

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

Case IPR2016-01884
Patent No. 7,336,260

**IMMERSION CORPORATION'S
PATENT OWNER RESPONSE**

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EXHIBIT LIST

Immersion Ex. 2001	Declaration of Dr. Sigurd Meldal in Support of Immersion Corporation's Patent Owner Preliminary Response, dated January 4, 2017
Immersion Ex. 2002	<i>Curriculum Vitae</i> of Sigurd Meldal, Ph.D.
Immersion Ex. 2003	Notice of Allowability, File History of the '260 Patent
Immersion Ex. 2004	Declaration of Dr. Sigurd Meldal in Support of Immersion Corporation's Patent Owner Response, dated July 3, 2017
Immersion Ex. 2005	Deposition Transcript of Dr. Majid Sarrafzadeh, SC, in IPR2016-01884 and IPR2016-01907, dated June 21, 2017
Immersion Ex. 2006	ITC Inv. No. 337-TA-1004, Order No. 43: Denying Respondent Apple Inc.'s Motion for Summary Determination That U.S. Patent No. 7,336,260 Does Not Claim Patentable Subject Matter, dated April 6, 2017

I. INTRODUCTION

Patent Owner Immersion Corporation (“Immersion” or “Patent Owner”) submits this Response to the Board’s Decision – Institution of *Inter Partes* Review (Paper No. 11) (“Decision”), entered April 3, 2017, to institute *Inter Partes* Review of United States Patent No. 7,336,260 (“the ’260 patent”) filed by Apple, Inc. (“Petitioner”). The Decision instituted review of claims 1 and 2 on two Grounds—obviousness under section 103(a) in light of (1) U.S. Patent Application Publication No. 2001/0008849 (“Komata”) and (2) Japanese Unexamined Patent Application Publication No. 11-212725 (“Tsuji”). Patent Owner respectfully submits that Petitioner has not established and cannot establish obviousness on either Ground.

In its Decision to institute *inter partes* review, Patent Owner respectfully submits that the Board applied an unreasonably broad construction of claims 1 and 2 of the ’260 patent, essentially reading the claims to cover detecting a pressure and providing a tactile sensation three (or four) separate times with each pressure detection/tactile sensation unrelated to the others. Such a reading fails to credit the structure of the claims and the specific teaching of the specification. The structure of claims 1 and 2 recites a relationship between detected pressures (“the second pressure greater than the first pressure,” “the third pressure greater than the second pressure,” and “the fourth pressure greater than the third pressure”). This

relationship is confirmed in the specification which provides a detailed description of how the detected pressures and corresponding tactile sensations are provided to the input device during a contact. The Board reads out this relationship from the claims.

The references on which Petitioner relies also fail to disclose or render the claims obvious. Neither Komata nor Tsuji discloses or teaches detecting first, second, third, and fourth pressures on the input device and providing corresponding tactile sensations during a contact with the input device. Komata discloses a head-to-head timing game where there is only one detected pressure and one vibration per contact with a player's switch. Komata teaches away from detecting multiple pressures and providing corresponding vibrations during a contact with the switch. Tsuji discloses an information display device such as an ATM machine that detects a single pressure and provides a single vibration during a contact with the operating panel. Tsuji teaches away from the '260 invention in a number of ways including, for example, teaching (1) to provide the same vibration, even when the user varies pressure during a contact, (2) to provide no vibration during a tracing operation where the user slides her finger on the operating panel. Neither reference renders obvious claims 1 and 2 of the '260 patent.

II. CLAIM CONSTRUCTION

A. The Board Provides an Overbroad Reading of Claims 1 and 2

In its decision to institute *inter partes* review of claims 1 and 2, the Board found that the limitations in claim 1 “do not define any temporal relationship between the detections and thus fail to require that detecting the first, second, and third pressures must occur at the same time, continuously, or as part of a single touch interaction.” Decision (Paper No. 11) at 22. The Board then reached the preliminary decision that “the challenged claims do not require detecting three pressures during a single touch interaction.” *Id.*, at 24. Immersion respectfully submits that this preliminary decision is contrary to the structure of the claim language and the specification. When read in light of the specification, the structure of claims 1 and 2 require detecting first, second, third and fourth pressure levels and providing corresponding tactile sensations as the user varies pressure during a contact with the input device. The claim recites the required relationship of the pressures that are detected during the contact. The Board’s preliminary conclusion that the broadest reasonable construction of the claim covers three separate contacts, unrelated to one another, is unreasonable and incorrect. Such an interpretation reads the recited second, third and fourth detected pressures, their relationship to other pressures (e.g., “the second pressure greater than the first pressure”), and corresponding sensations out of the claim and incorrectly reduces

the claim to just its first limitation—the detection of a single pressure and providing a single tactile sensation. Patent Owner respectfully submits that the Board has applied an unreasonably broad reading of the challenged claims that is divorced from the specification.

The Federal Circuit has cautioned the Board from applying an unreasonably broad claim construction during patent office proceedings. “As we have explained in other contexts, “[t]he protocol of giving claims their broadest reasonable interpretation . . . does not include giving claims a legally incorrect interpretation.”” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citing *In re Skvorecz*, 580 F.3d 1262, 1267 (Fed. Cir. 2009)); *see also In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010) (“The broadest construction rubric coupled with the term ‘comprising’ does not give the PTO an unfettered license to interpret claims to embrace anything remotely related to the claimed invention.”). The Federal Circuit instructs that “claims should *always* be read in light of the specification and teachings in the underlying patent.” *Suitco*, 603 F.3d at 1260 (emphasis added).

B. The Structure of Claims 1 and 2 And The Specification Confirm That The Claims Require Detecting Multiple Pressure Levels and Providing Corresponding Tactile Sensations During a Contact

The '260 patent is directed to an improved input device that is more efficient and easier to use through the incorporation of pressure detection and haptic

functionality. The patent explains that the inventions help to address a problem with prior art devices, which is that users cannot always rely on visual feedback when using electronic devices (*e.g.*, when they need to be watching the road while driving, in a distracting environment, or the user interface screen is not visible).

Ex. 1001, 1:60-2:5. Moreover, the human hand cannot reliably or consistently sense the degree of pressure it is applying to an input device such as a touchpad or touchscreen or how the pressure is increasing or decreasing during a contact. In other words, in systems where distinct levels of pressure being applied yield distinct results, a user may not be able to consistently and reliably apply pressure at some specific level on the input device in order to perform a particular function or achieve a particular result. Ex. 2004, Declaration of Dr. Sigurd Meldal in Support of Immersion Corporation's Patent Owner Response ("Meldal POR Decl.") ¶ 21.

Tactile feedback as the pressure that a user applies varies during a particular interaction or contact with a pressure-sensitive device provides an important means for communicating information between the device and the user to enhance efficiency and reduce errors. For example, by providing successive tactile feedback based on successive amounts of pressure input by the user, the device can provide confirmation that the user has or has not pressed hard enough on a graphical object to trigger a desired event, or has released pressure such that it is no longer active. Meldal POR Decl. ¶ 22.

This improved arrangement is reflected in the structure of the claims.

Claims 1 and 2 recite:

1. A computer-readable medium having instruction, the instructions including instructions that cause a processor to:

- detect a first pressure on a first input device;
- provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure;
- detect a second pressure on the first input device, *the second pressure greater than the first pressure*; and
- provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure;
- detect a third pressure on the first input device, *the third pressure greater than the second pressure*; and
- provide a third tactile sensation to the first input device.

2. The computer-readable medium of claim 1 further comprising stored instructions, the stored instructions including instructions which, when executed by a processor, cause the processor to:

- detect a fourth pressure on the first input device, *the fourth pressure greater than the third pressure*; and
- provide a fourth tactile sensation to the first input device.

Claim 1 expressly requires detecting three different pressure levels on an input device, each with a relationship to each other: “detect a first pressure on a first input device;” “detect a second pressure on the first input device, the second

pressure greater than the first pressure;” and “detect a third pressure on the first input device, the third pressure greater than the second pressure.” Claim 1 also requires providing corresponding first, second, and third tactile sensations. Claim 2 adds detecting a fourth pressure and providing a corresponding fourth tactile sensation, as follows: “detect a fourth pressure on the first input device, the fourth pressure greater than the third pressure” and “provide a fourth tactile sensation to the first input device.”

This claimed approach tracks the specification. The description of the invention in the specification consistently highlights how the claimed input device detects pressure and provides corresponding tactile feedback as the user varies pressure during the contact.

Figures 3 and 4 Embodiment:

Figure 3 of the '260 patent describes a mobile telephone 14 embodiment having a plurality of buttons or keys 10. Ex. 1001, 8:26-37. Figure 4 is a side-view of Figure 3. The specification provides the following relevant discussion:

An object 24, for example the user's finger or a stylus, is used to select one or more of the keys 10 by applying pressure in the direction of the arrow A. This pressure causes the selected key to progress through a plurality of positions. As illustrated, after leaving the rest position 23, *the keys pass sequentially through a second position 25, a third position 26, a fourth position 27,*

and a fifth position 28 as greater and greater pressure is applied to the button 10. Id., 8:65-9:5 (emphasis added).

