

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,773,356 B2
APPLICATION NO. : 13/362113
DATED : July 8, 2014
INVENTOR(S) : Kenneth M. Martin et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 20, line 67, claim 12, delete “basted”, insert -- based --.

Signed and Sealed this
Seventh Day of April, 2015



Michelle K. Lee
Director of the United States Patent and Trademark Office

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patentees : Kenneth M. Martin et al.
 Patent No. : 8,773,356 B2
 Issued : July 8, 2014
 Title of Invention : METHOD AND APPARATUS FOR PROVIDING
 TACTILE SENSATIONS

ATTN: Certificate of Corrections Branch
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

**REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT FOR PATENT
 OFFICE MISTAKES (37 C.F.R. § 1.322)**

Commissioner:

U.S. Patent Application Number 13/362,113, from which the above-referenced patent issued, was filed on January 31, 2012. This communication is being submitted to request that a Certificate of Correction under 37 C.F.R. § 1.322 be issued for the above-referenced U.S. Patent to correct errors made by the Patent Office.

Attached is Form PTO/SB/44 stating the text of the correction. The exact column and line numbers where the errors are in the patent and in the application as filed for the USPTO errors and Applicant errors are enumerated below.

Patent Office Errors:

1. Under "That which is claimed is:"

<u>PATENT</u>	<u>APPLICATION</u>
a. Column 20, Line 67	Amendment filed February 10, 2014, Claim 10, line 6, Claims allowed by Examiner on March 6, 2014.

Please direct any questions regarding this request, and send the Certificate of Correction,
to the undersigned.

Respectfully submitted,

/Zachary S. Kelton/

Zachary Kelton
Reg. No. 71,345

Dated: 1/15/2014

Kilpatrick Townsend & Stockton LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300 phone
(336) 607-7500 facsimile

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 8,773,356 B2

APPLICATION NO.: 13/362,113

ISSUE DATE : July 8, 2014

INVENTOR(S) : Kenneth M. Martin et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 20, line 67, Please delete "basted", please insert - - based - -.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

KILPATRICK TOWNSEND & STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101-2400

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	21215192
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Zachary S. Kelton/Renee Prevette
Filer Authorized By:	Zachary S. Kelton
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	15-JAN-2015
Filing Date:	31-JAN-2012
Time Stamp:	10:21:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	IMM147C3-Transmittal.pdf	68106 <small>c83f359fce113da50b7b9e2002964c73628d c6aa</small>	no	1

Warnings:

Information:

APPLE INC.

2	Request for Certificate of Correction	IMM147C3-RequestCOC.pdf	86466	no	2
			1bfe7ae7477c7ae66bee93655c902bfd65bdb8		

Warnings:

Information:

3	Request for Certificate of Correction	IMM147C3-COC.pdf	164329	no	2
			f58c079728e063fa05adbb7e4002f77b23097399		

Warnings:

Information:

Total Files Size (in bytes):			318901		
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: : Kenneth M. Martin et al.
Patent No. : 8,773,356 B2
Issued : July 8, 2014
Application No. : 13/362,113
Filing Date : January 31, 2012
Title : METHOD AND APPARATUS FOR PROVIDING
TACTILE SENSATIONS
Confirmation No. : 3915

ATTN: Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Commissioner:

Transmitted herewith are copies of the following documents for filing in the above-identified application:

- (1) Request for Certificate of Correction of Patent for Patent Office Mistakes Under 37 C.F.R. § 1.322; and
- (2) Form PTO/SB/44.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

/Zachary S. Kelton/

Date: 1/15/2015

By: Zachary Kelton (Reg. 71,345)

KILPATRICK TOWNSEND &
STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101-2400
Tel. (336) 607-7300
Fax. (336) 607-7500

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with The United States Patent Office via EFS-Web on January 15, 2015.

/Renee S. Prevette/
Renee S. Prevette



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	07/08/2014	8773356	51851/821825 (IMM147.C3)	3915

34300 7590 06/18/2014
 PATENT DEPARTMENT (51851)
 KILPATRICK TOWNSEND & STOCKTON LLP
 1001 WEST FOURTH STREET
 WINSTON-SALEM, NC 27101

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
 (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

- Kenneth M. Martin, Los Gatos, CA;
- Steven P. Vassallo, Redwood City, CA;
- Alex S. Goldenberg, San Francisco, CA;
- Alexander Jasso, San Jose, CA;
- Kollin Tierling, Milpitas, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Substitute for form 1449A/PTO Information Disclosure Statement by Applicant (use as many sheets as necessary)				<i>Complete if Known</i>		
				Application Number	13/362,113	
Sheet		1	of	12	Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)	

U.S. PATENT DOCUMENTS						
Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	1	2,972,140		2/14/1961	Hirsch	
	2	3,157,853		11/17/1964	Hirsch	
	3	3,220,121		11/30/1965	Cutler	
	4	3,497,668		02/24/1970	Hirsch	
	5	3,517,446		06/30/1970	Corlyon et al.	
	6	3,623,064		11/29/1970	Kagen	November 23, 1971
	7	3,902,687		09/02/1975	Hightower	
	8	3,903,614		09/09/1975	Diamond et al.	
	9	3,911,416		10/07/1995	Feder	
	10	4,127,752		11/28/1978	Lowthorp	
	11	4,160,508		07/10/1979	Salsbury	
	12	4,236,325		12/02/1980	Hall et al.	
	13	4,262,549		04/21/1981	Schwellenbach	
	14	4,311,980		01/19/1982	Prudenziati	
	15	4,333,070		06/01/1982	Barnes	
	16	4,362,408		12/07/1982	Cordes et al.	
	17	4,464,117		08/07/1984	Forest	
	18	4,484,191		11/20/1984	Vavra	
	19	4,513,235		04/23/1985	Acklam et al.	
	20	4,581,491		04/08/1986	Boothroyd	
	21	4,581,972		04/15/1986	Hoshino	
	22	4,599,070		07/08/1986	Hladky et al.	
	23	4,692,756		09/08/1987	Clark	
	24	4,708,656		11/24/1987	De Vries et al.	
	25	4,713,007		12/15/1987	Alban	
	26	4,725,817		02/16/1988	Jay	
	27	4,795,296		01/03/1989	Wijborg	
	28	4,791,416		12/13/1988	Adler	
	29	4,794,392		12/27/1988	Selinko	
	30	4,798,919		01/17/1989	Suita	
	31	4,821,030		04/11/1989	Batson	
	32	4,823,106		04/16/1989	Pope	
	33	4,840,634		06/20/1989	Muller	
	34	4,885,565		1208/1989	Embach	

Change(s) applied to document /S.H./ 5/6/2014

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
² Applicant's unique citation designation number (optional). ³ Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ⁴ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁷ Applicant is to place a check mark here if English language Translation is attached.
 Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
				Application Number	13/362,113
Information Disclosure Statement by Applicant (use as many sheets as necessary)				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	4	of	12		

101	6,097,964	08/01/2000	Nuovo
102	6,059,506	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zilles et al.
105	6,118,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,160,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,966	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thorner, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	05/13/2003 April 8, 2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Gregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,562	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shahoian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukamoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

Change(s) applied to document /S.H./ 5/7/2014

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for Kenneth M. Martin and examiner information for Ricardo Osorio.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Rule 312 Communication	Application No.	Applicant(s)
	13/362,113	Martin et al.
	Examiner	Art Unit

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. The amendment filed on 12 May 2014 under 37 CFR 1.312 has been considered, and has been:
- a) entered.
 - b) entered as directed to matters of form not affecting the scope of the invention.
 - c) disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.
 - d) disapproved. See explanation below.
 - e) entered in part. See explanation below.

Charles Bowen
Publishing Division

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

34300 7590 03/06/2014
 PATENT DEPARTMENT (51851)
 KILPATRICK TOWNSEND & STOCKTON LLP
 1001 WEST FOURTH STREET
 WINSTON-SALEM, NC 27101

Certificate of Mailing or Transmission
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
OSORIO, RICARDO	2692	345-163000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.</p> <p>1 KILPATRICK TOWNSEND & STOCKTON LLP 2 _____ 3 _____</p>
---	--

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: IMMERSION CORPORATION

(B) RESIDENCE: (CITY and STATE OR COUNTRY) SAN JOSE, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input checked="" type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to pay the fee from the account of the applicant or credits any overpayment, to Deposit Account Number <u>20-1430</u> (enclose an extra copy of this form).</p>
--	---

5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature Zachary S. Kelton Date 5/19/2014

Typed or printed name Zachary S. Kelton Registration No. 71,345

Electronic Patent Application Fee Transmittal

Application Number:	13362113
Filing Date:	31-Jan-2012
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
First Named Inventor/Applicant Name:	Kenneth M. Martin
Filer:	Zachary S. Kelton/Amber Johnson
Attorney Docket Number:	51851/821825 (IMM147.C3)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Extension-of-Time:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				960

Electronic Acknowledgement Receipt

EFS ID:	19064389
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Zachary S. Kelton/Amber Johnson
Filer Authorized By:	Zachary S. Kelton
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	19-MAY-2014
Filing Date:	31-JAN-2012
Time Stamp:	14:26:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$960
RAM confirmation Number	676
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip (if appl.)	Pages (if appl.)
				APPLE INC.	

1	Miscellaneous Incoming Letter	Transmittal.pdf	35536	no	1
			ac53ec851b55a9c76b00eb63786587c8a4982120		
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	IssueFee.pdf	98947	no	1
			b1f5aa466b5d267d11b7af502e8a5009fdb08950		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30703	no	2
			7610f41d7a42a4bd5bb4cc778a79dbd7c6d5c507		
Warnings:					
Information:					
Total Files Size (in bytes):				165186	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth Martin et al.
Application No. : 13/362,113
Filed : January 31, 2012
For : Method and Apparatus for Providing Tactile Sensations
Examiner : Ricardo Osorio
Art Unit : 2692
Conf. No. : 3915

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Sir:

Transmitted herewith are the following document(s) for filing in the above-identified application:

1. Transmittal;
2. Part B – Fee Transmittal (PTOL-85); and
3. Payment in the amount of \$960.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 5/19/2014
KILPATRICK TOWNSEND
& STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

By: Zac Kelton
Zachary S. Kelton
Reg. No. 71,345

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web on May 19, 2014.

Amber C Johnson
Amber C Johnson

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin
Application No. : 13/362,113
For : **Method and Apparatus for Providing Tactile Sensations**
Filed : January 31, 2012
Examiner : Ricardo Osorio
Art Unit : 2692
Confirmation No. : 3915

Mail Stop **Issue Fee**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

Dear Sir,

The following Amendments and Remarks are submitted in response to the Notice to File Corrected Application Papers mailed May 5, 2014 (the "Notice").

Amendments to the Specification begin on page 2 of this paper.

Remarks begin on page 3 of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph 18 with the following paragraph:

[0018] Figure 9 is a table illustrating a first set of data to be used in one embodiment of the present invention;~~and~~

Please replace paragraph 19 with the following paragraph:

[0019] Figure 10 is a table illustrating a second set of data to be used in another embodiment of the present invention[.]; and

Please add the following paragraph immediately following paragraph 19:

[0020] Figure 11 shows a device for providing tactile sensations according to one embodiment of the present invention.

REMARKS

This paper is filed in response to the Notice to File Corrected Application Papers (the “Notice”) mailed May 5, 2014.

The Notice objected to the specification on the basis of Figure 11 not being described in the brief description of the drawings in the as-filed specification. Applicant has amended the specification to add a new paragraph to the Brief Description of the Drawings to refer to Figure 11. The added paragraph recites the same description of Figure 11 as may be found in U.S. Patent No. 7,808,488 (the “’488 patent”), to which the present application claims priority and incorporates by reference. Specification, ¶ 1 (incorporating the ’488 patent by reference); ’488 patent, col. 2 l. 66-67 (describing Figure 11). Thus, no new matter is added by this amendment. Applicant respectfully asserts that the identified inconsistencies have been fully addressed by these amendments.

Should the Office have any comments, questions, or suggestions regarding this application, the Office is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

Date: 5/12/2014

/Zachary Kelton/
Zachary S. Kelton
Reg. No. 71,345

KILPATRICK TOWNSEND & STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7498 (voice)
(336) 734-2756 (fax)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 13/362,113, inventor Kenneth M. Martin, and examiner OSORIO, RICARDO.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 13362113
Applicant : Martin
Filing Date : 01/31/2012
Date Mailed : 05/05/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".*

/Lois Stone/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 13362113

IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES

- On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- The drawings filed 01/31/2012 include FIG. 11, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- OTHER:
- COMMENTS:

Electronic Acknowledgement Receipt

EFS ID:	18997611
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Zachary S. Kelton/Catherine Anderson
Filer Authorized By:	Zachary S. Kelton
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	12-MAY-2014
Filing Date:	31-JAN-2012
Time Stamp:	09:23:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	821825transmittal.pdf	64918 <small>3a2cb3267c931ac7727e7895331013f78f78f27f</small>	no	1

Warnings:

Information:

APPLE INC.

