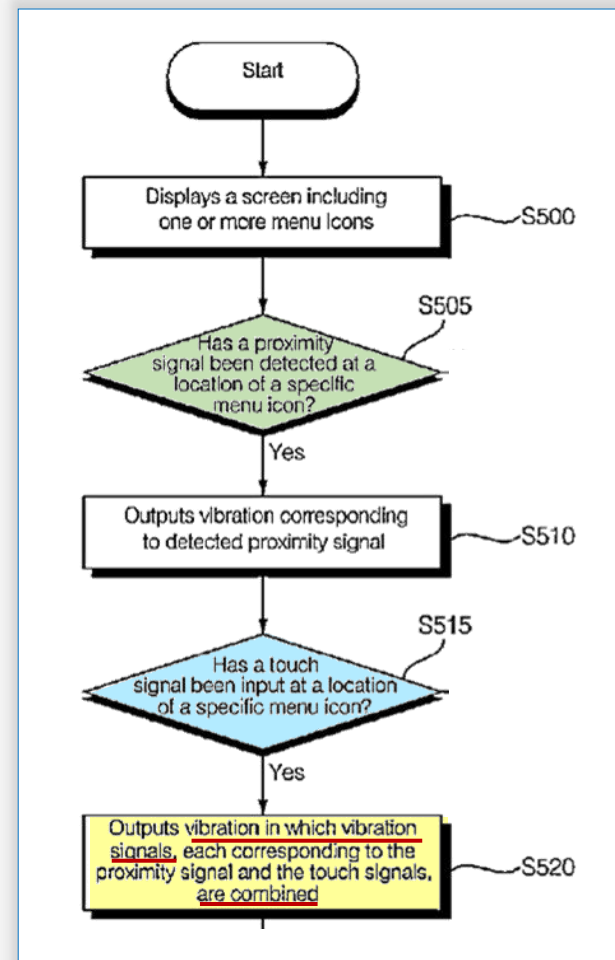
Ground 3 – Ku

GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103

Next, the controller 180 determines whether a proximity signal has been detected at the location of a specific one of the one or more menu icons through the proximity sensor 141 (S505). If, as a result of the determination in S505, the proximity signal has not been detected at the location of a specific menu icon, the controller 180 does not output a vibration signal. On the other hand, if, as a result of the determination in S505, the proximity signal has been detected at the location of a specific menu icon, the controller 180 outputs a vibration signal, corresponding to the detected proximity signal, through the haptic module 157 (S510). Here, a single vibration signal corresponding to the detected proximity signal is output as vibration. Next, the controller determines whether a touch signal has been input through the specific menu icon of the location where the proximity signal was detected in step S505 (S515). Here, the touch signal may be input through a touch screen.

On the other hand, if, as a result of the determination in S515, the touch signal has been input through the specific menu icon, the controller 180 outputs vibration in which a vibration signal corresponding to the proximity signal, which has been detected in step S505, and a vibration signal corresponding to the touch signal, which has been input in step S515, are combined through the haptic module 157 (S520). The respective vibration signals may be added or subtracted and then output as vibration. The controller 180 then displays a screen corresponding to the menu icon through which the touch signal has been input on the display unit 151 (S535).

EX1008 at 11:54-12:28) (cited by Petition at 43-44)

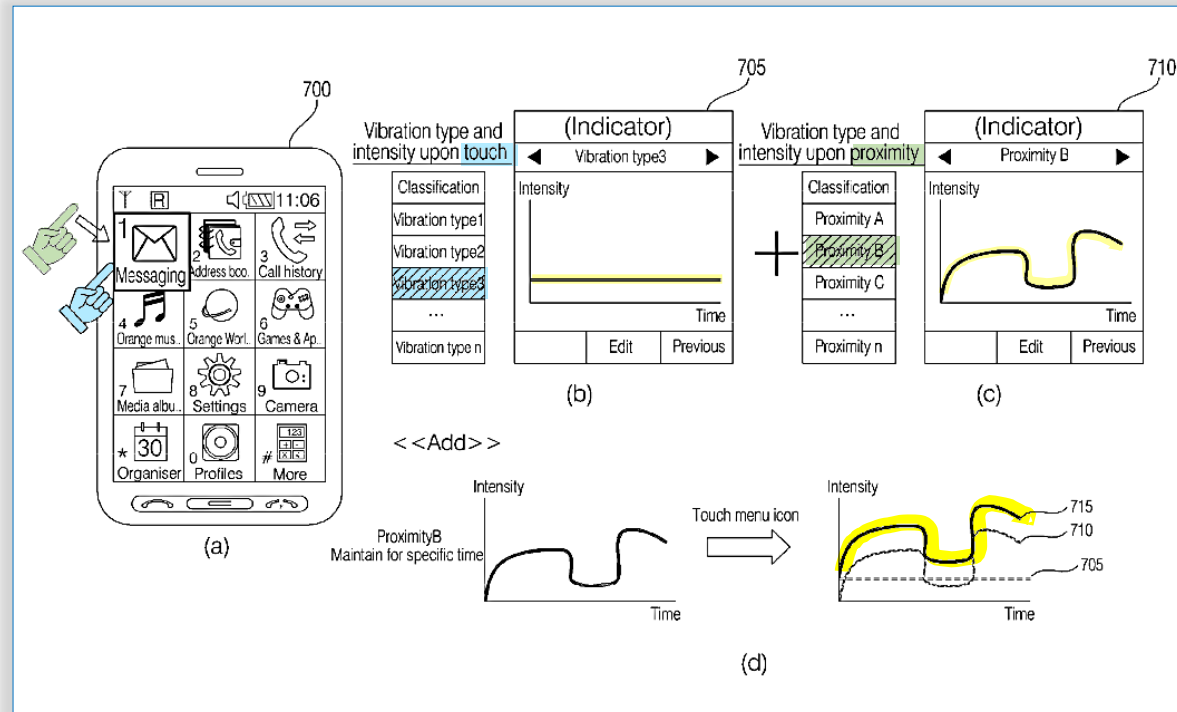


EX1008 at Fig. 7 (excerpted and annotated)
(cited by Petition at 56)

FIGS. 12 and 13 are diagrams showing vibration signals outputted by the mobile terminal 100, in accordance with one or more embodiments. As shown in (a) of FIG. 12, there appears a screen 700 displaying a plurality of menu icons for menu selection. In the case in which a signal for selecting a menu is input, the controller 180 analyzes the input signal. As a result of the analysis, the input signal may have a type, which includes a proximity signal and a touch signal and in which after the proximity signal is detected, the touch signal is input.

A vibration signal set with respect to the touch signal is a vibration signal 705 with respect to vibration type3, as shown in (b) of FIG. 12, and a vibration signal set with respect to the proximity signal is a vibration signal 710 with respect to proximity B, as shown in (c) of FIG. 12.

Accordingly, in the case in which, after the proximity signal is maintained for a specific period of time, a menu icon is touched, vibration 715 in which the vibration signal 705 with respect to the vibration type3 and the vibration signal 710 with respect to the proximity B have been added is output, as shown in (d) of FIG. 12. Here, the vibration may be output by subtracting the respective vibration signals, and a combination method of the vibration signals may be set automatically or set by a user.



EX1008 at 16:6-27 (cited by Petition at 44-45)

EX1008 at Fig. 12 (cited by Petition at 44)

Petition (at 3)

Ground 3 separately demonstrates that Ku in view of POSAs' knowledge renders obvious all independent claims and all but one challenged dependent claim.

Petition (at 54)

Generating a single "haptic output signal" calling for Ku's vibration 715 based on both the proximity and touch signals (i.e., the "*first and second sensor signals*" recited in [1F], [15F], and [19F]) and sending it to the haptics driver would have been more efficient and flexible than sending multiple haptic output signals to the haptics driver and requiring the driver to process them into a single output. Welch, ¶226; EX1020, [0062] (disclosing "combiner/sequencer" within processor for combining multiple haptic effects). It would also simplify the driver design by reducing the required processing power. Welch, ¶226.