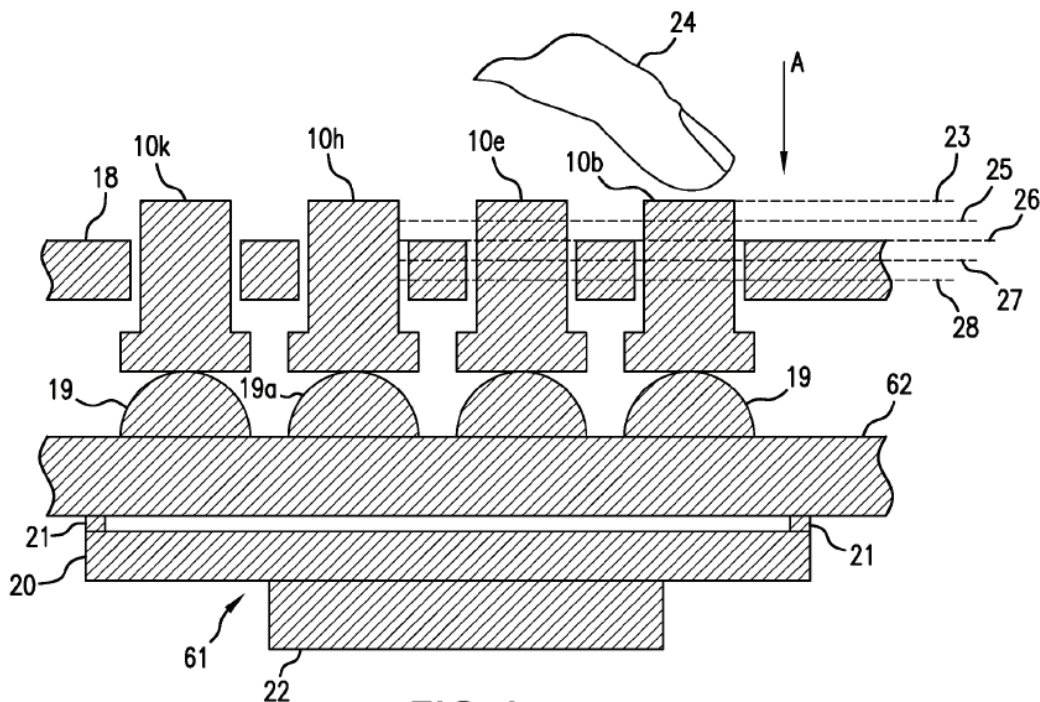


FIG.4

The specification explicitly teaches that as the user increases the pressure applied to the button within a single contact, the haptic effect provided to the user is varied. In this embodiment, the user first moves key 10i from its resting position (23) to a second position (25), then to a third position (26). Ex. 1001 at 9:11-14 (“[I]n the embodiment shown, a key 10i is moveable from a first level (rest) 23 to a second level 25 upon the application of a sufficient amount of pressure to the input device”); *id.* at 9:45-47 (“[T]he user applies further pressure to the button 10i sufficient to cause the button to move from the second level 25 to a third level 26.”). Greater pressure results in the key moving to further positions 27 and 28.

Meldal POR Decl. ¶ 26-27; Ex. 1001 at Fig. 4. Whenever one of the positions 25-28 is reached, a haptic effect is provided to the user. Meldal POR Decl. ¶ 27-28; Ex. 1001 at 9:65-10:1 (“[A]t each level 25, 26, 27, 28, a distinct signal is transmitted by the switch 19a to the controller 9.”).

The specification of the '260 patent teaches that the haptic effects are provided during a single interaction or contact, as the user varies the pressure applied to key 10i to move the key through various positions. For instance, when a user uses “a relatively light amount of pressure, the button 10i moves from rest state 23 to its second level 25.” Ex. 1001 at 9:19-23. When this occurs, “[t]he controller transmits [a] first controller output signal to the actuator 61,” which causes the device to vibrate at a specified frequency. *Id.* at 9:26-44. The specification then describes the user applying further pressure to move the input device from the second position to the third position. *Id.* at 9:45-48 (“When the user applies further pressure to the button 10i sufficient to cause the button to move from the second level 25 to a third level 26, the button’s force is applied to switch 19a.”). When the third position 26 is reached, another haptic effect is output *Id.* at 9:48-56 (“Switch 19a receives the force and is configured to transmit a second signal to the controller 9 whenever it receives force to indicate that the button 10i has moved from the second level 25 to the third level 26. . . . The controller 61 transmits the second controller output signal to the actuator 61.”).

Notably, this second haptic output associated with the third level 26 occurs during the same user contact as the first haptic output associated with the second level 25, because the specification states that the haptic output is initiated by the controller “*whenever* it receives force to indicate that the button 10i has moved from the second level 25 to the third level 26.” Ex. 1001 at 9:48-51 (emphasis added). Accordingly, the ’260 patent teaches that its system includes instructions that cause a processor to output tactile sensations corresponding to multiple pressure levels during a single contact with an input device. Meldal POR Decl. ¶ 28.

Figure 5 Embodiment:

The specification provides a further example of the invention using a touchscreen embodiment. The embodiment of Figure 5 is a PDA 31 implemented as a mobile telephone having a pressure-sensitive touchpad 30. Ex. 1001, 11:11-13, 46-49. This embodiment also discloses multi-level pressure detection as the user increases the pressure on the input device. *Id.*, 12:9-11 (“Certain softkeys 36b-i represent multiple positions or multiple inputs, each input or position corresponding to a distinct amount of pressure applied to the softkey 36b-i.”). The specification notes that the “functionality of the softkeys shown in FIG. 5 is similar to the mechanical key counter parts describe in relation to FIGS. 2 and 3.” *Id.*, 12:31-33; *see also id.*, 12:33-53.

The specification further makes clear that, like with the Figures 3-4

embodiment, the Figure 5 embodiment includes instructions that cause a processor to provide tactile sensations to the user based on detecting multiple pressures during a contact with the touchscreen. Meldal POR Decl. ¶ 29-30. In particular, as the softkey 36a is moved from a resting position to a second position through the application of pressure, “the controller is configured to cause the actuator to produce a first tactile sensation.” Ex. 1001 at 12:31-46. The specification teaches that, subsequent to the first tactile sensation being output, once a user has applied sufficient pressure to move the softkey to a third position, “[t]he controller would *then* cause the actuator 64 to produce a second tactile sensation upon receipt of the input signal associated with the third position.” Ex. 1001 at 12:46-50.

Figure 2 Embodiment:

The '260 patent provides another example, in Figure 2, of an apparatus 60 that includes a plurality of input devices in the form of alphanumeric input buttons 10a-l. Ex. 1001, 5:38-41. “Each of the buttons 10 is capable of resolving multiple levels of pressure placed on the buttons 10. For example, the button 10i (corresponding to the number 9 on the keypad) is capable of resolving five levels of pressure placed on the button 10i.” *Id.*, 5:60-64. A description of the multiple level detection as the user increases pressure for the embodiment shown in Fig. 2 includes the following relevant passage:

When the button 10i is in its first state, then the button 10i does not

transmit an input signal. When pressure is applied to the button 10i by the user that exceeds the first magnitude, the button 10i transmits a first signal to the controller 9. *When greater pressure is applied to the button 10i that exceeds the second magnitude of pressure*, the button 10i transmits a second signal to the controller. *When still greater pressure is applied to the button 10i that exceeds a third magnitude of pressure*, the button 10i transmits a third signal to the controller. When even greater pressure is applied to the button 10i that exceeds the fourth magnitude of pressure, the button transmits a fourth signal to the controller. Ex. 1001, 6:11-25 (emphasis added).

The approach in the claims tracks the specification's consistent description of embodiments where the pressure levels applied to the input device have a relationship to one another during a contact with the input device and signals are applied to the controller to generate haptic effects as a result of the detected pressures. Meldal POR Decl. ¶ 31-33. Ex. 1001, 6:11-24 (Figure 2, "When greater pressure is applied to the button 10i that exceeds the second magnitude of pressure" and "When still greater pressure is applied to the button 10i that exceeds a third magnitude of pressure"); *id.* 8:65 – 9:5 (Figures 3 and 4, "the keys pass sequentially through a second position 25, a third position 26, a fourth position 27, and a fifth position 28 as greater and greater pressure is applied to the button 10"), *id.* 12:31-33 (Figure 5, "The functionality of the softkeys shown in FIG. 5 is similar to the mechanical key counter parts describe in relation to FIGS. 2 and 3.").

The Board applied an unreasonably broad construction of claims 1 and 2 and did not credit the specific teaching of the specification of the '260 patent. The Board in its Decision stated that “Even assuming that the '260 patent does disclose providing tactile sensations as a user applies varying pressure *during an interaction*, it would be improper to read such disclosure into the claims.”

Decision at 23. The requirement that the detection and corresponding tactile sensations occur during an interaction is not an instance of reading disclosure into the claims. The claim language itself, and the structure of claims 1 and 2, recites the relationship of the detected pressures during the contact. Meldal POR Decl.

¶ 34. The claim language is not directed to discreet, separate, and unrelated events. If this were the case, the relational claim language detailing the relationship between the pressures would be superfluous. The claims track the description in the specification of how the improved apparatus detects multiple pressure levels and provides corresponding tactile sensations as pressure is varied during a single contact with the input device.

The Board’s reading of claims 1 and 2 is unreasonably broad and divorced from the specification, which is improper. “Even under the broadest reasonable interpretation, the Board’s construction ‘cannot be divorced from the specification and the record evidence,’ *In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011), and ‘must be consistent with the one that those skilled in the art would reach,’ *In re*

Cortright, 165 F.3d 1353, 1358 (Fed. Cir. 1999).” *Proxycorr, Inc.*, 789 F.3d at 1298.

C. Petitioner’s Arguments For A Broader Construction Should Be Rejected

Petitioner raised several incorrect arguments in its Reply to Patent Owner’s Preliminary Response that the claims and the specification do not support Immersion’s proposed construction. Each of these is addressed in turn.

First, Petitioner argues that there are not “any terms in claim 1 that could reasonably be construed as meaning ‘during a single touch interaction.’” Reply (Paper No. 9) at 1. Petitioner further argues that claim 1 “does not specify any other temporal or logical relationship between the detections.” *Id.* However, this argument ignores the fact that claims 1 and 2 do expressly recite and specify a relationship between each of the pressures that are detected—for instance, the “second pressure [is] greater than the first pressure,” and “the third pressure [is] greater than the second pressure.” This establishes a logical relationship between the detections, because it indicates that the haptic effect is provided as the user applies varying pressure to the input device, consistent with the specification. By arguing that no single interaction is required, Petitioner effectively reads out the logical relationship between detections that is set forth in the claim language. Meldal POR Decl. ¶ 35.

Second, Petitioner argues that “embodiments that rely on sampling passes, such as Figure 9, supposedly establish that no “interaction” requirement is present in the claims because they “have no way of knowing what occurs during sampling passes.” Reply at 3-5. However, this again ignores the claim language, which requires instructions that “cause a processor to” carry out the steps indicated, including the detection of multiple pressures during a single interaction. The system simply must contain instructions that cause a processor to execute the appropriate functionality in response to a user input. In contrast, each of the prior art references relied upon by Petitioner lack this capability. Petitioner provides no evidence that a sampling pass embodiment would not be configured to output haptic effects in response to various pressures detected over the course of a single contact. Meldal POR Decl. ¶ 36.

