



PATENT OWNER'S DEMONSTRATIVES

JUNE 23, 2025 ORAL ARGUMENT

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

CASE No. IPR2024-00582 | US PATENT 11,175,738

Patent Owner's Demonstrative Exhibit - Not Evidence ²

Valve Corp. v. Immersion Corp.

IPR2024-00582

Immersion Exhibit 2010

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Roadmap

- Background of the Invention
- Claim Construction and Plain Meaning of “haptic effect”
- The Petition’s Grounds Fail
 - Pratt (Ground 1 – 102/103)
 - Ku (Ground 3 – 103 only)
 - Pratt in view of Ku (Ground 2)
 - Ku in view of Jiang (Ground 4)

Background of the Invention

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴

The '738 Patent: Proximity-Based Haptic Feedback

US0111575382

(12) **United States Patent**
Khoshkava et al.

(41) Patent No.: US 11,157,538 B2

(45) Date of Patent: Nov. 16, 2021

(54) **SYSTEMS AND METHODS FOR PROXIMITY-RANGE HAPTIC FEEDBACK**

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

(75) **Inventors:** Vahid Khoshkava, Menlo Park, CA; Akbarabadi-Harman, Menlo Park, CA

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

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 698 days.

(21) **Appl. No. 15/077,096**

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(51) **Int. Cl.**
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(51) **U.S. Cl.**
3/048 (2013.06)

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3/042 (2006.06)

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3/048 (2013.06)

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3/048 (2013.06)

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3/042 (2006.06)

(51) **U.S. Cl.**
3/048 (2013.06)

(51) **U.S. Cl.**
3/042 (2006.06)

(51) **U.S. Cl.**
3/048 (2013.06)

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Primary Examiner—Bryan Earles

(71) Attorney, Agent, or Firm—Kilpatrick Townsend & Stockton LLP

(57) **ABSTRACT**

One illustrative device disclosed herein includes a proximity sensor capable of detecting a non-contact interaction with a touch-sensitive device and outputting a first sensor signal. The device also includes a touch sensor for detecting a touch on the touch-sensitive device and outputting a second sensor signal. The disclosed device also includes a processor configured to receive the first and second sensor signals, generate a haptic output signal based in part on the first and second sensor signals, transmit the haptic output signal to a haptic output device. The haptic output device in the disclosed device then outputs the haptic effect.

19 Claims, 4 Drawing Sheets

+ 300

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graph TD
    302[Detect a contact interaction with a device] --> 304[Transmit a touch sensor signal to the processor]
    304 --> 306[Receive a touch sensor signal]
    306 --> 308[Determine a haptic effect based on the touch sensor signal and a touch sensor signal]
    308 --> 310[Transmit a haptic output signal associated with the haptic effect]
    310 --> 312[Output the haptic effect]
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Valve Exhibit 1001
Valve v. Immersion

(10) Patent No.: US 11,175,738 B2

(54) **SYSTEMS AND METHODS FOR PROXIMITY-BASED HAPTIC FEEDBACK**

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

(72) Inventors: **Vahid Khoshkava**, Montreal (CA);
Abdelwahab Hamam, Montreal (CA)

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

Ex. 1001 at face page

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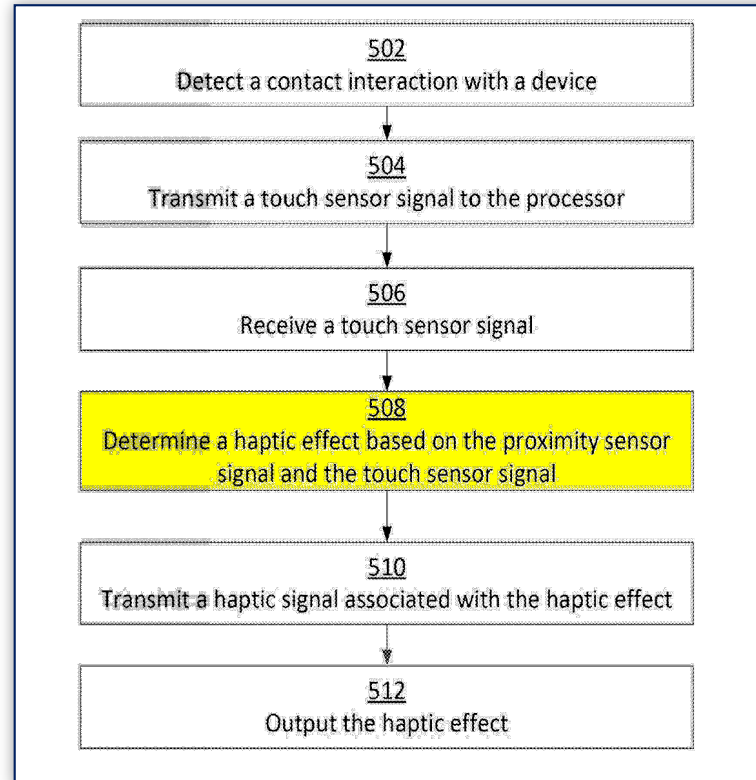
The '738 Patent: Proximity-Based Haptic Feedback

Advantages of Proximity-Based Haptic Feedback

Embodiments of the present disclosure provide advantages in a variety of implementations. For example,

[some] embodiments may be advantageous when implemented in mobile devices, such as phones. Such an implementation may allow a user to navigate the user interface without looking at the screen. For instance, if a user were running and holding a phone in the user's hand, the user may be able to navigate the user interface without looking at the screen. Another similar embodiment would include a game controller. With such an embodiment, the user is able to focus on the screen while simultaneously interacting with a user interface, without the need to look extensively at the user interface display on the game controller.