Petition (at 66)

- g. [1F]: "generate a haptic output signal based at least in part on the first and second sensor signals; and"

Ku's controller 180 is configured to "*generate a haptic output signal based at least in part on the first and second sensor signals*" as claimed. Welch, ¶257. The discussion in §VII.B.3 concerning Ku's Figures 7 and 12 in connection with Pratt-Ku also applies here; the only difference is that Ku's controller 180 rather than Pratt's processor 112 generates the haptic output signal. Welch, ¶258. Using controller 180 to generate a single "*haptic output signal*"—for example, a command signal causing vibration 715—based on both the proximity and touch signals (i.e., the "*first and second sensor signals*") and sending it to the haptics driver would have been more efficient than sending multiple haptic output signals to the haptics driver and requiring the driver to process them into a single output. See *supra* §VII.B.3; Welch, ¶259.

Ku's Figure 7 and 12 Teachings Render the Claims Obvious

Petition at 54, 66

226. Generating a single “haptic output signal” calling for Ku’s vibration 715 based on both the proximity and touch signals (i.e., the “first and second sensor signals” as required by [1F], [15F], and [19F]) and sending to the haptics driver indeed would have been more efficient and flexible than sending multiple haptic output signals to the haptics driver and requiring the driver to process them into a single output. A POSA would have recognized the benefits of such consolidation based on teachings such as that in Tierling (published in 2005), which discloses a “haptic device controller 130” “within [a] processor,” EX1020, FIG. 1, [0045]-[0046], that outputs “a control signal” to “control[] the tactile output [] of the haptic device 124.” *Id.*, FIG. 2, [0048]. Controller 130 includes an “effect combiner/sequencer 308” that can “combine [] multiple effects” using “summation.” *Id.*, FIG. 3B, [0062].

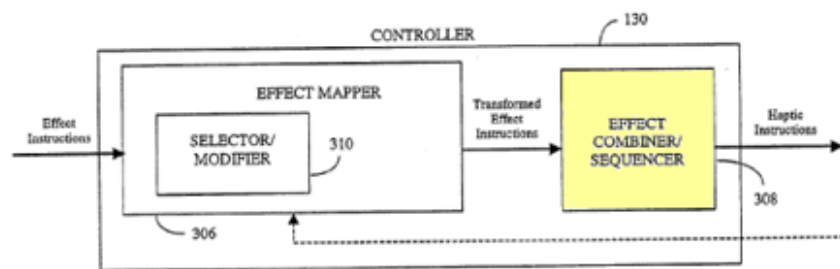


Fig. 3B

Sending a single haptic output signal to generate vibration 715 would also simplify the design requirements for Pratt’s haptics driver 120 and haptics actuator 130. For example, Tierling teaches that that the “effect combiner/sequencer 308...saves synthesizer and/or processor resources.” *Id.*, [0062]. Tierling also discloses “code to: superimpose multiple haptic instructions...to create at least one superimposed haptic instruction” associated with a “haptic signal.” *Id.*, claim 6. A POSA would have recognized the utility of Tierling’s code in implementing Ku’s Figure 12 and in particular outputting from Pratt’s processor a single “superimposed haptic instruction” calling for Pratt’s haptic output device to generate a combined vibration as illustrated in Ku’s FIGS. 7 and 12. *Id.*

259. In particular, I note the discussion in Section VI.B.3 (including paragraph 226) explaining that generating a single “haptic output signal” calling for Ku’s vibration 715 based on both the proximity and touch signals (i.e., the

sophisticated driver to process them into a single output. That discussion—including my analysis of the related teachings in Tierling (EX1020) applies to Ku

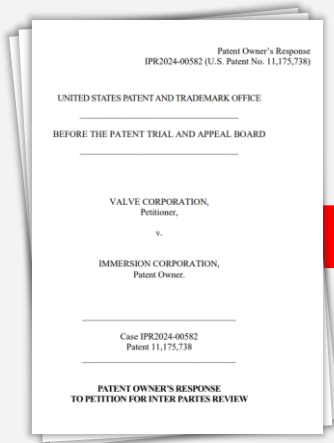
Immersion's Patent Owner Response Ignored The Petition's Evidence and Argument.

Reply at 8-13

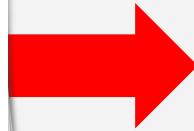
Patent Owner Response (at 52-53)

As detailed above, Ku **does not disclose** a single, unmodified haptic effect that is based on both a proximity signal and a touch signal. *See supra* § VI.A; EX2008,

Thus, Ku is not substantively different from Choe and **does not anticipate** the '738 Patent for the same reasons, namely that two sequential haptic effects are not the same as a single, unmodified haptic effect that is based on two separate sensor input signals—proximity and touch. *See* EX1002, 1090 (the Board describing Choe as disclosing separate haptic effect signals, each based on a proximity signal and a touch signal, respectively); EX2008, ¶117.

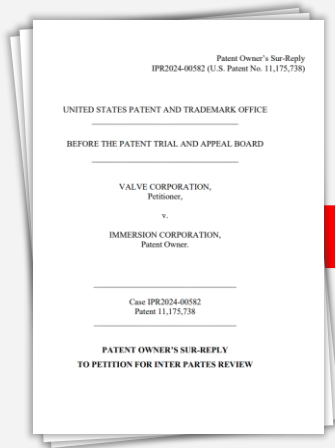


Patent Owner Response



Immersion's Sur-Reply Continues to Ignore the Petition and Dr. Welch

Sur-Reply (at 21)

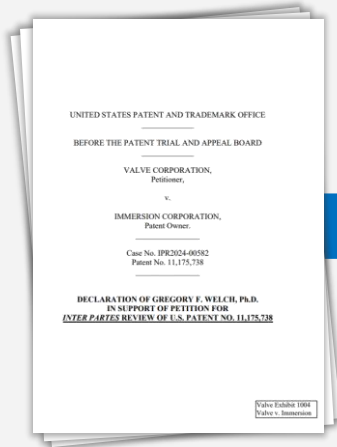


Sur-Reply

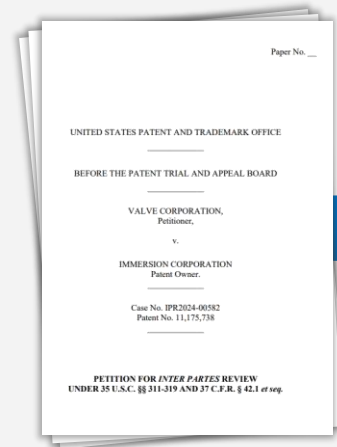
solely on touch. Even if Ku were modified to issue a single command signal, this would be a combined haptic output signal because it would involve the combination of two haptic output signals each of which derives from a single input signal. Valve's argument is that you can start with a haptic output signal based solely on proximity, and then combine it with a haptic output signal based solely on touch, and that this combination is a haptic output signal based at least in part on both proximity and touch. But that is incorrect because the original signal must be a single signal based at least in part on proximity and touch, and that single signal drives a single, unmodified haptic effect. As discussed above (*supra* §II), the claimed haptic effect

The Petition's and Dr. Welch's Modification to Ku

Petition at 54, 66



Welch Decl.



Petition

226. Generating a single “haptic output signal” calling for Ku’s vibration 715 based on both the proximity and touch signals (i.e., the “first and second sensor signals” as required by [1F], [15F], and [19F]) and sending to the haptics driver indeed would have been more efficient and flexible than sending multiple haptic output signals to the haptics driver and requiring the driver to process them into a single output. A POSA would have recognized the benefits of such consolidation based on teachings such as that in Tierling (published in 2005), which discloses a “haptic device controller 130” “within [a] processor,” EX1020, FIG. 1, [0045]-[0046], that outputs “a control signal” to “control[] the tactile output [] of the haptic device 124.” *Id.*, FIG. 2, [0048]. Controller 130 includes an “effect combiner/sequencer 308” that can “combine [] multiple effects” using “summation.” *Id.*, FIG. 3B, [0062].