2	Amendment after Notice of Allowance (Rule 312)	821825response.pdf	88011	no	3
			078c4d831fae0ff4ae4353773ad502a764ce 1aed		
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	821825notice.pdf	231472	no	3
			8bb56f19fc85bec28a5308d53bfd92be75 2f80d		
Warnings:					
Information:					
Total Files Size (in bytes):			384401		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth Martin et al.
Application No. : 13/362,113
Filed : January 31, 2012
For : Method and Apparatus for Providing Tactile Sensations
Examiner : Ricardo Osorio
Art Unit : 2692
Conf. No. : 3915

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Commissioner:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Response to Notice to File Corrected Application Papers;
2. Copy of Notice to File Corrected Application Papers.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 5/12/2014
KILPATRICK TOWNSEND
& STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

By: /Zachary Kelton/
Zachary S. Kelton
Reg. No. 71,345

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web on May 12, 2014.

/Catherine A. Anderson/
Catherine A. Anderson



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300	7590	05/05/2014	EXAMINER	
PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			OSORIO, RICARDO	
			ART UNIT	PAPER NUMBER
			2692	
			MAIL DATE	DELIVERY MODE
			05/05/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 13362113
Applicant : Martin
Filing Date : 01/31/2012
Date Mailed : 05/05/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
"Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Lois Stone/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 13362113

IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES

- On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- The drawings filed 01/31/2012 include FIG. 11, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- OTHER:
- COMMENTS:



NOTICE OF ALLOWANCE AND FEE(S) DUE

34300 7590 03/06/2014
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

Table with 2 columns: EXAMINER (OSORIO, RICARDO), ART UNIT (2692), PAPER NUMBER (3915)

DATE MAILED: 03/06/2014

Table with 5 columns: APPLICATION NO. (13/362,113), FILING DATE (01/31/2012), FIRST NAMED INVENTOR (Kenneth M. Martin), ATTORNEY DOCKET NO. (51851/821825 (IMM147.C3)), CONFIRMATION NO. (3915)

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

Table with 7 columns: APPLN. TYPE (nonprovisional), ENTITY STATUS (UNDISCOUNTED), ISSUE FEE DUE (\$960), PUBLICATION FEE DUE (\$0), PREV. PAID ISSUE FEE (\$0), TOTAL FEE(S) DUE (\$960), DATE DUE (06/06/2014)

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34300 7590 03/06/2014
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
 1001 WEST FOURTH STREET
 WINSTON-SALEM, NC 27101

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
OSORIO, RICARDO	2692	345-163000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	---

5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

13/362,113

01/31/2012

Kenneth M. Martin

51851/821825
(IMM147.C3)

3915

34300 7590 03/06/2014
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

EXAMINER

OSORIO, RICARDO

ART UNIT PAPER NUMBER

2692

DATE MAILED: 03/06/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/362,113	Applicant(s) MARTIN ET AL.	
	Examiner RICARDO L. OSORIO	Art Unit 2692	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to 2/10/2014.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.


THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)


- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Examiner's Amendment/Comment 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 7. <input type="checkbox"/> Other _____. |
|--|---|

/RICARDO L OSORIO/
Primary Examiner, Art Unit 2692

Issue Classification 	Application/Control No. 13362113	Applicant(s)/Patent Under Reexamination MARTIN ET AL.
	Examiner RICARDO L OSORIO	Art Unit 2692

US ORIGINAL CLASSIFICATION					INTERNATIONAL CLASSIFICATION								
CLASS		SUBCLASS			CLAIMED					NON-CLAIMED			
345		163			G	0	6	F	3 / 033 (2013.0)				
CROSS REFERENCE(S)					G	0	9	G	5 / 00 (2006.01.01)				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)												
345	167												

NONE	Total Claims Allowed:		
(Assistant Examiner)	(Date)	26	
/RICARDO L OSORIO/ Primary Examiner.Art Unit 2692	2/24/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	9

Issue Classification 	Application/Control No. 13362113	Applicant(s)/Patent Under Reexamination MARTIN ET AL.
	Examiner RICARDO L OSORIO	Art Unit 2692

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47									
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	19	17												
2	2	22	18												
3	3	23	19												
4	4	24	20												
5	5	10	21												
6	6	11	22												
7	7	20	23												
8	8	21	24												
9	9	25	25												
12	10	26	26												
13	11														
14	12														
15	13														
16	14														
17	15														
18	16														


NONE		Total Claims Allowed:	
		26	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/RICARDO L OSORIO/ Primary Examiner.Art Unit 2692	2/24/2014	1	9
(Primary Examiner)	(Date)		


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BIB DATA SHEET
CONFIRMATION NO. 3915

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO. (IMM147.C3)		
13/362,113	01/31/2012	345	2692	51851/821825		
APPLICANTS						
INVENTORS						
Kenneth M. Martin, Los Gatos, CA; Steven P. Vassallo, Redwood City, CA; Alex S. Goldenberg, San Francisco, CA; Alexander Jasso, San Jose, CA; Kollin Tierling, Milpitas, CA;						
** CONTINUING DATA *****						
This application is a CON of 12/894,489 09/30/2010 PAT 8159461 which is a CON of 11/693,117 03/29/2007 PAT 7808488 which is a CON of 10/285,450 11/01/2002 PAT 7336260 which claims benefit of 60/335,493 11/01/2001 and claims benefit of 60/399,883 07/31/2002						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **						
02/10/2012						
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 11	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
Verified and Acknowledged	/RICARDO OSORIO/ Examiner's Signature					
ADDRESS						
PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101 UNITED STATES						
TITLE						
METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS						
FILING FEE RECEIVED 1860	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit			

Search Notes 	Application/Control No. 13362113	Applicant(s)/Patent Under Reexamination MARTIN ET AL.
	Examiner RICARDO L OSORIO	Art Unit 2692

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169 and 173	2/24/2014	RLO

SEARCH NOTES		
Search Notes	Date	Examiner
EAST and inventor search and interference search history	2/24/2014	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
345	163, 167	2/24/2014	RLO

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin
Application No. : 13/362,113
For : **Method and Apparatus for Providing Tactile Sensations**
Filed : January 13, 2012
Examiner : Ricardo Osorio
Art Unit : 2692
Confirmation No. : 3915

Mail Stop **Amendment**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION

Commissioner:

The following Amendment and Remarks are submitted in response to the Office Action mailed September 17, 2013.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method, comprising:
 - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
 - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
 - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
 - generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table.

2. (Currently Amended) The method of claim 1, wherein[[5]] the actuator signal is configured to cause a haptic effect to be output.

3. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

4. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
5. (Original) The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.
6. (Original) The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
7. (Original) The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
8. (Original) The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
9. (Original) The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.

10. (Currently Amended) A system, comprising:

a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;

an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal; and

a processor in communication with the sensor and the actuator, the processor configured to:

output a display signal configured to display a graphical object on the touch-sensitive input device;

receive the sensor signal from the touch-sensitive input device;

determine an interaction between the object contacting the touch-sensitive surface and the graphical object;

generate the actuator signal based at least in part on the interaction and haptic effect data in a lookup table; and

transmit the actuator signal to the actuator.

11. (Original) The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. (Original) The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
13. (Original) The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.
14. (Original) The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
15. (Currently Amended) The ~~method~~system of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
16. (Currently Amended) The ~~method~~system of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
17. (Currently Amended) The ~~method~~system of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.

18. (Currently Amended) A computer-readable medium comprising program code, comprising:

program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;

program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;

program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and

program code for generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table, the actuator signal configured to cause a haptic effect to be output.

19. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

21. (New) The method of claim 1, wherein the haptic effect data comprises a plurality of haptic effects.

22. (New) The method of claim 1, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

23. (New) The system of claim 10, wherein the haptic effect data comprises a plurality of haptic effects.

24. (New) The system of claim 10, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

25. (New) The computer-readable medium of claim 18, wherein the haptic effect data comprises a plurality of haptic effects.

26. (New) The computer-readable medium of claim 18, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

REMARKS

I. General

This paper is filed in response to the Non-Final Office Action mailed September 17, 2013 (the “Office Action”).

Following the amendments above, claims 1-20 are pending in this application. Claims 1-20 were rejected as allegedly being anticipated under pre-AIA 35 USC § 102(b) by U.S. Patent Publication No. 2008/0068350 to Rosenberg et al. (“Rosenberg”).

Applicant has amended claims 1, 10, and 18. No new matter is added by these amendments, and support may be found in the specification and claims as originally filed.

Applicants respectfully traverse each of the rejections of the claims and respectfully requests withdrawal of all rejections and allowance of all pending claims in view of the amendments above and the remarks below.

II. Claim Amendments

Applicant has amended claims 1, 10, and 18 to recite elements relating to haptic effect data in a lookup table. Such subject matter may be found in the specification as filed, such as in paragraphs [0043] and [0071] as well as in Figures 9 and 10.

Applicant has also added new claims 21-26, which depend from and further limit amended claims 1, 10, and 18. Such subject matter may be found in the specification as filed, such as in paragraphs [0073]-[0086] as well as in Figures 9 and 10.

Further, Applicant has amended claims 2, 15, 16, and 17 to fix typographical errors.

III. 35 USC § 102(b) – Claims 1-20 – Rosenberg

Applicant respectfully traverses the rejection of claims 1-20 under pre-AIA 35 USC § 102(b) as allegedly being anticipated by Rosenberg.

To anticipate a claim under 35 U.S.C. § 102(b), the invention must be described in a printed publication more than one year prior to the date of the application for patent

in the United States. In addition, the reference must disclose each and every element of the claimed invention.¹

The present application is a continuation of three prior applications: 12/894,489, filed March 29, 2007, 11/693,117, filed March 29, 2007, and 10/285,450, filed November 1, 2001, which in turn claims priority to two provisional applications: 60/399,883, filed July 31, 2002, and 60/335,493, filed November 1, 2001. The Rosenberg reference relied upon by the Examiner was published on March 20, 2008, after the earliest claimed priority date. Thus, Rosenberg is not available as prior art under 35 U.S.C. § 102(b). However, Rosenberg claims priority as a continuation to several prior applications, the earliest of which, U.S. Patent Application 09/487,737, now U.S. Patent No. 6,563,487, was filed on January 19, 2000 and first published on November 1, 2011. Applicant notes that Rosenberg claims priority to earlier applications, but only as a continuation-in-part (CIP). Thus, because the rejection of claims 1-20 was based on Rosenberg rather than these earlier CIP applications, Applicant has not analyzed these earlier continuation-in-part priority applications to determine whether the subject matter relied upon by the Examiner was disclosed in these earlier applications. Thus, based on the respective priority chains of the present application and Rosenberg, Applicant respectfully asserts that under the above analysis Rosenberg is only available for use under 35 U.S.C. § 102(e).

However, with respect to 35 U.S.C. § 102(e), Rosenberg does not disclose or suggest “receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device; determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table.” Rosenberg may discuss outputting haptic effects based on user inputs (or graphical objects), but it does not discuss determining which specific haptic effect to output for given a user input (or graphical object) based on data in a lookup table. Thus, claim 1 is patentable over Rosenberg. Applicant respectfully requests the Examiner withdraw the rejection of claim 1.

¹ See 35 U.S.C. § 102(b), M.P.E.P. § 2131.

Because independent claims 10 and 18 each recite similar elements as those discussed above, each of claims 10 and 18 is patentable over Rosenberg for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 10 and 18.

Because claims 2-9, 11-17, and 19-26 each depend from and further limit one of claims 1, 10, or 18, each of claims 2-9, 11-17, and 19-26 is patentable over Rosenberg for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 2-9, 11-17, and 19-20.

CONCLUSION

Applicants respectfully assert that in view of the amendments and remarks above, all pending claims are allowable and Applicants respectfully request the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

Date: 2/10/2014

/Zachary Kelton/
Zachary S. Kelton
Reg. No. 71,345

KILPATRICK TOWNSEND & STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7498 (voice)
(336) 734-2756 (fax)

Electronic Patent Application Fee Transmittal

Application Number:	13362113
Filing Date:	31-Jan-2012
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Filer:	Zachary S. Kelton/Catherine Anderson
Attorney Docket Number:	51851/821825 (IMM147.C3)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	6	80	480

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 2 months with \$0 paid	1252	1	600	600
Miscellaneous:				
Total in USD (\$)				1080

Electronic Acknowledgement Receipt

EFS ID:	18155857
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Zachary S. Kelton/Catherine Anderson
Filer Authorized By:	Zachary S. Kelton
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	10-FEB-2014
Filing Date:	31-JAN-2012
Time Stamp:	13:43:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1080
RAM confirmation Number	10972
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip (if appl.)	Pages (if appl.)
				APPLE INC.	