Finally, Petitioner argues that the “dwell to select” embodiments of Figures 3 and 4 contradicts the single interaction interpretation of the claims. Reply at 5-7. Petitioner argues that in some non-preferred embodiments, a haptic effect is output only after a pressure is applied for a certain duration. *Id.* at 6. According to Petitioner, this embodiment is supposedly inconsistent with a system that is configured to output haptic effects in response to pressures applied during a single interaction or contact with the device. But the dwell-to-select embodiment does not preclude a user from applying additional pressures after the user applied the

pressure level 25 for a specified period of time. In such an instance, the system would, in accordance with the requirement of the claim, cause the processor to output haptic effects based on varying pressure levels over the course of a single contact. Meldal POR Decl. ¶ 37. Thus, Petitioner’s argument that Immersion’s claim interpretation would somehow exclude this embodiment is incorrect.

Additionally, even if an embodiment practicing only the “dwell-to-select” function was somehow excluded by Immersion’s interpretation, a “dwell-to-select” function is not a preferred embodiment. Not every embodiment disclosed in the specification must be covered by a claim. *Pacing Techs., LLC v Garmin Int’l, Inc.*, 778 F.3d 1021, 1026 (Fed. Cir. 2015) (“[I]n a case such as this, where the patent describes multiple embodiments, every claim does not need to cover every embodiment. This is particularly true where the plain language of a limitation of the claim does not appear to cover that embodiment.”) (internal citation omitted); *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 755 (Fed. Cir. 2016) (finding that each and every claim need not “be interpreted to cover each and every embodiment”); *Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1316 (Fed. Cir. 2010) (“It is not necessary that each claim read on every embodiment.”). Petitioner’s reliance on *Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013) is therefore inapposite. Reply at 4-7. In *Accent Packaging* the Federal Circuit held that it was improper to interpret a

claim that excluded a preferred embodiment. *Id.*, at 1326. That is not the case here. None of the embodiments Petitioner identifies are described as “preferred.”

D. Other Claims Further Demonstrate That Claims 1 And 2 Are Directed To Detecting Multiple Pressure Levels and Providing Corresponding Tactile Sensations During a Contact

Dependent claims 5 and 7 are directed to a separate contact on a second input device. These claims provide further support that claims 1 and 2 require detecting multiple pressure levels and providing corresponding tactile sensations during a contact with a first input device.

Claims 1 and 2 of the '260 patent recite detecting four separate pressures on the first input device. Each detected pressure in the claims have a relationship with the other detected pressures on the first input device (“the second pressure greater than the first pressure,” “the third pressure greater than the second pressure,” and “the fourth pressure greater than the third pressure”). Ex. 1001, 20:35-53.

Dependent claims 5 and 7 are directed to a second input device and recite:

5. The computer-readable medium of claim 1 further comprising stored instructions, the stored instructions including instructions which, when executed by a processor, cause the processor to: ***detect a fourth pressure on a second input device***; and provide a fourth tactile sensation to the second input device.

7. The computer-readable medium of claim 5 further comprising stored instructions, the stored instructions including instructions which, when executed by a processor, cause the processor

to: *detect a fifth pressure on the second input device, the fifth pressure greater than the fourth pressure*; and provide a fifth tactile sensation to the second input device.

Ex. 1001, 20:64-21:3, 21:6-12 (emphasis added).

Claim 5 of the '260 patent depends on claim 1 and recites detecting a fourth pressure on a second input device, such as *a different* alphanumeric button 10a-1 from the first input device. *Id.*, 5:39-43 (“An apparatus 60 shown in FIG. 2 includes multiple input devices. These multiple input devices include twelve fixed or pre-assigned alphanumeric input buttons 10a-1 . . .”); *see also id.* 12:9-33.

Notably, claim 5 does not recite any relationship between the detected fourth pressure on the second input device and the detected third pressure on the first input device. That is not surprising because claim 5 requires two different contacts (one to the first input device and one to the second input devices). Furthermore, claim 7, which depends on claim 5, requires detecting a fifth pressure on the second input device and specifies a relationship between the fifth and fourth detected pressures (“the fifth pressure greater than the fourth pressure”).

Consistent with the claim language and the specification, claim 7 requires detecting first, second, and third pressures and providing first, second, and third tactile sensations during a contact with the first input device and detecting fourth and fifth pressures and providing fourth and fifth tactile sensations during a

different contact with the second input device. In other words, the recitation of the relationship between the detected four pressures on the first (same) input device in claims 1 and 2 indicates that they occur during a single contact. The lack of a relationship between the detected third and fourth pressures in claim 5 is consistent because claim 5 requires two separate contacts with two separate input devices. The different usage of the claim language in view of the specification supports Patent Owner's reading of claims 1 and 2.

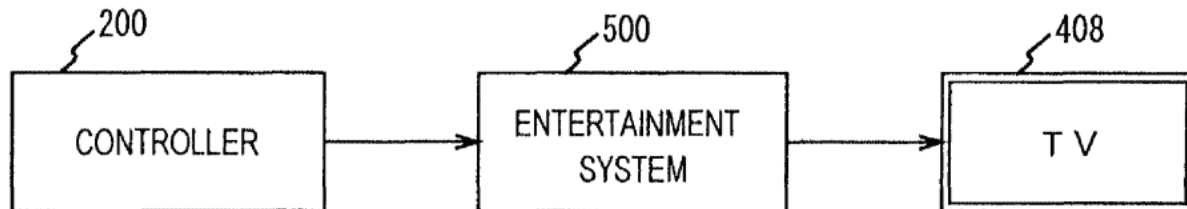
E. The Chief ALJ in ITC Proceedings Described Claims 1 and 2 As Detecting Multiple Pressure Levels and Providing Corresponding Tactile Sensations During a Single Interaction

In the ITC litigation between Patent Owner and Petitioner, Petitioner filed a motion for summary determination that the challenged claims of the '260 patent are invalid under 35 U.S.C. § 101. In holding that the '260 patent is subject matter eligible, the Chief ALJ stated that the '260 patent describes “detecting at least three different levels of pressure *during a single interaction* and providing haptic feedback based thereon.” Ex. 2006-6 (ITC Inv. No. 337-TA-1004, Order No. 43: Denying Respondent Apple Inc.'s Motion for Summary Determination That U.S. Patent No. 7,336,260 Does Not Claim Patentable Subject Matter, dated April 6, 2017) at 6 (emphasis added). The ITC opinion is consistent with Patent Owner's position and provides further evidence that this how a person of skill would properly read of the claims in view of the specification.

III. KOMATA DOES NOT RENDER OBVIOUS CLAIMS 1 AND 2

A. Background of Komata

Komata is entitled “Computer With Pressure-Sensitive Means, Method of Computer Having A Pressure-Sensitive Means And Vibration Means, Method of Using the Same and Recording Medium for the Method.” Komata discloses “[a] method and computer to provide control of vibrations of a controller used in video game machines provided with the controller.” Ex. 1007 at Abstract. The system is shown in Figure 1 (reproduced below), which includes an Entertainment System 500 connected to controller 200. The internals of the system 500 are shown in Figure 5.



Komata discloses a system that include two controllers each having a pressure-sensitive unit and a vibration unit connected to a video game machine to allow the two players to play a game against each other. The system 500 reads a pressure-sense values from a switch in one controller and provides a drive signal for driving the motor in the other controller. Ex. 1007 ¶¶ 7, 32.

Komata discloses “a head-to-head timing” game between two players

holding controllers connected to an entertainment system 500 (Fig. 1). *Id.* ¶ 34. In the game, a first player pushed a pressure sensitive switch on his controller to generate a vibration in a second player's controller, and the second player reacts and pushes a switch on his controller. Ex. 1007 ¶¶ 34-35; Abstract (“Based on the output value from the pressure-sensitive unit of one of the controllers, vibration is caused in the vibration unit of the other controller, and based on the output value from the pressure-sensitive unit of the other controller, vibration is caused in the vibration unit of the first one of the controllers.”). The system awards points to the reacting player based on the speed of the response time—a faster response time receives more points. Ex. 1007 ¶35, 48. Figure 2 of Komata is a table that maps the pressure-sense value detected in a controller to the drive signal for applying in the other controller. Ex. 1007 ¶ 36.

PRESSURE-SENSE VALUE	DRIVE SIGNAL
0	0
1	P 1
⋮	⋮
2 5 5	P 2 5 5

The system 500 receives a pressure-sense value from a button pressed on

Player A's controller and provides a drive-signal, derived from the table in Figure 2, to Player B's controller to cause it to vibrate. Ex. 1007 ¶¶ 34-36. Komata mentions in passing that vibration may be provided in both controllers. Ex. 1007 ¶¶ 34-35. However, in the context of Komata's game, vibration need only be provided to the other player's controller, as shown in Steps S4 or S6. *Id.*, Fig. 3.