The '738 Patent: Uses Proximity and Touch



Ex. 1001 at Fig. 5; POR at 3-5

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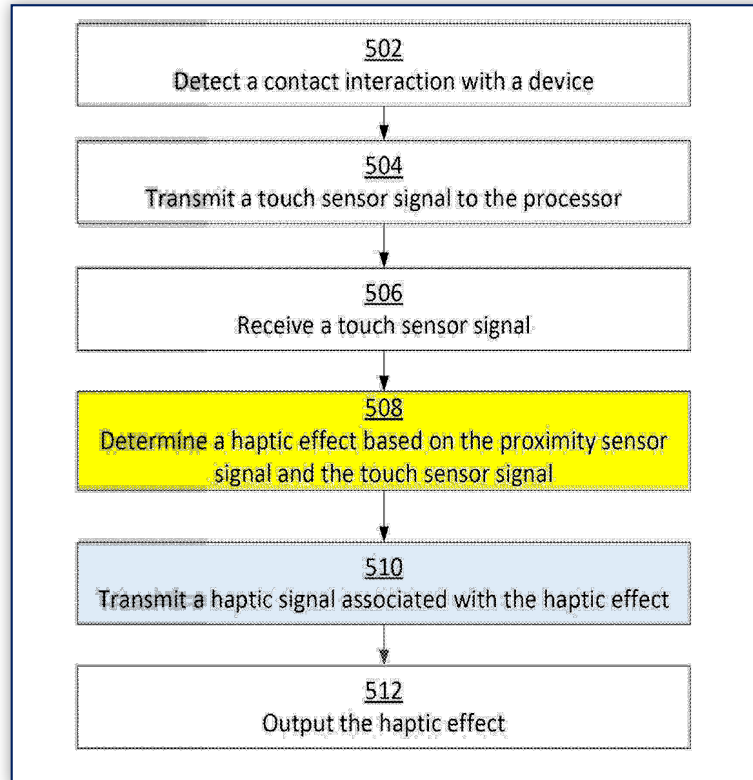
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The '738 Patent: Haptic Signal Associated with Haptic Effect



Ex. 1001 at Fig. 5; POR at 3-5

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The '738 Patent: Claim 1 – Proximity Signal

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.

Ex. 1001 at claim 1

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The '738 Patent: Claim 1 – Touch Signal

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.

Ex. 1001 at claim 1

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The '738 Patent: Claim 1 – Haptic Output Signal

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.

Ex. 1001 at claim 1

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The '738 Patent: Claim 1 – Haptic Output Device

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.

Ex. 1001 at claim 1

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The '738 Patent: Claim 1 – Haptic Effect

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.

Ex. 1001 at claim 1

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Claim Construction: “haptic effect”

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Patent Owner's Construction of “haptic effect”

“a single, unmodified haptic effect that is based on the proximity sensor signal and the touch sensor signal”

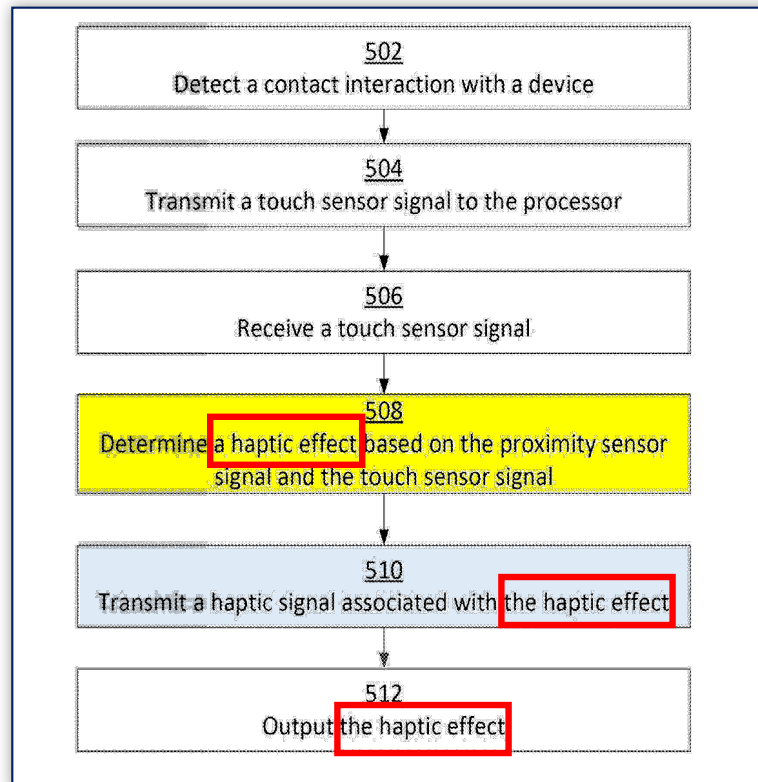
- Proposed in response to Board's institution decision
- Petitioner offers no competing construction

Patent Owner's Construction of "haptic effect"

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.

A single haptic effect is generated based on the proximity and touch signals

Patent Owner's Construction of "haptic effect"



Specification teaches that a ***single haptic effect*** is generated based on the proximity and touch signals

Ex. 1001 at Fig. 5; POR at 19-20; Sur-Reply at 1

Patent Owner's Demonstrative Exhibit - Not Evidence ¹⁷

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Patent Owner's Construction of "haptic effect"

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.

Claimed "haptic effect"

Ex. 1001 at claim 11:29-40; POR at 20-21; Sur-Reply at 1-2, 4-5

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Patent Owner's Construction of "haptic effect"

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.

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.

Claimed "haptic effect"

**Unclaimed embodiments
(modification, combination,
multiple effects)**

Ex. 1001 at claim 11:29-40; POR at 20-21; Sur-Reply at 1-2, 4-5

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Intamin, Ltd. v. Magnetar Techs., Corp.

483 F.3d 1328, 1336-37 (Fed. Cir. 2007)

Under the proper claim construction with the conducting rail extending the length of the fixed device, ***the claim may well not cover this embodiment.***

Nonetheless, ***this court has acknowledged that a claim need not cover all embodiments.***

A patentee may draft different claims to cover different embodiments.

Plain Meaning of “haptic effect”

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.

**“haptic output signal” is
a *single signal* based on
both touch and proximity**

Plain Meaning of “haptic effect”

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.