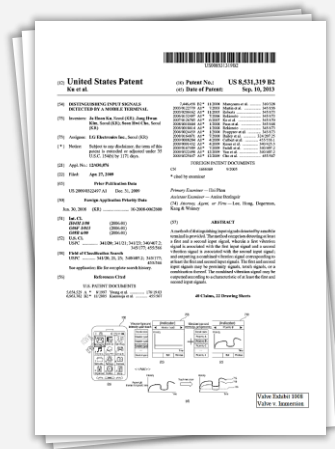
EX1004 (Welch Decl.) at [0226] (cited by Petition at 54)

Pratt’s processor 112 generates the haptic output signal. Welch, ¶258. Using controller 180 to generate a single “haptic output signal”—for example, a command signal causing vibration 715—based on both the proximity and touch signals (i.e., the “first and second sensor signals”) and sending it to the haptics driver would have been more efficient than sending multiple haptic output signals to the haptics driver and requiring the driver to process them into a single output. *See supra* §VII.B.3; Welch, ¶259.

Petition at 66

The Petition's and Dr. Welch's Modification to Ku

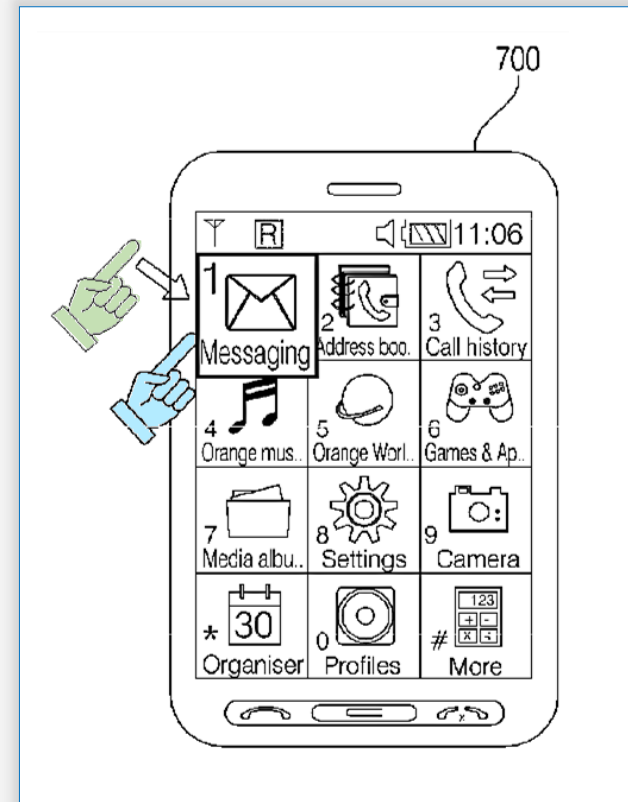
Petition at 56-57



Ku

In accordance with another embodiment, a method of distinguishing input signals detected by a mobile terminal is provided. The method comprises detecting a proximity signal and a touch signal inputted to the mobile terminal, wherein a first vibration signal is associated with the proximity signal and a second vibration is associated with the touch signal; determining a first location through which the proximity signal is inputted and a second location through which the touch signal is inputted; and outputting a combined vibration signal corresponding to the proximity signal and the touch signal, in response to determining that the first and second locations are the same.

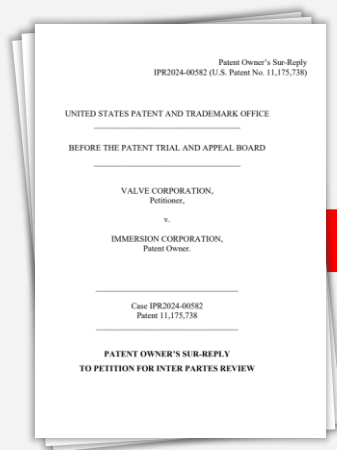
EX1008 at 1:61-2:5 (cited by Petition at 56)



EX1008 at Fig. 12 (excerpted and annotated)
(cited by Petition at 57)

Immersion's Tierling Argument Is Misplaced

Sur-Reply (at 21-22)



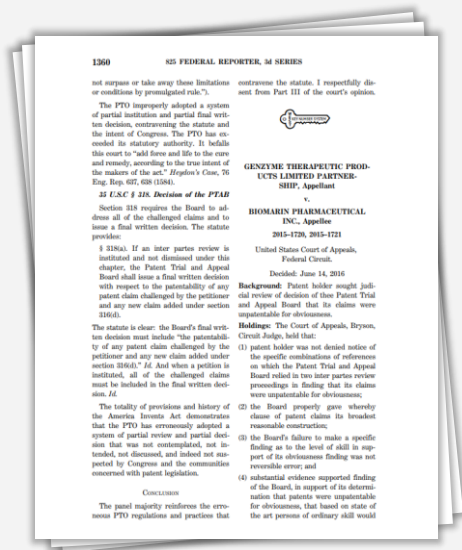
Sur-Reply

B. Ku + Tierling Is Not an Obviousness Combination Raised in the Petition.

Valve incorrectly asserts that Immersion never rebutted Valve's obviousness theory for Ku on the grounds that the POR did not address Valve's proposed combination of Ku and Tierling. Reply, 10-11. But Tierling is *not* one of the obviousness combinations in the Petition and Valve cannot now raise this new argument.¹ Reply, 11. Per 37 C.F.R. § 42.6(a)(3), "Arguments must not be incorporated by reference from one document into another." Valve cannot elevate Tierling to the level of an obviousness combination when that reference was only discussed in its expert's declaration and not in the Petition itself. *See, e.g., Cisco Sys., Inc. v. C-Cation Techs. LLC*, IPR2014-00454, Paper 12 at 10 (PTAB Aug. 29, 2014); *3M Co. v. Evergreen Adhesives, Inc.*, No. 2020-1738 (Fed. Cir. June 25, 2021) ("Citing § 42.6, the Board refused to consider 3M's central argument [] because the Board determined that this argument was provided only by way of improper incorporation by reference to testimony offered by 3M's expert[.]").

The Petition Properly Cited Tierling As Evidence of a Skilled Artisan's General Knowledge

Reply at 11



GENZYME THERAPEUTIC PRODUCTS LIMITED PARTNERSHIP, Appellant

v.

BIOMARIN PHARMACEUTICAL INC., Appellee

2015-1720, 2015-1721

United States Court of Appeals,
Federal Circuit.

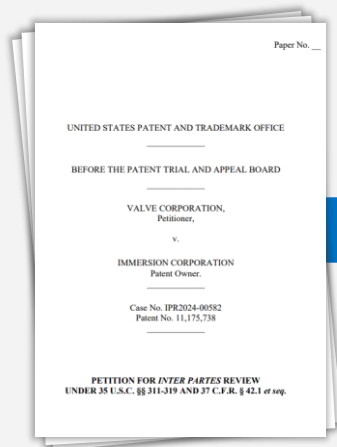
Decided: June 14, 2016

[7] This court has made clear that the Board may consider a prior art reference to show the state of the art at the time of the invention, regardless of whether that reference was cited in the Board's institution decision. In *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359 (Fed. Cir. 2015), this court vacated the Board's decision because it appeared that the Board had declined to consider a reference simply because the reference "had not been identified at the petition stage as one of the pieces of prior art defining a combination for obviousness." *Id.* at 1365. The court in *Ariosa* held that such references "can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness." *Id.* That is exactly how the Board used the Kikuchi and van der Ploeg '91 references—as part of the Board's survey of "the field related to the development of an enzyme replacement therapy for the treatment of Pompe disease" as of the priority date of the patents.

