

Paper No. ____

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VALVE CORPORATION.

Petitioner,

v.

IMMERSION CORPORATION

Patent Owner.

Case No. TBD

Patent No. 7,336,260

PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.*

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1001	U.S. Patent No. 7,336,260
1002	Prosecution History of U.S. Patent No. 7,336,260
1003	Declaration of Jean Renard Ward
1004	CV of Jean Renard Ward
1005	U.S. Patent Application Publication No. 2001/0008849 (“Komata”)
1006	U.S. Patent No. 6,597,347 (“Yasutake”)
1007	Japanese Unexamined Patent Application Publication No. 11-212725 (“Tsuji”) and Certified Translation of same
1008	WO 99/66997 (“Rosenberg”)
1009	U.S. Patent No. 5,977,867
1010	<i>Apple Inc. v. Immersion Corp.</i> , IPR2016-01884, Paper 11 (Apr. 3, 2017) (Institution Decision)
1011	<i>Apple Inc. v. Immersion Corp.</i> , IPR2016-01884, Paper 11 (Jan. 4, 2017) (Patent Owner Preliminary Response)
1012	<i>Apple Inc. v. Immersion Corp.</i> , IPR2016-01884, Paper 11 (July. 3, 2017) (Patent Owner Response)
1013	<i>Apple Inc. v. Immersion Corp.</i> , IPR2017-01369, Paper 7 (Nov. 21, 2017) (Institution Decision)
1014	Complaint, <i>Immersion Corp. v. Apple Inc., et al.</i> , 1:16-cv-00325-RGA, Doc. 1 (D. Del.)
1015	Plaintiff’s Preliminary Infringement Contentions in <i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712-TL (W.D. Wash.) (served Oct. 20, 2023)
1016	Exhibit A to Plaintiff’s Preliminary Infringement Contentions in <i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712-TL (W.D. Wash.)
1017	<i>Apple Inc. v. Immersion Corp.</i> , IPR2017-01369, Paper 39 (Mar 22. 2018) (Termination Decision)
1018	<i>In re Certain Mobile and Portable Electronic Devices Incorporating Haptics</i> , Inv. No. 337-TA-990, 1004, Order No. 42 (ITC Feb. 2, 2017)

1019	Federal Court Management Statistics (September 2023)
1020	U.S. Patent Application Publication No. 2001/0009036
1021	<i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712-TL, Dkt. No. 46 (W.D. Wash. Nov. 11, 2023)
1022	Negroponte, “HUNCH An Experiment in Sketch Recognition” in UCLA, Environmental Design: Research and Practice, Proceedings of the EDRA 3/ar 8 Conference (1972)
1023	Foley, Fundamentals of Interactive Computer Graphics (1982) (excerpts)
1024	Buxton, “There’s More to Interaction than Meets the Eye” in Norman, ed., User Centered Systems Design (1986)
1025	Rosch, “Alterative Input-Digitizing Tablets-Pointing the Way to Easier Input,” PC Magazine, p. 227 (Nov. 28, 1989)
1026	U.S. Patent No. 5,491,495
1027	Buxton, “Issues and Techniques in Touch-Sensitive Tablet Input,” SIGGRAPH ‘85, 19:3, 215 (1985)
1028	U.S. Patent No. 4,202,041
1029	U.S. Patent No. 494,562
1030	Davis, “The RAND Tablet: A Man-Machine Graphical Communication Device” in Proceedings-Fall Joint Computer Conference (1964)
1031	U.S. Patent No. 3,482,241
1032	U.S. Patent No. 5,708,460
1033	U.S. Patent No. 6,492,979
1034	U.S. Patent No. 5,510,813
1035	Buxton, “Touch Gesture and Marking,” ch. 7 in Baecker, ed., Readings in Human-Computer Interaction (1995)
1036	U.S. Patent No. 6,160,489
1037	Strong, “An Electrotactile Display,” IEEE, Trans. On Man-Machine Sys., mms-11:1 (Mar. 1970)

1038	Massie, “Initial Haptic Explorations with the Phantom: Virtual Touch Through Point Interaction” MIT Thesis (1996)
1039	Bliss, “Optical-to-Tactile Image Conversion for the Blind,” IEEE, Trans. On Man-Machine Sys., mms-11:1 (Mar. 1970)
1040	European Patent Publication No. EP0265011A1
1041	U.S. Patent No. 5,388,992
1042	IBM, “Mouse Ball-Actuating Device with Force and Tactile Feedback,” IBM Technical Disclosure Bulletin 32:9B (Feb. 1990)
1043	Fukumoto, “Active Click Tactile Feedback for Touch Panels,” CHI 2001 Interactive Posters (2001)
1044	PCT Publication No. WO9200559A1
1045	Massie, “The Phantom Haptic Interface—A Device for Probing Virtual Objects” in ASME, Dynamic Systems and Control (1994)
1046	U.S. Patent No. 5,982,352
1047	U.S. Patent No. 6,131,097
1048	U.S. Patent No. 6,337,678
1049	U.S. Patent No. 6,219,034
1050	U.S. Patent No. 6,219,032
1051	U.S. Patent No. 4,885,565
1052	U.S. Patent No. 6,424,333
1053	U.S. Patent No. 5,995,026
1054	U.S. Patent No. 5,235,868
1055	U.S. Patent No. 6,005,551
1056	Minsky, “Computational Haptics” MIT Thesis (1995)
1057	U.S. Patent No. 2,272,070
1058	<i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712, Dkt. No. 15 (Proof of Service) (May 18, 2023)

I. MANDATORY NOTICES

A. Real Party-In-Interest – § 42.8(b)(1)

Petitioner Valve Corporation is the real party-in-interest.

B. Related Matters – § 42.8(b)(2)

1. United States Patent & Trademark Office

U.S. Patent No. 7,336,260 (“the ’260 patent”) was filed on November 1, 2002 as Application No. 10/285,450 and claims priority to U.S. Provisional Application No. 60/335,493, filed November 1, 2001, and U.S. Provisional Application No. 60/399,883, filed July 31, 2002.

2. Patent Trial and Appeal Board

The ’260 patent has been challenged in two prior IPRs:

Apple Inc. filed a first petition for *inter partes* review against claims 1 and 2 of the ’260 patent on September 23, 2016. *Apple Inc. v. Immersion Corp.*, IPR2016-01884 (“First Apple IPR”). The Board instituted review on April 3, 2017, and an oral hearing was held on January 10, 2018. Prior to issuing a final written decision, the Board terminated the proceeding following a settlement between the parties.

Apple Inc. also filed a petition for *inter partes* review against claims 3-9 on May 4, 2017. *Apple Inc. v. Immersion Corp.*, IPR2017-01369 (“Second Apple IPR”). The Board discretionarily denied institution in the Second Apple IPR pursuant to 35 U.S.C. § 314(a).

3. District Court Matters

a. Western District of Washington

The '260 patent is currently at issue in *Immersion Corp. v. Valve Corp.*, 2:23-cv-00712-TL (W.D. Wash.). The complaint was served on May 18, 2023. *Id.*, Dkt. No. 15.

b. District of Delaware

The '260 patent was previously asserted in *Immersion Corp. v. Apple Inc., et al.*, No. 1:16-cv-325 (D. Del.) (“the 2016 Apple Litigation”).

4. International Trade Commission

The '260 patent was previously asserted in *In the Matter of Certain Mobile and Portable Electronic Devices Incorporating Haptics (Including Smartphones and Laptops) and Components Thereof*, Inv. No. 337-TA-1004 (U.S. International Trade Commission).

C. Counsel and Service Information – § 42.8(b)(3) and (b)(4)

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Powers of attorney are submitted with this petition. Counsel for Petitioner consents to service of all documents via electronic mail.

Petitioner requests *inter partes* review of claims 1-7 of the '260 patent.

II. INTRODUCTION

The '260 patent relates to providing tactile sensations to input devices used in electronic devices like phones. The patent concedes it was conventional for input devices (*e.g.*, mechanical buttons or non-mechanical softkeys displayed on touchscreens) to provide tactile feedback to users. The patent's purported novelty is providing tactile sensations based on how much pressure a user applies to a particular input device. That "idea," however, was known before the critical data. *See generally* EX1003 ("Ward"), ¶¶48-75.

Ground 1 demonstrates that claims 1-7 are anticipated, or rendered obvious, by Komata (EX1005), which discloses a gaming controller with pressure-sensitive buttons and a vibration generator that provides tactile sensations based on the pressure a user applies to the buttons. In the First Apple IPR the Board found a "reasonable likelihood" that Komata disclosed claims 1-2. EX1010, 26. The Board's prior determination was correct, and institution is warranted again.

Ground 2 demonstrates that claims 1-7 are also anticipated, or rendered obvious, by Tsuji (EX1007). The Board also previously found a "reasonable likelihood" that Tsuji disclosed claims 1-2. EX1010, 35.¹ The Board was again

¹ The Board called Tsuji "JP725."

correct because Tsuji discloses a pressure-sensitive touch panel that (1) detects the pressure a user places on a softkey displayed on the panel, (2) determines whether the pressure meets one of five pressure levels, and (3) outputs a vibration on the touch panel that corresponds with the detected pressure.

Ground 3 demonstrates that claims 1-7 are also anticipated, or rendered obvious, by Rosenberg (EX1008), a reference not at issue in the First Apple IPR. Rosenberg discloses a mouse with an actuator that outputs tactile feedback onto the mouse's physical buttons based on different pressures a user applies to those buttons.

III. CERTIFICATION OF STANDING

The '260 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR of its claims. 37 C.F.R. §42.104(a) .

IV. TABLE OF GROUNDS

Petitioners request cancellation of claims 1-7 as follows:

Ground	Reference(s)	Claim(s)	Basis
1	Komata	1-7	102/103
2	Tsuji	1-7	102/103
3	Rosenberg	1-7	102/103

Tsuji and Rosenberg are prior art under pre-AIA §102(b) based on these publication dates:

Reference	Publication
Tsuji	08-06-1999
Rosenberg	12-29-1999

Komata is prior art under pre-AIA §§102(a),(e) based on these filing and publication dates:

Reference	Filing	Publication
Komata	01-10-2001	07-19-2001

No reference relied upon in this petition was cited during prosecution.

V. THE '260 PATENT²

As the '260 patent explains, “[c]onventional electronic devices, such as mobile telephones..., include visual displays” that users interact with “using any one of a number of input devices.” 1:18-28. “Input devices” include physical buttons and non-physical softkeys on a touchscreen. 1:23-59; 2:16-20; Ward, ¶¶77-87. The patent concedes that prior-art input devices provided “vibratory feedback,” but alleges that they “lack a full range of functionality.” 2:6-12 (citing EX1009).

The patent discloses an apparatus that provides tactile feedback “in response to...the level of pressure placed on an input device.” 2:16-37. Figure 2 (below) provides an example for use in a mobile phone (2:43-44; 5:45-47):

² Unless otherwise noted, citations in Section V are to EX1001.

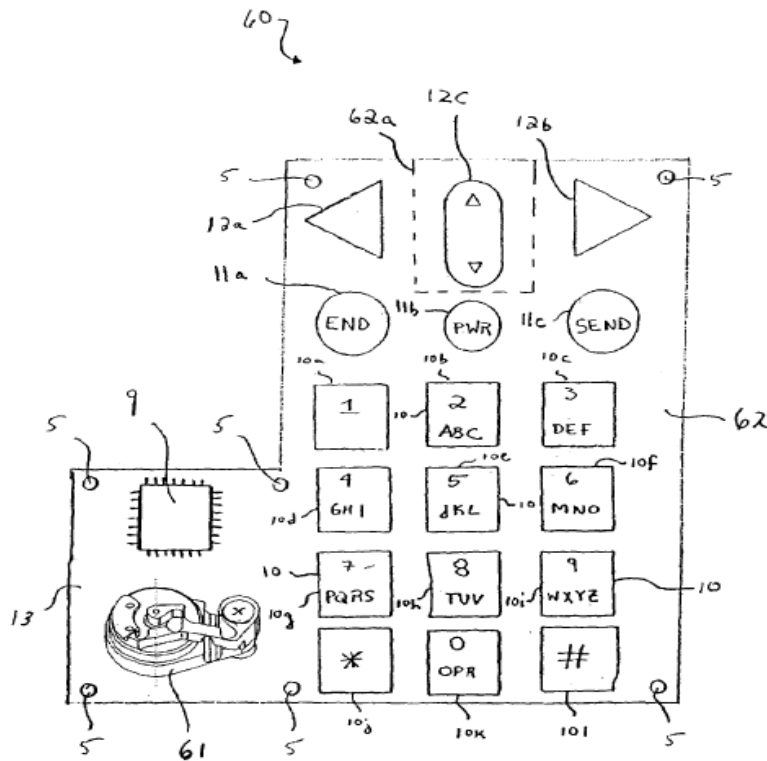


Fig. 2

Apparatus 60 has “multiple input devices includ[ing] twelve fixed or pre-assigned alphanumeric input buttons 10a-l.” 5:38-43. It also includes actuator 61 and controller 9. 7:65-66; 8:13-14. “[A]ctuator 61 is in communication with the various input devices, and is configured to provide vibrations of varying frequencies, magnitudes, and waveforms to the input devices.” 8:2-5; *see also* 4:4-38; 8:13-25.

The patent explains that the input devices, *i.e.*, buttons, “resolv[e] multiple levels of pressure placed on” them and “transmit a signal associated with the [detected] level of pressure.” 5:48-53. For example, a single “button 10i...is capable of resolving five [different] levels of pressure placed on [it].” 5:58-6:9.

To detect pressure, the patent uses conventional pressure-sensitive switches that can be “any analog or digital switch.” 8:43-53; FIG. 4; Ward, ¶¶88-93. When the switch detects a certain pressure level applied to an input device, an input signal is sent to the controller which accesses “a table in which input signals are associated with various haptic feedback signals.” 7:62-64. An exemplary table is shown in Figure 9:

INPUT DEVICE	INPUT SIGNAL	POSITION DATA	PRESSURE DATA	FUNCTION	TACTILE SENSATION
1	--	Location 1	< Pressure 1	Search	Sensation 1
	Input 1	Location 1	Pressure 1 <=	Select	Sensation 2
2	--	Position 1	--	On	Sensation 3
	--	Position 2	--	Off	Sensation 4
3	Input 2A	--	Pressure 1	9	Sensation 5
	Input 2B	--	Pressure 2	W	Sensation 6
	Input 2C	--	Pressure 3	X	Sensation 7
	Input 2D	--	Pressure 4	Y	Sensation 8
	Input 2E	--	Pressure 5	Z	Sensation 9
4	Input 3	--	Pressure 1	Menu 1	Sensation 10
		--	Pressure 2	Menu 2	Sensation 11
		--	Pressure 3	Menu 3	Sensation 12
5	--	--	Pressure 1	2	Sensation 13
		--	Pressure 2	A	Sensation 14
		--	Pressure 3	B	Sensation 15
		--	Pressure 4	C	Sensation 16
6	Input 4	Position 1	Pressure 1	Function 1	Sensation 17
	Input 5	Position 2	Pressure 2	Function 2	Sensation 18
	Input 6	Position 3	Pressure 3	Function 3	Sensation 19
7	Input 7	Location 1	Pressure 1	Function 1	Sensation 20
	Input 8	Location 2	Pressure 2	Function 2	Sensation 21
--	AMBIGUOUS	--	--	--	Sensation 22
--	Function Failure	--	--	--	Sensation 23

FIG. 9

The controller uses the table to cause “an actuator to cause the input device to vibrate at a frequency” associated with the tactile sensation corresponding to the detected pressure level. 14:43-57. For example, if the controller detects Pressure 1 on Input Device 5, it causes the actuator to output Sensation 13. 14:43-15:15; Ward, ¶¶94-96.