**single “haptic effect”
generated in response to
a *single haptic output
signal***

Plain Meaning of “haptic effect”

PTAB holding from appeal during prosecution:

Neither the Examiner nor Appellant appears to dispute that the broadest reasonable interpretation in light of the Specification for the argued limitation requires generating a haptic effect based on both a proximity signal and a touch signal, and does not mean that one haptic effect may be based on proximity and another haptic effect may be based on touch. We agree with both the Examiner and Appellant that the broadest reasonable interpretation of the argued limitation requires that both touch and proximity signals be used to generate each haptic effect.

Ex. 1002 at 1085, 1089; POR at 17

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Plain Meaning of “haptic effect”

Even if Immersion’s proposed construction is rejected, the claim requires a single haptic output signal that is based on both proximity and touch. For example, if a proximity sensor signal produces haptic effect “1” and a touch sensor signal produces haptic effect “2” then even if these haptic effects are further combined or overlaid on top of one another, overlapping in time, they are not a single haptic effect because they are a combination of separate haptic effects.

No Anticipation or Obviousness

Patent Owner's Demonstrative Exhibit - Not Evidence ²⁵

Summary

- **Ground 1: Pratt does not disclose/render obvious the claimed “haptic effect”** (POR at 2, 22-35; Sur-Reply at 7-15)
- **Ground 3: Ku does not render obvious the claimed “haptic output signal” or “haptic effect”** (POR at 52-54; Sur-Reply at 19-22)
- **Ground 2: Combining Pratt and Ku does not remedy the deficiencies of either reference** (POR at 36-52; Sur-Reply at 15-19)
- **Ground 4: Combining Ku with Jiang does not remedy Ku’s deficiencies** (POR at 54-55; Sur-Reply at 22-23)

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No Anticipation or Obviousness: Pratt (Ground 1)

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Pratt: Summary

Both of the Petition's Pratt-based theories fail:

- 1. Pratt's “bubble effect” embodiment does not disclose the claimed “haptic effect”**
- 2. A POSA would not have combined Pratt's “latency” and “rate-of-approach” embodiments**

First Pratt Theory: “Bubble Effect” Embodiment

[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.

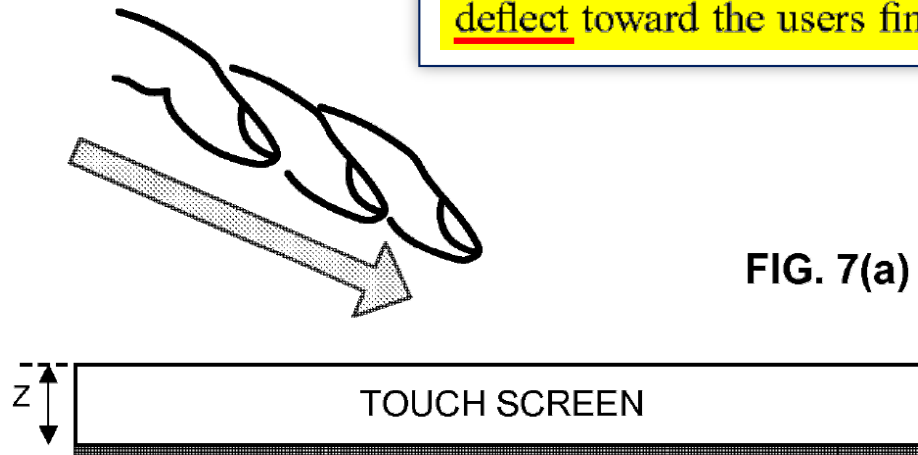
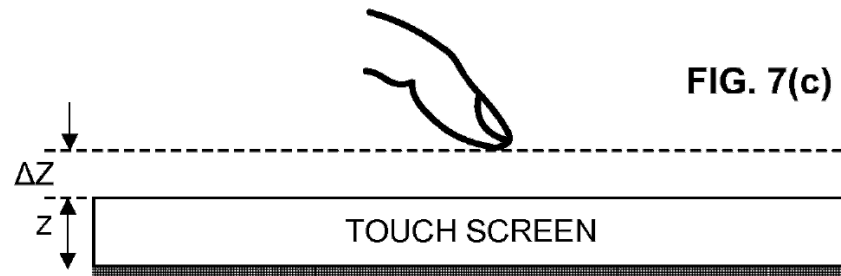
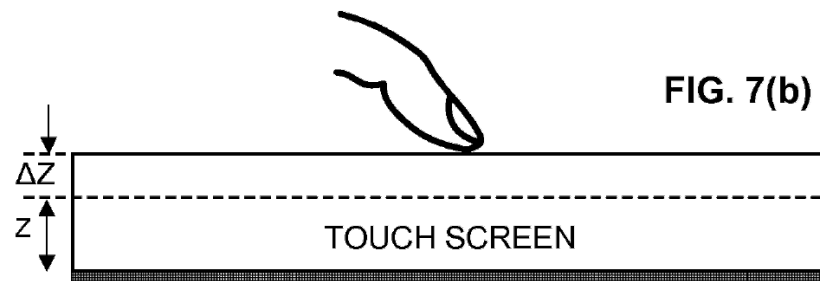


FIG. 7(a)

**The bubble effect’s
“deflection” is a first
haptic effect based only
on proximity**

First Pratt Theory: “Bubble Effect” Embodiment



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”).

The bubble effect's “return to default” is a second haptic effect based only on touch

Ex. 1006 ¶[0050], Figs. 7b-7c; POR at 28-30; Sur-Reply at 7

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First Pratt Theory: “Bubble Effect” Embodiment

perception thereof. The first haptic effect in Pratt’s “bubble effect”—deflecting the screen towards the user’s finger—is based entirely on proximity sensing. POR, 26 (citing EX1006, ¶[0049]-[0050], Figs. 7(a)-(d); EX2008, ¶80). The second haptic effect in Pratt’s “bubble effect”—returning the screen to its original flat position—is based solely on touch sensing. *Id.* Thus, each sensor signal, proximity and touch, generates a different haptic effect.