1	Miscellaneous Incoming Letter	821825transmittal.pdf	66556 7926af5a4ad616c4b9fe9c64b8517c01be1e e500	no	1
Warnings:					
Information:					
2	Extension of Time	821825EOT.pdf	186796 dade47a1c69fd4a58b5227b0bcbf94f31a90 64c0	no	2
Warnings:					
Information:					
3		821825response.pdf	117350 0d68b3712c56cf6f1aa0ca75fb1cdbfc6579a 601	yes	10
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	7	
	Applicant Arguments/Remarks Made in an Amendment		8	10	
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	31897 4c59dcb1e5fe4de41394530144f79059aa3 f275	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			402599		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin
Application No. : 13/362,113
Filed : January 13, 2012
For : Methods and Apparatus for Providing
Tactile Sensations
Examiner : Ricardo Osorio
Art Unit : 2692
Conf. No. : 3915

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Commissioner:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Amendment and Response to Non-Final Office Action;
2. Petition for Extension of Time Under 37 CFR 1.136(a);
3. Payment in the amount of \$1,080 (\$600 extension fee; \$480 claim fee).

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 2/10/2014

By: /Zachary S. Kelton/
Zachary S. Kelton (Reg. No. 71,345)

Kilpatrick Townsend & Stockton LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web, on February 10, 2014.

/Catherine A. Anderson/
Catherine A. Anderson

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) 51851/821825 (IMM147.C3)																														
Application Number 13/362,113	Filed January 13, 2012																															
For Method and Apparatus for Providing Tactile Sensations																																
Art Unit 2692	Examiner Ricardo Osorio																															
<p>This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.</p> <p>The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="text-align: center; border-bottom: 1px solid black;">Fee</th> <th style="text-align: center; border-bottom: 1px solid black;">Small Entity Fee</th> <th style="text-align: center; border-bottom: 1px solid black;">Micro Entity Fee</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> One month (37 CFR 1.17(a)(1))</td> <td style="text-align: center;">\$200</td> <td style="text-align: center;">\$100</td> <td style="text-align: center;">\$50</td> <td style="text-align: center;">\$ _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Two months (37 CFR 1.17(a)(2))</td> <td style="text-align: center;">\$600</td> <td style="text-align: center;">\$300</td> <td style="text-align: center;">\$150</td> <td style="text-align: center;">\$ <u>600.00</u></td> </tr> <tr> <td><input type="checkbox"/> Three months (37 CFR 1.17(a)(3))</td> <td style="text-align: center;">\$1,400</td> <td style="text-align: center;">\$700</td> <td style="text-align: center;">\$350</td> <td style="text-align: center;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Four months (37 CFR 1.17(a)(4))</td> <td style="text-align: center;">\$2,200</td> <td style="text-align: center;">\$1,100</td> <td style="text-align: center;">\$550</td> <td style="text-align: center;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Five months (37 CFR 1.17(a)(5))</td> <td style="text-align: center;">\$3,000</td> <td style="text-align: center;">\$1,500</td> <td style="text-align: center;">\$750</td> <td style="text-align: center;">\$ _____</td> </tr> </tbody> </table> <p><input type="checkbox"/> Applicant asserts small entity status. See 37 CFR 1.27.</p> <p><input type="checkbox"/> Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.</p> <p><input type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.</p> <p><input checked="" type="checkbox"/> Payment made via EFS-Web.</p> <p>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>71,345</u>.</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number _____.</p> <p><u>/Zachary S. Kelton/</u> <u>2/10/2014</u></p> <p style="text-align: center;">Signature Date</p> <p><u>Zachary S. Kelton</u> <u>(336) 607-7300</u></p> <p style="text-align: center;">Typed or printed name Telephone Number</p> <p>NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.</p> <p><input type="checkbox"/> * Total of _____ forms are submitted.</p>				Fee	Small Entity Fee	Micro Entity Fee		<input type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$200	\$100	\$50	\$ _____	<input checked="" type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$600	\$300	\$150	\$ <u>600.00</u>	<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1,400	\$700	\$350	\$ _____	<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$2,200	\$1,100	\$550	\$ _____	<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____
	Fee	Small Entity Fee	Micro Entity Fee																													
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<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____																												

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/362,113	Filing Date 01/31/2012	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		(Column 2)
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	(Column 3)		(Column 3)
AMENDMENT	02/10/2014	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 26	Minus	** 20 = 6	X \$80 =	480
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***3 = 0	X \$420 =	0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>					
					TOTAL ADD'L FEE	480

	(Column 1)	(Column 2)	(Column 3)	(Column 3)		(Column 3)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	** =	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	*** =	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>					
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/BRENDA HARRISON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 13/362,113 filed 01/31/2012 by Kenneth M. Martin, attorney 51851/821825 (IMM147.C3), examiner OSORIO, RICARDO, art unit 2692, and mail date 09/17/2013.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.
13/362,113

Applicant(s)
MARTIN ET AL.

Examiner
RICARDO L. OSORIO

Art Unit
2692

AIA (First Inventor to File)
Status
No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 7/8/2013.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1-20 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1-20 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some * c) None of the:
- Certified copies of the priority documents have been received.
 - Certified copies of the priority documents have been received in Application No. _____.
 - Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/8/2013
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 4) Other: _____.

Art Unit: 2692

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 7/8/2013 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 8,159,461 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-20 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Rosenberg et al (US 2008/0060350).

Regarding claims 1, 2, 10 and 18, Rosenberg discloses a system, method and program code comprising:

a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device (see Fig. 8, character 82 and paragraph 32, lines 1-6); an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator

Art Unit: 2692

signal (paragraph 32, lines 1-9); and a processor in communication with the sensor and the actuator (paragraph 32, lines 1-12);, the processor configured to: output a display signal configured to display a graphical object on the touch-sensitive input device (par. 56, lines 1-2); receive the sensor signal from the touch-sensitive input device; determine an interaction between the object contacting the touch-sensitive surface and the graphical object, generate the actuator signal based at least in part on the interaction; and transmit the actuator signal to the actuator (see paragraphs 57 and 59).

As to claims 3, 11 and 19, Rosenberg teaches of the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 4, 12, and 20, Rosenberg teaches of the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 5 and 13, Rosenberg teaches of the display signal is configured to display a keypad comprising a plurality of softkeys (see Fig. 8A).

As to claims 6 and 14, Rosenberg teaches of the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position (see paragraphs 57 and 59).

Art Unit: 2692

As to claims 7 and 15, Rosenberg teaches of the plurality of softkeys comprises one softkey for each digit from 0 to 9 (Rosenberg teaches of a PDA, Fig 8A, and also of a cellular phone having touch screen (see paragraph 71). It is inherent for a cell phone having touchscreen to also have a softkey for each digit from 0 to 9 for a user to make a phone call.

As to claims 8 and 16, Rosenberg teaches of the plurality of softkeys comprises the key configuration of a standard 101-key keyboard (In paragraphs 71-73, Rosenberg mentions other optional devices that include from a standard computer screen to a cell phone and many different types of graphical objects. Although not specifically mentioning a standard 101-key keyboard, it is inherent that such a graphic keyboard can also be used having more graphic objects being the only difference.

As to claims 9 and 17, Rosenberg discloses that the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object (see paragraphs 57 and 59).

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571)272-7676. The examiner can normally be reached on MONDAY-THURSDAY 7:00 am-5:30 PM.

Art Unit: 2692

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LUNYI LAO can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/

Primary Examiner, Art Unit 2629

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
				Application Number	13/362,113
Information Disclosure Statement by Applicant (use as many sheets as necessary)				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	1	of	12		

U.S. PATENT DOCUMENTS						
Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	1	2,972,140		2/14/1961	Hirsch	
	2	3,157,853		11/17/1964	Hirsch	
	3	3,220,121		11/30/1965	Cutler	
	4	3,497,668		02/24/1970	Hirsch	
	5	3,517,446		06/30/1970	Corlyon et al.	
	6	3,623,064		11/23/1970	Kagen	
	7	3,902,687		09/02/1975	Hightower	
	8	3,903,614		09/09/1975	Diamond et al.	
	9	3,911,416		10/07/1995	Feder	
	10	4,127,752		11/28/1978	Lowthorp	
	11	4,160,508		07/10/1979	Salsbury	
	12	4,236,325		12/02/1980	Hall et al.	
	13	4,262,549		04/21/1981	Schwellenbach	
	14	4,311,980		01/19/1982	Prudenziati	
	15	4,333,070		06/01/1982	Barnes	
	16	4,362,408		12/07/1982	Cordes et al.	
	17	4,464,117		08/07/1984	Forest	
	18	4,484,191		11/20/1984	Vavra	
	19	4,513,235		04/23/1985	Acklam et al.	
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	32	4,823,106		04/16/1989	Pope	
	33	4,840,634		06/20/1989	Muller	
	34	4,885,565		1208/1989	Embach	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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Substitute for form 1449A/PTO Information Disclosure Statement by Applicant (use as many sheets as necessary)				Complete if Known			
				Application Number		13/362,113	
				Filing Date		January 31, 2012	
				First Named Inventor		Martin et al.	
				Group Art Unit		2692	
Examiner Name		Osorio, R.					
Sheet	2	of	12	Attorney Docket Number		51851-821825 (IMM147.C3)	

U.S. PATENT DOCUMENTS						
Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)				
	35	4,891,764		01/02/1990	McIntosh	
	36	4,930,770		06/05/1990	Baker	
	37	4,934,694		06/19/1990	McIntosh	
	38	4,982,918		01/08/1991	Kaye	
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	40	5,019,761		05/28/1991	Kraft	
	41	5,022,384		06/11/1991	Freels	
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	47	5,116,051		05/26/1992	Moncrief	
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					Attorney Docket Number	51851-821825 (IMM147.C3)

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		Number Kind Code ² (if known)			
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	69	5,402,680	04/04/1995	Korenaga	
	70	5,436,622	07/25/1995	Gutman et al.	
	71	5,437,607	08/01/1995	Taylor	
	72	5,451,924	09/19/1995	Massimino	
	73	5,461,711	10/24/1995	Wang	
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Information Disclosure Statement by Applicant (use as many sheets as necessary)				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	4	of	12		

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103	6,160,489	12/12/2000	Perry et al.
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Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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		Application Number	13/362,113		
		Filing Date	January 31, 2012		
		First Named Inventor	Martin et al.		
		Group Art Unit	2692		
		Examiner Name	Osorio, R.		
Sheet	5	of	12	Attorney Docket Number	51851-821825 (IMM147.C3)

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		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
	138.	EP	0349086		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcorn United	
	141.	JP	01-003664		07/19/1990	Taito Corporation	
	142.	JP	02-109714		01/13/1992	Epoch Co. and Key-Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
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	150.	JP	10171586		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0028369		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exos, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		09/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27645		04/04/2002	Siemens Aktiengesellschaft	
Examiner Signature		/Ricardo Osorio/			Date Considered	09/12/2013	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Application Number	13/362,113
				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
Sheet	6	of	12	Attorney Docket Number	51851-821825 (IMM147.C3)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.	
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.	
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	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
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	180.	EBERHARDT et al., "OMAR -- A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.	
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	187.	International Search Report filed 11/1/02 corresponding to PCT/US02/35016	
	188.	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.	
	189.	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	

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		Attorney Docket Number	51851-821825 (IMM147.C3)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
	191.	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.	
	192.	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
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	198.	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Textue for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	199.	OUH-YOUNG, "Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	
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	201.	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
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Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)			<i>Complete if Known</i>		
			Application Number	13/362,113	
			Filing Date	January 31, 2012	
			First Named Inventor	Martin et al.	
			Group Art Unit	2692	
			Examiner Name	Osorio, R.	
Sheet	9	of	12	Attorney Docket Number	51851-821825 (IMM147.C3)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
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	214.	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
	215.	WAKIWAKA, et al., "Influence of Mover Support Structure on Linear Oscillatory Actuator for Cellular Phones," The Third International Symposium on Linear Drives for Industry Applications, 2001, p. 260-263, Nagano, Japan	
	216.	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)			Complete if Known		
			Application Number	13/362,113	
			Filing Date	January 31, 2012	
			First Named Inventor	Martin et al.	
			Art Unit	2692	
			Examiner Name	Osorio, R.	
Sheet	10	of	12	Attorney Docket Number	51851-821825 (IMM147.C3)

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2006 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2006 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.6.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
	227.	Office Action mailed May 10, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	
	228.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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Substitute for form 1449B/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		<i>Application Number</i>	13/362,113
		<i>Filing Date</i>	January 31, 2012
		<i>First Named Inventor</i>	Martin et al.
		<i>Art Unit</i>	2692
		<i>Examiner Name</i>	Osorio, R.
		<i>Attorney Docket Number</i>	51851-821825 (IMM147.C3)
<i>(Use as many sheets as necessary)</i>			
Sheet	11	of	12


NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	229.	Office Action mailed July 2, 2010 for corresponding Korean Patent Application No. 10-2009-7006555.	
	230.	Office Action mailed June 19, 2009 for corresponding Chinese Application No. 200810008845.X.	
	231.	Office Action mailed November 1, 2010 for corresponding Chinese Application No. 200810008845.X.	
	232.	Office Action mailed November 23, 2010 for corresponding Chinese Application No. 02821854.X.	
	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
	234.	Office Action mailed June 24, 2009 for corresponding US Patent Application No. 11/693,117.	
	235.	Office Action mailed December 29, 2009 for corresponding US Patent Application No. 11/693,117.	
	236.	Office Action mailed July 7, 2011 for corresponding Chinese Application No. 200810008815.X.	
	237.	Office Action mailed December 5, 2012 for corresponding Korean Patent Application No. 10-2011-7025866.	
	238.	Office Action mailed August 23, 2011 for corresponding Korean Patent Application No. 10-2010-7006555.	
	239.	Office Action mailed October 26, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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Search Notes 	Application/Control No. 13362113	Applicant(s)/Patent Under Reexamination MARTIN ET AL.
	Examiner RICARDO L OSORIO	Art Unit 2692

CPC- SEARCHED		
Symbol	Date	Examiner


CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169 and 173	9/12/2013	RLO

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	9/12/2013	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Application Number 	Application/Control No. 13/362,113	Applicant(s)/Patent under Reexamination MARTIN ET AL.	