A. Challenged Claims

Claims 1-7 are reproduced in the Claim Listing (*infra* §X), and independent claim 1 is reproduced below with labels added:

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

[1A] detect a first pressure on a first input device,

[1B] provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure;

[1C] detect a second pressure on the first input device, the second pressure greater than the first pressure; and

[1D] provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure;

[1E] detect a third pressure on the first input device, the third pressure greater than the second pressure; and

[1F] provide a third tactile sensation to the first input device.

The dependent claims specify further pressure and/or tactile sensations related to the first input device or a second input device. These conventional features were known in the prior art as detailed below.

B. Level of Ordinary Skill in the Art

POSAs would have a bachelor's degree in electrical engineering, computer science, or a related field, plus at least two years of industry or graduate level experience with software engineering, haptics programming, and/or human-computer interaction, including experience with user-interfaces and applications involving touchscreens, touchpads, and related technologies. Ward, ¶¶38-44.

C. Prosecution History

The applicants initially pursued claims for a “computer-readable medium having instructions” to cause a processor to “detect” pressures and “provide” tactile sensations to an input device. EX1002, 158. These claims included independent claim 1 directed to detecting first and second pressures and providing first and second tactile sensations, and dependent claim 2 that required detecting a third pressure and providing a third tactile sensation. EX1002, 159.

The examiner rejected claim 1 (and its dependents) in view of Yasutake (EX1006), but found claim 2 (and its dependents) allowable. EX1002, 184-190. The applicants subsequently tried (but failed) to distinguish claim 1 from Yasutake (EX1002, 207-216, 222-228), cancelled claim 1, and re-wrote claim 2 as an independent claim (EX1002, 234-238).

The notice of allowance cited claim 2's requirement that the processor “detect a third pressure on the first input device, the third pressure greater than the second

pressure” as the reason for allowance, and said that although Yasutake teaches detecting first/second pressures and providing first/second tactile sensations, it did not disclose detecting a third pressure and providing a third sensation. EX1002, 257-259; Ward, ¶¶97-101. As shown below, Komata, Tsuji, and Rosenberg, confirm that detecting a third pressure and providing a third sensation was known before the critical date.

D. Prior Board Proceedings

In the First Apple IPR, the Board instituted review against claims 1-2, finding that Apple had demonstrated a “reasonable likelihood” of proving Komata and Tsuji each rendered claims 1-2 obvious. EX1010, 26, 35. Before a final written decision could be reached, however, the parties settled, and the Board terminated the proceeding. EX1017, 2-3.

In the Second Apple IPR, the Board declined to institute IPR against claims 3-9, but did not address the merits. EX1013, 8. Apple’s second petition did not rely on Tsuji, though it relied on Komata for dependent claim 6. *Id.* The Board discretionarily denied institution because Apple failed to explain why it could not have challenged claims 3-9 in its first petition. EX1013, 15.

VI. CLAIM INTERPRETATION

Claim terms are construed according to their ordinary meaning in light of the specification and prosecution history. 37 C.F.R. §42.100(b). Because the petition’s

art plainly discloses each element of the challenged claims under any plausible construction, no outer boundary constructions are necessary. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013 (Fed. Cir. 2017).

Nonetheless, petitioner addresses claim-construction issues that arose in the First Apple IPR because that proceeding is intrinsic evidence. *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1360 (Fed. Cir. 2017). Petitioner also identifies claim constructions that Immersion successfully sought at the ITC during patent owner’s prior Apple litigation. 37 C.F.R. §42.100(b).

A. Prior Board Interpretations

1. “Input Device”

The specification describes “input devices” as any mechanical or non-mechanical device that a user uses to “interact[]” with an electronic device. 1:19-59 (describing input devices such mechanical buttons); 11:41-55 (softkey embodiment); FIG. 5; Ward, ¶¶104-105.

In the First Apple IPR, the Board determined that the broadest reasonable interpretation³ of “input device” is “a device by which a user can interact with an electronic device to provide instructions, responses, and other input to the electronic device.” EX1010, 10. Such a construction is also appropriate under *Philips v. AWH*

³ 37 C.F.R. §42.100(b) (2016).

Corp., 415 F.3d 1303 (Fed. Cir. 2012), and is plainly met by the petition’s prior art as detailed below. Ward, ¶¶103-106.

2. “Single Touch”

In the First Apple IPR, Immersion argued that claims 1-2 were limited to detecting multiple pressures during “an interaction” (pre-institution) or “a single contact” (post-institution). EX1011, 4-6; EX1012, 3. The Board correctly rejected that construction at institution, finding that the claims “do not define any temporal relationship between the [pressure] detections and thus fail to require detecting the first, second, and third pressures must occur at the same time, continuously, or as part of a single touch interaction.” EX1010, 21-22.

The claims contain no language imposing any temporal relationship on the three pressures or when they are detected. Ward, ¶¶107-111. Claim 1 only imposes a quantitative relationship on the three pressures—the third pressure must be greater than the second pressure which must be greater than the first pressure—but does not limit when those pressure are applied or detected. *Id.* Claim 1 thus covers scenarios in which the processor detects the three pressures during a single user contact with the input device ***and*** other scenarios where the processor detects the pressures during separate contacts with the device. *Id.*; *Vitronics Corp. v. Conceptronic*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

The specification contains no teachings that re-define or disavow the claim’s plain language. *Polaris Innovations Ltd. v. Brent*, 48 F.4th 1365, 1376 (Fed. Cir. 2022) (broad claim language can only be narrowed through “lexicography and disavowal”). Indeed, it contains teachings consistent with the absence of a temporal restriction on when the pressures are applied or detected. For example, the patent describes an embodiment in which a controller periodically “monitors” an input device, *i.e.*, Input Device 5, over several “passes” to detect whether pressure is being applied to the input device during a particular pass. EX1001, 14:43-15:15; FIG. 9; Ward, ¶¶112-114. As shown in Figure 9 (below; red box added), Input Device 5 associates four tactile sensations (Sensations 13-16) with four pressures (Pressures 1-4).

INPUT DEVICE	INPUT SIGNAL	POSITION DATA	PRESSURE DATA	FUNCTION	TACTILE SENSATION
1	--	Location 1	< Pressure 1	Search	Sensation 1
	Input 1	Location 1	Pressure 1 <=	Select	Sensation 2
2	--	Position 1	--	On	Sensation 3
	--	Position 2	--	Off	Sensation 4
3	Input 2A	--	Pressure 1	9	Sensation 5
	Input 2B	--	Pressure 2	W	Sensation 6
	Input 2C	--	Pressure 3	X	Sensation 7
	Input 2D	--	Pressure 4	Y	Sensation 8
	Input 2E	--	Pressure 5	Z	Sensation 9
4	Input 3	--	Pressure 1	Menu 1	Sensation 10
		--	Pressure 2	Menu 2	Sensation 11
		--	Pressure 3	Menu 3	Sensation 12
5	--	--	Pressure 1	2	Sensation 13
		--	Pressure 2	A	Sensation 14
		--	Pressure 3	B	Sensation 15
		--	Pressure 4	C	Sensation 16
6	Input 4	Position 1	Pressure 1	Function 1	Sensation 17
	Input 5	Position 2	Pressure 2	Function 2	Sensation 18
	Input 6	Position 3	Pressure 3	Function 3	Sensation 19
7	Input 7	Location 1	Pressure 1	Function 1	Sensation 20
	Input 8	Location 2	Pressure 2	Function 2	Sensation 21
--	AMBIGUOUS	--	--	--	Sensation 22
--	Function Failure	--	--	--	Sensation 23

FIG. 9

In this embodiment, the controller “monitors” Input Device 5 over separate “passes,” such that during a first “pass” it detects Pressure 1 and outputs Sensation 13, and on a separate “later monitoring pass” it detects Pressure 3 and outputs Sensation 15. EX1001, 14:43-63. There is no disclosure of the controller evaluating a temporal relationship between when Pressure 1 and Pressure 3 are applied, or of having any way of determining whether Pressures 1 and 3 were generated by a single user contact or separate user contacts. Ward, ¶¶112-114. Imposing a temporal restriction on the challenged claims would therefore improperly exclude this embodiment. *Id.*

B. Prior ITC Interpretations

The ITC construed two terms:

Term	Construction
“pressure”	“application of force from a contact”
“first/second/third/fourth tactile sensation”	“the first/second/third/fourth haptic tactile sensation can be the same or different from the other claimed tactile sensations.”

EX1018, 43; *see also id.* at 34-38 (providing rationale for the constructions).

Both above-identified constructions were ones that patent owner proposed. *Id.*, 34, 36. Judicial estoppel thus bars patent owner from advancing a construction of either “pressure” or “first/second/third/fourth tactile sensation” that is inconsistent

with the construction it successfully advanced before the ITC. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1349 (Fed. Cir. 2001).

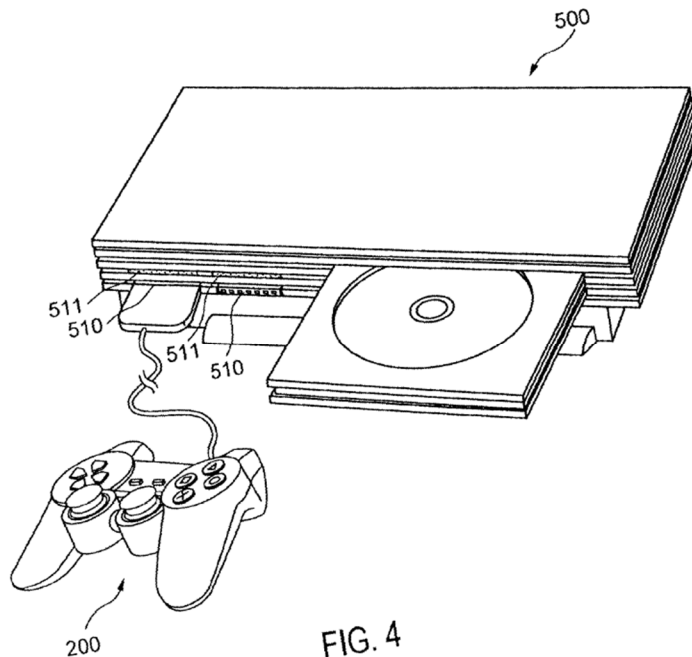
Patent owner's constructions are also consistent with the intrinsic evidence. The specification explains that different levels of "pressure" may be defined based on the distance an input device travels, which is dependent on force from a contact applied to the device, not on a direct measurement of pressure applied to it. EX1001, 5:48-57; Ward, ¶¶115-118. Likewise, the specification discloses embodiments in which detected levels of pressure result in vibrations of "the same frequency" (8:21-25, 9:60-62), which is consistent with the "first/second/third/fourth tactile sensation" being the same (or different). Ward, ¶¶119-122.

VII. UNPATENTABILITY GROUNDS

A. Ground 1: Claims 1-7 Are Anticipated by and/or Obvious Over Komata⁴

1. Komata (EX1005)

Komata discloses a “method and computer to provide control of vibrations of a controller used in video game machines.” Abstract. Figure 4 depicts an exemplary machine with controller 200 connected to entertainment system 500 ([0056]):



As shown below, controller 200 includes four pressure-sensitive buttons 221. [0031]; [0069].

⁴ Unless otherwise noted, citations in Section VII.A are to Komata.

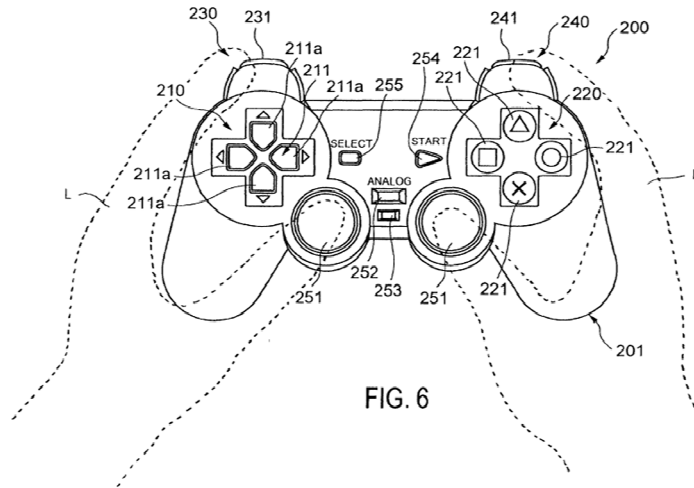


FIG. 6

The buttons each include a “resistor 40” and a “conducting member 50” ([0076]-[0078]):

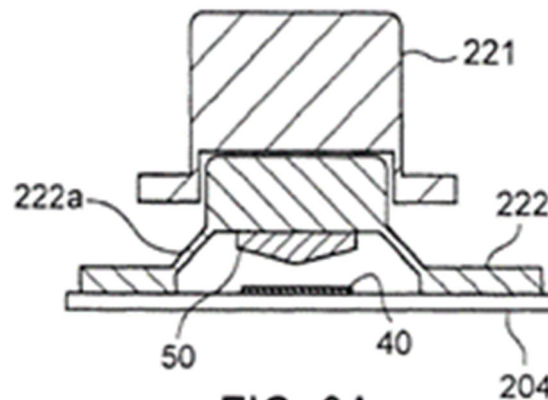


FIG. 8A

“[R]esistors 40 and conducting members 50 form pressure-sensitive devices” that “have resistance values that vary depending on the pushing pressure received from the control buttons.” [0079]; Ward, ¶¶124-130. When the button is not being pressed there is a space between the resistor and conducting member. As a user

presses the button the space narrows until the deformable tip of the conducting member touches the resistor as seen in Figure 8B. [0082].