No “haptic output signal” based on both proximity and touch

No “haptic effect” based on both proximity and touch

Plain Meaning of “haptic effect”

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.

**single “haptic effect”
generated in response to
a *single haptic output
signal***

**“haptic output signal” is
a *single signal* based on
both touch and proximity**

Plain Meaning of “haptic effect”

PTAB holding from appeal during prosecution:

Neither the Examiner nor Appellant appears to dispute that the broadest reasonable interpretation in light of the Specification for the argued limitation requires generating a haptic effect based on both a proximity signal and a touch signal, and does not mean that one haptic effect may be based on proximity and another haptic effect may be based on touch. We agree with both the Examiner and Appellant that the broadest reasonable interpretation of the argued limitation requires that both touch and proximity signals be used to generate each haptic effect.

Ex. 1002 at 1085, 1089; POR at 17

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Second Pratt Theory: “Rate of Approach” Embodiment (para. 41)

[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.

Ex. 1006 ¶[0041]

Second Pratt Theory: “Rate of Approach” Embodiment (para. 41)

[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.

Ex. 1006 ¶[0041]

**As the Petition admits,
the “rate of approach”
haptic effects are based
only on proximity**

The approach rate is
determined based on signals from the proximity sensor. [0034]; Welch, ¶¶148-149.

Pet. at 27

Second Pratt Theory: Modifying Paragraph 41 with Paragraph 39

The Petition proposes:

However, POSAs would understand that paragraph 41 can be implemented such that the actual haptic effect is only generated after the device “detect[s] the finger making contact with the touch surface.” [0039].

Pet. at 27

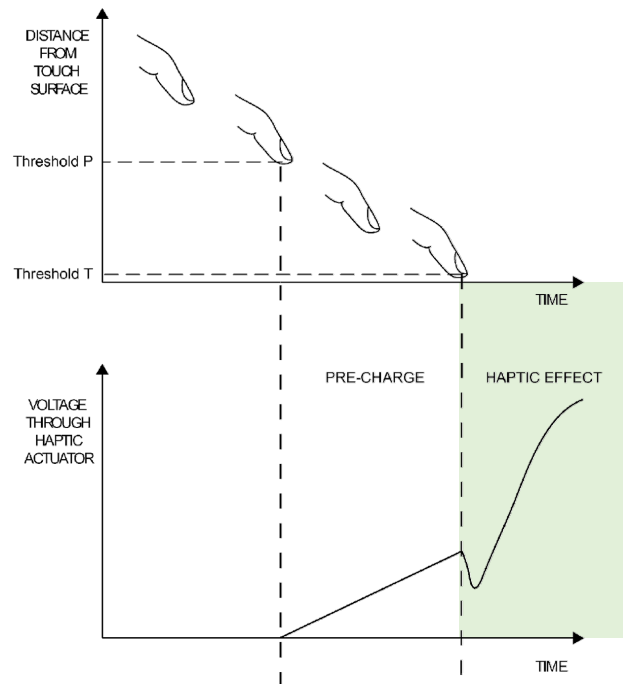
Second Pratt Theory: “Latency” Embodiment (para. 39)

[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.

Proximity only used for pre-charging to reduce latency, *not* for any haptic effect

Paragraph 39’s haptic effect is based only on touch

Second Pratt Theory: “Latency” Embodiment (para. 39)



Proximity only used for pre-charging to reduce latency,
not for any haptic effect

Paragraph 39’s haptic effect
is based only on touch

Ex. 1006 at Fig. 4; POPR at 2-3, 41-42; POR at 2, 35; Sur-Reply at 9-10

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Second Pratt Theory: Modifying “Rate of Approach” with “Latency”

(rate of approach)

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.

(as in the latency embodiment)

**No motivation to combine paragraphs 39 and 41:
different problems and different solutions.**

Second Pratt Theory: “Latency” Embodiment (para. 39)

[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.

Proximity only used for pre-charging to reduce latency, *not* for any haptic effect

Paragraph 39's haptic effect is based only on touch

Second Pratt Theory: “Rate of Approach” Embodiment (para. 41)

[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.

Ex. 1006 ¶[0041]

**As the Petition admits,
the “rate of approach”
haptic effects are based
only on proximity**

different effect following a “slow” approach. [0041]. The approach rate is determined based on signals from the proximity sensor. [0034]; Welch, ¶¶148-149.

Pet. at 27

Cook Grp., Inc. v. Boston Sci. Scimed, Inc.

809 F. App'x 990, 1001 (Fed. Cir. 2020)

[W]here the motivation to combine rests on a modification alleged to improve the primary [embodiment], as is the case here, the Board may consider whether ***the modification renders the reference inoperable for its intended function*** in deciding whether a POSA would have had a motivation to combine the [embodiments], even if that function is not a feature of the claimed device at issue.

POPR at 2, 41; POR at 2, 35; Sur-Reply at 12-13

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Cook Grp., Inc. v. Boston Sci. Scimed, Inc.

809 F. App'x 990, 1001 (Fed. Cir. 2020)

[W]here the motivation to combine rests on a modification alleged to improve the primary [embodiment], as is the case here, the Board may consider whether **the modification renders the reference inoperable for its intended function** in deciding whether a POSA would have had a motivation to combine the [embodiments], even if that function is not a feature of the claimed device at issue.

the combination of the paragraph 39 and 41 embodiments would result in loss of functionality, namely the ability to convey information about the rate of approach before the user touches the screen.

Sur-Reply at 12-13.