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Date Filed : 7/08/13	This patent is subject to a Terminal Disclaimer	

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jean proctor

U.S. Patent and Trademark Office

Application Number 	Application/Control No. 13/362,113	Applicant(s)/Patent under Reexamination MARTIN ET AL.	

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Date Filed : 7/08/13	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

jean proctor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin
Application No. : 13/362,113
For : **Method and Apparatus for Providing Tactile Sensations**
Filed : January 31, 2012
Examiner : Ricardo Osorio
Art Unit : 2692
Confirmation No. : 3915

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NON-FINAL OFFICE ACTION

Sir:

The following Amendment and Remarks are submitted in response to the Office Action mailed March 7, 2013.

Listing of the Claims begin on page 2 of this paper.

Remarks begin on page 7 of this paper.

LISTING OF THE CLAIMS

1. (Original) A method, comprising:
 - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
 - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
 - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
 - generating an actuator signal based at least in part on the interaction; and
2. (Original) The method of claim 1 wherein, the actuator signal is configured to cause a haptic effect to be output.
3. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.
4. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
5. (Original) The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

6. (Original) The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
7. (Original) The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
8. (Original) The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
9. (Original) The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
10. (Original) A system, comprising:
 - a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;
 - an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal; and
 - a processor in communication with the sensor and the actuator, the processor configured to:

output a display signal configured to display a graphical object on the touch-sensitive input device;

receive the sensor signal from the touch-sensitive input device;

determine an interaction between the object contacting the touch-sensitive surface and the graphical object,

generate the actuator signal based at least in part on the interaction; and

transmit the actuator signal to the actuator.

11. (Original) The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. (Original) The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

13. (Original) The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

14. (Original) The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.

15. (Original) The method of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.

16. (Original) The method of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.

17. (Original) The method of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.

18. (Original) A computer-readable medium comprising program code, comprising:
 - program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;
 - program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
 - program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
 - program code for generating an actuator signal based at least in part on the interaction, the actuator signal configured to cause a haptic effect to be output.

19. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

REMARKS

This paper is filed in response to the Office Action mailed March 7, 2013 (the "Office Action").

Claims 1-20 are pending in this application. Claims 1-20 were rejected under the judicially-created doctrine of obviousness-type double patenting over U.S. Patent No. 8,159,461 to Martin ("Martin").

In response to the rejection of claims 1-20, Applicant submits herewith a Terminal Disclaimer over Martin. Applicant respectfully requests the Examiner withdraw the rejection of claims 1-20.

CONCLUSION

Applicant respectfully asserts that in view of the amendments and remarks above, all pending claims are allowable and Applicant respectfully requests the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Date: July 8, 2013

Respectfully submitted,



Carl Sanders
Reg. No. 57,203

KILPATRICK TOWNSEND & STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7474 (voice)
(336) 734-2629 (fax)

Electronic Patent Application Fee Transmittal

Application Number:	13362113
Filing Date:	31-Jan-2012
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Filer:	Carl E. Sanders/Laura Smith
Attorney Docket Number:	51851/821825 (IMM147.C3)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with \$0 paid	1251	1	200	APPLE INC. 200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
Total in USD (\$)				360

Electronic Acknowledgement Receipt

EFS ID:	16246146
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Carl E. Sanders/Laura Smith
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	08-JUL-2013
Filing Date:	31-JAN-2012
Time Stamp:	09:37:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$360
RAM confirmation Number	4783
Deposit Account	
Authorized User	

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip (if appl.)	Pages (if appl.)
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1	Transmittal Letter	Transmittal821825.pdf	51756 7037052c54770039b0531074a678b60e4ac533fa	no	2
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Information:					
2	Extension of Time	ExtensionofTime821825.pdf	73811 030ff03308907a5aa3e5c6b0ea81fb842d35ebb9	no	1
Warnings:					
Information:					
3	Terminal Disclaimer Filed	TerminalDisclaimer821825.pdf	82124 bba3a0383814007bbde2339864a0b3af773actc4	no	1
Warnings:					
Information:					
4	Amendment Copy Claims/Response to Suggested Claims	Response821825.pdf	205205 c4cc5cba7103f95d35ad37fea61aab8f7323b0b3	no	7
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Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	31774 394d9a432869bd6a99d895980425712aa67ff890	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			444670		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin
 Application No. : 13/362,113
 Filed : January 31, 2012
 For : Method And Apparatus For Providing
 Tactile Sensations
 Examiner : Ricardo Osorio
 Art Unit : 2692
 Confirmation No. : 3915

Mail Stop Amendment
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

TRANSMITTAL

Sir:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Transmittal;
2. Petition for Extension of Time (1 month);
3. Terminal Disclaimer;
4. Response to Non-Final Office Action; and
5. EFS-Web Payment in the amount of \$360.00
 (\$200.00 – Extension of Time; \$160.00 – Disclaimer)

Shown below are the fees for the presentation of the amended claims:

	Claims Remaining	Highest # Previously Paid For	Extra	Rate	Fee
TOTAL	20	20	0	\$ 80	\$ 0
Ind. Cls.	3	3	0	\$420	\$ 0
Multiple Dependent Claim Added..... NO					
TOTAL					\$0

The Commissioner is hereby authorized to charge any additional fees required by this action, or credit any overpayment, to Deposit Account Number 20-1430.

Respectfully submitted,

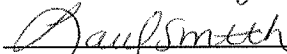
Date: July 8, 2013

By: 
Carl E. Sanders (Reg. No. 57,203)

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1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

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Laura J. Smith

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) IMM147.C3 (51851/821825)
Application Number 13/362,113	Filed January 31, 2012	
For Method And Apparatus for Providing Tactile Sensations		
Art Unit 2692	Examiner Ricardo Osorio	

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

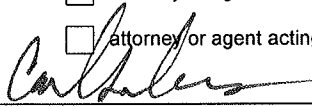
	<u>Fee</u>	<u>Small Entity Fee</u>	<u>Micro Entity Fee</u>	
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$200	\$100	\$50	\$ <u>200.00</u>
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$600	\$300	\$150	\$ _____
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1,400	\$700	\$350	\$ _____
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$2,200	\$1,100	\$550	\$ _____
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____

- Applicant asserts small entity status. See 37 CFR 1.27.
- Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.
- A check in the amount of the fee is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director has already been authorized to charge fees in this application to a Deposit Account.
- The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to
Deposit Account Number 20-1430.
- Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

- applicant/inventor.
- assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).
- attorney or agent of record. Registration number 57,203.
- attorney or agent acting under 37 CFR 1.34. Registration number _____.



Signature

July 8, 2013

Date

Carl Sanders

Typed or printed name

(336) 607-7300

Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

* Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**TERMINAL DISCLAIMER TO OBIVATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**Docket Number (Optional)
IMM147.C3 (51851/821825)

In re Application of: Kenneth M. Martin et al

Application No.: 13/362,113

Filed: January 31, 2012

For: Method And Apparatus For Providing Tactile Sensations

The owner*, Immersion Corporation, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,159,461 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

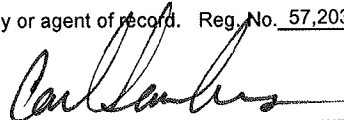
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

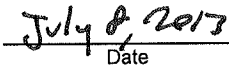
1. For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. The undersigned is an attorney or agent of record. Reg. No. 57,203



Signature



Date

Carl Sanders

Typed or printed name

336/607-7300

Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Substitute for form 1449A/PTO

Information Disclosure Statement by Applicant

(use as many sheets as necessary)

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

Sheet 1 of 12

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
	1	2,972,140	2/14/1961	Hirsch	
	2	3,157,853	11/17/1964	Hirsch	
	3	3,220,121	11/30/1965	Cutler	
	4	3,497,668	02/24/1970	Hirsch	
	5	3,517,446	06/30/1970	Corlyon et al.	
	6	3,623,064	11/23/1970	Kagen	
	7	3,902,687	09/02/1975	Hightower	
	8	3,903,614	09/09/1975	Diamond et al.	
	9	3,911,416	10/07/1995	Feder	
	10	4,127,752	11/28/1978	Lowthorp	
	11	4,160,508	07/10/1979	Salsbury	
	12	4,236,325	12/02/1980	Hall et al.	
	13	4,262,549	04/21/1981	Schwellenbach	
	14	4,311,980	01/19/1982	Prudenziati	
	15	4,333,070	06/01/1982	Barnes	
	16	4,362,408	12/07/1982	Cordes et al.	
	17	4,464,117	08/07/1984	Forest	
	18	4,484,191	11/20/1984	Vavra	
	19	4,513,235	04/23/1985	Acklam et al.	
	20	4,581,491	04/08/1986	Boothroyd	
	21	4,581,972	04/15/1986	Hoshino	
	22	4,599,070	07/08/1986	Hladky et al.	
	23	4,692,756	09/08/1987	Clark	
	24	4,708,656	11/24/1987	De Vries et al.	
	25	4,713,007	12/15/1987	Alban	
	26	4,725,817	02/16/1988	Jay	
	27	4,795,296	01/03/1989	Wijlborg	
	28	4,791,416	12/13/1988	Adler	
	29	4,794,392	12/27/1988	Selinko	
	30	4,798,919	01/17/1989	Suita	
	31	4,821,030	04/11/1989	Batson	
	32	4,823,106	04/16/1989	Pope	
	33	4,840,634	06/20/1989	Muller	
	34	4,885,565	12/08/1989	Embach	

Examiner
SignatureDate
Considered

¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO

Information Disclosure Statement by Applicant

(use as many sheets as necessary)

Sheet 2 of 12

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
	35	4,891,764	01/02/1990	McIntosh	
	36	4,930,770	06/05/1990	Baker	
	37	4,934,694	06/19/1990	McIntosh	
	38	4,982,918	01/08/1991	Kaye	
	39	4,983,786	01/08/1991	Stevens	
	40	5,019,761	05/28/1991	Kraft	
	41	5,022,384	06/11/1991	Freels	
	42	5,022,407	06/11/1991	Horch et al.	
	43	5,035,242	07/30/1991	Franklin, et al.	
	44	5,038,089	08/06/1991	Szakaly	
	45	5,053,585	10/01/1991	Yaniger	
	46	5,078,152	01/07/1992	Bond	
	47	5,116,051	05/26/1992	Moncrief	
	48	5,165,897	11/24/1992	Johnson	
	49	5,175,459	12/29/1992	Danial et al.	
	50	5,182,557	01/26/1993	Lang	
	51	5,186,685	02/16/1993	Grossman et al.	
	52	5,212,473	05/18/1993	Louis	
	53	5,223,658	06/29/1993	Suzuki	
	54	5,237,327	08/17/1993	Saitoh	
	55	5,283,970	02/08/1994	Aigner	
	56	5,240,417	08/31/1993	Smithson et al.	
	57	5,241,308	08/31/1993	Young	
	58	5,246,316	09/21/1993	Smith	
	59	5,271,290	12/21/1993	Fischer	
	60	5,275,174	01/4/1994	Cook	
	61	5,289,273	02/22/1994	Lang	
	62	5,299,810	04/05/1994	Pierce, et al.	
	63	5,309,140	05/03/1994	Everett	
	64	5,334,027	08/02/1994	Wherlock	
	65	5,355,148	10/11/1994	Anderson	
	66	5,390,128	02/14/1995	Ryan	
	67	5,390,296	02/14/1995	Crandall	

Examiner
Signature

Date
Considered

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² Applicant's unique citation designation number (optional). ³ Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ⁴ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁷ Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO

Information Disclosure Statement by Applicant

(use as many sheets as necessary)