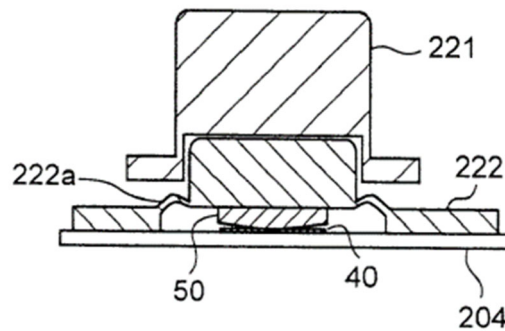


FIG. 8B

As the user continues to press the button, the conducting member continues to deform and the contact area between it and the resistor “expands” ([0082]) as seen in Figure 8C:

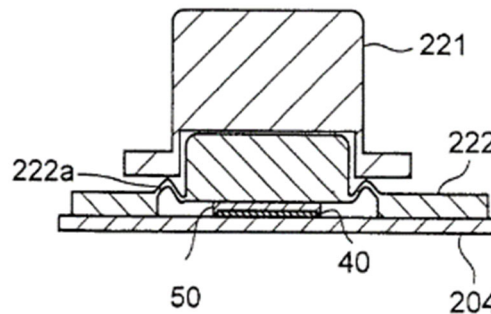


FIG. 8C

The pressure-sensitive device for each button outputs to an analog-to-digital (A/D) converter a voltage that varies with the applied pressure. [0079], [0084]-[0089]. When the conducting member contacts the resistor, “the surface area of contact between” the two components “increases in response to the pushing

pressure..., and thus the resistance of the resistor 40 is reduced so the analog signal (voltage) output from the output terminal 40c of the resistor 40 increases.” [0087]. The voltage increases until it “reaches the maximum $V_{\max}$ when the conducting member 50 is most deformed.” [0088].

The A/D converter converts the analog voltage signal to a digital signal that “corresponds to the pushing pressure” on the button. [0089]-[0091]. The digital signal represents a value in the range of “0-255” and is provided to the entertainment system which sends a drive signal to the controller having the depressed button, a different controller, or both. [0032]-[0034]; [0090]; claim 1; Ward, ¶¶131-132. The drive signal is calculated using “a pressure-sense value-drive signal conversion table,” like the one shown in Figure 2 (below), that converts each of the digital values 0-255 into a corresponding drive signal P0-P255. [0036]. The drive signal is sent to one or both controllers connected to the system, causing a vibration generator within the controller(s) to vibrate. [0036]; [0044]; [0031]; [0117]-[0120]; FIGS. 10, 15, 17-20; Ward, ¶¶132-133.

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

FIG. 2

As Figure 2 illustrates, Komata teaches sensing 256 different pressure levels (0-255) and generating 256 corresponding different drive signals (P0-P255) that cause the controller(s) to vibrate. Ward, ¶¶132-134.

2. Claim 1

a. [1PRE]

If the preamble is limiting, Komata discloses a “*computer-readable medium having instructions*” that cause a processor to perform the steps recited in limitations [1A]-[1F].

Komata’s “program for generating vibration depending on pressure-sensed values may be supplied either recorded alone on an optical disc or other recording medium.” [0041]; *see also* [0006]; claim 1; FIG. 5 (“RAM”); Ward, ¶¶135-137.

Komata's "program" is "run by the entertainment system 500 and executed by its CPU" ([0041]) which performs all of steps [1A]-[1F] as detailed below. *See also* FIG. 5 (CPU). POSAs understood a CPU, *i.e.*, central ***processing*** unit, is a "*processor*." EX1001, 13:47-49; 5:27-29; Ward, ¶¶138-139.

b. [1A]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*detect a first pressure on a first input device*," as claimed.

Komata's controller 200 and its buttons 221 are all "input devices" because each is used to interact with the entertainment system, *e.g.*, to "change the state of [] game characters." [0069]; *see also* [0070]; [0091]; FIG. 6; Ward, ¶¶140-141. Therefore, Komata's controller 200 and each of its buttons 221 is an "*input device*," as claimed. Ward, ¶¶140-141; *supra* §VI.A.1.

The entertainment system's CPU "*detect[s] a first pressure on*" each button 221 and each of those detected pressures is also a pressure on the controller 200. Ward, ¶¶142-144.

As discussed *supra* §V11.A.1, each button includes a resistor and conducting member that "form pressure-sensitive devices" and generate "resistance values that vary depending on the ***pushing pressure*** received from the control buttons." [0079]. The pressure-sensitive device for each button outputs to an A/D converter a voltage that varies with the applied pressure. [0079], [0084]-[0091]; FIGS. 8A-8C. As the

pressure increases, resistance of the resistor decreases so that the analog output from the resistor increases, resulting in a range of possible analog resistance outputs (voltages) conveying information about the pressure. [0087]; [0091] (“Changes in the level of the analog signal output...*correspond to changes in the pushing pressure.*”).

“[T]he analog output from the pressure-sensitive devices is converted by an A/D converter to digital values in the range 0-255 and provided to the entertainment system 500.” [0032]; FIG. 2. These digital values each “correspond[] to the pushing pressure on” the button, *i.e.*, they correspond to the application of force from a user pressing the button. [0091]; Ward, ¶¶145-147; *supra* §VI.B (“*pressure*” is “application of force from a contact”). The entertainment system’s CPU thus “*detect[s] a first pressure value*” by receiving a digital pressure-sense value from the A/D converter. Ward, ¶¶145-147.

Accordingly, Komata’s stored program code, when executed, causes the entertainment system’s CPU, *i.e.*, “*processor,*” to “*detect a first pressure,*” *i.e.*, a pressure corresponding to digital values 0-255, “*on a first input device,*” *i.e.*, controller 200 and/or the button 221 being pressed on controller 200. Ward, ¶148.

c. [1B]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure,*" as claimed.

As discussed *supra* §VII.A.1, the voltage that one of Komata's buttons generates is sent to an A/D converter which converts the analog voltage to a digital signal that represents a value between "0-255" and is provided to the entertainment system. [0032], [0089]. The entertainment system, via its CPU, then sends a drive signal to a controller, *e.g.*, the controller with the depressed button. [0032]-[0034]; claim 1; Ward, ¶¶149-150. The drive signal is calculated using "a pressure-sense value-drive signal conversion table" (Figure 2) that converts each of digital values 0-255 into a corresponding drive signal P0-P255. [0036]. The drive signal is sent to the controller, and a vibration generator system within the controller causes a vibration to be felt on the controller and on the button 221 being pressed. [0036], [0044]; Ward, ¶¶151-153.

As shown below in Figure 17, "the vibration generation system mechanism 22 consists of a motor 20 driven by drive signals supplied from the entertainment system 500 and an eccentric member 21 attached to the driveshaft 20a of the motor 20." [0117]; *see also* [0118]-[0120]; FIGS. 10, 15, 18-20.

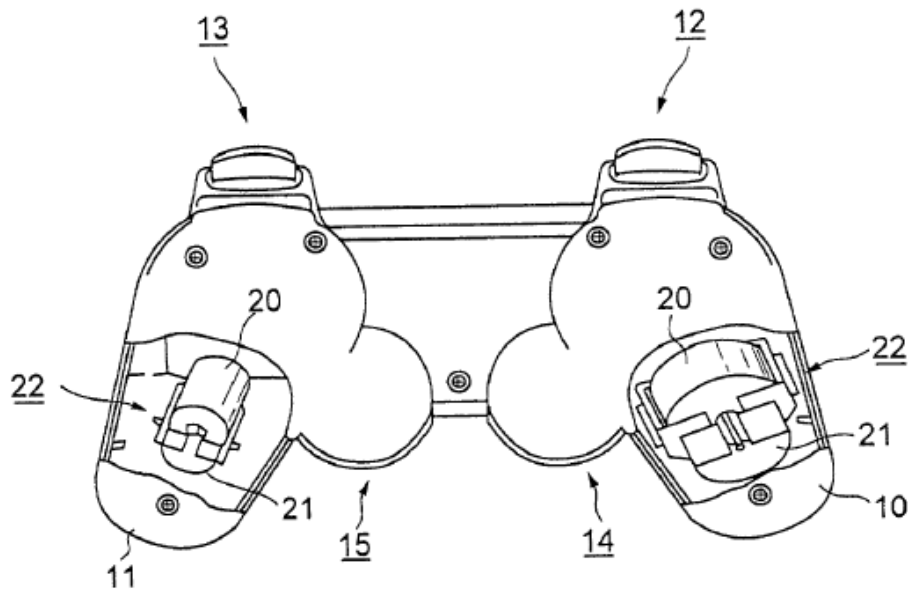


FIG. 17

Vibrations caused by the vibration generation system “are transmitted via the side walls [of the controller] to the handle parts, and thus vibrations are transmitted to the user’s fingers.” [0028]; FIG. 20. As the ’260 patent explains, “*tactile sensations*,” as claimed, “include vibrations” like those Komata generates. EX1001, 3:48-51; Ward, ¶¶152-154.

As seen in Figure 6 (below), buttons 221 are inset within second handle part 11, and thus the buttons receive vibrations from the vibration generator within the second handle part as well as vibrations from the generator within the first handle part. [0120]-[0121] (each handle has “different sizes of motors” so different vibrations can be felt); FIG. 20; Ward, ¶155.

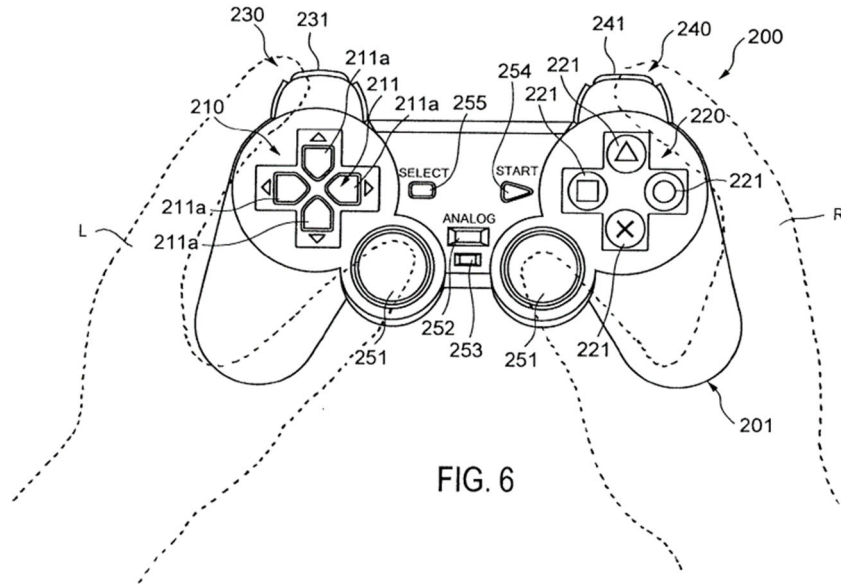


FIG. 6

As discussed *supra* §VII.A.1, the drive signal that the entertainment system’s CPU sends to the controller to drive the vibration system is based on a pressure-sense value that the entertainment system’s CPU derived based on the digital signal (*i.e.*, “0-255”) from the A/D converter. [0032]-[0036], [0089]; FIG. 2. For example, when the CPU receives Pressure-Sense Value 1, it sends to the controller’s vibration generating system Drive Signal 1 which causes a vibration to be felt on both the controller and on the button 221 that has been pressed. Ward, ¶¶156-157.

Komata’s Figure 20 depicts controller 200 vibrating, confirming that the CPU “*provide[s] a first tactile sensation to the*” controller. [0119]; Ward, ¶¶158-160. As Mr. Ward explains, the unitary structure of Komata’s controller also results in the depressed button 221 vibrating when handle parts 10 and 11 vibrate such that the CPU also “*provide[s] a first tactile sensation to the*” button being pressed. Ward,

¶159. This is consistent with the '260 patent which describes vibrating a button indirectly by causing an actuator to vibrate a printed-circuit board which propagates that vibration to input devices connect to the board. 4:33-35; 9:34-44; FIG. 2 (depicting single actuator 61 that is separate from each button); Ward, ¶160.

Komata therefore teaches “*provid[ing] a first tactile sensation to the first input device,*” i.e., controller 200 and/or the button 221 being pressed on controller 200, “*the first tactile sensation based at least in part on the first pressure,*” as claimed. Ward, ¶¶158-161.

d. [1C]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*detect a second pressure on the first input device, the second pressure greater than the first pressure,*” as claimed. Ward, ¶¶162-166.

As discussed above for limitation [1A], the entertainment system’s CPU “*detect[s] a [] pressure on the first input device*” by receiving a digital pressure-sense value from the A/D converter, and using that value to detect up to 256 distinct pressures being applied. [0032]; [0091] (“digital signal output[] from the A/D converter [] corresponds to the pushing pressure on the control button”); FIG. 2.

For example, as discussed for limitation [1A], the CPU can detect digital Pressure-Sense Value 1 (“*the first pressure*”). Ward, ¶¶163-165. Using that same process, the CPU can also detect digital Pressure-Sense Value 10 (“*a second*

pressure”) when a user has pushed button 221 in a manner that creates the voltage needed for the A/D converter to generate and send to the CPU digital Pressure-Sense Value **10**. Ward, ¶166.

Because Komata teaches that the analog signals that its pressure-sensitive devices output range from a minimum voltage (no pressure) to a maximum voltage (most pressure) ([0086]-[0088]), POSAs would have understood Komata’s Pressure-Sense Values 0 to 255 to represent that voltage range with 0 representing minimum pressure and 255 corresponding to maximum pressure. Ward, ¶¶165-166. POSAs would therefore have understood that Pressure-Sense Value **10** represents “*pressure on the first input device,*” *i.e.*, controller 200 and/or the button 221 being pressed on the controller, that is “*greater than*” the pressure represented by Pressure-Sense Value **1**. Ward, ¶166.

e. [1D]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure,*” as claimed.

As discussed above for limitation [1B], the entertainment system’s CPU generates a drive signal that corresponds to the pressure-sense value the CPU receives from the controller’s A/D converter. [0032]-[0036]; FIG. 2. The CPU sends the drive signal to the controller with the button 221 being pressed, and a

vibration generator system within that controller causes a vibration to be felt by a user pressing the button. [0032]-[0034], [0036], [0044], claim 1; Ward, ¶¶167-168.

As discussed for limitation [1C], Komata's stored program code, when executed, causes the entertainment system's CPU to "*detect a second pressure,*" e.g., digital Pressure Value **10**. The program code would then cause the CPU to send a drive signal, e.g., Drive Signal **10**, to the vibration system of the controller with the button 221 being pressed so that a vibration is provided to the controller, including the button being pressed. Ward, ¶169. As explained *supra* §VI.B, the claimed "tactile sensations" can be the same or different such that any second "tactile sensation" meets the claimed "*second tactile sensation.*" Accordingly, the vibration that Drive Signal 10 generates is a "*second tactile sensation*" that is "*based at least in part on the second [detected] pressure,*" as claimed. Ward, ¶¶170-172.

f. [1E]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*detect a third pressure on the first input device, the third pressure greater than the second pressure*" as claimed.

As discussed above for limitations [1A] and [1C], the entertainment system's CPU "*detect[s] a [] pressure on the first input device*" by receiving a digital pressure-sense value, and using that value to detect up to 256 distinct pressures.