POPR at 2, 41; POR at 2, 35; Sur-Reply at 12-13

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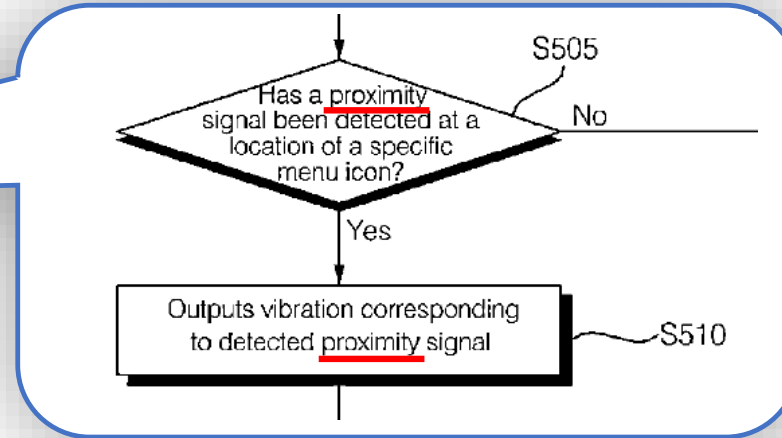
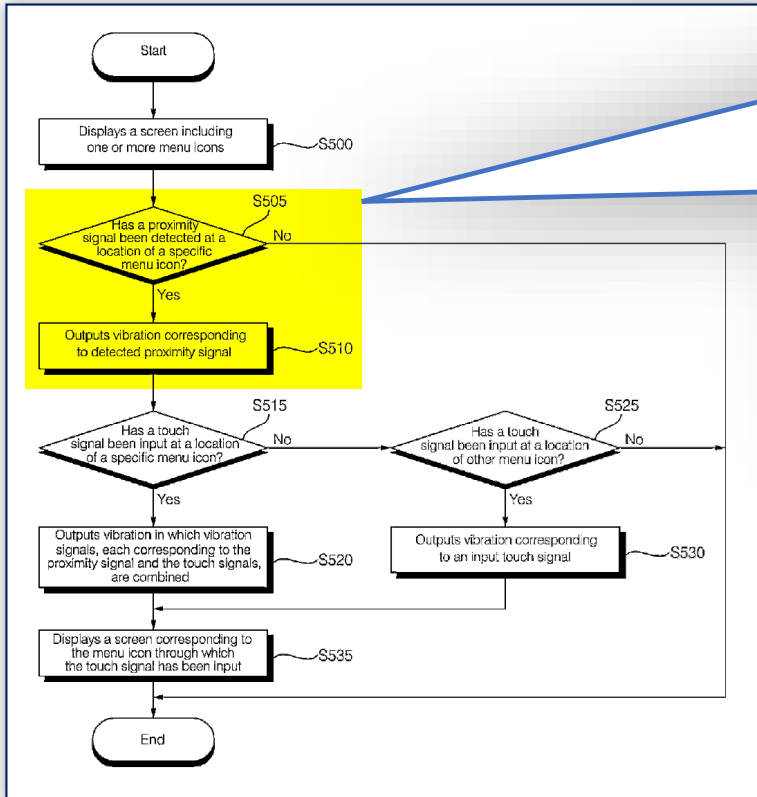
Immersion Exhibit 2010

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No Obviousness: Ku (Ground 3)

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁴

Ku: Figure 7's Haptic Effect S510



Vibration in S510 based only on proximity

Vibration = “haptic effect”

NOT “haptic output signal”

Ex. 1008 at Fig. 7, 6:45-48; POR at 37-39, 45, 52-54; Sur-Reply at 19-21; Pet. at 63

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁵

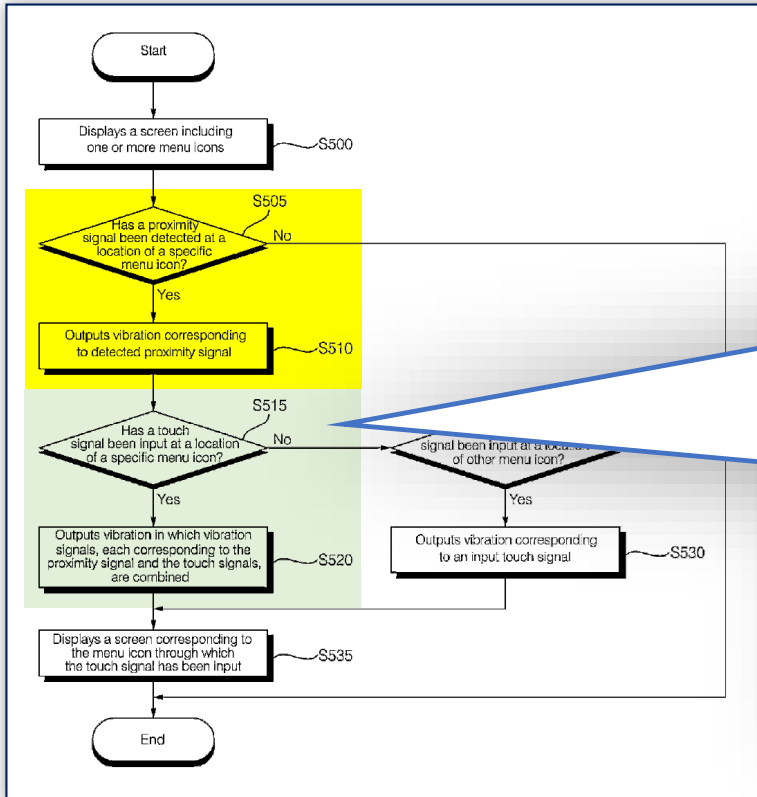
Valve Corp. v. Immersion Corp.