B. Komata Does Not Disclose Or Render Obvious Detecting Multiple Pressures and Providing Corresponding Tactile Sensations During a Contact

Komata does not disclose or teach a processor configured to detect multiple pressure levels and provide corresponding tactile sensations to the input device during a contact, as recited in claims 1 and 2. Komata's system is programmed to read and respond to only a single pressure value for any given interaction—the processor's programming specifically prohibits providing vibrations for more than one pressure value per contact. Specifically, Komata teaches a turn-based game, where player A pushes a button that causes a vibration in player B's controller, and player B then attempts to quickly push a button on his or her controller in order to obtain the maximum number of points. Meldal POR Decl. ¶¶ 45-56; *see generally* Ex. 1007 at Fig 3 & ¶¶ 34-52. The logic flow diagram of Komata's game is reproduced below:

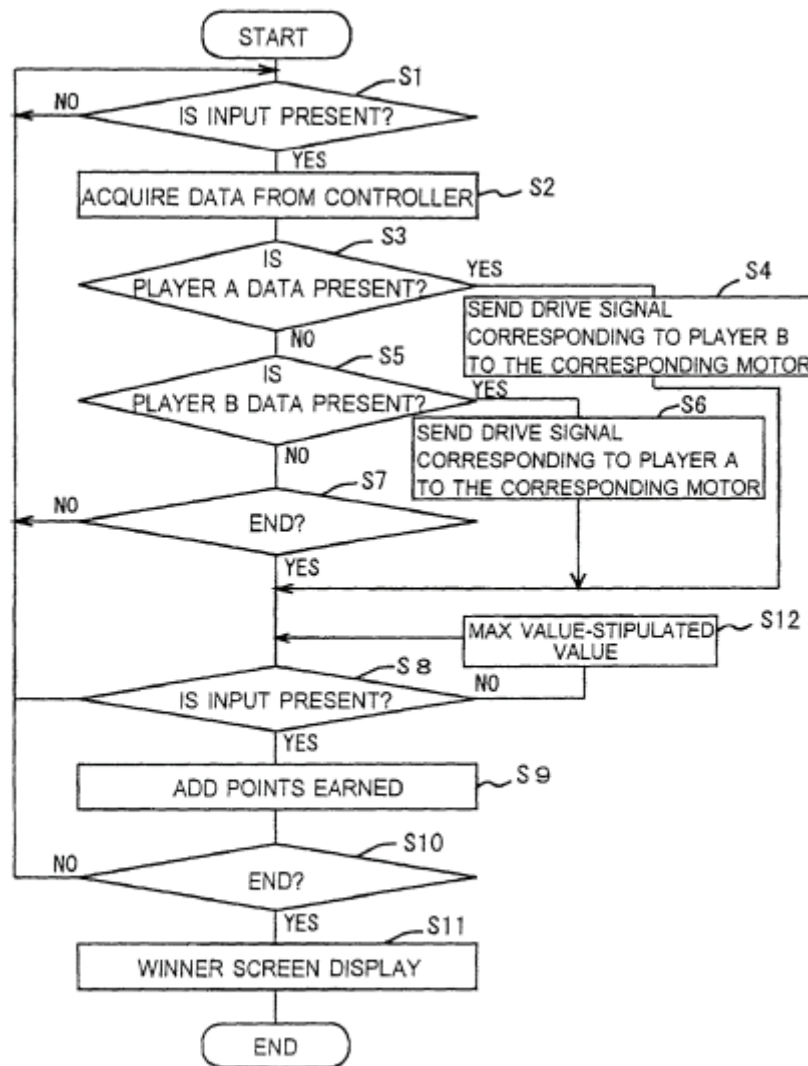


FIG. 3

Each “round” in Komata’s game begins in S1, when one of the players has pressed a button on the controller. Ex. 1007 ¶ 42. In each round, one player is designated as the “attacking side.” Ex. 1007 ¶ 48. The decision of which player is attacking is made in steps S3 and S5, and corresponds to which player provided the input in S1. *Id.*; Meldal POR Decl. ¶ 47. For example, if Player A pushed the button on the controller in step S1, the conditional in S3 would evaluate to “true,”

and the following path would be taken through the program:

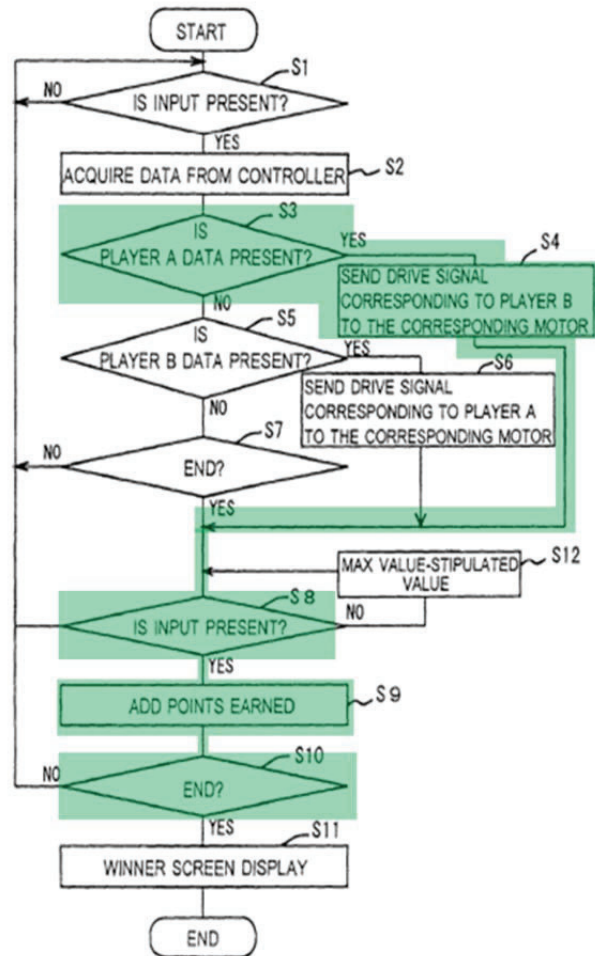


FIG. 3

In this path, the system detects a single pressure applied to a button on Player A's controller. Meldal POR Decl. ¶ 48; Ex. 1007 ¶¶ 43-44. In Step S4, the system determines "a drive signal corresponding to the [single] pressure-sensed value from the controller 200 of player A" and supplies the drive signal to player B's controller, which causes a vibration. Ex. 1007 ¶ 44.

The process then progresses to S8, in which the system waits for the non-

attacking player (in this case, player B) to press the button in response to the vibration generated by the attacking player's button press. Ex. 1007 ¶ 48. Once player B pushes the button in S8, the system progresses to S9, where player B acquires points based on how quickly player B pressed the button in response to the vibration. *Id.* ¶¶ 48-49. Komata teaches that these points are based on “the response time from when the attacking player (A or B) sends vibration to the other player until the defending player (B or A) to which the vibration is sent pushes the button in response.” *Id.* ¶ 52. The system then progresses to step S10, in which “a decision as to whether or not to end the processing is made” such as when a player reaches a particular point value. *Id.* ¶ 50. Meldal POR Decl. ¶¶ 49-50.

In the case that Player B is attacking, player A “defends” by pushing the button in response to the vibration caused by player B's button push, and player A accumulates points based on the difference in time between when player B pushed the button and player A responded. Meldal POR Decl. ¶ 51. In this case, the following path is taken through the program:

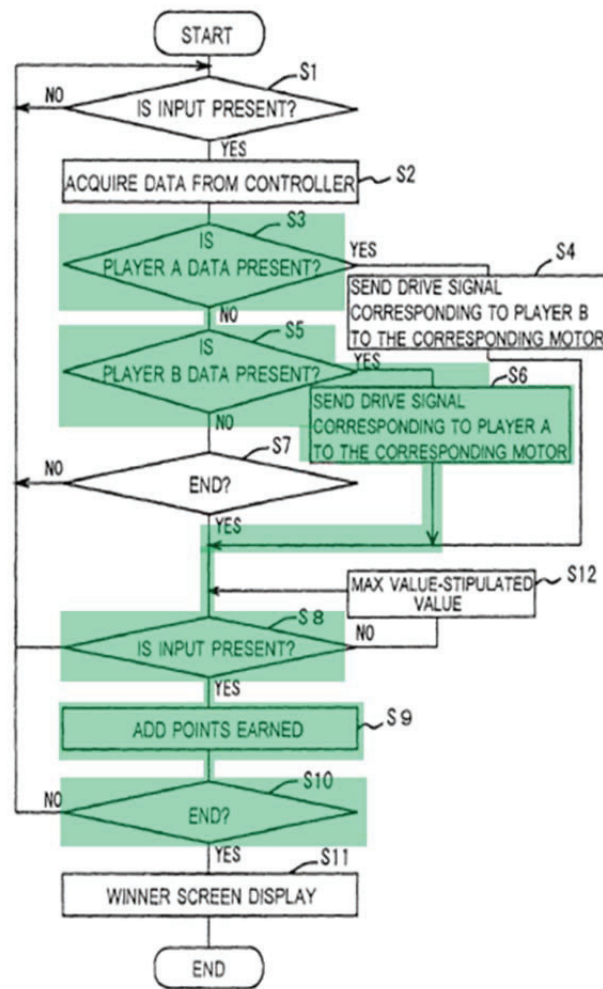


FIG. 3

Regardless of whether player A or player B is attacking, within each “round” of Komata’s game, the system detects only a *single* pressure from the “attacking” player’s controller and provides only a *single* vibration to the “defending” player’s controller. Ex. 1007 ¶ 44 (“In Step S4, a drive signal corresponding to the pressure-sensed value from the controller 200 of player A is read from the table shown in FIG. 2 and supplied to the controller 200 of player B.”); *id.* ¶ 46 (“In Step S6, a drive signal corresponding to the pressure-sense value from the controller

200 of player B is read from the table of FIG. 2 and supplied to the controller 200 of player A.”). It is thus clear that each round of Komata does not satisfy the claim requirement of detecting multiple pressures and outputting multiple corresponding tactile sensations based on a single contact. Meldal POR Decl. ¶ 52.

Furthermore, a POSITA would understand that Komata’s game would be programmed such that even multiple consecutive “rounds” of the game would be incapable of meeting the claim requirement. Meldal POR Decl. ¶ 53. In particular, Komata’s game would not be designed such that it would allow a player to progress through multiple “rounds” using a single contact with a button on the controller, because this situation is contrary to the teachings of Komata. Meldal POR Decl. ¶ 53.

Komata teaches that when player A is attacking, a vibration is generated in player B’s controller at step S4.¹ Ex. 1007 ¶ 44. Player B is then awarded points based on “the response time from when the attacking player . . . sends vibration to” player B until player B “pushes the button in response.” Ex. 1007 ¶ 52. Komata thus teaches that the vibration in S4 is initiated at the specific time that player A pushes on its button. Meldal POR Decl. ¶ 53. In the case that player A is attacking

¹ For purposes of this analysis, Player A is assumed to be attacking initially. The analysis is not substantively changed if Player B is attacking, as the system would generate a vibration in Player A’s controller at step S6 in this example, and continue with Player A defending. Meldal POR Decl. ¶ 53 n.1; Ex. 1007 ¶ 46.

in round one, for example, Komata would never progress from the end of round one at S10 to the beginning of round two while player A continued to hold down his or her button. Allowing player A to begin the second round while continuing to press the button from the first round would place player A on attack again, because Komata expressly states that the defending player is the player where no pressure was present on their button:

In Step S8, a decision is made as to whether or not input of pressure-sensed data is present, and if “YES” then the control procedure moves to Step S9, and if “NO” then the control procedure moves to Step S12. Here, the decision of whether or not input of pressure-sensed data is present refers to the input from the player *where a decision of “none” is made in Step S3 or Step S5*. For example, if a decision is made in Step S3 or Step S5 that the input from player A is present, then player A is determined to be the side generating vibration, namely the attacking side.