[0032]; FIG. 2. For example, the CPU can detect digital Pressure-Sense Values **1** (*i.e.*, “*first pressure*”), and **10** (*i.e.*, “*second pressure*”). Ward, ¶¶173-175.

Using the same process, the CPU can also detect digital Pressure-Sense Value **100** when a user has pushed button 221 in a manner that creates the voltage that results in the A/D converter sending to the CPU the digital Pressure-Sense Value 100 (*i.e.*, “*third pressure*”). Ward, ¶175. As explained above for limitation [1C], POSAs would have understood that Pressure-Sense Value **100** represents “*pressure on the first input device,*” *i.e.*, controller 200 and/or the button 221 being pressed on the controller, that is “*greater than*” the pressure represented by Pressure-Sense Value **10**, *i.e.*, the “*second pressure,*” as claimed. Ward, ¶176.

g. [1F]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*provide a third tactile sensation to the first input device,*” as claimed.

As discussed above for limitations [1B] and [1D], the entertainment system’s CPU generates a drive signal that corresponds to the pressure-sense value the CPU receives from the controller’s A/D converter. [0032]-[0036]; FIG. 2. The CPU sends the drive signal to the controller with the button 221 being pressed, and a vibration generator system within that controller causes a vibration to be felt by a user pressing the button. [0032]-[0034], [0036], [0044], claim 1; Ward, ¶¶177-178.

As discussed for limitation [1E], Komata's stored program code, when executed, causes the entertainment system's CPU to "*detect a third pressure,*" *e.g.*, digital Pressure Value **100**. The program code would then cause the CPU to send a drive signal, *e.g.*, Drive Signal **100**, to the vibration system of the controller with the depressed button 221 so a vibration is provided to the controller with depressed button 221. Ward, ¶179. As explained *supra* §VI.B, the claimed "tactile sensations" can be the same or different such that any third "tactile sensation" meets the claimed "*third tactile sensation.*" Accordingly, the vibration that Drive Signal **100** generates is a "*third tactile sensation*" that is "*based at least in part on the third [detected] pressure,*" as claimed. Ward, ¶¶180-182.

3. Claim 2

a. [2PRE]

See [1PRE]; Ward, ¶183.

b. [2A]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*detect a fourth pressure on the first input device, the fourth pressure greater than the third pressure,*" as claimed.

As discussed above for limitations [1A], [1C] and [1E], the entertainment system's CPU "*detect[s] a [] pressure on the first input device*" by receiving a digital pressure-sense value from the A/D converter, and using that value to detect up to 256 distinct pressures. [0032]; FIG. 2. For example, the CPU can detect digital

Pressure-Sense Values **1** (*i.e.*, “first pressure”), **10** (*i.e.* “second pressure”), and **100** (*i.e.*, “third pressure”). Ward, ¶¶184-186.

Using the same process, the CPU can also detect digital Pressure-Sense Value **200** when a user has pushed button 221 in a manner that creates the voltage that results in the A/D converter sending to the CPU the digital Pressure-Sense Value **200** (*i.e.*, “fourth pressure”). Ward, ¶186. As explained for limitation [1C], POSAs would have understood that Pressure-Sense Value **200** represents “*pressure on the first input device,*” *i.e.*, controller 200 or the button 221 being pressed on the controller, that is “*greater than*” the pressure represented by Pressure-Sense Value **100**, *i.e.*, the “third pressure,” as claimed. Ward, ¶¶186-187.

c. [2B]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*provide a fourth tactile sensation to the first input device,*” as claimed.

As discussed above for limitations [1B], [1D] and [1F], the entertainment system’s CPU generates a drive signal that corresponds to the pressure-sense value the CPU receives from the controller’s A/D converter. [0032]-[0036]; FIG. 2. The CPU sends the drive signal to the controller with the button 221 being pressed, and a vibration generator system within that controller causes a vibration to be generated

and felt by a user pressing the button. [0032]-[0034], [0036], [0044], claim 1; Ward, ¶¶188-189.

As discussed above for limitation [2B], Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*detect a fourth pressure,*” *e.g.*, digital Pressure Value **200**. The program code would then also cause the CPU to send a drive signal, *e.g.*, Drive Signal **200**, to the vibration system of the controller with the button 221 being pressed so that a vibration is provided to the controller, including the button 221 being pressed on it. Ward, ¶190. As explained *supra* §VI.B, the claimed “tactile sensations” can be the same or different such that any fourth “tactile sensation” meets the claimed “*fourth tactile sensation.*” Accordingly, the vibration that Drive Signal **200** generates is a “*fourth tactile sensation*” that is “*based at least in part on the fourth [detected] pressure,*” as claimed. Ward, ¶¶191-193.

4. Claim 3

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*cause the processor to provide the first tactile sensation to a second input device,*” as claimed. Ward, ¶¶194-201.

Komata explains that when two people are using the entertainment system, the vibration is “generated on *both controllers.*” [0034]-[0035]; [0053]. The entertainment system’s CPU thus causes the vibration discussed for limitation 1B

(i.e., “*first tactile sensation*”) to be provided on both (1) the controller 200 with the depressed button 221 (i.e., either being the “*first input device*”), and (2) the other user’s controller and its separate set of buttons 221, either being the “*second input device*.” Ward, ¶¶195-198. The vibration is also provided to the other buttons 221 on the first user’s controller 200, and those other buttons are each also a “*second input device*.” Ward, ¶199. Thus, the same vibration (i.e., “*first tactile sensation*”) is provided to both first and second inputs devices. Ward, ¶¶198-201.

5. Claim 4

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*provide the second tactile sensation to the second input device*,” as claimed for the same reasons discussed in connection with claim 3, because Komata discloses providing all generated vibrations (“*first*” and “*second*” as claimed) to both controllers. [0034]-[0035]; [0053]; Ward, ¶¶202-204.

6. Claim 5

a. [5PRE]

See [1PRE]; Ward, ¶205.

a. [5A]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*detect a fourth pressure on a second input device*,” as claimed.

As discussed with respect to claims 3-4, the “*second input device*” in Komata is met by (1) a second controller 200, and/or (2) a button 221 on that second

controller. In either case, the entertainment system's CPU uses the same process discussed with respect to limitations [1A]-[1B], [1E], and [2A] to detect a pressure applied to the "*second input device*." For example, when a second user presses a button 221 on the second controller, the entertainment system's CPU detects a digital pressure-sense value, *e.g.*, digital Pressure-Sense Value **250**, that constitutes a "*fourth pressure*" as claimed. [0042]-[0053]; Ward, ¶¶206-208.

b. [5B]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*provide a fourth tactile sensation to the second device*," as claimed.

As discussed with respect to claims 3-4 (as well as limitations [1B], and [1D]-[1E]), the entertainment system's CPU causes a vibration to occur based on the digital pressure-sense values it detects from a button being pressed on either controller. Ward, ¶¶209-210. When, as discussed for limitation [5A], the CPU detects a "*fourth pressure*," *e.g.*, digital Pressure-Sense Value **250**, it would cause a vibration to be provided based on that pressure detection, *i.e.*, "*a fourth tactile sensation*." Ward, ¶210; *supra* §VI.B (claimed "tactile sensations" can be the same or different).

As explained with respect to claims 3-4, that vibration may be provided to both controllers and thus be provided to the “*second input device*,” *i.e.*, the second controller 200 and/or the depressed button 221 on that controller. Ward, ¶211.

7. Claim 6

Claim 6 limits claim 5 by requiring that the “*fourth tactile sensation [be] different from the first tactile sensation.*”

As discussed with respect to claim 5, Komata’s stored program code, when executed, causes the entertainment system’s CPU, *i.e.*, “*processor*,” to “*provide a fourth tactile sensation to the second input device*,” as claimed. For example, the CPU provides a sensation that corresponds to Pressure-Sense Value **250** (*i.e.*, “*a fourth pressure*”) by issuing a corresponding drive signal, *e.g.*, Drive Signal **250**, to the vibration generation system associated with the second input device. Ward, ¶¶212-213.

Komata further teaches that the “magnitude” of the vibration provided to a controller “is determined depending on [the] magnitude” of the output from a pressure-sensitive device. *See* claims 4 & 7. Komata thus teaches providing vibrations whose magnitudes (*i.e.*, intensities) varies depending on the amount of pressure being exerted onto the input device. [0041] (“generating vibration depending on pressure-sensed values”); [0053] (“vibration depending on the pressure-sensed value”); [0054]; Ward, ¶¶214-215.

For example, when the “fourth tactile sensation” is based on digital Pressure-Value **250** and Drive Signal **250** (as was discussed for claim 5), then it would have a higher magnitude (*i.e.*, intensity) than “*the first tactile sensation*” which is based on Pressure Value **1** and Drive Signal **1** (as was discussed for limitation [1B]).

If patent owner contends that Komata does not disclose providing different tactile sensations, then doing so would have been obvious in view of Komata’s teachings that the “magnitude” of vibrations that are output should depend on the “magnitude” of the pressed sensed. Claims 4 and 7; Ward, ¶216.

8. Claim 7

a. [7PRE]

See [5PRE]; Ward, ¶217.

a. [7A]

Komata’s stored program code, when executed, causes the entertainment system’s CPU to “*detect a fifth pressure on a second input device, the fifth pressure greater than the fourth pressure*” as claimed.

As discussed with respect to claims 3 and 4, the “*second input device*” in Komata is either (1) a second controller 200, or (2) a button 221 on the second controller. In either case, the entertainment system’s CPU uses the same process discussed with respect to limitations [1A], [1B], [1E], [2A], and [5A] to detect a pressure that is being applied to the “*second input device*.” For example, when a second user presses a button 221 on the second controller 200, the entertainment

system's CPU would detect a digital pressure-sense value, *e.g.*, digital Pressure-Sense Value **255**, that constitutes a "*fifth pressure*" as claimed. Ward, ¶¶218-221. That pressure is also greater than the "*fourth pressure*" which generated a digital Pressure-Sense Value **250**, *i.e.*, the pressure needed to generate 255 is greater than that needed to generate 250. Ward, ¶221.

b. [7B]

Komata's stored program code, when executed, causes the entertainment system's CPU to "*provide a fifth tactile sensation to the second input device*" as claimed.

As discussed with respect to claims 3-5 (as well as limitations [1B], [1D], and [1E]), the entertainment system's CPU causes a vibration to occur based on the digital pressure-sense values it detects from a controller. Ward, ¶¶222-223. Therefore, when the CPU detects a "*fifth pressure*," *e.g.*, digital Pressure-Sense Value **255**, it would cause a vibration to occur based on that pressure detection, *i.e.*, "*a fifth tactile sensation*." Ward, ¶222; *supra* §VI.B (claimed "tactile sensations" can be the same or different).

As explained with respect to claims 3-5, that vibration would be provided to both controllers and thus it is provided to the "*second input device*," *i.e.*, the second controller 200 or the button 221 being pressed on that controller. Ward, ¶223.

B. Ground 2: Claims 1-7 Are Anticipated by and/or Obvious Over Tsuji⁵

1. Tsuji (EX1007)

Tsuji explains that devices with touch panels “are in wide use” but “lack a sense of touch...for indicating that operation inputs have been performed.” [0001]-[0003]. Tsuji discloses a device that “uses a mechanical reaction such as a vibration...as a response to an operation input,” which “give[s] an operator a reliable sense of operation.” [0014]; Abstract; Ward, ¶224.

Tsuji’s device uses “piezoelectric element[s]” that generate voltages “when a pressing force is applied” to them. [0016]; [0018] (“convert[s] mechanical pressure into voltage”). The voltage generated is converted “into a mechanical reaction,” *e.g.*, a vibration. [0016]-[0018]; Ward, ¶225.

Tsuji’s Figures 1-2 (below) illustrate an ATM (automated teller machine) with “an information display device 100” embodying Tsuji’s invention ([0040]-[0043]):

⁵ Unless otherwise noted, citations in Section VII.B are to Tsuji.

Fig. 1

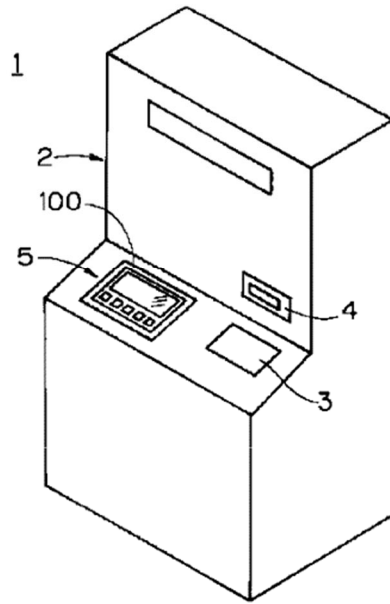
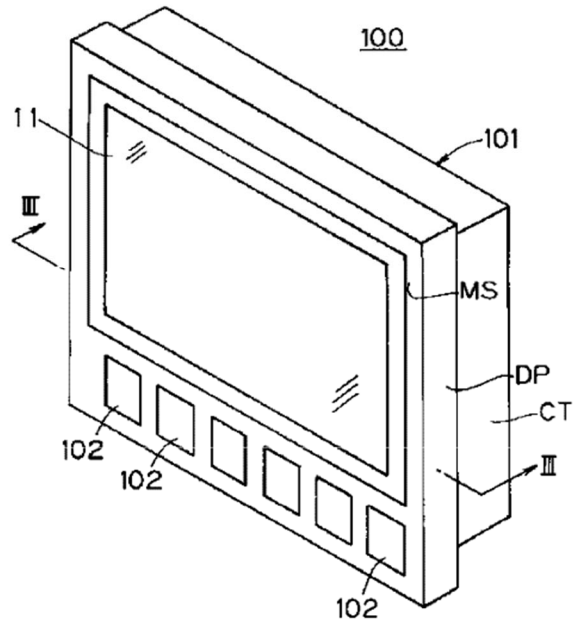


Fig. 2



Tsuji's Figures 3-4 (below) illustrate cross-sectional and plan views of the display ([0044]-[0047]):

Fig. 3

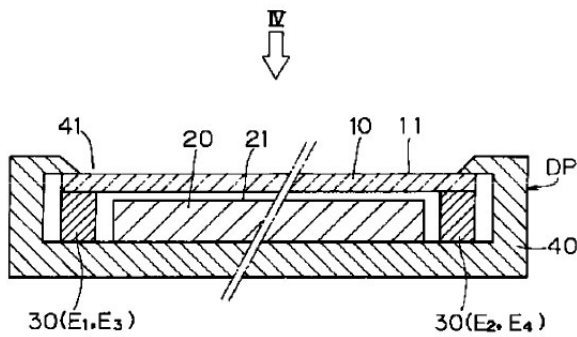
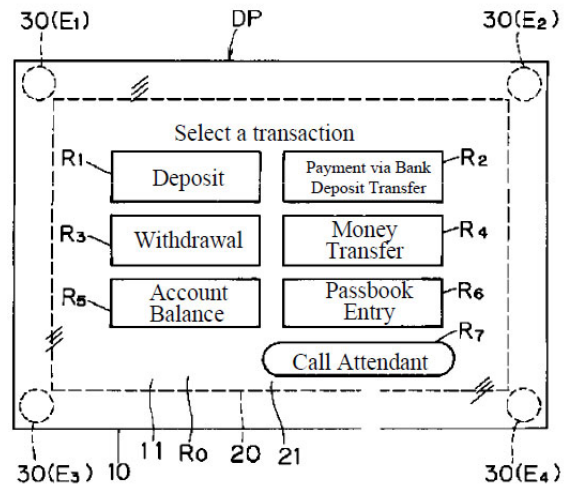