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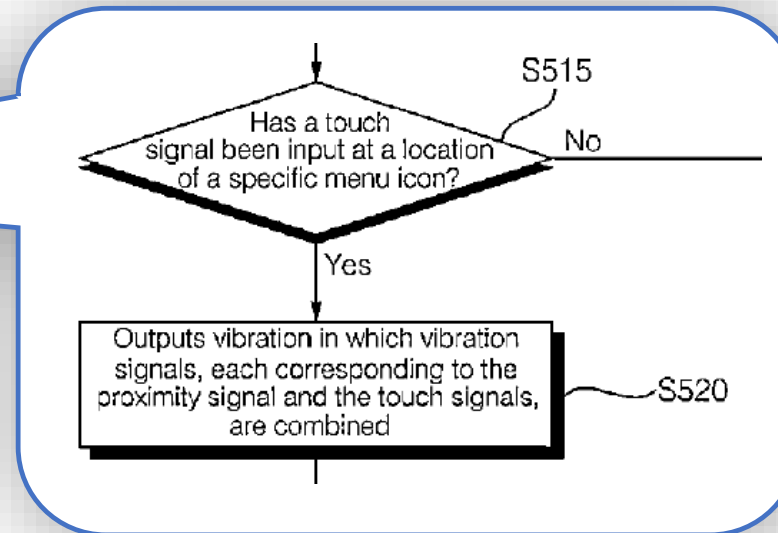
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Ku: Figure 7's Haptic Effects_ S250



TWO “vibration signals” (haptic effects)

Each based only on proximity OR touch



Ex. 1008 at Fig. 7; POR at 41-42, 45, 52-54; Sur-Reply at 19-21

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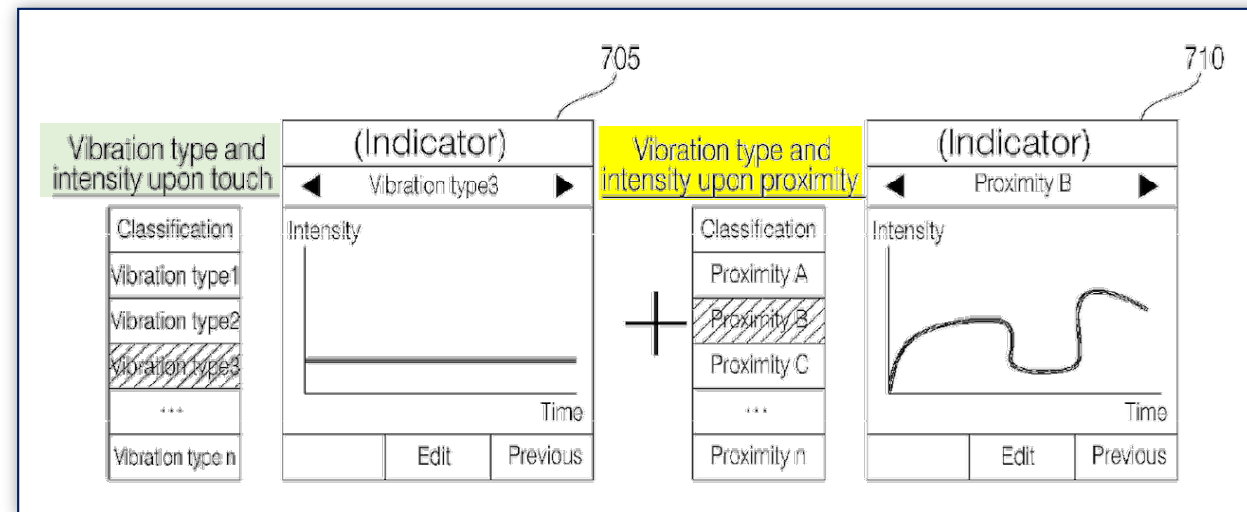
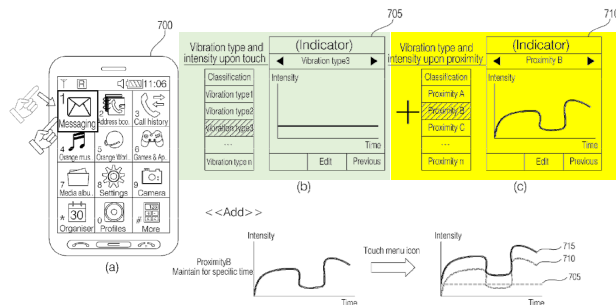
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Ku: Figure 12's Haptic Effects 705 and 710

Haptic effect 705 based only on touch

Haptic effect 710 based only on proximity



Ex. 1008 at Fig. 12; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

Patent Owner's Demonstrative Exhibit - Not Evidence ⁴⁷

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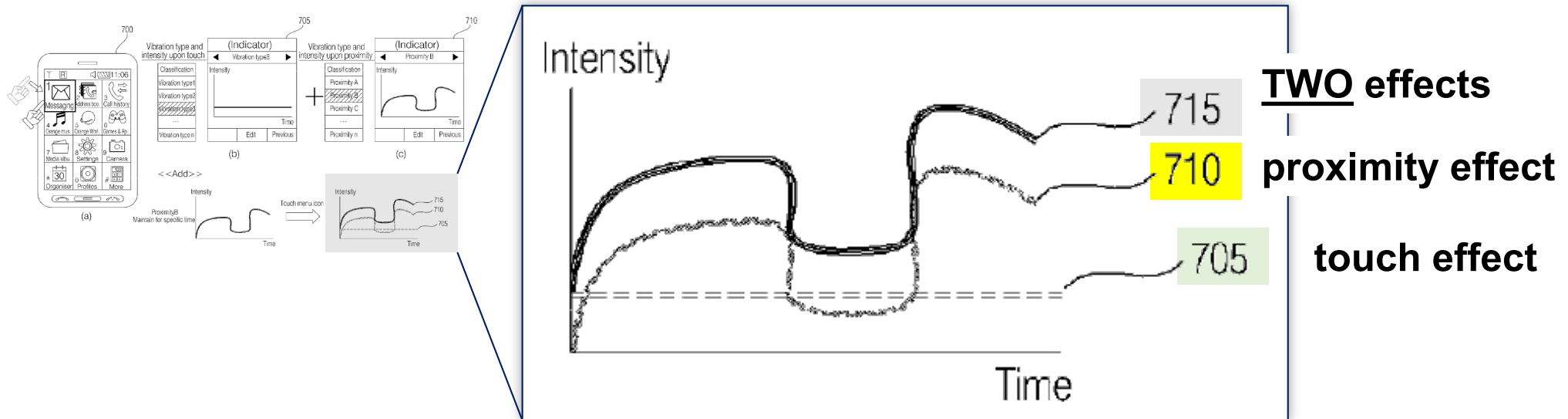
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Ku: Figure 12's Haptic Effects_ 715