Ground 4 – Ku in View of Jiang

GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103

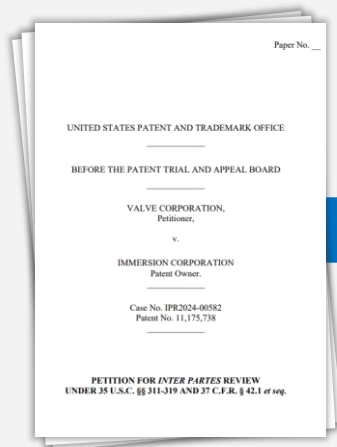
Petition (at 77-78)



Petition

Jiang discloses “a type of EMP [electromechanical polymer]-based sensors [] suitable for use in a haptic response, e.g., in a handheld or mobile device.” EX1010, [0002]; Welch, ¶293. Jiang’s “EMP sensor” includes “a [] set of EMP layers provided between a first electrode and a second electrode forming a capacitor,” while the EMP layers can be “activated by application of a voltage across the first and second electrodes.” EX1010, Claim 1. Jiang’s EMP sensor “may serve as a proximity sensor” as its capacitance changes according to the relative location of a finger to the EMP sensor. *Id.*, [0025]. It can distinguish whether it is being “touched” and at the same time “serve as an EMP actuator, when a voltage is applied to the EMP layers through the sensing electrode.” *Id.*, FIG.5, [0029]-[0030]. Furthermore, Jiang describes that “transparent EMP devices” can be formed using transparent electrodes, and “formed on top of a graphical display of a mobile device, for example, to form a keyboard that provides data input and haptic feedback at the same time.” *Id.*, FIG. 8, [0035]. In short, the EMP sensor doubles as a haptic output device.

Petition (at 78-79)



Petition

While Ku’s mobile terminal may include “a plurality of haptic modules 157,” Ku does not detail how such modules are arranged. EX1008, 6:67-7:1.

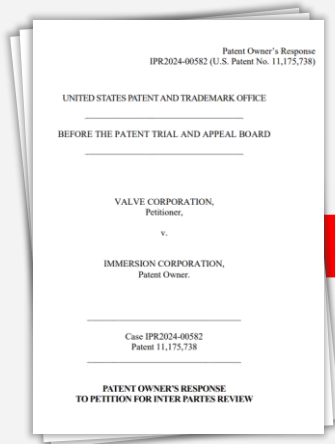
Jiang, however, discloses such an arrangement and teaches that a traditional “haptics system which typically vibrates the entire electrical device []is often rigid,” which Jiang’s EMP actuator improves upon by “provid[ing] a ‘localized’ haptics feedback”—selectively activating only the actuator under the touch. Jiang, FIG. 5; Ramstein, [0028], Welch, ¶297. This is because Jiang’s EMP sensor “can be made very small,” such that “tactile feedback in response to touch by a human finger may be localized to an area in the immediate vicinity of the touch stimulus.” Ramstein, [0024]; Welch, ¶297. For example, Jiang uses the same pair of “sensing electrodes” to sense input *and* drive actuation of the EMP sensor—reducing the device’s footprint. Jiang, [0030], FIG. 5; Welch, ¶297.

POSAs would have been motivated to implement localized haptics feedback in Ku’s mobile terminal such that instead of vibrating the entire device, the tactile feedback may be “concentrate[d]” “to a localized zone under the user finger” to “reduce the device’s power requirement,” and to “offer[] a stronger sensation and a finer resolution.” Ramstein, [0024]; Welch, ¶298.

Immersion's POR Did Not Dispute the Petition's Motivation-to-Combine Showing.

Reply at 27-28

Patent Owner Response (at 55)

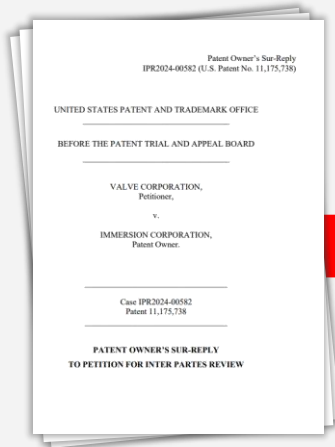


Patent Owner Response

Jiang simply discloses that if the screen is touched, then a haptic effect may be generated. EX2008, ¶121. “When mobile device 801 senses that a key on the keypad is touched, as sensed by the sensor portion of the corresponding key (e.g., 802-1), the actuator portion of that key is activated to provide a haptic response.” EX1010, ¶[0035]. What Jiang does not disclose is a single, unmodified haptic effect that is based on a proximity sensor signal and a touch sensor signal. EX2008, ¶119. In fact, the reason that Petitioner proposes for combining the Ku and Jiang references does not relate to the use of both proximity and touch signals and instead would be to “implement localized haptics feedback in Ku’s mobile terminal such that instead of vibrating the entire device, the tactile feedback may be concentrated to a localized zone under the user finger.” Pet., 79 (cleaned up). Thus, the Ku-Jiang combination does not address the key disclosure that is missing from Ku. EX2008, ¶121.

Immersion's Sur-Reply Newly Disputes the Petition's Motivation-to-Combine Showing, But Immersion's Argument Fails

Sur-Reply (at 22-23)



Sur-Reply

does not relate to the use of both proximity and touch signals. Instead, Valve claims that a POSA would be motivated to “implement localized haptics feedback in Ku’s mobile terminal such that instead of vibrating the entire device, the tactile feedback may be concentrated to a localized zone under the user finger.” Petition, 79 (cleaned up). But it is not enough to simply state that it would have been obvious to a POSA to combine two references on the basis that the combination would be theoretically better than the originals. *Id.* There must be a motivation to create the proposed combination and that is lacking. In *Virtek*, the Federal Circuit reversed the Board’s

Ground 2 – Pratt in View of Ku

GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103

Ground 1 – Pratt's Bubble-Effect Embodiment

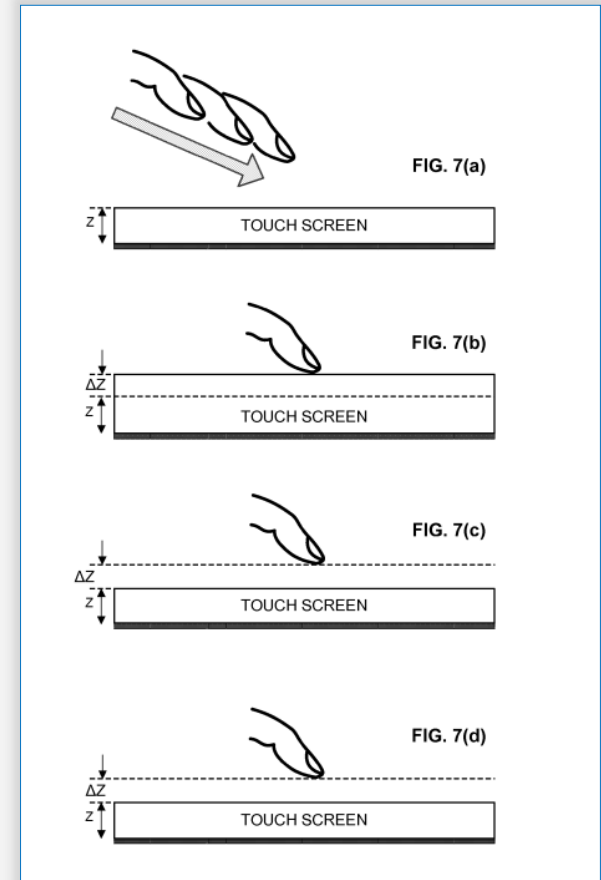
GROUND	CLAIMS	BASIS
1. Pratt (EX1006)	1-3, 5-6, 14-15, 19	102/103
2. Pratt Combined with Ku (EX1008)	1-6, 14-16, 19	103
3. Ku	1-5, 14-16, 19	103
4. Ku Combined with Jiang (EX1010)	1-6, 14-16, 19	103