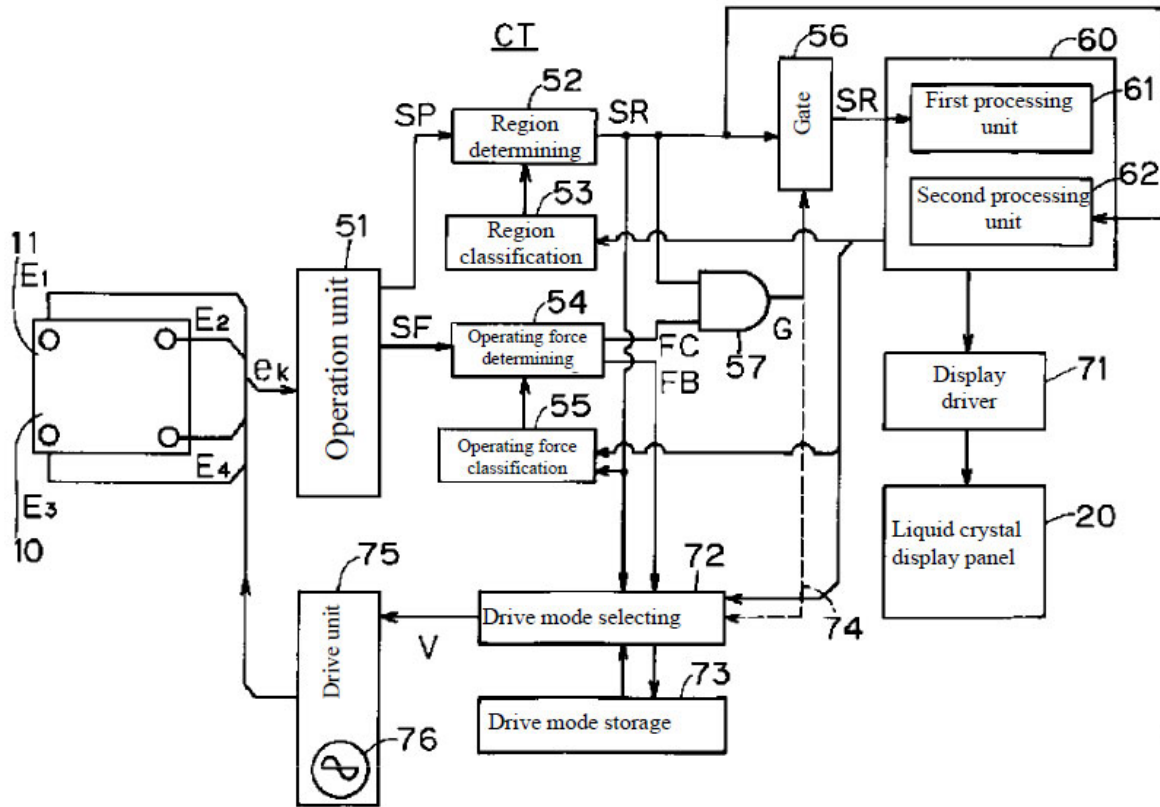
Fig. 4



The display has four piezoelectric elements E1-E4, located at the corners of an LCD panel, and seven operating regions R1-R7 a user can select by pressing. [0045]-[0046]. The voltage signals output by the piezoelectric elements allow the device to sense where the user touches the display and the amount of pressure that has been applied to the display. [0016]-[0018]; [0047]-[0048]. The piezoelectric elements also vibrate the touchscreen to provide feedback that the display has been touched. Abstract; [0014]-[0017]; [0112]; [0121]-[0122]; Ward, ¶¶226-229.

Figure 7 (below) depicts Tsuji's control circuit. [0080]. Although Figure 7 depicts "a hardware circuit," Tsuji teaches that the circuit can be "realized with software using a microcomputer" such that the hardware circuit portions "are functionally realized using the MPU [*i.e.*, microcomputer] and memory of said microcomputer." [0080]; Ward, ¶230.

Fig. 7

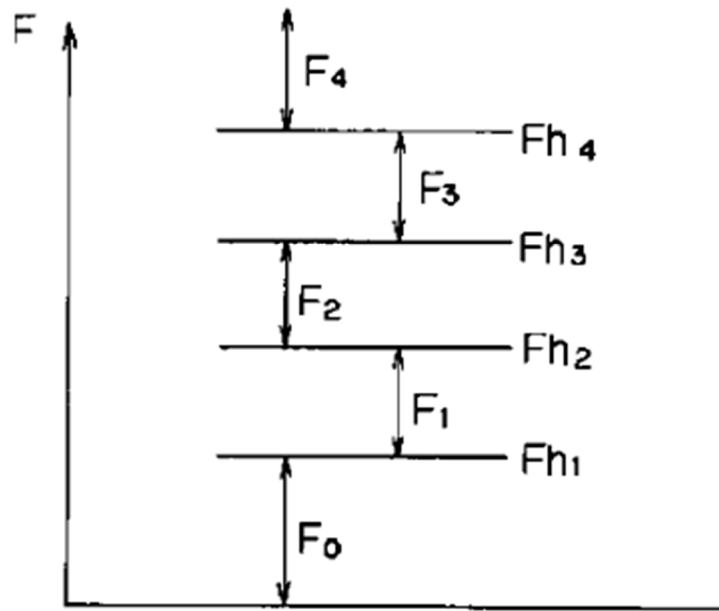


Element voltages e_k of each piezoelectric element E1-E4 are output to an operation unit 51. [0081]-[0082]. These voltages are based on “pressure [that] is applied” to the display, *e.g.*, from a user pressing against it. [0051]; [0082]; [0018] (“converting mechanical pressure into voltage”); Ward, ¶¶231-232. Based on those voltages, the operation unit detects an “operating force F” and outputs an operating force signal (“SF”) to an operating force determining unit 54. [0084]-[0085]; [0091].

Unit 54 has access to a “plurality of thresholds Fh1 through Fh4,” and these four thresholds are used to determine whether the pressure exerted on the

piezoelectric elements (*i.e.*, the “operating force F ”) falls into one of five “force classifications”: F_0 through F_4 seen below. [0091]-[0100]; Fig. 11; Ward, ¶¶233 (explaining threshold F_{h1} is a minimum and F_{h4} is a maximum).

Fig. 11



An “operating force determining signal” (“FB”), indicative of the detected force classification, is sent to drive mode selection unit 72 and used to determine how to drive the piezoelectric elements using the table depicted in Figure 13 below. [0101]-[0102]; [0107]-[0109].

Block diagram of a re-write information storage device 72. The device includes a memory array 72a with rows R₀ through R₆ and columns F₀ through F₄. The array is connected to a control signal V and a feedback signal FB. The array is also connected to a signal G via a dashed line. The array is connected to a port 'From 73' and a port 'To 73'. The array is also connected to a port 'From 60' and a port 'To 60'.

2. Claim 1

If the preamble is limiting, Tsuji discloses a “*computer-readable medium having instructions*” that cause a processor to perform the steps recited in limitations [1A]-[1F].

Tsuji's "control circuit" can be "realized with software using a microcomputer" such that Figure 7's hardware circuit is "functionally realized using the MPU [*i.e.*, microcomputer] and memory of said microcomputer." [0080]. Tsuji's "microcomputer" is a "*processor*" as claimed, and the "software" it uses to perform the control circuit's functionality are "*instructions*" stored in a "*computer-readable medium*," *i.e.*, Tsuji's "memory." Ward, ¶¶239-241. Alternatively, it would have been obvious to use Tsuji's "memory" to store the "software" Tsuji's microprocessor executed to realize Figure 7's functionality because that was a common and well-known arrangement. Ward, ¶242.

b. [1A]

Tsuji's stored program code, when executed, causes the microcomputer to "*detect a first pressure on a first input device*," as claimed. Ward, ¶¶243-250.

Tsuji's display device 100 and each individual operating region (*e.g.*, R1-R7) is an "*input device*" because each is used to interact with an electronic device, *e.g.*, an ATM or game device. [0045]-[0046] ("Regions R1 through R7...serve as operating regions for bank users"); [0145]-[0147] ("performs operations by pressing...regions R1 through R4"); FIGS. 1-4, 17-18; Ward, ¶¶244-246; *supra* §VI.A.1 (construing "*input device*").

Tsuji's microcomputer "*detect[s] a first pressure on*" each operating region (and thus on display device 100 too). As discussed *supra* §VII.B.1, voltages from

piezoelectric elements E1-E4 within device 100 are used to detect pressure that is applied to the display, *e.g.*, when a finger presses an operating region. [0018] (“convert[s] mechanical *pressure into voltage*”); [0051] (explaining that “when pressure is applied...a force k...applied to these piezoelectric elements...can be known”); [0081]-[0085] (describing how “pressing force” is sensed), [0091], FIG. 7. Tsuji describes the detected “pressure” that has been converted into a voltage as an “operating force F” applied to the piezoelectrical elements, and that operating force is a “*pressure*,” as claimed, because it results from the “application of force from a contact,” *i.e.*, a user pressing an operating region. *Supra* §VII.B; Ward, ¶¶247-248.

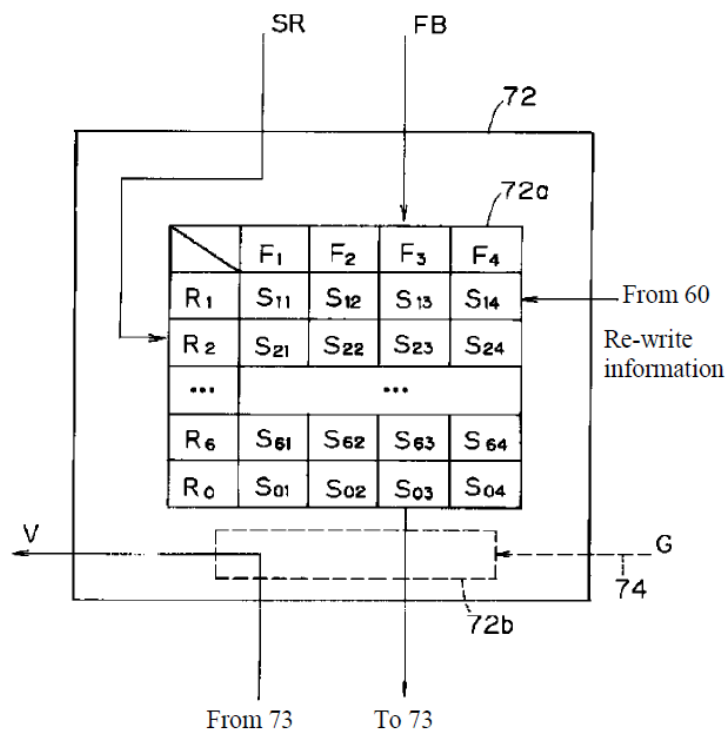
The microcomputer compares the detected operating force with thresholds Fh1-Fh4 to determine whether the operating force (*i.e.*, “*pressure*”) falls into one of five “force classifications” F0-F4. [0093]-[0101]; Ward, ¶¶249-250. Because the microcomputer can detect into which of five force classifications a particular operating force F (*i.e.*, *pressure*) falls, the microcomputer “*detect[s] a first pressure*,” *e.g.*, a pressure falling into the F1 classification. Ward, ¶¶249-250.

c. [1B]

Tsuji’s stored program code, when executed, causes the microcomputer to “*provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure*,” as claimed. Ward, ¶¶251-256.

As discussed *supra* §VII.B.1, Tsuji’s microcomputer uses an “operating force determining signal” (“FB”), which is indicative of the detected force classification, to determine—using Figure 13’s table—how to drive the piezoelectric elements ([0102], [0109]; Ward, ¶252):

Fig. 13



As shown above, if the detected “*first pressure*” falls into force classification F1 and the microcomputer determines that the pressure was exerted in Region R1, signal S11 is used to place the piezoelectric elements into a drive mode selected from a “variety of drive modes.” [0107]-[0109]; [0130]; [0181]; FIG. 14 (depicting drive modes with different frequencies, amplitudes, and timing); Ward, ¶253.

Each drive mode causes the piezoelectric elements to generate “a mechanical reaction such as a vibration...of an operating surface as a response to an operation input from a device side.” [0014]-[0016]; [0110]-[0112]; FIG. 14 (depicting various drive modes). For example, Tsuji’s ATM example uses the piezoelectric elements as “driving means for gently vibrating the operating panel 10 based on said pressing.” [0048]; Ward, ¶¶253-255. The vibration is provided to notify the user that the operation was received (Abstract; [0014]) and is provided to the entire “operating surface” of the device panel, which includes the display device 100 and each of its operating regions. Abstract (“operating surface 11...vibrate[s]”); [0014]-[0018]; [0021]; [0110]-[0112]; [0114]; Ward, ¶¶255-256.

Tsuji’s microcomputer thus “*provide[s] a first tactile sensation,*” *i.e.*, a vibration corresponding to a particular drive mode, “*to the first input device,*” *i.e.*, display device 100 and/or the operating region on that device’s operating surface that the user has pressed, and “*the first tactile sensation based at least in part on the first pressure,*” *i.e.*, the drive mode used is based on the force classification into which the operational force (*i.e.*, “*pressure*”) falls as discussed for limitation [1A].

d. [1C]

Tsuji’s stored program code, when executed, causes the microcomputer to “*detect a second pressure on the first input device, the second pressure greater than the first pressure,*” as claimed.

Tsuji's microcomputer uses the same process discussed above for limitation [1A] to detect "*a second pressure*," i.e., it detects an "operating force" (i.e., "*pressure*") applied to an operating region on display device 100 and determines into which of five "force classifications" F0-F4 that "operating force" falls. *Supra* §VII.B.2.b (limitation [1A]). These classifications include a pressure (e.g., one within the F2 classification) greater than the "*the first pressure*" of limitation 1A (e.g., one within the F1 classification). [0095]; FIG. 11 (depicting F2 as requiring more operational force than F1). The microcomputer thus "*detect[s] a second pressure*," e.g., an operating force (i.e., "*pressure*") falling into the F2 classification, "*on the first input device*," i.e., display device 100 and/or the same operating region on that device's operating surface that the user has pressed in limitation [1A], "*the second pressure greater than the first pressure*," as claimed. Ward, ¶¶257-259.