Sheet 3 of 12

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
	68	5,402,499	03/28/1995	Robinson	
	69	5,402,680	04/04/1995	Korenaga	
	70	5,436,622	07/25/1995	Gutman et al.	
	71	5,437,607	08/01/1995	Taylor	
	72	5,451,924	09/19/1995	Massimino	
	73	5,461,711	10/24/1995	Wang	
	74	5,466,213	11/14/1995	Hogan, et al.	
	75	5,489,812	02/06/1996	Furuhata	
	76	5,496,174	03/05/1996	Garner	
	77	5,514,150	05/07/1996	Rostoker	
	78	5,521,336	05/28/1996	Buchanan	
	79	5,547,382	08/20/1996	Yamasaki, et al.	
	80	5,575,761	11/19/1996	Hajianpour	
	81	5,631,861	05/20/1997	Kramer	
	82	5,684,722	11/04/1997	Thorner	
	83	5,691,747	11/25/1997	Amano	
	84	5,709,219	01/20/1998	Chen	
	85	5,729,249	03/17/1998	Yasutake	
	86	5,766,016	06/16/1998	Sinclair, et al.	
	87	5,767,457	06/16/1998	Gerpheide	
	88	5,785,630	07/28/1998	Bobick et al.	
	89	5,791,992	08/11/1998	Crump	
	90	5,844,392	12/01/1998	Peurach	
	91	5,857,986	01/12/1999	Moriyasu	
	92	5,887,995	03/30/1999	Holehan	
	93	5,889,670	03/30/1999	Schuler	
	94	5,889,672	03/30/1999	Schuler	
	95	5,917,906	06/29/1999	Thornton	
	96	5,943,044	08/24/1999	Martinelli	
	97	5,945,772	08/31/1999	Macnak	
	98	5,977,867	11/02/1999	Bouin	
	99	5,988,902	11/23/1999	Holehan	
	100	6,078,126	06/20/2000	Rollins	

Examiner
SignatureDate
Considered

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¹ Applicant's unique citation designation number (optional). ² Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO

Information Disclosure Statement by Applicant

(use as many sheets as necessary)

Sheet 4 of 12

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

101	6,097,964	08/01/2000	Nuovo
102	6,059,506	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zilles et al.
105	6,118,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,160,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,966	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thorner, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	05/13/2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Gregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,562	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shahoian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

Examiner
SignatureDate
Considered

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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 5 of 12

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
	138.	EP	0349086		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcorn United	
	141.	JP	01-003664		07/19/1990	Taito Corporation	
	142.	JP	02-109714		01/13/1992	Epoch Co. and Key-Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
	146.	JP	H4-8381		01/13/1992	Endo	
	147.	JP	H5-192449		08/03/1993	Koma et al.	
	148.	JP	H7-24147		01/27/1995	Yokoyama	
	149.	JP	8221173		08/30/1996	Hitachi Ltd.; Hitachi Device Eng.	
	150.	JP	10171586		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0028369		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exos, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		09/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27645		04/04/2002	Siemens Aktiengesellschaft	
Examiner Signature					Date Considered		

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT***(use as many sheets as necessary)*

Sheet 6 of 12

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.
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	171.	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.
	172.	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.
	173.	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
	174.	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.
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Substitute for form 1449A/PTO		<i>Complete if Known</i>	
		Application Number	13/362,113
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Filing Date	January 31, 2012
		First Named Inventor	Martin et al.
		Group Art Unit	2692
		Examiner Name	Osorio, R.
		Attorney Docket Number	51851-821825 (IMM147.C3)
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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
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	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
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			Filing Date	January 31, 2012	
			First Named Inventor	Martin et al.	
			Group Art Unit	2692	
			Examiner Name	Osorio, R.	
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	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
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Sheet 9 of 12

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First Named Inventor	Martin et al.
Group Art Unit	2692
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	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
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	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2006 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2006 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.6.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
	227.	Office Action mailed May 10, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	
	228.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	

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Sheet 11 of 12

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First Named Inventor	Martin et al.
Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

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	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
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	235.	Office Action mailed December 29, 2009 for corresponding US Patent Application No. 11/693,117.	
	236.	Office Action mailed July 7, 2011 for corresponding Chinese Application No. 200810008815.X.	
	237.	Office Action mailed December 5, 2012 for corresponding Korean Patent Application No. 10-2011-7025866.	
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	244.	United States Patent and Trademark Office, Office Action mailed August 17, 2011 for corresponding US Application No. 12/894,489.	

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Electronic Patent Application Fee Transmittal

Application Number:	13362113
Filing Date:	31-Jan-2012
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Filer:	Carl E. Sanders/Amber Johnson
Attorney Docket Number:	51851/821825 (IMM147.C3)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
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Pages:				
Claims:				
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Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

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EFS ID:	16253013
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Carl E. Sanders/Amber Johnson
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	08-JUL-2013
Filing Date:	31-JAN-2012
Time Stamp:	16:07:21
Application Type:	Utility under 35 USC 111(a)

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Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	08A.pdf	903897 992f077c5def6ebb8fca410292ba9b93cfc4a41	no	12
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	CNOA03092012.pdf	247729 e5ba241d2fd54da80c41ec15dc9574f31aa827	no	5
Warnings:					
Information:					
5	Non Patent Literature	CNOA07072011.pdf	531768 3c37aceb91378cd9fb25ef678ff8cce6ddcb077c1	no	8
Warnings:					
Information:					
6	Non Patent Literature	EPOA05102012.pdf	458073 adb735f37445340ee3dc5b1876dc32c082dea8f2	no	9
Warnings:					
Information:					
7	Non Patent Literature	KROA05042010.pdf	192547 14c792fadba6d4eb9725ce11be1bb6dcd0e9a78	no	4
Warnings:					
Information:					
8	Non Patent Literature	KROA08232011.pdf	361807 1ba92c5842782cdece9502ed97811186d542047c	no	8
Warnings:					
Information:					
9	Non Patent Literature	KROA10262010.pdf	429871 0c2d77bb5db14d89461b464498e45771914d9b4c	no	7

Warnings:					
Information:					
10	Non Patent Literature	KROA12052012.pdf	332111 601153ddd91ee1d62eb34afb37cd114e2046fc45	no	7
Warnings:					
Information:					
11	Non Patent Literature	OA03022011.pdf	185161 be53ab376de77cc54d566d401c1ca270391f22ad	no	5
Warnings:					
Information:					
12	Non Patent Literature	OA08172011.pdf	2149226 8997d77b0d21c3deff01c1c5ff52f0b8999816ef	no	29
Warnings:					
Information:					
13	Fee Worksheet (SB06)	fee-info.pdf	30060 619668441ce4f53a9b48b95d04ab2a2ddb54ba6	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				6040387	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Martin et al.
Application No. : 13/362,113
Filed : January 31, 2012
For : **Method and Apparatus for Providing Tactile Sensations**
Examiner : Osorio, R.
Art Unit : 2692
Conf. No. : 3915

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Sir:

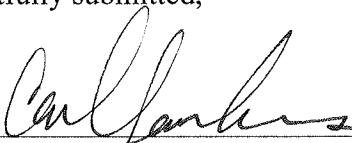
Transmitted herewith is a copy of the following document(s) for filing in the above-identified application:

1. Transmittal;
2. Information Disclosure Statement;
3. Form PTO/SB/08a listing Two Hundred and Forty-Four (244) Documents;
4. Nine (9) Non Patent Literature Documents; and
5. EFS-Web payment in the amount of \$180 (IDS Fee).

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

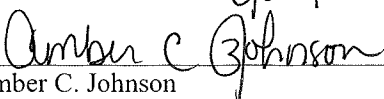
Date: July 8, 2013

By: 
Carl Sanders (Reg. No. 57,203)

KILPATRICK TOWNSEND &
STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with The United States Patent Office via EFS-Web, on July 8, 2013.


Amber C. Johnson

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Martin et al.
Appl. No.: 13/362,113
For: Method and Apparatus for Providing Tactile Sensations
Filed: January 31, 2012
Examiner: R. Osorio
Art Unit: 2692
Confirmation No: 3915

INFORMATION DISCLOSURE STATEMENT
(SUBMISSION AFTER FILING OF AN APPLICATION
BUT BEFORE FINAL REJECTION OR NOTICE OF ALLOWANCE
OR CONCURRENTLY WITH A RULE 1.114 RCE APPLICATION)

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO/SB/08A(s), attached hereto.

II. COPIES (check at least one box)

- a. This application was filed before June 30, 2003. Accordingly, submitted herewith is a legible copy of (i) each U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed.
- b. This application was filed on or after June 30, 2003. Accordingly, copies of cited U.S. patents and patent application publications therefore are not included. Copies of foreign patent documents and non-patent literature are included.

- c. Some or all of the documents listed on the attached PTO/SB/08A are not enclosed pursuant to 37 C.F.R. § 1.98(d) because the documents were previously cited or submitted to the Office in prior Application Serial No. 12/894,489 (now U.S. Patent 8,159,461) to which the above identified application claim priority under 35 U.S.C. § 120. If copies are needed, please contact the undersigned.

III. CONCISE EXPLANATION OF THE RELEVANCE
(check at least one box)

- a. **DOCUMENTS IN THE ENGLISH LANGUAGE**

The patents, publications, or other information listed on the attached PTO/SB/08A are in the English language and therefore, do not require a statement of relevancy.

- b. **DOCUMENTS NOT IN THE ENGLISH LANGUAGE**

A concise explanation of the relevance of all patents, publications, or other information listed that is not in the English language is as follows:

- c. **ENGLISH LANGUAGE SEARCH REPORT**

An English language version of the search report or action that indicates the degree of relevance found by the foreign office is attached, thereby satisfying the requirement for a concise explanation. See MPEP 609(III)(A)(3).

- d. **OTHER**

The following additional information is provided for the Examiner's consideration.

FEES

IV. THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(b):
(check one box)

- a. within three months of the filing date of a national application (37 C.F.R. § 1.97(b)(1)). No fee or statement is required. *(This section is not to be used with RCE's.)*
- b. within three months of the date of entry of the national stage as set forth in § 1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or statement is required.
- c. concurrently with the filing of a Request for Continued Examination under § 1.114 (37 C.F.R. § 1.97(b)(4)). No fee or statement is required.
- d. before the mailing date of a first Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or statement is required.

In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the statement under 37 C.F.R. § 1.97(e) below, or, if no statement has been made, charge our deposit account in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).

V. THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(c):
(check one box)

before the mailing date of a Final Office Action under 37 C.F.R. § 1.113 (See 37 C.F.R. § 1.97(c)(1)) or before the mailing date of a Notice of Allowance under 37 C.F.R. § 1.311 (See 37 C.F.R. § 1.97(c)(2)).

- a. No statement; therefore, a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).
- or
- b. See the statement below. No fee is required.

VI. STATEMENT UNDER 37 C.F.R. § 1.97(e) (check only one box)

The undersigned hereby states that

- a. each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS; or
- b. no item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the IDS.
- c. Some of the items of information were cited in a communication from a foreign Patent Office. As to this information, the undersigned states that each item of information contained in the IDS was first cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby states that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application and, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

VII. PAYMENT OF FEES (check one box)

- Payment by credit card Form PTO-2038 in the amount of \$180 required by 37 C.F.R. § 1.17(p) is enclosed for the above-identified fee.
- Please charge Deposit Account No. 20-1430 in the amount required by 37 C.F.R. § 1.17(p) for the above-indicated fee. A triplicate copy of this paper is attached.
- No fee is required.

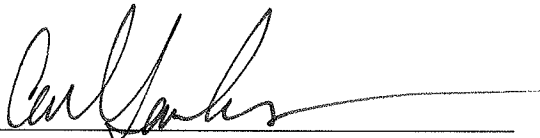
If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule and charge the appropriate fee to Deposit Account No. 20-1430.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 20-1430 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17.

Respectfully submitted,

KILPATRICK TOWNSEND & STOCKTON LLP

Date: July 8, 2013

By: 
Carl Sanders (Reg. No. 57,203)
1001 West Fourth Street
Winston-Salem, NC 27101-2400

- Attachment(s):
- PTO/SB/08A
 - Documents
 - Fee
 - Other:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/362,113	Filing Date 01/31/2012	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	07/08/2013	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	* 20	Minus	** 20	= 0	X \$80 = 0
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***3	= 0	X \$420 = 0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	0

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/THUY TA/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300	7590	03/07/2013	EXAMINER	
PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			OSORIO, RICARDO	
			ART UNIT	PAPER NUMBER
			2692	
			MAIL DATE	DELIVERY MODE
			03/07/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/362,113	Applicant(s) MARTIN ET AL.	
	Examiner RICARDO L. OSORIO	Art Unit 2692	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 31 January 2012.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1-20 is/are pending in the application.
- 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1-20 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 4) Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Art Unit: 2692

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 8,159,461. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-20 of the instant application and claims 1-23 of U.S. Patent No. 8,159,461 have common limitations. However, claims 1-20 of the instant application are broader than claims 1-23 of U.S. Patent No. 8,159,461.