Ex. 1007 ¶ 48 (emphasis added). This passage indicates that if pressure is present on a controller at Step S3 or S5, that player cannot, by definition, be the defending player. Meldal POR Decl. ¶ 53.

However, allowing player A to attack for two consecutive rounds while pressing the button during continuously between rounds would prevent Komata’s system from delivering the vibration in the second round at the time that player A pushed the button, because player A would originally have pushed the button in

round one while the second vibration is not generated until round two. Meldal POR Decl. ¶ 55. A POSITA would recognize that programming Komata's system to allow for player A to hold the button continuously between rounds would thus contradict Komata's teachings, because allowing such operation would prevent the game from acting in accordance with Komata's teaching that vibration should be generated in S4 at the time player A pushes the button. Meldal POR Decl. ¶ 55.

Komata further teaches that the conditional branch S10 would include various logical controls that would be configured to make the game operate as intended, such as ending the game when one of the players has reached a specified score. Ex. 1007 ¶ 50. A POSITA would recognize that controls to make the game operate as intended would further include a check to ensure that the attacking player from the current round is not continuing to hold down the button before the next round is initiated, and that such a configuration would allow Komata to accurately assign points based on the response time between player A's button push and player B's button push. Meldal POR Decl. ¶ 56; *see* Ex. 1007 ¶¶ 35, 52.

A POSITA would not have reason to modify Komata such that the attacking player (such as player A) would be allowed to continuously hold down the button between rounds. As explained above, one of the goals of Komata's game is to measure the time gap between the time that player A pushes the button and the time that player B pushes the button, and assign points to player B accordingly.

Ex. 1007 ¶¶ 35, 52 (basing points on response time between player A's button press and player B's response). By allowing player A to continuously hold the button between rounds, player B would not be responding to a vibration generated at the time player A pushed the button. Instead, player B would simply be in response to a vibration generated at whenever the system happened to reach step S4, which would not correlate to the time when player A pushed the button. Such a modification to Komata's game would render its functioning at odds with Komata's disclosure of the purpose of that game. Meldal POR Decl. ¶ 57.

Furthermore, a POSITA would understand that allowing player A to continuously press the button between round one and round two (while playing as the "attacking" player in both rounds) would not create interesting or competitive gameplay and would be against the interest of Player A. Meldal POR Decl. ¶ 58. For example, Komata teaches that *only the defending player* accumulates points after each round, and that whoever reaches a "stipulated point score" first can be declared the winner. Meldal POR Decl. ¶ 58. Thus, having one player be on "attack" for numerous rounds in a row would make little sense, as ideally players would take turns attacking and defending to allow both players a chance to earn points. Certainly, a player would not want to attack for numerous consecutive rounds, because doing so would prevent that player from obtaining points during those rounds. Thus, a POSITA seeking to create a competitive and/or interesting

game would not create a system where a single player were allowed to initiate multiple consecutive rounds of “attack” by holding down a button continuously. Meldal POR Decl. ¶ 54, 58.

At his deposition, Petitioner’s expert further suggested that player A may be motivated to hold down his or her button between rounds to get the attention of player B. Ex. 2005 at 116:18-118:12 Such speculation by Dr. Sarrafzadeh rings hollow. In Komata’s game, player A and player B are near each other in the same room, because they are using controllers connected to the same gaming system. Meldal POR Decl. ¶ 59; *see* Ex. 1013 ¶ 43 (both players using controllers that are physically connected to the entertainment system). Players A and B could simply talk to each other. Furthermore, even if, as Dr. Sarrafzadeh suggests, player A might attempt to hold down his or her button between rounds, a POSITA would not have had a reason to design the system to accommodate such behavior as discussed above.

Komata’s system is programmed to read and respond to only a single pressure value for any given interaction. There is no disclosure in Komata describing an arrangement as in the claims of the ’260 patent where at least three levels of pressure are detected and three corresponding sensations are provided based on the detected pressures as the user varies the pressure during the contact. Komata teaches a fundamentally different approach and does not render the

challenged claims obvious.

IV. TSUJI DOES NOT RENDER OBVIOUS CLAIMS 1 AND 2

Tsuji describes an information display device such as an ATM machine that is able to provide certain instances of vibration feedback. Tsuji's system only detects a single pressure and provides a vibration per contact. Tsuji's system does not disclose the '260 invention of detecting first, second, and third pressures on the input device and providing corresponding tactile sensations during a contact with the input device. Meldal POR Decl. ¶ 75-76.

A. Background of Tsuji

Tsuji discloses two hardware configurations. In the first configuration, display unit DP is illustrated in Figures 3 and 4, and includes a transparent operation panel 10 positioned over a liquid crystal display panel 20. Ex. 1009 ¶¶ [0045]-[0046]. As shown in Figure 4, Regions R1 through R7 are selectable by the user, for example to initiate a function such as deposit or withdrawal. *Id.*, ¶ [0047].

Fig. 3

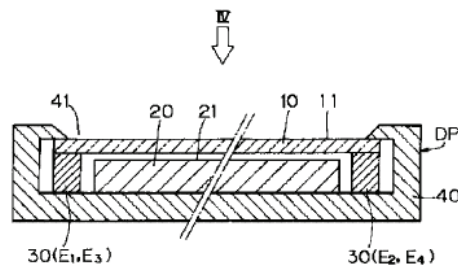
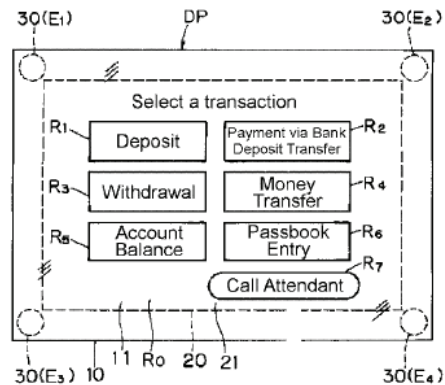


Fig. 4

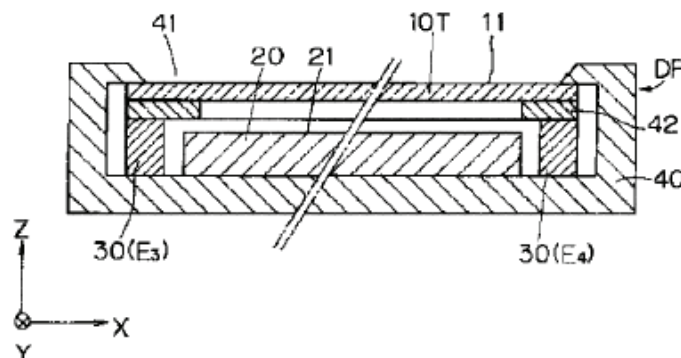


Tsuji discloses using piezoelectric elements E1-E4 positioned on the corners of the display, which are used both to detect which of the operation areas were pressed by a user and the force of the operation press, and also to vibrate the operation panel

10. *Id.*, ¶¶ [0046], [0048].

In the second configuration, the operation panel 10 of display operation unit DP is replaced by a touch panel 10T, as shown in Figure 15.

Fig. 15

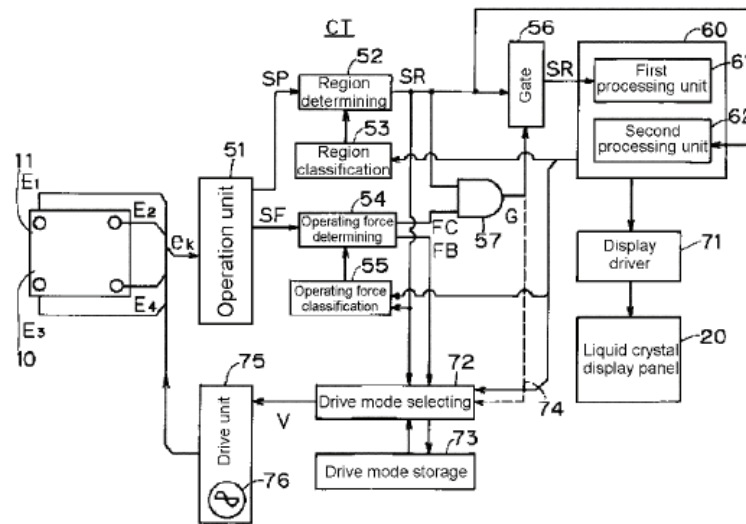


The hardware control circuit of the Figure 15 embodiment is shown in Figure 16.

Id., ¶ [0133]-[0144]; Figs. 15-16.

Figure 7 discloses a very specific hardware control circuit CT that is used with the ATM embodiment.

Fig. 7



Position calculating unit 51b determines the operation position through a series of calculations performed by unit 51b and outputs operation position signal SP, which is provided to region determining unit 52. *Id.*, ¶¶ [0084], [0087].