Tsuji teaches that the detected "*second pressure*" (and other pressures) can be exerted during the same contact that also produces the detected "*first pressure*." For example, Tsuji teaches that "a stronger vibration" can be "applied as the operating force F **gets larger**." [0111]. Thus, Tsuji's microcomputer detects when the operational force (i.e., "*pressure*") applied to the display device or a particular region (e.g., R1) "gets larger" and results in the detected force moving from one force classification (e.g., F1) to a higher classification (e.g., F2) during a single contact as

the user exerts more pressure. Ward, ¶260. Tsuji thus satisfies patent owner’s “single contact” claim construction. Ward, ¶260; *supra* §VI.A.2.

e. [1D]

Tsuji’s stored program code, when executed, causes the microcomputer to “*provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure,*” as claimed.

Tsuji’s microcomputer uses the same process discussed above for limitation [1B] to “*provide a second tactile sensation to the first input device,*” *i.e.*, it uses the table in Tsuji’s Figure 13 to place the piezoelectric elements into a drive mode that corresponds with the force classification associated with a detected pressure. Ward, ¶¶261-262.

Tsuji’s microcomputer thus “*provide[s] a second tactile sensation,*” *i.e.*, a vibration corresponding to a particular drive mode, “*to the first input device,*” *i.e.*, display device 100 and/or the operating region on that device’s operating surface that the user has pressed, and “*the second tactile sensation based at least in part on the second pressure,*” *i.e.*, the drive mode used is based on the force classification (*e.g.*, F2) into which the operational force (*i.e.*, “pressure”) falls as discussed for limitation [1C]. Ward, ¶¶263-264. As explained *supra* §VI.B, the claimed “tactile sensations” can be the same or different such that any second “tactile sensation” meets the claimed “*second tactile sensation.*” Accordingly, the vibration that the

drive mode associated with classification F2 generates is a “*second tactile sensation*” that is “*based at least in part on the second [detected] pressure,*” as claimed. Ward, ¶264.

f. [1E]

Tsuji’s stored program code, when executed, causes the microcomputer to “*detect a third pressure on the first input device, the third pressure greater than the second pressure,*” as claimed.

Tsuji’s microcomputer uses the same process discussed above for limitations [1A] and [1C] to detect “*a third pressure,*” *i.e.*, it detects an “operating force” (*i.e.*, “pressure”) applied to an operating region on display device 100 and determines into which of five force classifications (F0-F4) that “operating force” falls. *Supra* §VII.B.2.b (limitation [1A]). These classifications include a pressure (*e.g.*, one within the F3 classification) that is greater than the threshold to which “*the second pressure*” of limitation 1C was classified (*e.g.*, one within the F2 classification). [0095]; FIG. 11; Ward, ¶¶265-267. The microcomputer thus “*detect[s] a third pressure,*” *e.g.*, an operational force (*i.e.*, “pressure”) falling into the F3 classification, “*on the first input device,*” *i.e.*, display device 100 and/or the same operating region on that device’s operating surface that the user pressed for limitations [1A] and [1C], “*the third pressure greater than the second pressure,*” as claimed. Ward, ¶268.

g. [1F]

Tsuji's stored program code, when executed, causes the microcomputer to “*provide a third tactile sensation to the first input device,*” as claimed.

Tsuji's microcomputer uses the same process discussed above for limitation [1B] and [1D] to “*provide a third tactile sensation to the first input device,*” *i.e.*, it uses the table in Tsuji's Figure 13 to place the piezoelectric elements into a drive mode that corresponds with a detected pressure, *e.g.*, the particular drive mode used is based on the force classification discussed for limitation [1E], *e.g.*, F3. Ward, ¶¶269-270.

Tsuji's microcomputer thus “*provide[s] a third tactile sensation,*” *i.e.*, a vibration corresponding to a particular drive mode, “*to the first input device,*” *i.e.*, display device 100 and/or the operating region on that device's operating surface that the user has pressed. Ward, ¶271. As explained *supra* §VII.B, the claimed “tactile sensations” can be the same or different such that any third “tactile sensation” meets the claimed “*third tactile sensation.*” Accordingly, the vibration that the drive mode associated with classification F3 generates is a “*third tactile sensation,*” as claimed. Ward, ¶272.

3. Claim 2

a. [2PRE]

See §VII.B.2.a ([1PRE]); Ward, ¶273.

b. [2A]

Tsuji's stored program code, when executed, causes the microcomputer to “*detect a fourth pressure on the first input device, the fourth pressure greater than the third pressure,*” as claimed.

Tsuji's microcomputer uses the same process discussed above for limitations [1A], [1C], and [1E] to detect “*a fourth pressure,*” *i.e.*, it detects an “operating force” (*i.e.*, “*pressure*”) applied to an operating region on display device 100 and determines into which of five “force classifications” (F0-F4) that “operating force” falls. [0093]-[0101]; Ward, ¶¶274-275; *supra* §VII.B.2b (limitation [1A]). These force classifications include a pressure (*e.g.*, one within the F4 classification) greater than the “*the third pressure*” of limitation 1D (*e.g.*, one within the F3 classification. [0095]; Fig. 11; Ward, ¶275. The microcomputer thus “*detect[s] a fourth pressure,*” *e.g.*, an operational force (*i.e.*, “*pressure*”) falling into the F4 classification, “*on the first input device,*” *i.e.*, display device 100 and/or the same operating region on that device's operating surface that the user has pressed for limitations [1A], [1C], and [1E], “*the fourth pressure greater than the third pressure,*” as claimed. Ward, ¶¶276-277.

c. [2B]

Tsuji's stored program code, when executed, causes the microcomputer to “*provide a fourth tactile sensation to the first input device,*” as claimed.

Tsuji's microcomputer uses the same process discussed above for limitation [1B], [1D], and [1F] to "*provide a fourth tactile sensation to the first input device,*" i.e., it uses the table in Tsuji's Figure 13 to place the piezoelectric elements into a drive mode that corresponds with a detected pressure. Ward, ¶¶278-279.

Tsuji's microcomputer thus "*provide[s] a fourth tactile sensation,*" i.e., a vibration corresponding to a particular drive mode, "*to the first input device,*" i.e., display device 100 and/or the operating region on that device's operating surface that the user has pressed. Ward, ¶280. As explained *supra* §VI.B, the claimed "*tactile sensations*" can be the same or different such that any fourth "tactile sensation" meets the claimed "*fourth tactile sensation.*" Accordingly, the vibration that the drive mode associated with classification F4 generates is a "*fourth tactile sensation*" that is "*based at least in part on the fourth [detected] pressure,*" as claimed. Ward, ¶¶280-281.

4. Claim 3

Tsuji's stored program code, when executed, causes the microcomputer to "*provide the first tactile sensation to a second input device,*" as claimed. Ward, ¶¶282-286.

As explained *supra* §VII.B.2.c ([1B]), Tsuji's microcomputer generates a drive signal (e.g., S11) to place the piezoelectric elements into a drive mode that causes those elements to vibrate the operating surface. [0014]-[0016]; [0110]-

[0112]; FIG. 14. For example, Tsuji's ATM example uses the piezoelectric elements as "driving means for gently vibrating the operating panel 10 based on said pressing." [0048]; FIG. 3; [0122]; *see also* [0152]; FIG. 17. Because the entire "operating panel 10" is vibrated, the vibration is provided to all operating regions displayed on its operating surface. Abstract ("causes the operating surface 11 to vibrate"); [0014]; [0112]; [0121]-[0122] ("vibrates...the operating surface"); Ward, ¶¶283-285.

Accordingly, when the pressure discussed for limitation [1A] was detected and caused the "*first tactile sensation*" to be provided to one operating region (*e.g.*, R1), that vibration is also provided to the other operating regions (*e.g.*, R2), any one of which meets the "*second input device*," as claimed. Ward, ¶286; EX1001, 13:11-25 ("a single vibrotactile actuator outputting the same sensation to all the buttons simultaneously can be used").

5. Claim 4

Tsuji's stored program code, when executed, causes the microcomputer to "*provide the second tactile sensation to a second input device*," as claimed.

As discussed for claim 3, Tsuji's piezoelectric elements provide vibrations simultaneously to all displayed operating regions. Tsuji's microcomputer thus "*provides the second tactile sensation*" discussed in limitation 1D, to "*a second input device*," as claimed. Ward, ¶¶287-288.

6. Claim 5

a. [5PRE]

See §VII.B.2.a ([1PRE]); Ward, ¶289.

b. [5A]

Tsuji's stored program code, when executed, causes the microcomputer to *"detect a fourth pressure on a second input device,"* as claimed.

Tsuji's display device includes several operating regions, each of which is an *"input device."* *Supra* §VII.B.2.b (discussing operating regions for [1A]). For example, Figure 17's gaming system embodiment has four regions (R1-R4) and Figure 4's ATM embodiment has seven (R1-R7). [0046]; [0145]; Ward, ¶¶290-291.

Tsuji's microcomputer detects a pressure on any of the operating regions in the manner discussed above for limitation [1A]. Tsuji's microcomputer thus *"detect[s] a fourth pressure on the second input device," i.e.,* any pressure that differs from the claimed first, second and third pressures and is exerted on an operating region different than the operating region (*"first input device"*) that was pressed to generate the first, second and third pressures recited in claim 1. Ward, ¶292.

c. [5B]

Tsuji's stored program code, when executed, causes the microcomputer to *"provide a fourth sensation to the second input device,"* as claimed.

Tsuji's microcomputer uses the same process discussed above for limitation [1B], [1D], [1F], and [2B] to "*provide a fourth tactile sensation to the second input device,*" i.e., it uses the table in Tsuji's Figure 13 to place the piezoelectric elements into a drive mode that corresponds with a detected pressure. Ward, ¶¶293-294.

Tsuji's microcomputer thus "*provide[s] a fourth tactile sensation,*" i.e., a vibration corresponding to a particular drive mode, "*to the second input device,*" i.e., the operating region on display device 100's operating surface that the user has pressed, and which is different than the region pressed in limitation [1A]. Ward, ¶¶295-296.

7. Claim 6

Tsuji's stored program code, when executed, causes the microcomputer to provide a "*fourth tactile sensation,*" i.e., the one discussed for claim 5, that is "*different from the first tactile sensation,*" as claimed.

As discussed with respect to limitation [1B], Tsuji's microcomputer uses Figure 13's table to generate a signal that places the piezoelectric elements into a particular drive mode. [0107]-[0109]; Ward, ¶¶297-298. As Figure 13 illustrates, a different signal is generated for each unique combination of operating region and force classification, and therefore POSAs would have understood that the drive mode associated with each signal results in a different vibration being felt by a user. Ward, ¶298. This is also consistent with Figure 14 which depicts unique drive

modes, each generating a different vibration pattern ([0109]), and with Tsuji's explanation that certain regions (but not all) can be assigned "weak vibrations" ([0110]-[0111]). Ward, ¶298.

POSAs thus understood Tsuji to disclose that the "*first tactile sensation*" generated in limitation [1B], *e.g.*, the sensation associated with force classification F1 and Region 1, would be different from the "*fourth tactile sensation*," *i.e.*, the sensation associated with a different force classification (*e.g.*, F4) and a different operating region (*e.g.*, R2). Ward, ¶¶298-299. Alternatively, implementing Tsuji so that the "*first*" and "*fourth*" sensations are different would have been obvious because POSAs would have wanted users to be able to differentiate different operating regions and/or different pressures applied to those regions. Ward, ¶300.

8. Claim 7

a. Preamble

Supra §VII.B.6.a ([5PRE]); Ward, ¶301.

b. [7A]

Tsuji's stored program code, when executed, causes the microcomputer to "*detect a fifth pressure on the second input device, the fifth pressure greater than the fourth pressure*," as claimed.

The '260 patent does not describe anything critical or patentable about detecting five pressures rather than four. The number of "force classifications" used in implementing Tsuji (see Tsuji Fig. 11) was a matter of design choice, and it would

have been obvious for POSAs to add an additional force classification to those (F0-F4) shown in Tsuji Fig. 11. Ward, ¶¶302-304. POSAs would have had a reasonable expectation of success in doing so by creating a new force threshold Fh5 and adjusting the other force thresholds Fh1-Fh4 to create a greater granularity of classification of the classified force into six (F0-F5) force classifications rather than five (F0-F4). *Id.*

c. [7B]

An obvious implementation of Tsuji's stored program code discussed in connection with [7A], when executed, causes the microcomputer to "*provide a fifth tactile sensation to the second input device,*" as claimed.

Tsuji's microcomputer implemented to detect a fifth pressure would use the same process discussed above for limitation [1B], [1D], [1F], [2B], and [5B] to "*provide a fifth tactile sensation to the second input device,*" *i.e.*, it uses the table in Tsuji's Figure 13, modified to detect a fifth pressure, to place the piezoelectric elements into a drive mode that corresponds with the detected pressure. Ward, ¶¶305-306.

This obvious implementation of Tsuji's microcomputer would thus "*provide a fifth tactile sensation,*" *i.e.*, a vibration corresponding to a particular drive mode, "*to the second input device,*" *i.e.*, the operating region on display device 100's

operating surface that the user has pressed and which is different than the region pressed in limitation [1A]. Ward, ¶¶307-308.