715 represents **TWO** overlapping haptic effects, one based only on **proximity (710)** and the other only based on **touch (705)**



Ex. 1008 at Fig. 12; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

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Ku: Petition's Obviousness Theory

Recognizing Ku does not disclose a single “haptic output signal”:

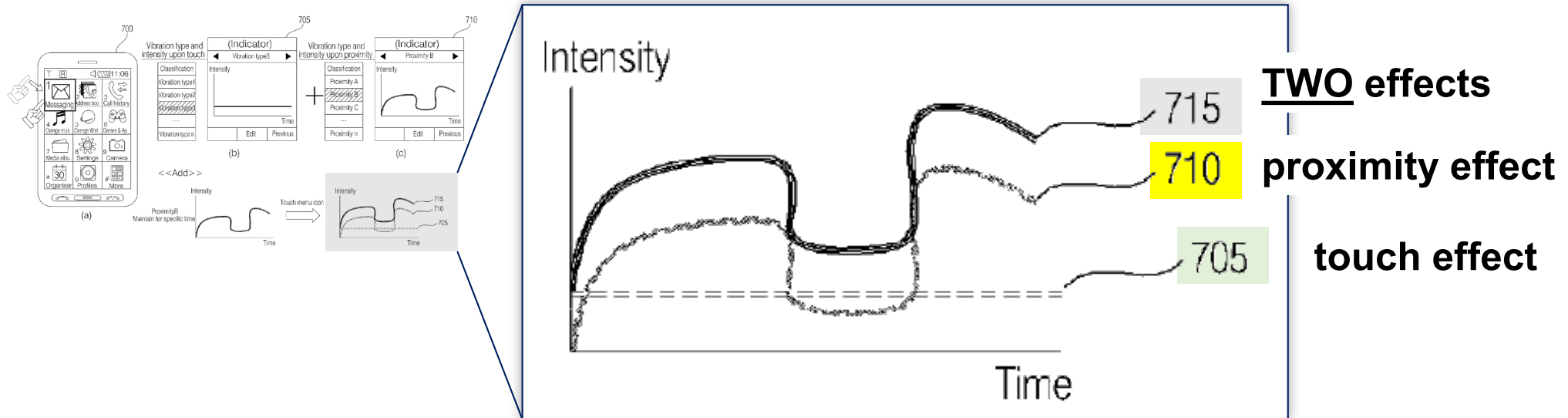
Pratt's processor 112 generates the haptic output signal. Welch, ¶258. Using controller 180 to generate a single “*haptic output signal*”—for example, a command signal causing vibration 715—based on both the proximity and touch signals (i.e., the “*first and second sensor signals*”) and sending it to 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;

**The Petition's
“command signal”
obviousness theory**

What Ku discloses

Ku: Figure 12's Vibration 715

715 represents **TWO** overlapping haptic effects, one based only on **proximity (710)** and the other only based on **touch (705)**



Ex. 1008 at Fig. 12; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

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Ku: Petition's Theory Does Not Rely on Tierling

Sole mention of Tierling (Ex. 1020) in the Petition in Ground 2, not Ground 3

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

Ku: Petition's Theory Does Not Rely on Tierling

Indeed, as Dr. Welch testified, POSAs would have recognized the benefits of such consolidation based on teachings such as Tierling, which discloses a “haptic device controller 130” “within [a] processor” that outputs “a control signal” to “control[] the tactile output [] of the haptic device 124.” Welch, ¶226 (quoting EX1020, [0045]-[0046] & [0048]). Controller 130 includes an “effect combiner/sequencer 308” that can “combine [] multiple effects.” Welch, ¶226 (quoting EX1020, [0062]); see also EX1020, FIG. 3B:

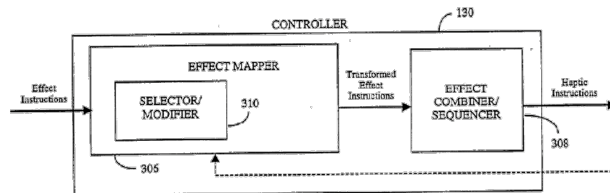


Fig. 3B

As Dr. Welch further noted, Tierling teaches that that the “effect combiner/sequencer 308...saves synthesizer and/or processor resources.” Welch, ¶226 (quoting EX1020, [0062]). Tierling also discloses “code to: superimpose multiple haptic instructions...to create at least one superimposed haptic instruction” associated with a “haptic signal.” Welch, ¶226 (discussing Tierling’s claim 6).

- **First time Petitioner claimed Tierling (Ex. 1020) was part of its Ground 3 theory was on reply**
- **Cites in the reply are to Petitioner’s expert declaration, not the Petition**
- **3M Co. v. Evergreen Adhesives, Inc., 860 F. App’x 724, 727-28 (Fed. Cir. 2021)**
 - Affirmed Board’s reliance on 37 C.F.R. § 42.6 in its refusal to consider argument provided only by way of improper incorporation by reference to testimony offered by 3M’s expert

Reply at 9-10; Sur-Reply at 21-22

Patent Owner's Demonstrative Exhibit - Not Evidence ⁵²

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No Obviousness: Pratt in view of Ku (Ground 2)