The omission of an element and its function where not needed is obvious. Ex parte Rainu, 168 USPQ 375 (PTO Bd. Of App. 1969). The omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same as before. In re Karlson, 136 USPQ 184 (CCPA 1963).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571)272-7676. The examiner can normally be reached on MONDAY-THURSDAY 7:00 am-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LUNYI LAO can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2692

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/
Primary Examiner, Art Unit 2692

Search Notes 	Application/Control No. 13362113	Applicant(s)/Patent Under Reexamination MARTIN ET AL.
	Examiner RICARDO L OSORIO	Art Unit 2692

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169	3/1/2013	RLO

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	3/1/2013	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 4 columns: APPLICATION NUMBER (13/362,113), FILING OR 371(C) DATE (01/31/2012), FIRST NAMED APPLICANT (Kenneth M. Martin), ATTY. DOCKET NO./TITLE (51851/821825 (IMM147.C3))

CONFIRMATION NO. 3915

PUBLICATION NOTICE

34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101



Title:Method And Apparatus For Providing Tactile Sensations

Publication No.US-2013-0027324-A1
Publication Date:01/31/2013

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	390
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	620
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	250
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *			OR	x 62 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *				x 250 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1260

APPLICATION AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
Total (37 CFR 1.16(j))	*	Minus	**	x	=	OR	x	=
Independent (37 CFR 1.16(h))	*	Minus	***	x	=	OR	x	=
Application Size Fee (37 CFR 1.16(s))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
Total (37 CFR 1.16(j))	*	Minus	**	x	=	OR	x	=
Independent (37 CFR 1.16(h))	*	Minus	***	x	=	OR	x	=
Application Size Fee (37 CFR 1.16(s))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY,DOCKET.NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/362,113, 01/31/2012, 2629, 1380, 51851/821825 (IMM147.C3), 20, 3

CONFIRMATION NO. 3915

UPDATED FILING RECEIPT

34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101



Date Mailed: 10/22/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Inventor(s)

Kenneth M. Martin, Los Gatos, CA;
Steven P. Vassallo, Redwood City, CA;
Alex S. Goldenberg, San Francisco, CA;
Alexander Jasso, San Jose, CA;
Kollin Tierling, Milpitas, CA;

Applicant(s)

Kenneth M. Martin, Los Gatos, CA;
Steven P. Vassallo, Redwood City, CA;
Alex S. Goldenberg, San Francisco, CA;
Alexander Jasso, San Jose, CA;
Kollin Tierling, Milpitas, CA;

Assignment For Published Patent Application

Immersion Corporation, San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 34300

Domestic Priority data as claimed by applicant

This application is a CON of 12/894,489 09/30/2010 PAT 8159461
which is a CON of 11/693,117 03/29/2007 PAT 7808488
which is a CON of 10/285,450 11/01/2002 PAT 7336260
which claims benefit of 60/335,493 11/01/2001
and claims benefit of 60/399,883 07/31/2002

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 02/10/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/362,113**

Projected Publication Date: 01/31/2013

Non-Publication Request: No

Early Publication Request: No

Title

Method And Apparatus For Providing Tactile Sensations

Preliminary Class

345

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

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UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kenneth M. Martin
Ser. No. : 13/362,113
Filing Date : January 31, 2012
For : Method And Apparatus For Providing Tactile Sensations
Examiner : To Be Assigned
Art Unit : 2629
Conf. No. : 3915

Mail Stop: Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

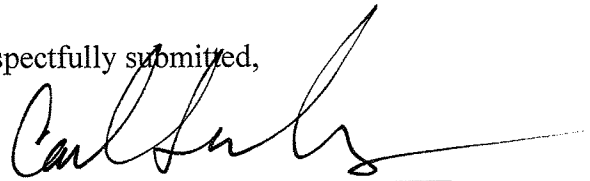
Sir:

RESPONSE TO NOTICE TO FILE MISSING PARTS

A Notice to File Missing Parts for the above-referenced Non-Provisional Patent Application was mailed on February 14, 2012. The Notice requires that Applicant submit a replacement abstract and satisfy the following supplemental fees: \$380.00 – Statutory Basic Filing Fee; \$130.00 – Surcharge; \$620.00 – Search Fee and \$250.00 – Examination Fee for a total of \$1,380.00. In addition, Applicant submits a two-month Petition for Extension of Time extending the period of time to reply to June 14, 2012.

In response Applicant includes a replacement abstract, the required supplemental fees of \$1,380.00 and a two-month Petition for Extension of Time with a fee of \$560.00 for total fees due of \$1,940.00.

Respectfully submitted,



Carl E. Sanders
Registration No. 57,203

Date: June 14, 2012

Kilpatrick Townsend & Stockton LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin
Application No. : 13/362,113
For : **Method and Apparatus for Providing Tactile Sensations**
Filed : January 31, 2012
Examiner : Ricardo Osorio
Art Unit : 2629
Confirmation No. : 3915

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Sir:

Please amend application as follows

Amendments to the Specification begin on page 2 of this paper.

Remarks begin on page 4 of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace the Abstract with the Abstract set forth on the following page.

ABSTRACT

~~Products and processes for providing tactile sensations to input devices or electronic devices are provided. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected.~~

Systems and methods for providing tactile sensations are disclosed. For example, one disclosed method includes the steps of outputting a display signal configured to display a graphical object on a touch-sensitive input device; receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device; determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and generating an actuator signal based at least in part on the interaction.

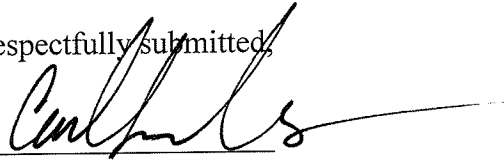
REMARKS

Applicant has amended the abstract to include fewer than 150. Applicant respectfully asserts that the amended Abstract complies with the appropriate rules.

Should the Office have any comments, questions, or suggestions regarding this application, the Office is courteously requested to telephone the undersigned at the number listed below.

Date: June 14, 2012

Respectfully submitted,



Carl Sanders
Reg. No. 57,203

KILPATRICK TOWNSEND & STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7474 (voice)
(336) 734-2629 (fax)

Electronic Patent Application Fee Transmittal

Application Number:	13362113
Filing Date:	31-Jan-2012
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Filer:	Carl E. Sanders/Amber Johnson
Attorney Docket Number:	51851/821825 (IMM147.C3)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	380	380
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250

Pages:

Claims:

Miscellaneous-Filing:

Late filing fee for oath or declaration	1051	1	130	130
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Petition:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with \$0 paid	1252	1	560	560
Miscellaneous:				
Total in USD (\$)				1940

Electronic Acknowledgement Receipt

EFS ID:	13019192
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Carl E. Sanders/Amber Johnson
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	14-JUN-2012
Filing Date:	31-JAN-2012
Time Stamp:	17:32:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1940
RAM confirmation Number	4878
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip (if appl.)	Pages (if appl.)
				APPLE INC.	

1	Miscellaneous Incoming Letter	Transmittal.pdf	44042 fe7407c90145e9b904967143e32b02999f2dc473	no	1
Warnings:					
Information:					
2	Extension of Time	EOT.pdf	74998 ce8846c5ed9ceee2801c8c5ba3c9c6dfca1c307c	no	1
Warnings:					
Information:					
3	Applicant Response to Pre-Exam Formalities Notice	Response.pdf	42623 5ba8829bab2943a0880323d3292d728508a4f6b9	no	1
Warnings:					
Information:					
4	Preliminary Amendment	PrelAmend.pdf	102254 a339f64d9fb1887629dcd6ca2eeffad47489260	no	4
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	38383 a6f7fb103d4f9275ac1226e6abab701b1b554aa1	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			302300		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin
Application No. : 13/362,113
Filed : January 31, 2012
For : Method And Apparatus For Providing
Tactile Sensations
Examiner : To Be Assigned
Art Unit : 2629
Confirmation No. : 3915

Mail Stop: Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

Sir:

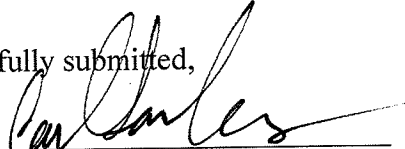
Transmitted herewith are the following documents for filing in the above-identified application:

1. Transmittal;
2. Petition for Extension of Time (2 month);
3. Response to Notice to File Missing Parts;
4. Preliminary Amendment; and
5. EFS-Web Payment in the amount of \$1,940.00
(\$560.00 – Extension of Time; \$380.00 – Statutory Basic Filing
Fee; \$130.00 – Surcharge; \$620.00 – Search Fee; and \$250.00 –
Examination Fee)

The Commissioner is hereby authorized to charge any additional fees required by this action, or credit any overpayment, to Deposit Account Number 20-1430.

Respectfully submitted,

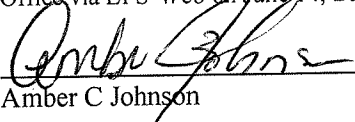
Date: June 14, 2012

By: 
Carl E. Sanders (Reg. No. 57,203)

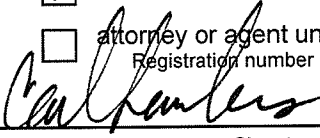
KILPATRICK TOWNSEND &
STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101
(336) 607-7300

Certificate of Electronic Filing

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS-Web on June 14, 2012.


Amber C Johnson

Under the paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) 51851/821825 (IMM147.C3)	
Application Number 13/362,113		Filed January 31, 2012	
For Method And Apparatus For Providing Tactile Sensations			
Art Unit 2629		Examiner To Be Assigned	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
		<u>Fee</u>	<u>Small Entity Fee</u>
<input type="checkbox"/>	One month (37 CFR 1.17(a)(1))	\$150	\$75 \$ _____
<input checked="" type="checkbox"/>	Two months (37 CFR 1.17(a)(2))	\$560	\$280 \$ <u>560</u>
<input type="checkbox"/>	Three months (37 CFR 1.17(a)(3))	\$1270	\$635 \$ _____
<input type="checkbox"/>	Four months (37 CFR 1.17(a)(4))	\$1980	\$990 \$ _____
<input type="checkbox"/>	Five months (37 CFR 1.17(a)(5))	\$2690	\$1345 \$ _____
<input type="checkbox"/>	Applicant claims small entity status. See 37 CFR 1.27.		
<input type="checkbox"/>	A check in the amount of the fee is enclosed.		
<input checked="" type="checkbox"/>	Payment by credit card. Form PTO-2038 is attached.		
<input type="checkbox"/>	The Director has already been authorized to charge fees in this application to a Deposit Account.		
<input checked="" type="checkbox"/>	The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>20-1430</u> .		
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.			
I am the	<input type="checkbox"/>	applicant/inventor.	
	<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).	
	<input checked="" type="checkbox"/>	attorney or agent of record. Registration Number <u>57,203</u>	
	<input type="checkbox"/>	attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	
			June 14, 2012
	Signature		Date
	<u>Carl Sanders</u>		<u>336/607-7300</u>
	Typed or printed name		Telephone Number
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input type="checkbox"/>	Total of _____ forms are submitted.		

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/362,113	Filing Date 01/31/2012	<input type="checkbox"/> To be Mailed
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APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	SMALL ENTITY <input type="checkbox"/>	OR			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)
<input checked="" type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A			N/A	380
<input checked="" type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (j), or (m))</small>	N/A	N/A	N/A			N/A	620
<input checked="" type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A			N/A	250
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	20 minus 20 =	* 0	X \$ =		OR	X \$60 =	0
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	3 minus 3 =	* 0	X \$ =			X \$250 =	0
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1250

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	(Column 3)						
AMENDMENT	06/14/2012	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 20	Minus	** 20	=	0	OR	X \$60=	0
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***3	=	0	OR	X \$250=	0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

	(Column 1)	(Column 2)	(Column 3)						
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=		OR	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=		OR	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
 /ROBERT TALBERT/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 4 columns: APPLICATION NUMBER (13/362,113), FILING OR 371(C) DATE (01/31/2012), FIRST NAMED APPLICANT (Kenneth M. Martin), ATTY. DOCKET NO./TITLE (51851/821825 (IMM147.C3))

CONFIRMATION NO. 3915

FORMALITIES LETTER



34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

Date Mailed: 02/14/2012

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items below to avoid abandonment.

- The statutory basic filing fee is missing. Applicant must submit \$380 to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A replacement abstract not exceeding 150 words in length and commencing on a separate sheet in compliance with 37 CFR 1.72(b) and 37 CFR 1.121 is required.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$130 for a non-small entity, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within TWO MONTHS from the date of this Notice is \$1380 for a non-small entity

- \$380 Statutory basic filing fee.
\$130 Surcharge.
The application search fee has not been paid. Applicant must submit \$620 to complete the search fee.