C. Ground 3: Claims 1-7 Anticipated by and/or Obvious Over Rosenberg⁶

1. Rosenberg (EX1008)

Rosenberg discloses a mouse with pressure-sensitive buttons and “an actuator” that “produce[s] forces” on those buttons to provide feedback to the user. 24:1-2. A mouse with two buttons (316a-b) and an actuator (318) is shown below in Figure 8 (23:15-24:3):

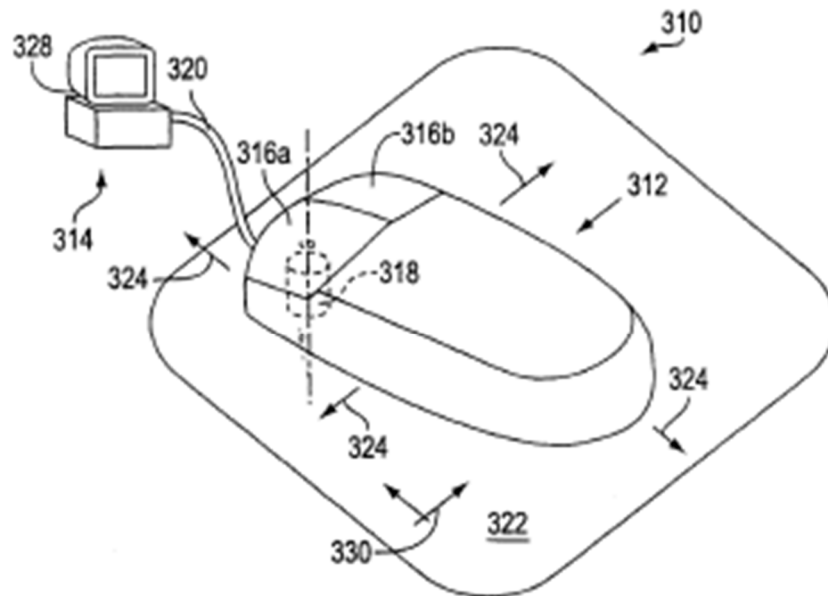


FIG. 8

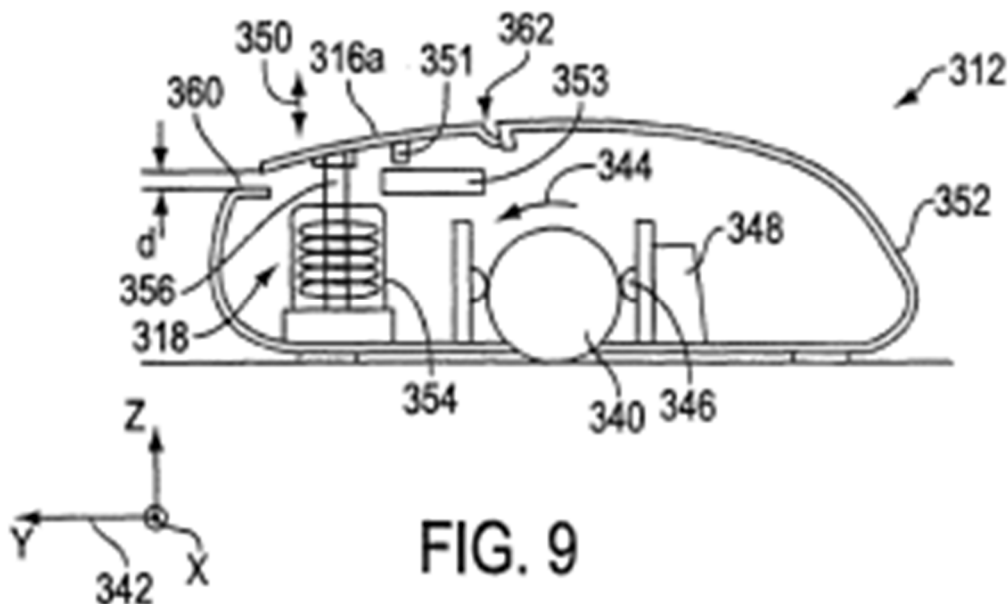
⁶ Unless otherwise noted, citations in this Section VII.C are to Rosenberg.

A user pushes button 316a (or 316b) “down...to provide a command to the computer,” *e.g.*, to select an item. 25:23-30. Rosenberg teaches that:

“[A] sensor can be used to detect the precise position of the button 316(a) in its range of motion (degree of freedom). For example, each position of the button can be sensed as a different analog value and used as an analog value or a digital value in processing the button position. This allows the host computer 314 (or local microprocessor [in the mouse]) to determine the position of the button and to control a force output [to the mouse] based on that position.”

25:33-26:4; *see also* 37:28-38:20 (reciting a “force feedback mouse” with a sensor that “detects a range of at least three position” of a button and wherein an “output force” applied by an actuator depends on the “position of said button in [its] degree of freedom”). Rosenberg teaches that one sensor for detecting the button’s position within its degree of freedom is “a force sensing switch to detect the amount of force applied to button [316a].” 28:23-24; Ward, ¶¶309-314.

Figure 9 (below) provides a cross-section view of Figure 8’s mouse. 25:11-12. Actuator 318 outputs force against button 316a. 26:5-7. A single actuator “can provide forces simultaneously to both buttons 316a and 316b” or “each button 316 can be provided with its own actuator.” 26:25-29. One type of force the actuator(s) output is a “spring effect” wherein the “magnitude of [the] force sensation is dependent on the distance of the button from the origin of the [simulated] spring.” 30:29-33; Ward, ¶¶315-316.



2. Claim 1

a. [1PRE]

If the preamble is limiting, Rosenberg discloses a “*computer-readable medium having instructions*” that cause a processor to perform the steps recited in limitations [1A] to [1F].

Rosenberg explains that a processor—either (1) a “host computer” with a “host microprocessor” or (2) a “local microprocessor” within the mouse itself – “determine[s] the position of the button and [] control[s] a force output [to the button] based on that position.” 7:29-30; 25:33-26:4. Rosenberg thus discloses that a “*processor*” controls the mouse’s force-feedback functionality. Ward, ¶¶317-318.

Both of Rosenberg's processors execute instructions stored on a computer-readable medium. 7:35-8:1 (host processor "retrieves and stores instructions...from RAM and ROM"); 9:30-32 (local processor uses "software instructions" to perform force-feedback functionality and those instructions are stored in a local memory that is "RAM and/or ROM"); 11:19-21. The "RAM" or "ROM" from which the host or local processor accesses instructions to perform Rosenberg's force-feedback functionality is a "*computer readable medium*," as claimed, and the accessed instructions are "*program code*," as claimed. Ward, ¶¶319-321.

b. [1A]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*detect a first pressure on a first input device*," as claimed.

Rosenberg's buttons 316a-b are used to "input a command signal to the host computer," *i.e.*, an electronic device, to manipulate a "graphical environment in a variety of ways." 25:23-30. Each button 316 is therefore an "*input device*," as claimed. Ward, ¶¶322-323; *supra* §VI.A.1.

Rosenberg's host or local processor "*detect[s] a first pressure on*" each button 316. Specifically, Rosenberg's mouse includes a "force sensing switch" that "is used to detect the position of [] button 316a" within its range of movement by "detect[ing] the amount of force applied to [the] button." 28:20-25; *see also* 30:31-33 ("sensor...is...used to sense the position of the button 316a in its degree of

freedom”); 38:19-20 (“sensor detects a range of at least three positions of said button in said degree of freedom”). POSAs understood that detecting the “force” applied to button 316 “detects” the “*pressure*” applied to the button because “*pressure*,” as claimed, is the application of force from a contact. Ward, ¶¶324-326; *supra* §VI.B.

Rosenberg further teaches that its processor detects the force applied to the button using the sensor. For example, by using a “continuous-range sensor,” like a force-sensing switch (Ward, ¶327), “*each position* of the button can be sensed as a different analog value and used as an analog value or a digital value in processing the button position. This allows *the host computer 314 (or local microprocessor)* to determine the position of the button and to control a force output based on that position.” 25:33-26:4. By “determin[ing] the position of the button” in Rosenberg’s force-sensing-sensor embodiment, the host or local microprocessor “*detect[s] a first pressure on a first input device*,” as claimed, *i.e.*, a pressure corresponding to one of several positions of the button within its degree of freedom. Ward, ¶327.

c. [1B]

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure*,” as claimed.

Rosenberg’s mouse includes “an actuator 318 which is operative to produce *forces* on one or more buttons.” 24:1-3. The actuator does so in response to

instructions from the host or local processor. 25:33-26:4; 28:26-28. The “force sensations” (e.g., “vibration”) the actuator produces are “*tactile sensations*” as claimed. 3:14-15; *see also* 17:17-18:5 (discussing the sensations); 19:36-20:6 (same); Ward, ¶¶328-329.

Rosenberg teaches that the force sensation(s) the actuator provides button 316a is “based on” the “position of the button.” 25:33-26:4, 38:21-22 (“output force is dependent...on said position of said button”). For example, Rosenberg teaches a force sensation that mimics a mechanical spring so “[t]he magnitude of this force sensation is dependent on the distance of the button from the origin of the spring.” 30:29-31. In other words, the magnitude of the force sensation that the actuator provides on button 316a increases as the pressure applied by the user increases to push the button further down. 30:29-34; Ward, ¶¶330-331 (discussing spring effects).

As explained for limitation [1A], “the position of the button” corresponds to “*the first pressure*” in Rosenberg’s force-sensing-sensor embodiment. Ward, ¶332. Rosenberg’s stored program code, when executed, thus causes the host or local processor to “*provide a first tactile sensation,*” i.e., one of Rosenberg’s “force sensations,” e.g., “spring effect,” “*to the first input device,*” i.e., button 316a, “*the first tactile sensation based at least in part on the first pressure,*” i.e., the pressure

corresponding to the position of button 316a as determined by a force-sensing sensor. Ward, ¶332.

d. [1C]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*detect a second pressure on the first input device, the second pressure greater than the first pressure,*" as claimed.

As discussed above for limitation [1A], Rosenberg's host or local processor "*detect[s] a [] pressure on the first input device*" by receiving from a force-sensing sensor data (*e.g.*, analog or digital values) indicating "each position" of button 316a within its degree of freedom. 25:33-26:6; 38:19-20. Using that same process, either processor detects additional pressures, *i.e.*, pressure corresponding to "each position" of the button from its rest position until a stop position. 25:33-26:4 ("each position"); 38:19-20 ("at least three positions"); *see also* 26:19-20; FIG. 9; Ward, ¶¶333-336.

Rosenberg's stored program code, when executed, thus causes the processors to "*detect a second pressure*" that is "*greater than the first pressure,*" as claimed. For example, if the position of button 316a determined in limitation [1A] (*i.e.*, "*the first pressure*") is an initial position just below a rest position, Rosenberg's stored program code, when executed, also causes the processor to "*detect a second*

pressure” that is “*greater than the first pressure*” when detecting that the button has been pushed further down. Ward, ¶¶336-337.

e. [1D]

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure,*” as claimed.

As discussed for limitation [1B], Rosenberg’s processor instructs the actuator to output a force sensation (*i.e.*, “*tactile sensation*”) on button 316a, and that force sensation is “based on” the “position of the button.” 25:33-26:4; *see also* 38:21-22. Accordingly, when as discussed for limitation [1C], Rosenberg’s processor “*detect[s] a second pressure,*” the processor instructs the actuator to output a force sensation based on that detected pressure, *i.e.*, “*a second tactile sensation.*” Ward, ¶¶338-340. For example, when the force sensation is a “spring effect,” the processor instructs the actuator to output a force sensation with greater magnitude than the force sensation output in response to the first detected pressure so as to simulate the increasing resisting force of a mechanical spring. 30:29-34; Ward, ¶340.

f. [1E]

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*detect a third pressure on the first input device, the third pressure greater than the second pressure,*” as claimed.

As discussed for limitations [1A] and [1C], Rosenberg's processor "detect[s] a [] pressure on the first input device" by receiving from a force-sensing sensor data (e.g., analog or digital values) indicating "each position" of button 316a within its degree of freedom. 25:33-26:6; 38:19-20. Using that process, the processor detects additional pressures, *i.e.*, pressures corresponding to "each position" of the button from its rest position until a stop position. 25:33-26:4; 26:19-20; 38:19-20; FIG. 9; Ward, ¶¶341-342.

Rosenberg's processor thus "*detect[s] a third pressure*" that is "*greater than the second pressure*," as claimed. For example, Rosenberg's program code causes the processor to "*detect a third pressure*" that is "*greater than the second pressure*" when the button is pushed down some amount lower than [1C]'s position which is lower still than [1A]'s position. 38:19-20 ("at least three positions"); Ward, ¶343.

g. [1F]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*provide a third tactile sensation to the first input device*," as claimed.

As discussed for limitations [1B] and [1D], Rosenberg's processor instructs an actuator to output a force sensation (*i.e.*, "*tactile sensation*") on button 316a, and that instruction is "based on" the "position of the button." 25:33-26:4; *see also* 38:21-22. Accordingly, when as discussed for limitation [1E], Rosenberg's processor "*detect[s] a third pressure*," the processor instructs the actuator to output

a force sensation based on that detected pressure, *i.e.*, “*a third tactile sensation.*” Ward, ¶¶344-346. For example, when the force sensation is a “spring effect,” the processor instructs the actuator to output a force sensation with greater magnitude than the force sensation output in response to either the first or second detected pressures so as to simulate the increasing resistance of a mechanical spring. 30:29-34; Ward, ¶346. POSAs would also have understood that the “spring effect” is one that would have been provided during a single press of the button 316a, *i.e.*, the actuator outputs more resisting force during a single press as the button moves further down. Ward, ¶347.

3. Claim 2

a. [2PRE]

Supra §VII.C.2.a ([1PRE]); Ward, ¶348.

b. [2A]

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*detect a fourth pressure on the first input device, the fourth pressure greater than the third pressure*” as claimed.

Using the process described for limitations [1A], [1C], and [1E], Rosenberg’s processor detects additional pressures beyond the first three detected pressures, *i.e.*, pressure corresponding to “each position” of the button from its rest position until a stop position. 25:33-26:4; 26:19-20; 38:19-20; FIG. 9; Ward, ¶¶349-350. Rosenberg’s teachings that it detects “each position” of button 316a within its degree

of freedom and that “*at least* three positions of said button” are detected would have been understood by POSAs to be a disclosure of detecting four (or more) positions. Ward, ¶¶350-351.

If Rosenberg is considered to not disclose detecting a fourth button position, that would have been an obvious way to implement what Rosenberg discloses. Ward, ¶352. The ’260 patent does not disclose that there is anything critical about detecting four (or five) different pressures and POSAs would have understood that detecting four (or five) different button positions would have beneficially provided more precise force feedback than detecting only three. *Id.* POSAs would have had a reasonable expectation of success in doing so because the analog/digital output of Rosenberg’s sensor provides the ability to detect four (or five) different button positions. *Id.*

Rosenberg’s program code, or an obvious implementation thereof, thus causes the processor to “*detect a fourth pressure*” that is “*greater than the third pressure*,” as claimed. For example, when the position of button 316a determined in limitation [2A] is some amount lower than the position determined in limitation [1E] (*i.e.*, “*the third pressure*”), Rosenberg’s program code causes the processor to “*detect a fourth pressure*” that is “*greater than the third pressure*.” 38:19-20; Ward, ¶353.

c. [2B]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*provide a fourth tactile sensation to the first input device*" as claimed.

As discussed for limitations [1B], [1D] and [1F], Rosenberg's stored program code, when executed, causes the host or local processor to instruct the actuator to output a force sensation (*i.e.*, "*tactile sensation*") on button 316a "based on" the "position of the button." 25:33-26:4; *see also* 38:21-22. Accordingly, when as discussed for limitation [2A], Rosenberg's processor "*detect[s] a fourth pressure*," the processor instructs the actuator to output a force sensation based on that detected pressure, *i.e.*, "*a fourth tactile sensation*." Ward, ¶¶354-355. For example, when the force sensation is a "spring effect," the processor instructs the actuators to output a force sensation with greater magnitude for the fourth pressure than for the other three detected pressures to simulate increasing resistance of a mechanical spring. 30:29-34; Ward, ¶¶356.

4. Claim 3

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*provide the first tactile sensation to a second input device*," as claimed.

Rosenberg's mouse includes button 316b that also provides "commands to the computer system" (23:33-34) and is thus "*a second input device*," as claimed. Ward, ¶¶357-358; *supra* §VI.A.1.