Pratt's Bubble-Effect Embodiment Anticipates or Renders the Claims Obvious

Petition at 24-26

[0050] FIG. 7(a) illustrates a state of the touch screen prior to detection. As the user's finger approaches the touch screen, it enters the "field of view" of the touch screen and is identified by the proximity sensor. In response, a haptics driver may pre-charge a haptics actuator to cause the touch screen to deflect toward the users finger by a predetermined amount, shown as ΔZ in FIGS. 7(a)-(d). Thus, the touch screen may be deflected toward the user's finger by the time it makes contact with the touch screen as shown in FIG. 7(b). When the touch sensor determines that the user's finger has made contact, it may initiate the haptic effect. As shown in FIG. 7(c), a mechanical button click may be simulated, for example, by removing the pre-charge effect and inducing the touch screen to return to its default level (shown as "Z"). After the retraction of the touch screen, the user's finger may fall to the surface of the screen at the Z level, shown in FIG. 7(d). The click effect may be induced by the user feeling mechanical resistance at the first point of contact with the screen deflected forward (FIG. 7(b)) and then at the second point of contact with the screen at the rest position (FIG. 7(d)). This effect simulates a mechanical compression effect (i.e., the bubble effect).

[0051] Of course, the proximity-based deflection operations are not limited to click effects. Vibration effects may be induced by deflecting the screen forward prior to initial contact, then oscillating the screen forward and backward after contact is made. A variety of different haptic effects may be used in connection with proximity detection operations.



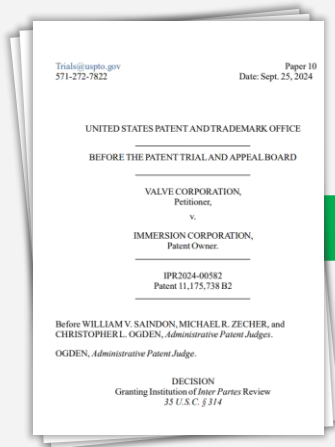
EX1006 at FIGS. 7a to 7d (cited by Petition at 25)

haptic effect can include one or more haptic effects. For example, the haptic effect can include a haptic effect meant to confirm "pushing" on a virtual button.

EX1001 at 11:38-40 (cited by Petition at 24)

The Board Agreed at Institution

Institution Dec. at 15-16



Institution Decision

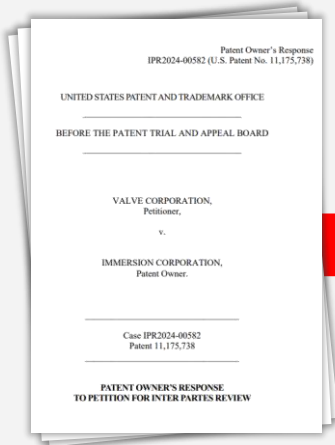
At this stage, we find Valve’s argument sufficiently persuasive that Pratt’s “bubble” effect discloses a haptic output signal for a single haptic effect based on both proximity and touch signals. Ex. 1006 ¶¶ 49–51, Figs. 7(a)–(d). Pratt’s “bubble” effect would appear to be a different sensation to the user if pre-charging did not happen, and that pre-charging relies on the proximity sensor. This would appear to be true even if we were to agree that the pre-charging portion of the effect could fairly be partitioned out as a separate and distinct haptic effect from the portion of the effect that occurs after the touch.

We also agree with Valve, at this stage, that Pratt’s “bubble” effect is analogous to the “pushing” effect disclosed in the ’738 patent, in which there is an additional confirmatory “pushing” part of the effect after the user touches the surface. This example comes immediately after stating that a touch-based haptic effect can either be “modified or combined” with another proximity-based haptic effect. Ex. 1001, 11:35–40. The use of the words *modified or combined*, in the alternative, suggests that a single haptic effect may have different unmodified phases based on proximity and touch which are combined with each other and regarded as a single “haptic effect.”

Institution Decision at 15-16

Immersion Does Not Dispute Many of the Board's Initial Findings

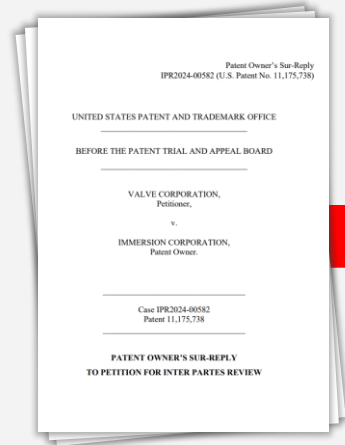
Reply at 15



Patent Owner Response

Patent Owner Response (at 31)

more haptic effects as described in Pratt's 'bubble effect.' EX2008, ¶88. The fact that the user may perceive the screen interaction as a single sensation does not mean that it is a single haptic effect. *Id.*



Sur-Reply

Sur-Reply (at 7-8)

The Board's analogy between the "pushing effect" embodiment disclosed in the '738 Patent at 11:38-40 and the "bubble effect" embodiment does not render the claims anticipated or obvious because, as detailed in the POR, the "pushing effect" embodiment is outside the scope of the claims. POR, 21-22. The haptic effect that is

Immersion Misconstrues “*Haptic Effect*”

Reply at 15-25

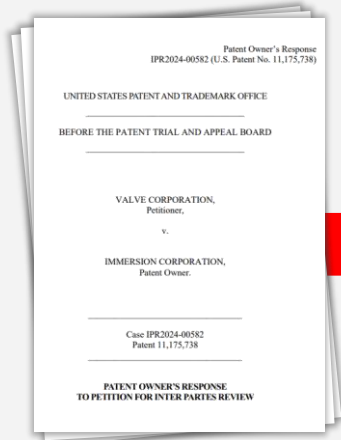
Patent Owner Response (at 19)

in contrast to Petitioner’s erroneous construction. To clarify the meaning of the claim term, it should be properly construed as “a single, unmodified haptic effect that is based on the proximity sensor signal and the touch sensor signal.” EX2008, ¶¶31-36.

Patent Owner Response (at 28)

The “bubble effect” embodiment does not disclose the claimed invention because it does not disclose a single, unmodified haptic effect that is based on both a proximity signal and a touch signal. Rather, it discloses two separate haptic effects that occur sequentially, not a single haptic effect based in part on both proximity and touch signals. EX2008, ¶83. The first haptic effect in the “bubble” effect is where the touchscreen is deflected towards the user’s finger. EX2008, ¶84. This haptic effect is based entirely on the proximity signal.

The second haptic effect in the “bubble” effect is when the touchscreen moves down to its default position. EX2008, ¶85. This haptic effect is based solely on the touch signal.

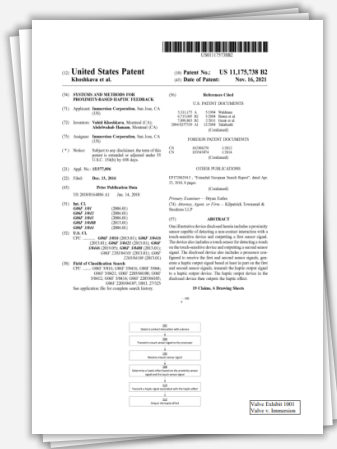


Patent Owner Response



Immersion Misconstrues “*Haptic Effect*”

Reply at 15-25



738 Patent

What is claimed is:

1. A device comprising:

a proximity sensor capable of detecting a non-contact interaction with a touch-sensitive device and outputting a first sensor signal;

a touch sensor capable of detecting a touch with the touch-sensitive input device and outputting a second sensor signal;

a haptic output device configured to receive a haptic output signal and output a haptic effect in response to the haptic output signal; and

a processor configured to:

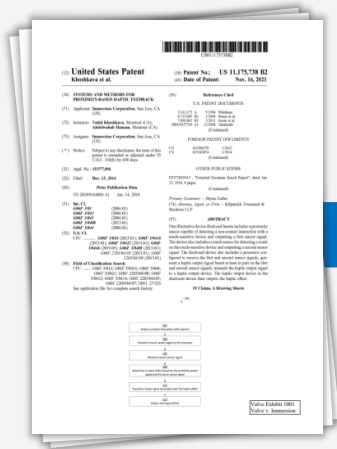
receive the first sensor signal and the second sensor signal;

generate a haptic output signal based at least in part on the first and second sensor signals; and

transmit the haptic output signal to the haptic output device.