- The application examination fee has not been paid. Applicant must submit **\$250** to complete the examination fee for a non-small entity.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tle/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
13/362,113

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	380
N/A	620
N/A	250
x 60 =	0.00
x 250 =	0.00
	0.00
	0.00
TOTAL	1250

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
Independent (37 CFR 1.16(h))	*	Minus	***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
Independent (37 CFR 1.16(h))	*	Minus	***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/362,113, 01/31/2012, 2629, 0.00, 51851/821825 (IMM147.C3), 20, 3

CONFIRMATION NO. 3915

34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

FILING RECEIPT



Date Mailed: 02/14/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Applicant(s)

Kenneth M. Martin, Los Gatos, CA;
Steven P. Vassallo, Redwood City, CA;
Alex S. Goldenberg, San Francisco, CA;
Alexander Jasso, San Jose, CA;
Kollin Tierling, Milpitas, CA;

Assignment For Published Patent Application

Immersion Corporation, San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 34300

Domestic Priority data as claimed by applicant

This application is a CON of 12/894,489 09/30/2010
which is a CON of 11/693,117 03/29/2007 PAT 7808488
which is a CON of 10/285,450 11/01/2002 PAT 7336260
which claims benefit of 60/335,493 11/01/2001
and claims benefit of 60/399,883 07/31/2002

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 02/10/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 13/362,113

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
Title

Method And Apparatus For Providing Tactile Sensations

Preliminary Class

345

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)

CONFIRMATION NO. 3915

POA ACCEPTANCE LETTER

34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101



Date Mailed: 02/14/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/31/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hngo/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

Practitioners associated with the Customer Number: 34300

OR

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number		Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

The address associated with Customer Number:

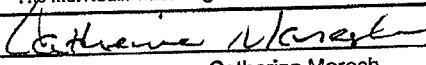
OR

<input type="checkbox"/> Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

Assignee Name and Address:
 Immersion Corporation
 801 Fox Lane
 San Jose, California 95131

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
 The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	March 27, 2009
Name	Catherine Maresh	Telephone	408-350-8819
Title	Senior IP Counsel		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	11959756
Application Number:	13362113
International Application Number:	
Confirmation Number:	3915
Title of Invention:	Method And Apparatus For Providing Tactile Sensations
First Named Inventor/Applicant Name:	Kenneth M. Martin
Customer Number:	34300
Filer:	Carl E. Sanders/Laura Smith
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	51851/821825 (IMM147.C3)
Receipt Date:	31-JAN-2012
Filing Date:	
Time Stamp:	11:41:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	UtilityTransmittal821825.pdf	91787 <small>e85a38d58a9d19f478b69b94efc5b3d9a4d99651</small>	no	1

Warnings:

Information:

APPLE INC.

2	Application Data Sheet	ApplicationDataSheet821825.pdf	383834 6cfc6798e5e59f4e78bd0966615ea36ef9f83cfc	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Specification	Specification821825.pdf	2213601 9f10184c67266f84748c05015ac78e040733c2d4	no	46
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Drawings821825.pdf	313435 b3d2b41315705cff3233ae12c8fe807af044ec24	no	11
Warnings:					
Information:					
5	Oath or Declaration filed	Declaration821825.pdf	203581 894fd385d4fe445a59256b32c9de04f8c070b706	no	4
Warnings:					
Information:					
6	Assignee showing of ownership per 37 CFR 3.73(b).	StatementUnder37CFR373BWithAssignment821825.pdf	266046 488d8b706a533162f9bfff4b5cc4971174a8eaaeb	no	6
Warnings:					
Information:					
7	Power of Attorney	PowerofAttorney821825.pdf	77080 5d2c68057295a9113775dc2fc1d5bfb40b23361f	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			3549364		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No. IMM147.C3 (51851/821825)
	First Inventor Kenneth M. Martin
	Title Method And Apparatus For . . .
	Express Mail Label No.

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
--	--

1. **Fee Transmittal Form** (e.g., PTO/SB/17)
2. **Applicant claims small entity status.**
See 37 CFR 1.27.
3. **Specification** [Total Pages 46]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))
4. **Drawing(s)** (35 U.S.C. 113) [Total Sheets 11]
5. **Oath or Declaration** [Total Sheets 4]
 - a. Newly executed (original or copy)
 - b. A copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
 - i. **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
name in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. **Application Data Sheet.** See 37 CFR 1.76
7. **CD-ROM or CD-R** in duplicate, large table or
Computer Program (Appendix)
 Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. - c. are required)
 - a. Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. CD-ROM or CD-R (2 copies); or
 - ii. Paper
 - c. Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. **37 CFR 3.73(b) Statement** (when there is an assignee) **Power of Attorney**
11. **English Translation Document** (if applicable)
12. **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
 Copies of citations attached
13. **Preliminary Amendment**
14. **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. **Other:** _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

Continuation Divisional Continuation-in-part (CIP) of prior application No.: 12/894,489.....

Prior application information: Examiner Osorio, Ricardo Art Unit: 2629

19. CORRESPONDENCE ADDRESS

The address associated with Customer Number: 34300 OR Correspondence address below

Name			
Address			
City	State	Zip Code	
Country	Telephone	Email	

Signature	Date	January 31, 2012
Name (Print/Type)	Carl Sanders	Registration No. (Attorney/Agent) 57,203

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	51851/821825 (IMM147.C3)
		Application Number	
Title of Invention	Method And Apparatus For Providing Tactile Sensations		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

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Applicant Authority <input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	51851/821825 (IMM147.C3)
	Application Number	
Title of Invention	Method And Apparatus For Providing Tactile Sensations	

Citizenship under 37 CFR 1.41(b)		US	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	51851/821825 (IMM147.C3)
		Application Number	
Title of Invention	Method And Apparatus For Providing Tactile Sensations		

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Application Information:

Title of the Invention	Method And Apparatus For Providing Tactile Sensations		
Attorney Docket Number	51851/821825 (IMM147.C3)	Small Entity Status Claimed	<input type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	11	Suggested Figure for Publication (if any)	

Publication Information:

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<input type="checkbox"/>	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Prior Application Status					<input type="button" value="Remove"/>
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
	Continuation of	12894489	2010-09-30		
Prior Application Status	Patented				<input type="button" value="Remove"/>
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12894489	Continuation of	11693117	2007-03-29	7808488	2010-10-05

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	51851/821825 (IMM147.C3)		
		Application Number			
Title of Invention	Method And Apparatus For Providing Tactile Sensations				
Prior Application Status	Patented		<input type="button" value="Remove"/>		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11693117	Continuation of	10285450	2002-11-01	7336260	2008-02-26
Prior Application Status	Pending		<input type="button" value="Remove"/>		
Application Number	Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)	
10285450	non provisional of		60335493	2001-11-01	
Prior Application Status	Pending		<input type="button" value="Remove"/>		
Application Number	Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)	
10285450	non provisional of		60399883	2002-07-31	
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<input type="button" value="Remove"/>			
Application Number	Country ¹	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			<input type="radio"/> Yes <input checked="" type="radio"/> No
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Assignee Information:

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Assignee 1

If the Assignee is an Organization check here.

Organization Name | Immersion Corporation

Mailing Address Information:

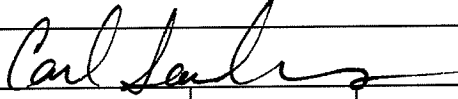
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	51851/821825 (IMM147.C3)		
		Application Number			
Title of Invention		Method And Apparatus For Providing Tactile Sensations			
Signature				Date (YYYY-MM-DD)	January 31, 2012
First Name	Carl	Last Name	Sanders	Registration Number	57203

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

CROSS-REFERENCES TO RELATED APPLICATION

[0001] This application is a continuation of co-pending U.S. Patent Application No. 12/894,489, entitled "Method and Apparatus for Providing Tactile Sensations," which is a continuation of U.S. Patent Application No. 11/693,117, filed March 29, 2007, now U.S. Patent No. 7,808,488, issued October 5, 2010, entitled "Method and Apparatus for Providing Tactile Sensations," which is a continuation of U.S. Patent Application No. 10/285,450 filed November 1, 2002, now U.S. Patent No. 7,336,260, issued February 26, 2008, entitled "Method and Apparatus for Providing Tactile Sensations", which 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, the entirety of all of which are hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to methods and apparatus for providing tactile sensations.

BACKGROUND

[0003] Conventional electronic devices, such as mobile telephones and Personal Digital Assistants (PDAs), include visual displays. A user of such devices interacts with the visual display using any one of a number of input devices. Examples of such input devices include computer mice, joysticks, trackballs, steering wheels, stylus, tablets, pressure-sensitive spheres, scroll wheels, keyboards, and keypads. The user provides instructions, responses, and other input to the device using such input devices.

[0004] In conventional mobile telephones and PDAs, confirmation of the input provided by the user is primarily limited to visual or audible confirmation. In some such devices, physical feedback is provided by conventional mechanical switches in the form of the conventional mechanical feedback of switches, for example the switch closure force-displacement profile. Typically, in such devices, the mechanical feedback provided by each button is identical. In addition, in such conventional devices, for those buttons that serve multiple functions, the mechanical feedback generally remains the same regardless of the current function of the button.

[0005] In addition to providing extremely limited and rudimentary mechanical confirmation of button selection, conventional buttons as used, for example, in keypads for mobile telephones and PDAs, provide simple passive touch cues regarding the alignment of keys. Such cues include raised bumps on the center key of a telephone keypad or on the "F" and "G" keys of a keyboard that assist a user in orienting to the pattern of keys in the keypad and keyboard. Again, these physical queues are very limited, and users typically need to view a keypad or keypad for visual confirmation that the correct instructions or information is being entered.

[0006] When a flat surface interface device is used, such as a touchpad for a computer or PDA, these simple mechanical cues are unavailable to the user. Often, touchpads are combined with flat-panel display screens that display one or more graphically generated buttons or softkeys. Normally, the softkeys are visible through the touchpad. A user's contact with the touchpad in an area defined by a softkey provides the electronic device having the touchpad with the input associated with that softkey.

[0007] The use of electronic devices using such conventional mechanical buttons and touchpad arrangements are particularly difficult to use in distracting environments or when the user is attempting to perform another task simultaneously with using the electronic device. For example, if the other task involves operating a motor vehicle or heavy machinery, it may be difficult or impossible for a user to simultaneously use such an electronic device because such devices typically require the user to look at the device, at least briefly, when interacting with the device. In addition, electronic devices relying on softkeys can be difficult to read in bright light environments such as in bright sunlight and can contain very small fonts and graphics that are difficult to read and select.

[0008] Some conventional touchpads include vibratory feedback to the user of the touchpad. U.S. Patent No. 5,977,867 is one example. Such conventional systems and methods are limited, though. They lack a full range of functionality assistance to a user interacting with an electronic device. Moreover, such systems and methods still require considerable visual attention from the user.

SUMMARY

[0009] The present invention comprises products and processes for providing tactile sensations to input devices or electronic devices. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and to control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one

designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected. Mobile telephones and PDAs benefit from employing such products and processes, but other devices benefit as well. The advantages offered by the various embodiments of the present invention may be understood by examining this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 is a perspective view of an embodiment of an apparatus according to the present invention;

[0011] Figure 2 is a plan view of another embodiment of an apparatus according to the present invention;

[0012] Figure 3 is a plan view of an electronic device including an embodiment of the present invention;

[0013] Figure 4 is a schematic representations through line 4-4 of Figure 3;

[0014] Figure 5 is a plan view of another electronic device including another embodiment of the present invention;

[0015] Figure 6 is a schematic representations through line 6-6 of Figure 5;

[0016] Figure 7 is a block diagram illustrating an embodiment of the apparatus in an electronic device;

[0017] Figure 8 is a flow chart illustrating a method according to the present invention;

[0018] Figure 9 is a table illustrating a first set of data to be used in one embodiment of the present invention; and

[0019] Figure 10 is a table illustrating a second set of data to be used in another embodiment of the present invention.

DETAILED DESCRIPTION

[0020] The present invention includes methods and systems for providing tactile sensations. One embodiment includes methods and systems for providing tactile sensations to input devices, both mechanical and non-mechanical (for example soft-keys that are computer generated and displayed on a screen). Embodiments of the present invention can be utilized in wide variety of electronic devices including telephones, mobile telephones, remote controls, gamepads, joystick handles, automotive controls (radios, Compact Disc (CD) players, automobile functions, etc.), consumer electronics devices, Personal Digital Assistants (PDAs), personal computers, laptop computers, portable gaming devices, pagers, I-pagers, audio equipment, televisions, security or alarm systems, Automated Teller Machines (ATM), calculators, home appliances, and white goods.

[0021] Figure 1 shows one embodiment of the present invention. The apparatus 1 shown in Figure 1 includes an input device 2 having multiple positions for communicating a plurality of input signals. The input device 2 can be any device capable of transmitting an input signal. In the embodiment shown, the input device 2 is a rocker-type switch. The rocker switch 2 shown can pivot or rock between two positions in which the rocker switch contacts and activates one of two rubber switches 3 containing conductive pads. The use of rubber switches 3 provides the advantage of allowing the

user to still feel a substantial vibration or force through the input device 2 when the user had fully depressed the switch. Suitable rubber switches are available and known in the art. In other embodiments, the input device may include an analog switch, a force sending resistor, a strain gauge based sensor, a capacitive touch switch, a scroll wheel, a mini-joystick, a touchpad, a touch screen, a 3-way switch, a 4-way switch, a 5-way switch, or other input device. Each position of the input device 2 corresponds to one of the input signals.