Region determining unit 52 determines whether a user contacted any of the operation regions R1 through R7 or non-operation region R0, and outputs region determining signal SR to indicate the contacted region. *Id.*, ¶¶ [0088]-[0091]; Meldal POR Decl. ¶ 67. In the second embodiment of control circuit unit CT, operating position specification unit 51T outputs operation position signal SP, and the rest of control circuit unit CT operates as it does in the first embodiment. *Ex.*

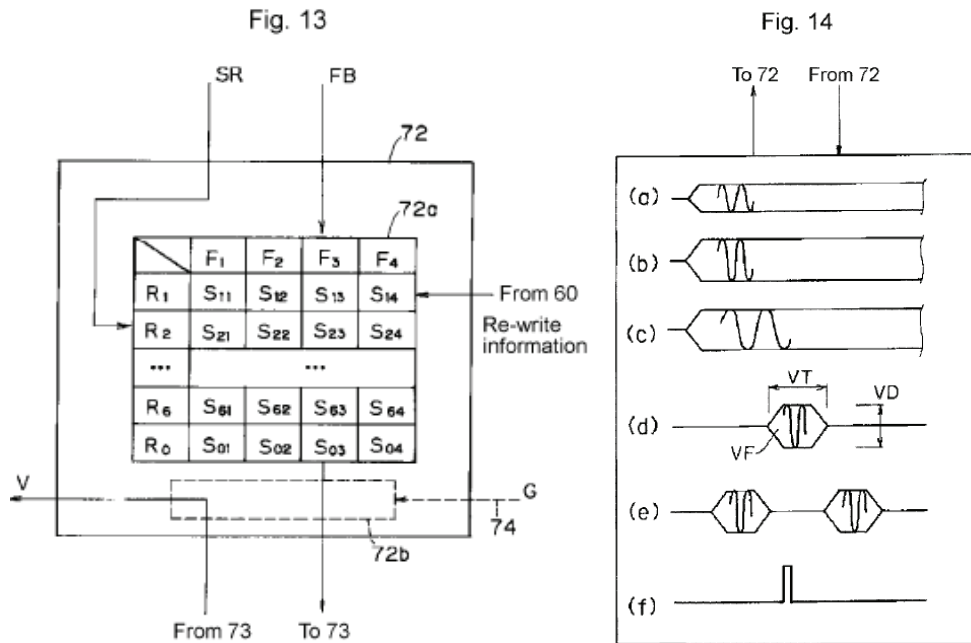
1009 ¶¶ [0139]-[0140].

The operating force calculating unit 51b calculates the force applied to the operating surface and outputs an operating force signal SF. Ex. 1009 ¶¶ [0085]-[0086]. Operating force signal SF is “is applied to an operating force determining unit 54.” *Id.*, ¶ [0092]. The operating force determining unit 54 includes hardware circuitry that determines whether the force falls within one of the thresholds F1 to F4, and outputs two signals FC (operation enabling signal) and a force determining signal FB. *Id.*, ¶¶ [0095]-[0102].

If a user contacts the operating surface at a pressure below Fh1 (such as during a tracing operation), the operating enabling signal FC is at a non-active level. If FC is not enabled, the AND gate 57 inhibits any vibration. *Id.*, ¶¶ [0104]-[0105]; Meldal POR Decl. ¶ 68. The operation of the operating force calculating unit 51b is similar in the embodiment of Figure 16. Ex. 1009 ¶ [0143]. Tsuji discloses activating a selection only when both the region determining signal SR indicates the touch is within a valid region (e.g., R1) and the location is pressed with a predetermined threshold force.

The region determination signal SR and force determining signal FB are both inputs into a drive mode selection unit 72 (from Fig. 13), reproduced below. The drive mode selection unit 72 selects a single drive mode (e.g., S23) based on the signals SR and FB, and will cause a single operating surface to vibrate. *Id.*,

¶ [0108].



Tsuji discloses different drive modes (Fig. 14) stored in the drive mode storage unit. *Id.*, ¶¶ [0110]-[0111]. Figures 14(a) – (b) are continuous drive modes having small and large amplitudes, respectively. Figure 14(c) is a continuous drive mode having a different frequency from drives modes 14(a) and 14(b). If the vibration selected is one of modes 14(a) – 14(c), the vibration continues until the operation is larger than the minimum threshold F1. When a user weakens the force applied to the display panel or removes his finger, the vibration stops. *Id.*, ¶ [0126]. Figures 14(d) – (e) show drive modes where the user instead simply received a single or double vibration. Figure 14(f) shows a drive mode that provides a oneshot pulse. *Id.*, ¶ [0110].

Other Embodiments:

Tsuji discloses a further embodiment implemented as a game device 200, shown in Figures 17-19. *Id.*, ¶¶ [0145]-[0152]. In this embodiment, “operating regions R1 through R4 displayed by the liquid crystal display panel are visible through the operating surface 11 in FIG. 17.” *Id.*, ¶ [0146]. Notably, Tsuji states that a when a user presses on one of the operating regions R1 to R4 with pressure larger than a predetermined threshold, the operating surface is vibrated. *Id.* (“When the position of this pressing operation is sensed, if the pressing force thereof is larger than a predetermined threshold, the operation input is accepted, a displayed object 210 (FIG. 18) on a screen changes, and the operating surface 11 is vibrated or slightly displaced based on a predetermined mode.”). Tsuji does not disclose detecting multiple levels of pressure in the operating regions R1 to R4 of Figures 17-18. Meldal POR Decl. ¶ 73.

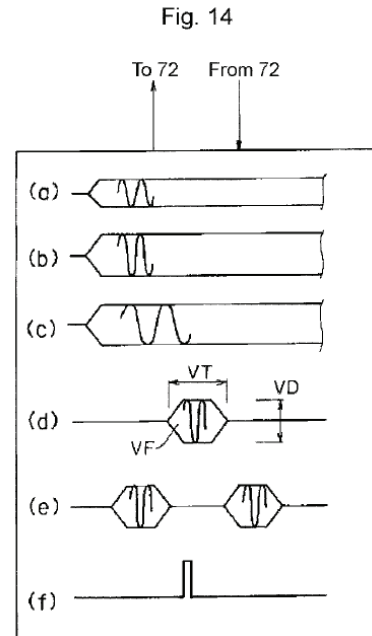
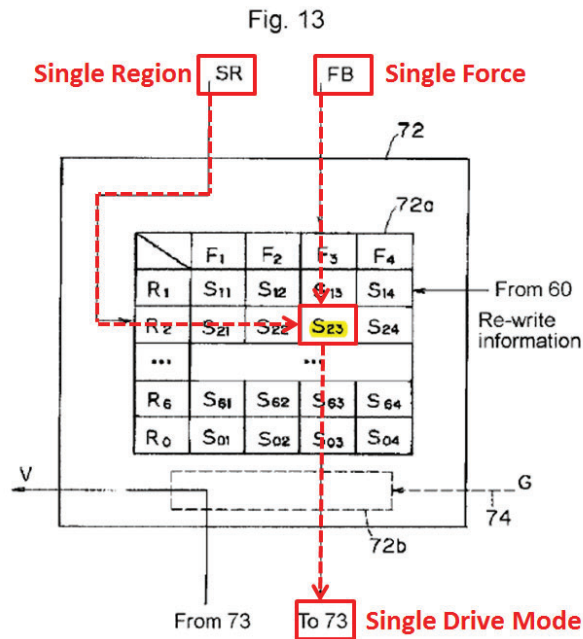
Tsuji further discloses a volume control embodiment (Figs 20-21). Ex. 1009 ¶¶ [0153]-[0159]. “Furthermore, a vibration amplitude changes to coincide with the position of the volume knob 301 being operated at a given time. For example, the operating surface 11 is vibrated with a low amplitude when the volume knob 301 is in section YL, a medium amplitude when the knob is in section YM, and a high amplitude when the knob is in section YH.” *Id.*, ¶ [0154]. In this embodiment, the drive mode output is based on the position of the knob in the Y direction, and not based on pressure levels. Meldal POR Decl. ¶ 74.

B. Tsuji Does Not Disclose or Teach Claims 1 and 2

Tsuji does not render obvious claims 1 and 2 of the '260 patent. Based on a proper interpretation, claim 1 of the '260 patent recites a processor that detects first, second, and third pressure levels applied to an input device and provides corresponding first, second, and third tactile sensations to the input device during a contact. Claim 2 further recites detecting a fourth pressure on the input device and providing a corresponding fourth tactile sensation to the input device during the contact.

Tsuji does not disclose or suggest detecting first, second, and third pressure levels on the input device (e.g., the second detected pressure is “greater than the first pressure” and the third detected pressure is “greater than the second pressure”) and providing corresponding first, second, and third tactile sensations on the input device during a contact.

To the contrary, for any given touch or press, Tsuji discloses detecting a single pressure and providing a single vibration/drive mode per contact with the operating panel. Meldal POR Decl. ¶ 77. Tsuji’s description of a single detected pressure and single vibration is depicted in Figure 13. This figure is reproduced below and annotated in red to highlight that Tsuji detects a single force (FB) at a single region (SR), and provides a single drive mode (e.g., S23). The drive modes are shown in Figure 14, also reproduced below.



Ex. 1009 ¶¶ [0108]-[0110].

Tsuji discloses two vibration mode categories: (1) predetermined vibrations as shown in Figures 14(d)-14(f), and (2) continuous vibrations as shown in Figure 14(a)-14(c). *Id.*, ¶¶ [0110], [0120], [0125]-[0126].

Drive Modes 14(d)-(e):

For predetermined vibration drive modes 14(d)-(e), Tsuji teaches using short vibration modes when an operator provides input to the system that causes the screen to change.

In the case of information display where screens change in conjunction with the operational input of an operator, vibration is stopped after, for example, the operating panel 10 has been vibrated for exactly a predetermined amount of time. This can be accomplished by using a signal transmitting path from the information

processing unit 60 to the drive mode selecting unit 74 to forcefully put the drive mode parameter signal V into an inactive level.

Furthermore, the operation unit 51 and the piezoelectric element drive unit 75 may be integrated, and the importation of the signals from the piezoelectric elements E1 through E4 and the sending of the high frequency wave to the piezoelectric elements E1 through E4 may be switched temporally using a switching circuit. ***Moreover, short period vibration modes like those in FIG. 14 (d) and (e) may be selected.***

Id., ¶ [0125] (emphasis added). There is no disclosure of providing a second vibration mode based on a different pressure during the operator's contact with the operating panel 10. Meldal POR Decl. ¶¶ 79-81.

Drive Mode 14(f):

For predetermined vibration mode 14(f), Tsuji discloses “a one shot displacement like that in Figure 14(f) may be applied for ***each time the keypad is pressed.***” Ex. 1009 ¶ [0120] (emphasis added). Tsuji's teaching is clear that a single vibration mode is provided for each contact (each time the keypad is pressed). Meldal POR Decl. ¶ 82.

Drive Modes 14(a)-(c):

For continuous vibration modes 14(a)-(c), Tsuji discloses providing the same vibration until the user weakens the force to below the minimum threshold Fh1 or removes his finger, at which time it stops entirely:

In the case of vibration modes like those in FIG. 14 (a) through (c), *vibration continues as long as the operator applies an operating force F that is larger than the minimum threshold $Fh1$* . When the operator weakens the operating force F or removes his/her finger from the operating surface 11, this is sensed by the operating force determining unit 54, and thus the operating force determining signal FB to *the drive mode selecting unit 72 becomes inactive*. As a result, the drive mode parameter signal V goes to an inactive level, and the operating surface 11 *stops vibrating*.