The Specification Uses the Term “Haptic Effect” Broadly

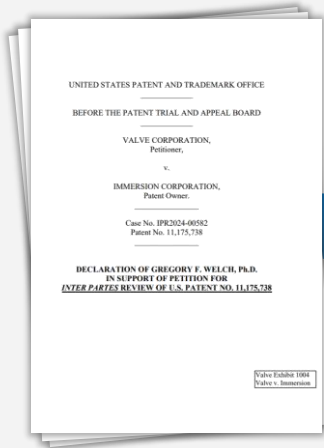
Reply at 17-18



738 Patent

102. In some embodiments, haptic output device 118 is configured to output a haptic effect comprising, for example, a vibration, a squeeze, a poke, a change in a perceived coefficient of friction, a simulated texture, a stroking sensation, an electro-tactile effect a surface deformation (e.g., a deformation of a surface associated with the computing device 101), an ultrasonic or laser-based effect, and/or a puff of a solid, liquid, or gas. Further, some haptic effects may

EX1001 at 5:19-23 (cited by Petition at 24 and Reply at 17-18)



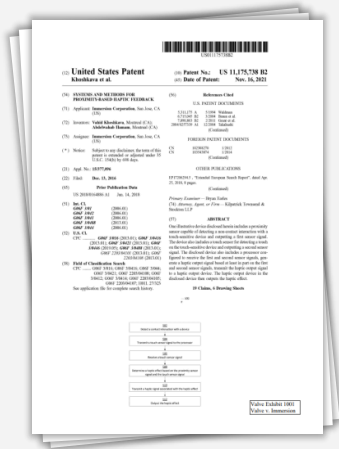
Welch Decl.

successfully clicked on without looking. Indeed, Pratt’s “bubble” effect is an example of what the ’738 patent describes as “an electro-tactile effect a surface deformation (e.g., a deformation of a surface associated with the computing device 101)”. *Id.*, 5:23-25.

Welch. Decl. (EX1004) at [0136] (cited by Petition at 24)

The Specification Uses the Term “Haptic Effect” Broadly

Reply at 17-18



738 Patent

sensitive surface 116. Varying the levels of attraction between the object and the conducting layer can vary the haptic effect perceived by a user.

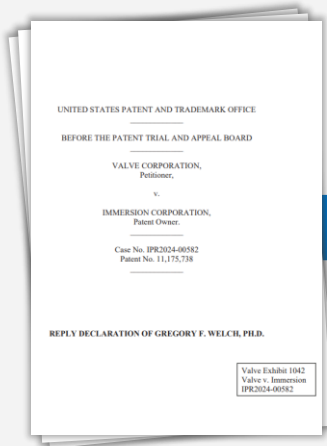
EX1001 at 6:15-17 (cited by Reply at 18)

The dual proximity sensor and haptic actuator shown in FIGS. 2A and 2B can be used to provide a variety of haptic effects. For example, the actuator 202 may be used to provide a static electrostatic friction sensation. While the

EX1001 at 9:59-62 (cited by Reply at 18)

The Specification Uses the Term “Haptic Effect” Broadly

Reply at 18

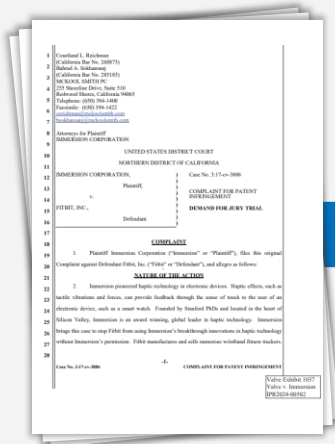


Welch Reply Decl.

descriptions of “haptic effect,” a POSA would understand that the “haptic effect” may be a physical effect that a *human* may sense, perceive, or experience.

16. Thus, in the context of the '738 Patent, and consistent with Immersion's own statements made outside of this proceeding, a haptic effect encompasses a sensation—for example, a vibration—experienced by the device user. This is consistent with the testimony I provided to Immersion when deposed for this proceeding. See EX1036, 8:12-17 (explaining that a “haptic effect,” may “refer to the sensations you might feel”).

Welch. Reply Decl. (EX1042) at [0013], [0016] (cited by Reply at 18)



EX1037

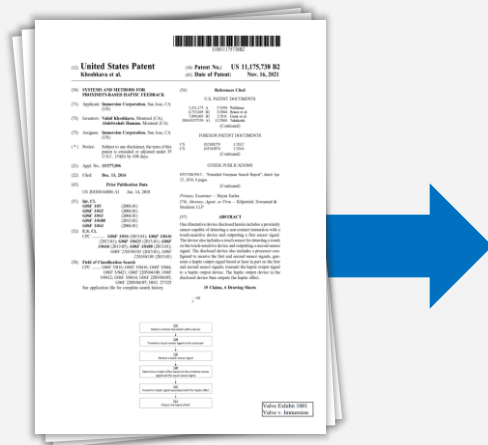
3. The word “haptics” originates from the Greek word *haptikos*, meaning to be able to grasp and perceive by touch. Haptic effects (such as tactile or touch feedback) can be produced by actuators, or motors, which create a vibration, jolt, pulse, spatial texture, or other physical sensation. Haptic hardware devices are often combined with software simulating the way in which objects interact through the sense of touch. Touch and pressure sensors also can be used with haptic devices to measure forces exerted by the user on the graphical user interface or touch interface of a device, such as the touchscreen of a device.

EX1037 at [0003] (cited by Reply at 18)

Immersion's Lone Support Does Not Justify Its Narrow Construction

Reply at 16

Immersion's "Support"

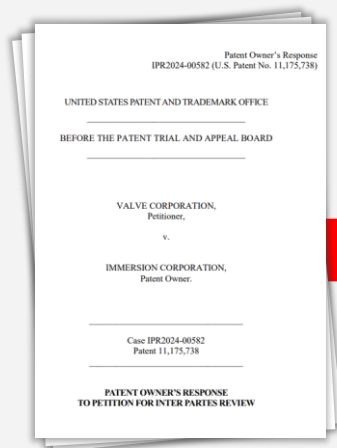


738 Patent

The method continues at step 504, where the touch sensor 108 generates a signal and transmits the signal to the processor 102. At step 506 the processor 102 receives the touch sensor signal. The method 500 continues at step 508 when the processor 102 determines a haptic effect based at least in part on the touch sensor signal and on the proximity signal. For instance, the processor 102 may be configured to output a particular haptic effect associated with a particular control on a user interface element displayed on the touch sensitive surface 116. Such a haptic effect may further be modified or combined with another haptic effect based on the proximity sensor signal. In some embodiments, the haptic effect can include one or more haptic effects. For example, the haptic effect can include a haptic effect meant to confirm "pushing" on a virtual button.

EX1001, 11:32-40 (cited by POR at 20-21)

Patent Owner Response (at 21)



Patent Owner Response

The haptic effect that is derived from further modification as described in 11:35-38 is not the original haptic effect that is claimed in Claim 1 and described at step 508. Rather, it is a secondary haptic effect derived from a single or original haptic effect that was further modified or combined with another haptic effect. This secondary haptic effect is beyond what is determined at step 508 and outside the scope of the claimed limitation. An example of this secondary haptic effect is “pushing’ on a virtual button.” *Id.* The distinction between these two types of haptic effects is supported by the plain language of the claim itself, which states that the claimed haptic effect is output in response to the haptic output signal and that haptic output signal is based in part on the first and second sensor signals rather than the result of the combination of two separate haptic output signals or the combination of two separate haptic effects. EX2008, ¶35.