Patent Owner's Demonstrative Exhibit - Not Evidence ⁵³

Pratt: “Latency” Embodiment

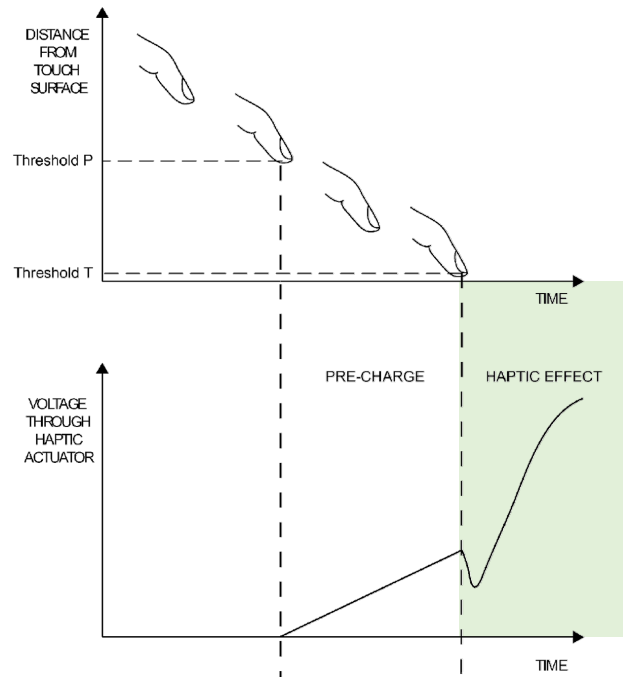


FIG. 4

Haptic effect is based only on touch

Proximity only used for pre-charging to reduce latency, *not* for any haptic effect

Ex. 1006 at Fig. 4; POPR at 2-3, 41-42; POR at 2, 35; Sur-Reply at 9-10

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Petition's Theory: Combine Pratt's "Latency" Embodiment with Ku Figures 7/12

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).

**Does not remedy
Ku's deficiencies**

**Ku Fig. 12(d) has
two haptic effects**

Pet. at 47-48; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

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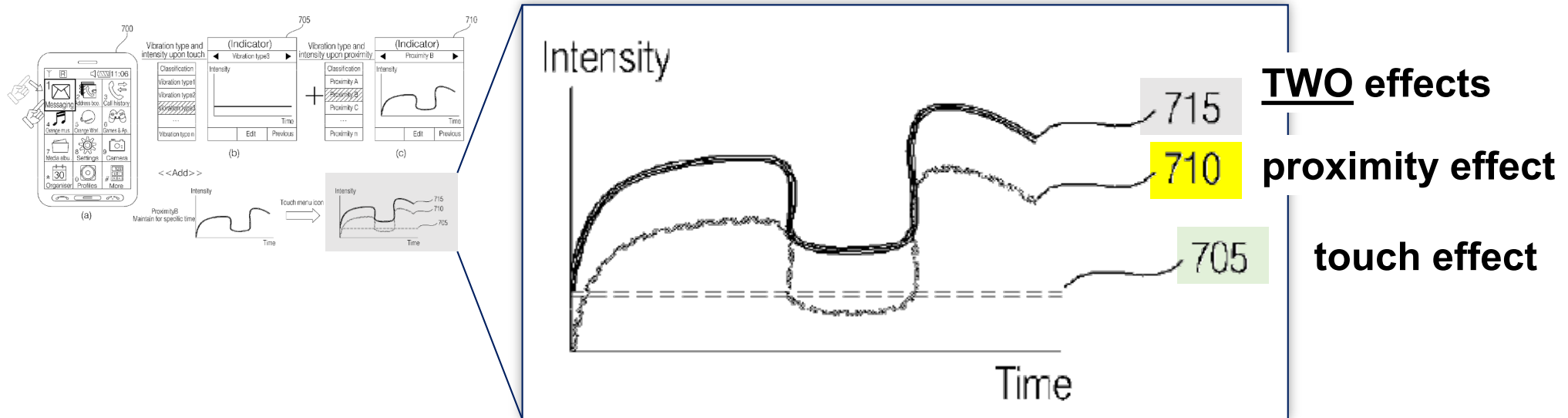
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Ku: Figure 12's Vibration 715

715 represents **TWO** overlapping haptic effects, one based only on **proximity (710)** and the other only based on **touch (705)**



Ex. 1008 at Fig. 12; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

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Petition's Theory: Combine Pratt's "Latency" Embodiment with Ku Figures 7/12

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**No motivation
to combine**

**Directed to different
problems**

Pet. at 47-48; POR at 42-43, 45, 52-54; Sur-Reply at 19-21

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No Obviousness: Ku in view of Jiang (Ground 4)

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Jiang: EMP Sensor

Jiang et al.

(54) ELECTROMECHANICAL POLYMER-BASED SENSOR

Such transparent EMP devices may be 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.

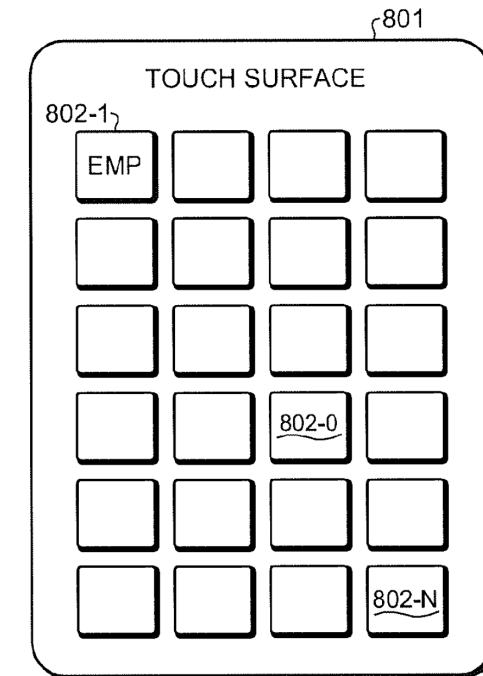


Fig. 8

Ex. 1010 at face page, ¶[0035], Fig. 8; Pet. at 77-78

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Ku + Jiang

Ku-Jiang includes elements [1D], [1E], [1F], and [1G] for the same reasons detailed in §VII.C concerning Ku. The only difference between Ku and Ku-Jiang is Jiang's EMP sensor, which doubles as both sensors and the haptic output device (in place of Ku's "haptic module"). The processor and associated signals are identical.

**Petition admits Jiang cannot address Ku's
"haptic output signal" and "haptic effect" deficiencies**

FOLIO LAW GROUP PLLC

Patent Owner's Demonstrative Exhibit - Not Evidence ⁶¹