Ex. 1009 ¶ [0126] (emphasis added).

Paragraph [0126] of Tsuji teaches that if, for example, an initial pressure of $F2$ is detected, the same vibration is provided even if the user varies the pressure to above $F1$, $F3$, or $F4$. Meldal POR Decl. ¶¶ 83-84. This teaches the contrary to the invention claimed in the '260 patent which requires detecting multiple pressures and providing corresponding tactile sensations during a contact with the input device.

C. Petitioner Has Not Established that Tsuji Discloses or Renders Obvious the Limitations of Claims 1 and 2

The Petition points to four separate and discrete operating force classifications $F1$, $F2$, $F3$, and $F4$ in Region $R1$ and four discrete drive modes $S11$, $S12$, $S13$, and $S14$ for support that Tsuji discloses claims 1 and 2. Pet. at 65-71. This analysis is wrong and irrelevant. Petitioner is simply hypothesizing four

different events that could each independently occur. But, as discussed above, Tsuji expressly teaches only detecting a single operating force and producing a single vibration for a given user input. The multiple references to force classifications F1, F2, F3, and F4 in Region R1 and drive modes S11, S12, S13, and S14 is for four different contacts with Tsuji's system, and does not disclose the limitations of claims 1 and 2. Meldal POR Decl. ¶ 85. Tsuji does not disclose or teach detecting multiple pressure levels on an input device and providing corresponding vibrations during a contact.

D. Tsuji Does Not Disclose a “Single Interaction” Embodiment

Notably, Dr. Sarrafzadeh does not provide any opinions in his declaration that Tsuji discloses detecting multiple pressure levels and providing corresponding tactile sensations on the input device during a single interaction. Ex 1002 ¶¶ 128-146.

In the co-pending ITC litigation between Patent Owner and Petitioner, Petitioner attempted to argue that Tsuji discloses a “single interaction” embodiment. In particular, Petitioner mischaracterized paragraph 112 of Tsuji stating that it discloses that a “weak vibration” may be applied to the touchscreen when the user interacts with a region, and as the operating force gets larger, a “stronger” vibration may be output. This is neither a fair nor accurate description of the disclosure in the reference according to a POSITA. Meldal POR Decl. ¶ 87.

The cited description, like the rest of Tsuji, discloses one vibration, not an arrangement where a vibration changes during the contact. Paragraph 112 of Tsuji states:

Returning to FIG. 13, variations can be introduced with respect to how the operating surface 11 is driven by changing the content stored in the table 72a. For example, when weak vibration is to be applied to operating regions R1 through R6, codes in the range of S11 through S64 can be determined to specify the vibration mode in FIG. 14 (a). Furthermore, when a stronger vibration is to be applied as the operating force F gets larger, the vibration mode in FIG. 14 (a) may be specified in the operating force classifications F1 and F2 in FIG. 13, and the vibration mode in FIG. 14 (b) may be specified in the operating force classifications F3 and F4, respectively. While it is preferred that codes S01 through S04 for the non operating region R0 specify “no driving,” it is acceptable to apply weak vibrations to this region.

Ex. 1009 ¶ [0112]. This paragraph simply teaches that the force classifications in the table 72a (Fig. 13) can be programmed to provide the desired vibration for separate contacts. In other words, if a weak force is detected (e.g., at level F1 or F2), the user would receive a particular vibration. If for a separate contact a strong force is detected (e.g., at level F3 or F4), the user would receive a stronger vibration. In short, this paragraph describes how one could populate the table 72a in a particular way. It does not provide any teaching of detecting multiple pressure

levels and providing corresponding vibrations/drive modes during a contact.

Meldal POR Decl. ¶ 88.

Petitioner also argued in the ITC litigation that paragraphs [0045]-[0048], [0076], [0087]-[0092], [0112], and [0145]-[0146] and Figures 17 and 18 describe a purported “single interaction” embodiment, though Petitioner provided *no* analysis. None of these citations support Petitioner’s argument. Meldal POR Decl. ¶¶ 59-92.

E. Tsuji Teaches Away From Claims 1 and 2

Tsuji teaches away from providing a second vibration/drive mode based on multiple pressure levels as *pressure* is varied on the operating panel during a contact. First, Tsuji expressly teaches that in a tracing operation where a user slide a finger on the display surface below the pressure threshold Fh1, no vibration is output by the system. Ex. 1009 ¶¶ [0010], [0094], [0101], Abstract; Meldal POR Decl. ¶ 94. Second, for a continuous vibration mode, Tsuji expressly discloses that the same vibration continues for as long as pressure is above Fh1, even if pressure is varied between F1 to F4. Ex.1009 ¶ [0126]; Meldal POR Decl. ¶¶ 95-96. Third, in the volume control embodiment, Tsuji discloses modifying the vibration based on position of the knob, not pressure. Ex. 1009 ¶¶ [0154]-[0155]; Meldal POR Decl. ¶ 97. Fourth, Tsuji discloses that the oneshot vibration pulse (Fig. 14(f)) “may be applied *each time the keypad is pressed*” indicating to a POSITA that the

vibration is provided per press (and release). Ex. 1009 ¶ [0120]; Meldal POR Decl. ¶ 98. Fifth, Tsuji discloses that short predetermined vibrations (14(d)-(e)) are applied in connection with a user input that causes the screen to change. Ex. 1009 ¶ [0125]; Meldal POR Decl. ¶ 99. In this embodiment, Tsuji discloses that for *each screen change*, changing (1) the coordinates for new regions are stored in region classification storage unit 53, (2) thresholds in force classification storage unit 55, and (3) the contents of table 72a. Ex. 1009 ¶ [0120]. A POSITA would understand that Tsuji does not teach providing a second vibration/drive mode based on multiple pressure levels as *pressure* is varied on the operating panel during a contact. Meldal POR Decl. ¶ 100. Nowhere does Tsuji contemplate or disclose replacing one vibration/drive mode with another based on pressure changes during a contact. Furthermore, in listing a variety of drive modes, none of the disclosed modes involve replacing one haptic with another based on pressure changes. Ex. 1009 ¶ [0169]. A person of ordinary skill in the art would understand that in Tsuji a vibration/drive mode continues until completed (by being a fixed pattern or by pressure being removed). *Id.*, ¶¶ [0125]-[0126]; Meldal POR Decl. ¶¶ 83-84, 100.

F. Dr. Sarrafzadeh's Opinions at His Deposition Lack Credibility

At his deposition, Dr. Sarrafzadeh testified to several opinions on single interaction that are not credible.

1. Tracing Operation

Petitioner and its expert make a series of incorrect arguments based on the “tracing operation” disclosed in Tsuji. In the tracing operation, a user can slide her finger on the operating panel at a force less than the minimum threshold (Fh1) without the contact being interpreted as a menu selection. Ex. 1009 ¶ [0010]. The purpose of the tracing operation is to prevent inadvertent selection of function by filtering out light contact. *Id.*, ¶¶ [0010], [0094]; Meldal POR Decl. ¶ 103. Petitioner’s expert Dr. Sarrafzadeh (incorrectly) testified that in Tsuji the user while tracing will receive a vibration when moving into a region. Ex. 2005 (Dr. Sarrafzadeh Depo.), at 26:24-27:20. There is no basis for this testimony. Indeed, Dr. Sarrafzadeh’s opinion is directly contradicted by Tsuji. Tsuji states expressly that the “FC” signal used as the “operation enabling signal” stays at a “non-active level” during tracing. Ex. 1009 ¶ [0101]. In other words, vibration is *disabled* during the tracing operation. Meldal POR Decl. ¶¶ 94, 102. Tsuji makes this clear: “[I]f the operator is not pressing the operating surface 11 at all, or if the operator is touching the operating screen 11 but has not yet performed a final selection operation (such as during a tracing operation, and the like), *the operation enabling signal FC stays at a non active level.*” Ex. 1009 ¶ [0101] (emphasis added). During the tracing operation, the drive mode selection circuit is disabled

and no vibration is provided because the operation enabling signal FC is at a non-active level.

Dr. Sarrafzadeh compounds his erroneous opinion with another lengthy erroneous opinion that the tracing operation assists visually impaired individuals. Ex. 2005, at 28:9-29:3; *see also id.* 34:12-24. This opinion is fatally flawed. First, while Tsuji discloses that his invention assists visually impaired individuals, it does so by providing vibrations (as opposed to a visual or audible cue) to confirm the selection of a menu (Ex. 1009 ¶¶ [0005], [0179]), not by the tracing operation. Dr. Sarrafzadeh erroneously tries to tie the tracing operation with visually impaired individuals. The tracing operation has nothing to do with assisting visually impaired individuals because the system ***does not*** generate a vibration during tracing. Ex. 1009 ¶ [0101]. That is, the tracing operation will not provide the user with any feedback of where they are touching on the operating panel. Meldal POR Decl. ¶¶ 94, 102-104. Dr. Sarrafzadeh's opinion is not credible as a user (visually impaired or not) will not get a vibration during the tracing operation. When asked whether the aforementioned scenario was expressly disclosed in Tsuji, Dr. Sarrafzadeh admitted in his deposition that it was not. Ex. 2005, at 37:6-14 ("A. Well for this particular example those exact words are not written in here.").

During the deposition, Dr. Sarrafzadeh attempted to correct his erroneous opinion via redirect by his counsel, testifying that the visually impaired person

could feel their way around the screen until they found the correct region. *Id.*, at 123:19-124:24. This opinion is not credible because the visually impaired individual would not know the location of the region for withdrawal, and the tracing operation does not generate any haptics. If the user pressed harder randomly on the screen until a vibration was felt, the visually impaired person would not know the difference between any particular region or function. If the user was on the screen for withdrawal, but intended to perform a deposit, the user would already be in the wrong screen of the ATM machine. Dr. Sarrafzadeh's testimony that the tracing operation somehow assists the visually impaired lacks credibility.