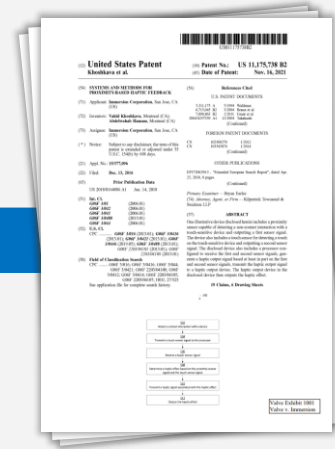


“We normally do not interpret claims in a way that excludes embodiments disclosed in the specification.” *Google LLC v. EcoFactor, Inc.*, 92 F. 4th 1049, 1058 (Fed. Cir. 2024).

The Specification Is Explicit that The Haptic Effect Can Include One or More Haptic Effects.

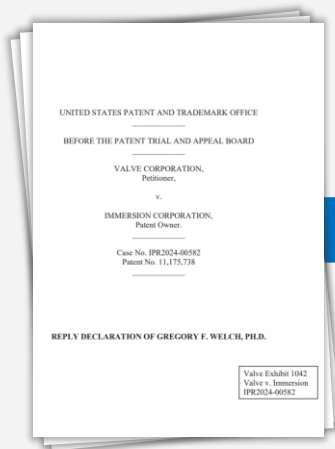
Reply at 16

The method continues at step 504, where the touch sensor 108 generates a signal and transmits the signal to the processor 102. At step 506 the processor 102 receives the touch sensor signal. The method 500 continues at step 508 when the processor 102 determines a haptic effect based at least in part on the touch sensor signal and on the proximity signal. For instance, the processor 102 may be configured to output a particular haptic effect associated with a particular control on a user interface element displayed on the touch sensitive surface 116. Such a haptic effect may further be modified or combined with another haptic effect based on the proximity sensor signal. In some embodiments, the haptic effect can include one or more haptic effects. For example, the haptic effect can include a haptic effect meant to confirm “pushing” on a virtual button.



738 Patent

EX1001, 11:32-40 (cited by POR at 20-21)



Welch Reply Decl.

32. The '738 Patent itself stresses the logical reality and understanding of a POSA that *“the haptic effect can include one or more haptic effects”* (EX1001, 11:37-38)—just like a color may include one or more colors. See also *id.*, 5:26-28 (“[S]ome haptic effects may use multiple haptic output devices 118 of the same or different types in sequence and/or in concert.”); *id.*, 10:47-48 (“[T]he haptic effect can include one or more haptic effects.”). The '738 Patent also offers an express

EX1042 at [0032] (cited by Reply at 23)

The Prosecution History Does Not Support Immersion

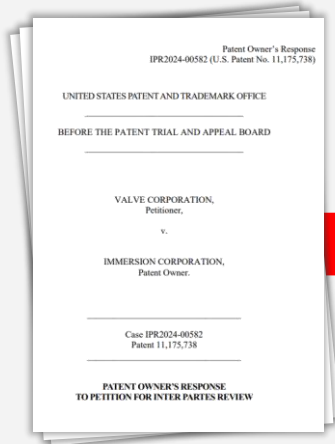
Reply at 24-25

Patent Owner Response (at 22)

On appeal during prosecution, the Board agreed that a disclosure of combining haptic effects was insufficient to anticipate Claim 1 because the original, underlying haptic effect must be based at least in part on *both* the proximity and touch signals.

Moreover, we agree with Appellant that the Examiner's determination that Choe discloses that haptic signals may be combined is insufficient to support a finding of anticipation. As Appellant correctly notes, "Choe paragraph [0052] simply describes synthesizing different vibration effects or outputting effects sequentially." Generally describing the use of synthesized vibration effects does not disclose that the specific signals 225 and 226 described by Choe in a separate embodiment are combined.

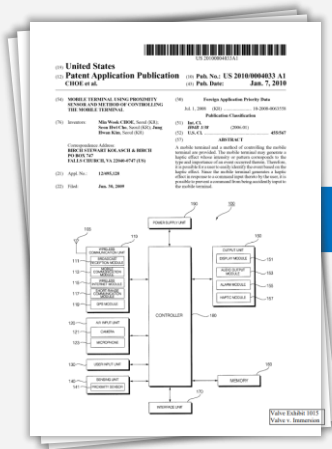
EX1002, 1091.



Patent Owner Response

The Prosecution History Does Not Support Immersion

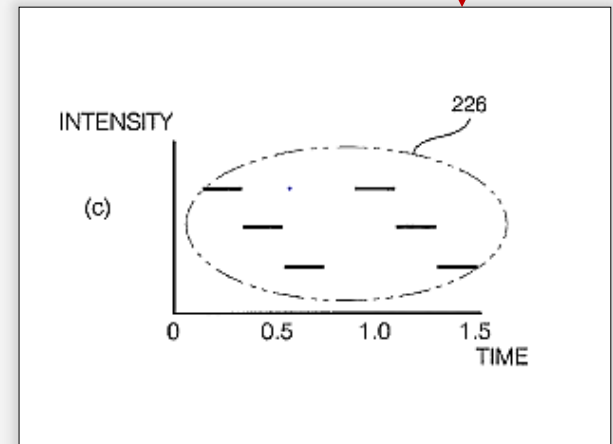
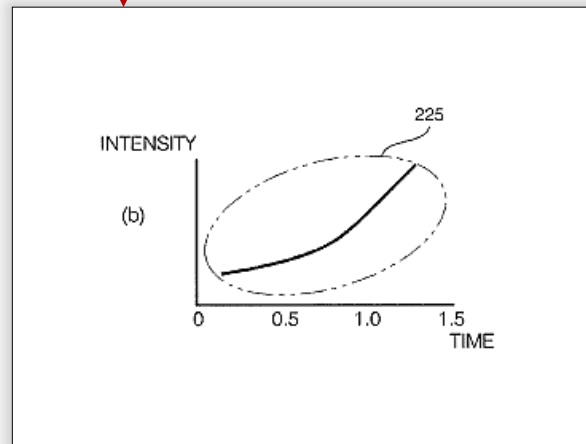
Reply at 24-25



Choe (EX1015)

[0137] More specifically, referring to FIG. 16(a), a screen 223 for the payment of charges may be displayed in a display region. If the user touches a key 224 to pay charges, the controller 180 may determine that a command to pay charges has been issued. Alternatively, the controller 180 may determine the distance between the user's finger and the key 224 based on a signal provided by the proximity sensor 141. Then, if it is determined that the distance between the user's finger and the key 224 has gradually decreased, the controller 180 may control the haptic module 157 to generate a haptic effect 225 in order to alert the user to the approach of the user's finger to the key 224.

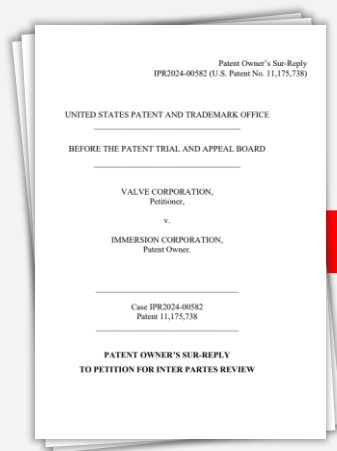
[0138] Referring to FIG. 16(c), once the key 224 is touched or approached by the user's finger, the controller 180 may control the haptic module 157 to generate a haptic effect 226 in order to alert the user to the payment of charges.