Rosenberg teaches an embodiment in which “a single actuator 318 can provide forces simultaneously to both buttons 316a and 316b.” 26:25-29. Accordingly, Rosenberg causes its processors to provide “*the first tactile sensation*” discussed in limitation 1B, to “*a second input device*” (button 316b) as claimed. Ward, ¶¶359-360.

5. Claim 4

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*provide the second tactile sensation to the second input device,*” as claimed.

As discussed for claim 3, Rosenberg’s actuator provides force sensations “simultaneously to both buttons 316a and 316b.” 26:25-29. Rosenberg thus causes its processors to provide “*the second tactile sensation*” discussed in limitation 1D, to “*a second input device,*” as claimed. Ward, ¶¶361-362.

6. Claim 5

a. [5PRE]

Supra §VII.C.2.a ([1PRE]); Ward, ¶363.

b. [5A]

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to “*detect a fourth pressure on the second input device,*” as claimed.

Rosenberg’s button 316b includes “sensors similar” to the sensor that button 316a includes, *e.g.*, a force-sensing sensor. 28:25; *supra* §VII.C.2.b (discussing

Rosenberg's sensors for [1A]). Button 316b's sensor detects a pressure in the same manner that button 316a's sensor does, *i.e.*, by determining the position of button 316b within its degree of freedom. *Supra* §VII.C.2.b (discussing limitation [1A]). Rosenberg's processor thus "*detect[s] a fourth pressure on the second input device*" in either of two ways.

First, a pressure of any magnitude detected on button 316b is a different pressure than the first, second, and third pressures detected on button 316a. Ward, ¶¶364-366.

Second, if the "*fourth pressure*" must be a pressure of a different magnitude than the first, second and third pressures, an obvious implementation of Rosenberg's button 316b detects four distinct pressures for the same reasons that button 316a does. *Supra* §VII.C.3.b; Ward, ¶¶367.

c. [5B]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*provide a fourth tactile sensation to the second input device*" as claimed.

Rosenberg's button 316b can also "be provided with forces," either by sharing a single actuator with button 316a or having its own actuator. 26:25-29. Whichever actuator button 316b uses operates the same as button 316a's actuator. *Supra* §VII.C.2.c (limitation [1B]). Accordingly, when as discussed for limitation [5A],

Rosenberg’s processor “*detect[s] a fourth pressure*” on button 316b, the code would also cause the processor to instruct that button’s corresponding actuator to output a force sensation on button 316b based on that detected pressure, *i.e.*, “*a fourth tactile sensation.*” Ward, ¶¶368-369.

7. Claim 6

Rosenberg’s stored program code, when executed, causes Rosenberg’s processor to provide a “*fourth tactile sensation different from the first tactile sensation,*” as claimed.

Rosenberg discloses that the “output force” that its actuator provides “is dependent, at least in part, on said position of said button in said degree of freedom.” 38:21-22; *supra* §VII.C.3.b (explaining that the button’s position corresponds to a particular pressure). At least when “*the fourth tactile sensation*” discussed in claim 5 is based on a position of button 316b (*i.e.*, “*a fourth pressure*”) that is different than the position of button 316a that triggers “*the first tactile sensation*” (*i.e.*, “*a first pressure*”), the “output force,” *i.e.*, force sensation, of the two “*tactile sensations*” would also be different. Ward, ¶¶370-372.

8. Claim 7

a. [7PRE]

Supra §VII.C.6.a ([5PRE]); Ward, ¶373.

b. [7A]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*detect a fifth pressure on the second input device, the fifth pressure greater than the fourth pressure,*" as claimed.

As discussed *supra* §VII.C.6.b (limitation [5A]), Rosenberg's button 316b has a force-sensing sensor that detects a pressure by determining the position of button 316b within its degree of freedom. *Supra* §VII.C.2.b (limitation [1A]). Rosenberg's processors thus "*detect a fifth pressure on the second input device*" in two ways: (a) any pressure put on 316b that is not identical to the "*fourth pressure*" discussed for limitation [5A], or if the "*fifth pressure*" must be a different magnitude than all the other claimed pressures then (b) an obvious implementation of Rosenberg's button 316b detects five distinct pressures for the same reasons that button 316a does. *Supra* §VII.C.3.b; Ward, ¶¶374-377.

c. [7B]

Rosenberg's stored program code, when executed, causes Rosenberg's processor to "*provide a fifth tactile sensation to the second input device,*" as claimed.

As discussed above for limitations [1B], [1D], [1F] and [5B], Rosenberg's processor instructs the actuator to output a force sensation (*i.e.*, "*tactile sensation*") on a button, and that instruction is "based on" the "position of the button." 25:33-26:4; *see also* 38:21-22. Accordingly, when as discussed for limitation [7A],

Rosenberg’s processor “*detect[s] a fifth pressure*,” the processor would instruct the actuator associated with button 316b to output a force sensation based on that detected pressure, *i.e.*, “*a fifth tactile sensation*.” Ward, ¶¶378-379. For example, if the force sensation is a “spring effect,” then the processors would instruct the actuator to output a force sensation with greater magnitude than the force sensation output in response to fourth detected pressure (*i.e.*, the first pressure detected on button 316b) so as to simulate the increasing resistance of a mechanical spring. 30:29-34; Ward, ¶380.

VIII. NO BASIS FOR DISCRETIONARY DENIAL

A. *Fintiv*

Under the Director’s Interim Procedure for Discretionary Denials, “the PTAB will not deny institution based on *Fintiv*⁷ if there is compelling evidence of unpatentability,” which this Petition provides, thereby concluding the *Fintiv* analysis. *Nokia of Am. Corp. v. TQ Delta*, IPR2022-00471, Paper 11 at 19-21 (Aug. 18, 2022). Regardless, the *Fintiv* factors weigh against discretionary denial.

1. Stay Potential

Petitioner will seek a pre-institution stay, but without “specific evidence” how the court will rule, this factor is neutral. *Sand Revolution II v. Continental*

⁷ *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (Mar. 20, 2020) (precedential).

Intermodal Group–Trucking, IPR2019-01393, Paper 24 at 7 (June 16, 2020) (informative).

2. Trial Timing

The Board considers the median time to trial which is 27 months for the Western District of Washington. EX1019, 76; *but see* EX1021 (identifying June 2025 trial-ready date). A trial would thus likely occur in late August 2025, *after* a final written decision would be expected. *Cf. Sony Interactive v. Quantum Imaging*, IPR2023-00954, Paper 11 at 26 (Dec. 11, 2023) (trial four months *before* FWD “weighs *against* discretionary denial”).

Moreover, Petitioner filed this petition with diligence, filing three months after receiving patent owner’s list of asserted claims, and four months before the §315(b) deadline. EX1015; EX1058. Factor 2 thus weighs against denial. *Fintiv*, Paper 11 at 11 (“expeditiously” filed petitions “weigh[] against [denial]”).

3. Litigation Investment

Other than initial motion practice and preliminary contentions, the parties have invested little in the litigation, weighing against denial. *Samsung Elecs. v. Netlist, Inc.*, IPR2022-00063, Paper 13 at 8 (May 5, 2022) (granting institution where no “claim construction and merits determinations” had occurred).

4. Issue Overlap

Patent owner does not assert challenged claims 3-4. EX1015. That a trial here will address claims the district court will not address weighs against denial.

Markforged Inc. v. Continuous Composites, IPR2022-00679, Paper 7 at 32-33 (Oct. 25, 2022).

5. Litigation Defendants

Petitioner is the defendant in district court, which “is far from an unusual circumstance.” *Sand Revolution II*, Paper 24 at 12-13. This factor is neutral.

B. General Plastic

Whether to discretionarily deny institution in view of an earlier petition filed by a different party—like Apple’s prior petitions—is governed by the *General Plastic* factors. *Valve Corp. v. Elec. Scripting Prods.*, IPR2019-00062, Paper 11 at 2 (April 2, 2019) (precedential).

Factor 1 asks whether the current petitioner filed the earlier petition or has a “significant relationship” with the earlier petitioner. *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 8–10 (Sept. 6, 2017); *Valve*, Paper 11 at 2. Petitioner has not previously challenged the ’260 patent and it has no significant relationship with Apple. Petitioner was not involved in the earlier Apple lawsuit, and its products were not at issue. EX1014, ¶¶54-64. Patent owner’s current lawsuit against petitioner targets petitioner’s products, not Apple’s. EX1016. Factor 1 thus “weighs **strongly** against” discretionary denial. *Ebates Performance Marketing v. IBM Corp.*, IPR2022-00646, Paper 10 at 9 (Oct. 25, 2022) (instituting review despite five prior petitions having been filed).

Factors 2 and 4-5 relate to the time between when a petitioner filed a first petition and a subsequent petition. *General Plastic*, Paper 19 at 8–10; *Ebates*, Paper 10 at 10. Those factors “have only marginal relevance” where, as here, petitioner did not previously challenge the patent and has no significant relationship with a prior petitioner. *Ebates*, Paper 10 at 10-11. Additionally, these factors weigh against discretionary denial because petitioner filed its petition promptly, only eight months after being sued, which was the first notice patent owner gave petitioner of the patent. *Supra* §VII.A.2; *Ebates*, Paper 10 at 11 (factors “weigh against” denial where petitioner had no reason to challenge patent when earlier petition was filed).

Factor 3 considers whether the subsequent petition was refined based on lessons learned from the earlier proceeding. *General Plastic*, Paper 19 at 8-10. Petitioner did not “strategically stag[e] [its] prior art and arguments in multiple petitions,” which is the concern Factor 3 addresses. *Ebates*, Paper 10 at 12.

This is also not a “multiple-bites-of-an-apple” situation where the first bite failed, and the second bite tries to fix that failure. This Petition reuses art from the First Apple IPR where the Board *instituted review* and *rejected* patent owner’s “single contact” claim construction. *General Plastic*, Paper 19 at 17 (developing factors to address “follow-on petitions after the Board’s *denial*” of an earlier petition); *Signify North America v. Cao Lighting*, IPR2023-00214, Paper 14 at 21 (June 15, 2023) (“[R]oad-mapping concern is either not relevant or is less relevant

when the earlier IPR was instituted.”); *Mercedes-Benz USA v. Yechezkal Evan Spero*, IPR2023-01039, Paper 10 at 9-10 (Dec. 12, 2023) (similar). The Komata and Tsuji grounds rely on substantially the same theories that Apple advanced in the First Apple IPR which further “minimize” any road-mapping concerns. *Nintendo Co. v. Gamevice, Inc.*, IPR2023-00643, Paper 11 at 11 (Nov. 6, 2023).

The petition also includes new arguments not at issue in the First Apple IPR so that proceeding could not have provided a roadmap. Rosenberg was not at issue in the prior IPR, and Tsuji and Komata were never applied to claims 3-9. While the Second Apple IPR challenged claims 3-9, that petition was discretionary denied offering no “map” for petitioner to follow. *Code200, UAB v. Bright Data Ltd.*, IPR2022-00861, Paper 18 at 5 (Aug. 23, 2022) (precedential).

Factors 6-7 consider the Board’s finite resources and the need to issue a final written decision within one year. *General Plastic*, Paper 19 at 8-10. Nothing suggests an undue burden on the Board, and its prior experience with the patent may offer efficiencies. *Signify*, Paper 14 at 23. Moreover, “the Board’s mission to improve patent quality...outweighs the impact on Board resources.” *Code200*, Paper 18 at 5.

C. *Advanced Bionics*

Discretionary denial under *Advanced Bionics v. Med-El*, IPR2019-01469, Paper 6 (Feb. 13, 2020) (precedential) is not warranted.

First, Rosenberg was not cited during prosecution and was not relied upon in the earlier Apple IPRs. The Office has never considered whether Rosenberg renders claims 1-7 unpatentable, which weighs against discretionary denial. *Oticon Medical AB v. Cochlear Ltd.*, IPR2019-00975, Paper 15 at 20 (Oct. 16, 2019).

Second, although the Board previously considered Komata and Tsuji with respect to claims 1-2 in the First Apple IPR, it *instituted review* and did not reach a final written decision only due to settlement. The Board’s prior “consideration” of Komata and Tsuji does not warrant discretionary denial. *Frontier Therapeutics v. Medac Gesellschaft*, IPR2016-00649, Paper 10 at 6-7 (Sept. 1, 2016).

Third, although Komata was cited against claim 6 in the Second Apple IPR, and a reference (EX1020) with disclosures similar to Komata was cited against claims 3-9, the Board discretionarily denied the Second Apple IPR, and thus never considered whether those disclosures rendered claims 1-7 unpatentable, weighing against discretionary denial. *Nintendo*, Paper 11 at 10.

IX. CONCLUSION

The Board should institute IPR.

Respectfully submitted,
Valve Corp.

Date: 01-19-2024

By: /Richard Giunta/

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CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)

I certify that on January 19, 2024, I will cause a copy of the foregoing document, including any exhibits or appendices filed therewith, to be served via Overnight FedEx at the following correspondence address of record for the patent:

Immersion / Kilpatrick Townsend and Stockton
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

Date: January 19, 2024

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing IPR petition contains 13,997 words excluding a table of contents, a table of authorities, Mandatory Notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioner has relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: January 19, 2024

/MacAulay Rush/

MacAulay Rush

Paralegal

WOLF, GREENFIELD & SACKS, P.C.

X. CLAIM LISTING

The following claim listing assigns element labels (e.g., [1A1], [1A2], etc.) to certain claims for clarity.

Claim 1
[1PRE] A computer-readable medium having instructions, the instructions including instructions that cause a processor to:
[1A] detect a first pressure on a first input device;
[1B] provide a first tactile sensation to the first input device, the first tactile sensation based at least in part on the first pressure;
[1C] detect a second pressure on the first input device, the second pressure greater than the first pressure; and
[1D] provide a second tactile sensation to the first input device, the second tactile sensation based at least in part on the second pressure;
[1E] detect a third pressure on the first input device, the third pressure greater than the second pressure; and
[1F] provide a third tactile sensation to the first input device.
Claim 2
[2PRE] 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:
[2A] detect a fourth pressure on the first input device, the fourth pressure greater than the third pressure; and
[2B] provide a fourth tactile sensation to the first input device.
Claim 3
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 provide the first tactile sensation to a second input device.
Claim 4
The computer-readable medium of claim 3 further comprising stored instructions, the stored instructions including instructions which, when executed by a processor, cause the processor to provide the second tactile sensation to the second input device.

Claim 5
[5PRE] 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:
[5A] detect a fourth pressure on a second input device; and
[5B] provide a fourth tactile sensation to the second input device.
Claim 6
The computer-readable medium of claim 5, the fourth tactile sensation different from the first tactile sensation.
Claim 7
[7PRE] 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:
[7A] detect a fifth pressure on the second input device, the fifth pressure greater than the fourth pressure; and
[7B] provide a fifth tactile sensation to the second input device.