2. Overriding One Vibration With Another Vibration

Dr. Sarrafzadeh further incorrectly opined that Tsuji teaches overriding one vibration/drive mode with another vibration/drive mode as pressure is changed. Ex. 2005, at 39:5-41:21. Dr. Sarrafzadeh's opinion is contradicted expressly by paragraph 126 of Tsuji, which states: "In the case of vibration modes like those in FIG. 14 (a) through (c), *vibration continues as long as the operator applies an operating force F that is larger than the minimum threshold F_{h1}* . When the operator weakens the operating force F or removes his/her finger from the operating surface 11, this is sensed by the operating force determining unit 54, and thus the operating force determining signal FB to the drive mode selecting unit 72

becomes inactive. As a result, the drive mode parameter signal V goes to an inactive level, and the operating surface 11 stops vibrating.” Ex. 1009 ¶ [0126] (emphasis added). In other words, this paragraph of Tsuji expressly teaches that for a continuous vibration mode (e.g., 14(A)-14(C)), the same vibration will be provided for as long as the pressure is above Fh1. A POSITA would understand that under this scenario, based on the teaching of paragraph 126 of Tsuji, varying the pressure between F1-F4 will not change the vibration mode. Meldal POR Decl. ¶¶ 83-84, 105. Dr. Sarrafzadeh’s opinion is contrary to the teaching of Tsuji and lacks credibility.

3. Game Controller Embodiment

Dr. Sarrafzadeh again testified, contrary to the disclosure of Tsuji, that Tsuji teaches that the operating regions R1 to R4 in the game controller embodiment (Figs. 17 and 18) can detect an increase in pressure and provide different tactile sensations. Ex. 2005, at 73:23-74:25. Nothing in the game controller embodiment describes detected varied levels of pressure and providing corresponding sensations during the interaction. Indeed, the game controller embodiment of Tsuji contradicts Dr. Sarrafzadeh’s opinion. In describing the embodiment, Tsuji states that “if the pressing force [on one of the Regions R1 to R4] is larger than a predetermined threshold, the operation input is accepted, a displayed object 210 (FIG. 18) on a screen changes, and the operating surface 11 is vibrated or slightly

displaced based on a predetermined mode.” Ex. 1009 ¶ [0146]. This embodiment follows, stating: “The operation *at this point* is the same as in the first and second embodiments.” *Id.* (emphasis added). What this paragraph teaches is that the game controller embodiment of Tsuji detects a single threshold and once that threshold is reached, the display changes and vibration is provided. Meldal POR Decl. ¶¶ 73,106. It does not disclose detecting multiple pressure levels or providing multiple vibrations. Moreover, this embodiment does not disclose detecting multiple pressure levels and providing corresponding vibrations during a single contact. Meldal POR Decl. ¶ 106.

Second, Dr. Sarrafzadeh’s reliance on paragraph 112 is misplaced. Paragraph 112 of Tsuji simply teaches that the force classifications in the table 72a (Fig. 13) can be populated such that levels F1 and F2 contains weak vibrations (e.g., 14(a)) and that force classifications F3 and F4 can have stronger vibrations (e.g., 14(b)). Meldal POR Decl. ¶¶ 87-88. Paragraph 112 does not change Tsuji’s disclosure of detecting a single pressure and providing a single vibration per contact.

4. Volume Controller Embodiment

Dr. Sarrafzadeh also provides incorrect opinions stating that the volume controller embodiment of Tsuji (Figures 20-21) provides different tactile sensations as pressure is increased. Ex. 2005, at 76:3-77:25. Dr. Sarrafzadeh’s

opinion that “forces are a factor in changing the vibration” (*Id.*, at 77:23) is contradicted by Tsuji and is based on a misreading (or misrepresentation) of Tsuji’s disclosure. First, Tsuji expressly states with respect to the volume control embodiment that “a vibration amplitude *changes to coincide with the position* of the volume knob 301 being operated at a given time. For example, the operating surface 11 is vibrated with a low amplitude when the volume knob 301 is in section YL, a medium amplitude when the knob is in section YM, and a high amplitude when the knob is in section YH.” Ex. 1009 ¶ [0154] (emphasis added). Tsuji directly contradicts Dr. Sarrafzadeh’s opinion.

Second, Dr. Sarrafzadeh’s opinion misreads (or misrepresents) Tsuji’s disclosure stating that the volume controller embodiment “uses the same embodiment of Figure 1 and two.” Dr. Sarrafzadeh omits that Tsuji expressly states that the volume control embodiment uses *a different table 72a* (than that disclosed in Figure 13) that identifies the vibration *based on the position* of the knob, not pressure.

FIG. 22 illustrates an example of a specific configuration for realizing such a function. FIG. 22 illustrates a deformed portion of part of the first embodiment in FIG. 7 or the second embodiment in FIG. 16, where information YD indicating which section, YL, YM, or YH, the displayed Y coordinate for the operated volume knob 301 belongs to at a given time is transmitted to the drive mode selecting

unit 72 from the information processing unit 60. *The table 72a in the drive mode selecting unit 72 stores relationships for selecting a drive mode to coincide with this Y coordinate identifying value YD in a table format and is set such that the drive mode is selected from the drive mode storage unit 73*, where a vibration mode with a high amplitude is selected when the Y coordinate identifying value YD is large, and a vibration mode with low amplitude is selected when the identifier is small. Vibration modes with high amplitudes, medium amplitudes, or low amplitudes, respectively, are stored in the drive mode storage unit 73.

Id., ¶ [0155] (emphasis added). Dr. Sarrafzadeh’s opinions in connection with the volume controller embodiment are incorrect and not credible. Meldal POR Decl. ¶¶ 107-108.

5. ATM Embodiment

Dr. Sarrafzadeh further inaccurately testified that Tsuji’s ATM embodiment is capable of providing several different vibrations over the course of a single user interaction. Ex. 2005, at 97:9-14 (testifying that multiple vibrations are possible, “[a]nd you may not remove your finger from the screen or you may”). Dr. Sarrafzadeh stated (incorrectly) that this would be possible in two different instances—when the user selects a menu item and the menu screen changes, and when the user selects menu item and the menu stays the same. Ex. 2005, at 95:15-

97:14. However, his testimony is contradicted by both the express disclosure of Tsuji and how a POSITA would understand the operation of Tsuji's system.

The only evidence Dr. Sarrafzadeh provides for his opinion is his contention that the circuitry in Figure 7 of Tsuji performs a "continuous operation." Ex. 2005, at 96:15-23; 38:11-39:2 ("Figure 7, as we designer[s] call it it's a continuous circuit; it's ongoing. . . . The circuit is not going to stop.").

Dr. Sarrafzadeh's description is without support in Tsuji. Indeed, Tsuji contradicts his testimony. A POSITA would have understood that the information processing unit 60 of Tsuji's Figure 7 would *prevent* a user from experiencing multiple vibrations associated with a single touch of the screen based on multiple levels of pressure. Meldal POR Decl. ¶ 111. For example, Tsuji teaches that for the "withdrawal amount input screen" of the ATM embodiment, "a one shot displacement [vibration] may be applied *each time the keypad is pressed.*" Ex. 1009 ¶ 120. In other words, only a single vibration is provided for each user press of (i.e., contact with) the screen. Meldal POR Decl. ¶ 111. Preventing a single user contact from generating multiple vibrations would be accomplished via "the information processing unit 60," for example, by "forcefully put[ting] the drive mode parameter signal V into an inactive level." Ex. 1009 ¶ 125. Thus, Dr. Sarrafzadeh's contention that the ATM circuitry would provide multiple vibrations for a single contact is contradicted by Tsuji, and ignores the effect that the

information processing unit 60 would have on determining the conditions under which a vibration is provided to a user. Meldal POR Decl. ¶ 111.

A POSITA would similarly understand that multiple vibrations are not provided in the event that the menu screen in Tsuji's ATM embodiment changes after a user pushes a particular region on the screen; in fact, Tsuji's information processing unit 60 would prevent more than one vibration from associated with a single contact. Meldal POR Decl. ¶ 112. Tsuji teaches that "each time the screen changes" the table in drive mode selecting unit 72, which contains information for determining drive mode signals, is rewritten by information processing unit 60.

Ex. 1009 ¶ 121. A POSITA would recognize that while this rewriting is occurring, the information processing unit 60 would prevent additional vibrations from being output to the user. Meldal POR Decl. ¶ 112. A POSITA would further recognize that even after the rewriting is finished, if the user were able to select another function in the ATM embodiment (and receive a corresponding vibration) without removing his or her finger, the system would behave erratically, because the region the user pressed would cause an inadvertent selection of a new function. Ex. 1009 ¶ 121; Meldal POR Decl. ¶ 112. A POSITA would thus understand that, in order to avoid a user unintentionally selecting functions, information processing unit 60 would ensure that the user has initiated a separate contact with the screen before a function is initiated and corresponding vibration is provided. Meldal POR Decl.

¶ 112. Dr. Sarrafzadeh's opinion that multiple vibrations would be associated with a single user contact in Tsuji's system thus ignores Tsuji's express teaching and the effects that the information processing unit 60 would have on the system based on a POSITA's understanding.

V. UNCONSTITUTIONALITY OF *INTER PARTES* REVIEWS

In *Oil States Energy Services LLC v. Greene's Energy Group, LLC* 639 F.App'x 639 (Fed. Cir. 2016), cert. granted (June 12, 2017) (No. 16-712), the Supreme Court will consider the constitutionality *inter partes* review proceedings. Immersion preserves the position that this *inter partes* review proceeding and the challenge to Immersion's duly issued and existing '260 patent violates the Constitution by allowing for private property rights to be extinguished through an adversarial process in the Patent and Trademark Office, a non-Article III forum, without a jury.

VI. CONCLUSION

For the foregoing reasons, the Patent Owner requests that the Board find claims 1-2 of the '260 patent to be patentable.

Date: July 3, 2017

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, the undersigned certifies that on July 3, 2017, a copy of the foregoing document **IMMERSION CORPORATION'S PATENT OWNER RESPONSE and EXHIBITS 2004-2006** were served, by electronic mail, as agreed to by the parties, upon the following:

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CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

Pursuant to 37 C.F.R. § 42.24 (d), I certify that the present paper contains 11,892 words as counted by the word-processing program used to generate the brief. This total does not include the tables of contents and authorities, the caption page, table of exhibits, signature blocks, certificate of service, or this certificate of word count.

Dated: July 3, 2017

Respectfully submitted,

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