Additional Slides

Immersion's Sur-Reply

Sur-Reply (at 19-20)

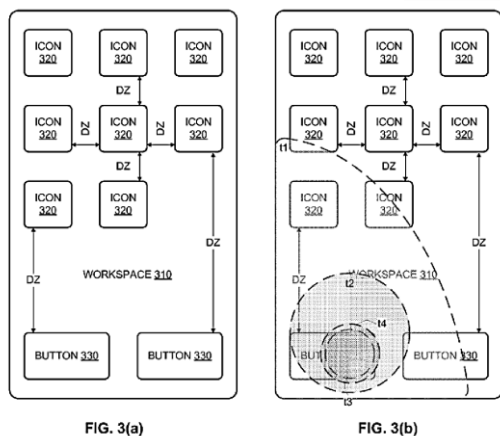


Sur-Reply

Petition, 66. Valve takes issue with Immersion's response as responding to an anticipation argument rather than an obviousness argument. Reply, 3, 11. Immersion responded to Valve's argument that "Ku is not substantively different from Choe and does not anticipate the '738 Patent for the same reasons." Immersion previously referred to anticipation rather than obviousness but the response is the same, namely that even if it were true that the signals could be combined into a single command signal, this single command signal does not disclose all the limitations of the asserted claims. POR, 48-49, 53. The reason is that a combined haptic output signal is still not a single signal based at least in part on both proximity and touch. Instead, it is a *combined* signal, where each of the original output signals is based solely on either proximity or touch but not both. *Id.* As detailed in the POR, "To the extent that Ku

Petition (at 47)

While Pratt thereby reduces latency between the user touching the screen and feeling the haptic effect, Pratt's system was ready for improvement using Ku's method of "distinguishing input signals." EX1008, 1:15-17. Pratt itself does not address the problem Ku discusses: "distinguish[ing] between different types of touch signals and proximity signals." EX1008, 1:32-34. Given Ku (and in particular Ku's Figures 7 and 12), however, POSAs would have had reason to use Pratt's device to practice Pratt's Figure 4 in such a way that one "haptic effect"—corresponding to Ku's Figure 12(d)—is output if Pratt detects proximity and touch signals associated with the same menu icon (per step S520 in Ku's Figure 7) and a different "haptic effect" is output otherwise (per Ku's step S525). Welch, ¶¶210-212. Pratt itself indeed discloses a device with a user interface including multiple icons:



Petition (at 50)

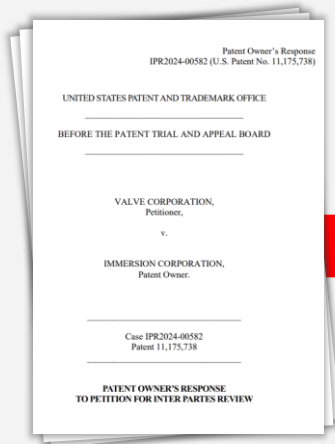
This combination ("Pratt-Ku") yields a mobile device with Pratt's reduced latency and Ku's ability to distinguish input signals—quickly alerting users the moment they touch the portion of the screen above which their finger had been hovering. Welch, ¶212. POSAs would have recognized such an alert as desirable to indicate to users whether they touched the icon they intended to touch. *Id.*

POSAs would have had a reasonable expectation of success when practicing Pratt this way; Ku and Pratt are fully consistent and complementary. Welch, ¶¶213-217. In addition to the above-illustrated parallels in user interface, POSAs would have recognized that Pratt's processor—with the proximity and touch classification modules—was suitable for implementing the decisional steps reflected in each of Ku's Figures 7 and 12. Welch, ¶217. Implementing either of Ku's algorithms in Pratt's hardware would be a routine engineering task. Welch, ¶253; *Cywee Group Ltd. v. ZTE (USA), Inc.*, 90 F.4th 1358, 1363 (Fed. Cir. 2024).

Immersion's Challenge to Ground 2 Ignores the Law

Reply at 26-27

Patent Owner Response (at 51-52)



Patent Owner Response

Petitioner argues that it would have been obvious to combine this embodiment with Ku, in particular Ku's disclosure of "distinguishing between different types of touch signals and proximity signals." Pet., 47. On its face, the combination does not make sense. EX2008, ¶114. The pre-charging embodiment is designed to reduce latency. Nothing about Ku's disclosure (even accepting Petitioner's characterization of Ku) relates to reducing latency. *Id.* Petitioner simply creates a combination out of whole cloth claiming that it would be advantageous to have the latency-reducing effects of Pratt along with Ku's ability to distinguish between types of proximity or touch signals. Pet., 47-50. Indeed, when Petitioner describes the resulting combination, it has nothing to do with reducing latency: "POSAs would have recognized such an alert as desirable to indicate to users whether they touched the icon they intended to touch." Pet., 50; EX2008, ¶114.



"If a technique has been **used to improve one device**, and a person of ordinary skill in the art would recognize that it **would improve similar devices in the same way**, using the technique is obvious unless its actual application is beyond his or her skill." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

Cited by Reply at 27

The European Counterpart to the 738 Patent Was Rejected Over Ku's European Counterpart

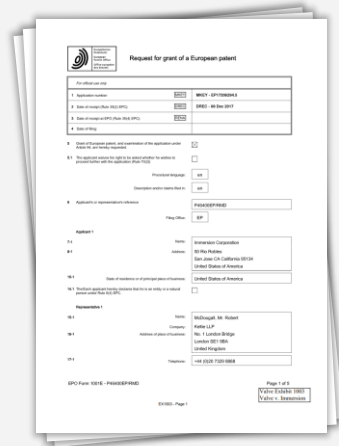
Petition at 7-8

Petition (at 7)

D. EP Counterpart File History

On December 8, 2017, applicants filed a European counterpart application with independent claims identical to those in the U.S. application and almost identical to those in the issued U.S. patent. *See* EX1003, 33-35; Welch, ¶¶66-68. The European dependent claims likewise closely tracked those in the U.S. application. EX1003, 33-35; Welch, ¶69.

The April 25, 2018 European search opinion determined the independent claims lacked novelty over EP 2141580A2 (EX1014)—Ku's European counterpart. EX1003, 95-96. The European opinion also concluded the dependent claims lacked “novelty and/or inventive step.” EX1003, 96.



EX1003



EX1014

68. When it was originally filed, the EP Counterpart listed three independent claims (1, 13 and 15). *Id.*, 33-35. Aside from the appearance of numerical reference numbers in parenthesis such as (101) and (132), these independent claims in the EU Counterpart were identical to corresponding independent claims originally filed in the '096 Application in the U.S. *Compare id.*, with EX1002, 21-23. The independent claims in the EU Counterpart were also almost identical to those in the issued '738 patent in the United States., as illustrated in the comparison table below of claim 1 of the EU Counterpart and the '738 patent as issued:

Independent claims of EU Counterpart (EX1003, 33-35)	Independent claims of '738 patent (EX1001)
1. A device (101) comprising: a proximity sensor (132) capable of detecting a non-contact interaction with a touch sensitive device and outputting a first sensor signal; a touch sensor (108) capable of detecting a touch with the touch-sensitive input device and outputting a second sensor signal; a haptic output device (118) configured to receive a haptic output signal and output a haptic effect in response to the haptic output signal; and a processor (102) configured to: receive the first sensor signal and the second sensor signal; generate a haptic output signal based at least in part on the first and second sensor signals; and transmit the haptic output signal to the haptic output device (118).	1. A device comprising: a proximity sensor capable of detecting a non-contact interaction with a touch-sensitive device and outputting a first sensor signal; a touch sensor capable of detecting a touch with the touch-sensitive input device and outputting a second sensor signal; a haptic output device configured to receive a haptic output signal and output a haptic effect in response to the haptic output signal; and a processor configured to: receive the first sensor signal and the second sensor signal; generate a haptic output signal based at least in part on the first and second sensor signals; and transmit the haptic output signal to the haptic output device.

EX1004 (Welch Decl.) at [0068] (cited by Petition at 7)