[0022] The input device 2 and rubber switches 3 are mounted on a Printed Circuit Board (PCB) 4 in the embodiment shown to facilitate electrical communication between the input device 2 and an electronic device (not shown). The PCB 4 can be custom shaped according to the device into which the apparatus 1 is placed. The PCB 4 also provides for secure mounting within the device by including, for example, a plurality of holes 5 to accept fasteners for securing to the electronic device. In another embodiment, the input device 2 can be directly connected or mounted in the electronic device.

[0023] The apparatus 1 shown in Figure 1 also includes a vibrotactile actuator 6 in communication with the input device 2. Preferably, the actuator 6 is configured to output a plurality of distinct tactile feedback sensations to the input device 2. Suitable tactile sensations include vibrations, for example, jolts and textures, and a plurality of distinct tactile sensations can be created by varying the frequency, amplitude and waveform output by the actuator 6. The actuator 6 is selected to deliver the desired tactile sensations to the input device 2. The actuator 6 shown in Figure 1 is a voice coil actuator. Other suitable actuators include, for example, piezo-electric actuators, eccentric mass actuators, moving magnet actuators, and friction brakes in contact with metal shafts. In

addition, the actuator can include a flexure, for example an arrangement of flexible material, coupled to the rotating shaft of a DC motor or step motor to transform the rotation of the motor shaft into vibrations or other haptic sensations. Various arrangements of a flexure coupled to a motor may be used as an actuator. For example, U.S. Patent Application No. 09/585,741, filed June 2, 2000, illustrates suitable arrangements of flexures and motors for use as an actuator in embodiments of the present invention. The entire disclosure of the application No. 09/585,741 is incorporated herein by reference. Tactile sensations can also be delivered to the input device 2 from a speaker included with an electronic device into which the apparatus is placed, for example the speaker in a mobile telephone or in a personal computer.

[0024] Although the embodiment shown in Fig. 1 includes one input device 2 and one actuator 6, other embodiments include a plurality of input devices, all in communication with a single actuator. Alternatively, an embodiment can include a plurality of actuators each in communication with at least one input device. Various arrangements of actuators in combination with input devices are suitable for use in the present invention. For example, U.S. Patent Application No. 09/263,263, filed July 26, 2001, published on March 21, 2002, as U.S. Patent Pub. No. US2002/0033795 illustrates actuators in combination with input devices that may be used in embodiments of the present invention. The entire disclosure of application No. 09/263,263, Pub. No. 2002/0033795 is incorporated herein by reference.

[0025] As mentioned, the actuator 6 is in communication with the input device 2. In the embodiment shown in Figure 1, the actuator 6 is in communication with the input device 2 through a cantilevered beam or lever arms 7 attached to the pivoting rocker,

amplifying the effective forces of the actuator 6 felt by the user. The tactile sensations generated by the actuator 6 propagate through the lever arm 7 to the input device 2. Suitable materials for the lever arm 7 are capable of transmitting the tactile sensations and can be, for example, metal. The lever arm 7 shown includes one or more bends 8 to fit within the electronic device in which the apparatus 1 is disposed. Different shapes of bends may be used to fit within the electronic device. In another embodiment, the actuator 6 is mounted directly to the input device 2 or to any component of the input device. Alternatively, the actuator 6 is mounted to the PCB 4 to which the input device is attached, communicating tactile sensations to the input device through the PCB. In another embodiment, the actuator is an existing eccentric mass motor as is used, for example, as a vibrating ringer in a pager or mobile telephone.

[0026] The vibrotactile actuator 6 can also be mounted to a portion of the case or housing of the electronic device in which the apparatus 1 is disposed, communicating the tactile sensations to the entire electronic device. In one embodiment, two actuators can be incorporated in the case or back of an electronic device, for example the case of a mobile phone in an area that contacts the user's hand. This arrangement effectively doubles the amplitude of the tactile sensation, and the user's fingers do not tend to attenuate the tactile sensation.

[0027] The apparatus 1 also includes a controller 9 in communication with the input device 2 to receive the input signals therefrom. The controller 9 can also receive additional information from the input device 2 including the position of the input device 2 and the amount of pressure applied to the input device 2. In one embodiment, the input signal includes information related to the amount of pressure applied to the input device

2, information related to the position of the input device 2, or a combination of information about pressure and position. In addition to being in communication with the input device 2, the controller 9 is in communication with the actuator 6 to produce a tactile sensation in the actuator 6 corresponding to the input or input signal received by the controller 9 from the input device 2.

[0028] The controller 9 is located in a suitable location according to the needs of the device in which the apparatus 1 is placed. In one embodiment, the controller 9 is attached to the PCB 4 as shown in Figure 1. Suitable controllers, include, for example, digital logical processors capable of processing input, execute algorithms, and generate output as necessary to create the desired tactile sensations in the input device in response to the inputs received from that input device. Such controllers may include a microprocessor, an Application Specific Integrated Circuit (ASIC), and state machines. Such controllers include, or may be in communication with, media, for example computer readable media, which stores instructions that, when executed by the controller, cause the controller to perform the steps described herein as carried out, or assisted, by a controller. One embodiment of a suitable computer-readable medium includes an electronic, optical, magnetic, or other storage or transmission device capable of providing a processor, such as the processor in a web server, with computer-readable instructions. Other examples of suitable media include, but are not limited to, a floppy disk, CD-ROM, magnetic disk, memory chip, ROM, RAM, ASIC, configured processor, all optical media, all magnetic tape or other magnetic media, or any other medium from which a computer processor can read. Also, various other forms of computer-readable media may

transmit or carry instructions to a computer, including a router, private or public network, or other transmission device or channel.

[0029] In one embodiment, the apparatus 1 includes a dedicated controller 9 for use specifically with the apparatus 1. This embodiment is particularly well suited for applications where the apparatus 1 is retro-fitted into an existing electrical or electronic device. In another embodiment, the controller 9 is the microprocessor or Central Processing Unit (CPU) of the electronic device in which the apparatus 1 is disposed. The apparatus 1 can also include additional circuitry such as the drive circuitry (not shown) necessary to create the tactile sensations in the actuator 6 in response to input from the controller 9 and a memory medium for storing data to be accessed by the controller 9 for example a correlation between the tactile sensations to be produced in the actuator 6 and the input information or input signal received from the input device 2.

[0030] Figure 2 shows another embodiment of the present invention. An apparatus 60 shown in Figure 2 includes multiple input devices. These multiple input devices include twelve fixed or pre-assigned alphanumeric input buttons 10a-l, three pre-assigned function buttons 11a-c, and three assignable function buttons 12a-c. The plurality of inputs devices are arranged according to the electronic device in which the apparatus 60 is situated. In the embodiment shown, the plurality of input devices are arranged as the keys in a key pad for a telephone or mobile telephone.

[0023] Embodiments of the present invention include an input device having a means for determining or sensing pressure. The input device is capable of resolving multiple levels of pressure placed on the input device, and of transmitting a signal associated with the

level of pressure placed on the input device. These multiple levels of pressure may be defined by, for example, the physical location of, or distance traveled by, a switch-type input device in the x-plane when pressed by a user (higher / lower), the magnitude of pressure placed on a touchpad-type input device, or other means.

[0031] The buttons of Figure 2 are illustrative of such an embodiment. Each of the alphanumeric input buttons 10 shown in Figure 2 is a keypad button. Each of the buttons 10 is capable of resolving multiple levels of pressure placed on the buttons 10. For example, the button 10i (corresponding to the number 9 on the keypad) is capable of resolving five levels of pressure placed on the button 10i. In the embodiment shown, the first level is a state in which no pressure is placed on the button by a user, the second level being a first magnitude of pressure placed on the button (greater than no pressure placed by the user), the third level being a second magnitude of pressure placed on the button (where the second magnitude of pressure is different from or greater than the first magnitude), the fourth level being a third magnitude of pressure placed on the button (where the third magnitude is different from or greater than the second magnitude), and the fifth level being a fourth magnitude of pressure placed on the button (where the fourth magnitude is different from or greater than the third).

[0032] In button 10i, each of levels two through five is associated with a distinct input signal. When the button 10i is in its first state, then the button 10i does not transmit an input signal. When pressure is applied to the button 10i by a user that exceeds the first magnitude of pressure, the button 10i transmits a first signal to the controller 9. When greater pressure is applied to the button 10i that exceeds the second magnitude of pressure, the button 10i transmits a second signal to the controller. When still greater

pressure is applied to the button 10i that exceeds the third magnitude of pressure, the button 10i transmits a third signal to the controller. When even greater pressure is applied to the button 10i that exceeds the fourth magnitude of pressure, the button 10i transmits a fourth signal to the controller. The structural arrangement of the communication by the button 10i to the controller 6 of an input signal is further illustrated in Fig. 4, described below.

[0033] Each of the levels two through five of button 10i (and thus each of their associated signals) is associated with a letter, W-Z. The second level is associated with the letter W, the third level is associated with the letter X, and so on. The second level is associated with the letter W, the third level is associated with the letter X, and so on. In the embodiment shown, the key 10i has five positions corresponding to no pressure, and the letters W, X, Y, and Z. In an alternative embodiment, the key 10i has six positions corresponding to no pressure, the number "9," and the letters W, X, Y, and Z.

[0034] In the embodiment shown, the alphanumeric buttons 10 are all capable of resolving five levels of pressure. In alternative embodiments, the various buttons are capable of resolving differing levels of pressure. For example, in an alternative embodiment, while the button 10i is capable of resolving five levels of pressure, the button 10b (corresponding to the number 2 on the keypad) is capable of resolving four levels of pressure placed on the button 10b (the first level being no pressure placed on the button). Like button 10i, the levels resolved by button 10b in the alternative embodiment are each associated with a distinct input signal, and are each associated with a distinct letter of the alphabet, A-C.

[0035] The pre-assigned function buttons 11a-c of the apparatus 1 are keypad push buttons. Each of the buttons 11a-c is capable of resolving three levels of pressure placed on the buttons 11a-c no pressure, a first magnitude of pressure (greater than none), and a second magnitude of pressure (greater than the first magnitude). Examples of functions carried out by such pre-assigned function buttons 11 a-c include "Send" 11a, "Power" 11b, and "End Call" 11c.

[0036] In the embodiment shown, each of the pre-assigned function buttons 11 a-c is configured such that the first magnitude of pressure is an amount of pressure that signifies that a user's finger is "hovering" over, or touching with more than passing force, the button. Each is also configured such that the second magnitude of pressure is an amount of pressure that signifies that a user's finger applies when the user wishes to activate the button.

[0037] Thus, in the embodiment shown, when a user's finger "hovers" over the "Send" button 11c, a first signal is transmitted by the button 11c to the controller. And, when a user's finger activates the "Send" button 11c, a second signal is transmitted by the button 11c to the controller.

[0038] The assignable-function buttons 12a, 12b, 12c are buttons whose function depends upon the mode of operation of the device with which the apparatus 1 is associated. For example, when such an apparatus 1 is associated with a mobile telephone, such buttons 12a, 12b, 12c may be used to navigate the menus displayed to carry out various functions, such as scrolling through an address book, selecting a number to dial, editing a number, re-setting the time displayed, and similar functions.

[0039] In addition, the assignable-function buttons 12a-c are configured similarly to the pre-assigned buttons 11a, 11b, 11c, in that the buttons 12a, 12b are configured such that the first magnitude of pressure is an amount of pressure that signifies that a user's finger is "hovering" over, or touching with more than passing force, the button, and such that the second magnitude of pressure is an amount of pressure that signifies that a user's finger applies when the user wishes to activate the button. Preferably, the buttons 11a, 11b, 11c, 12a, 12b, 12c are configured such that they receive and analyze other data in determining whether the user is merely hovering or, instead, wishes to activate the button (such as type of, and duration of, contact with the button). Any suitable input-device may be used as an assignable-function input device. Examples of such input-devices include rocker-switches and scroll wheels.

[0040] In an alternative embodiment (not shown), the middle assignable-function button 12c, includes the input device of Fig. 1. It is in communication with the actuator 6 (not shown) shown in Fig. 1 as well, and operates in the manner described with reference to Fig. 1. In such an embodiment, the PCB 62 is separated at line 62a, such that the PCB4 of Fig. 1 is not in contact with PCB62.

[0041] Referring again to Fig. 2, although in the embodiment shown there the alphanumeric keys have four or five available states (embodying an alphanumeric-character selection), and the pre-assigned buttons 11a, 11b, 11c, and the assignable-function buttons 12a, 12b, 12c are configured to indicate hover / activation signals, in other embodiments, other configurations may be used. Moreover, although the alphanumeric keys 10 have four or five available states, thus allowing them to be associated with three or four (or more) input signals, such keys 10 may be configured to

provide input signals at, for example, only two of the states. In this way, such keys 10 may be configured to provide hover / activation signals similar to that which is provided in the pre-assigned buttons 11a, 11b, 11c, and assignable-function buttons 12a, 12b, 12c in the embodiment shown in Fig. 2.

[0042] Moreover, in the embodiment shown, the levels for the alphanumeric input devices 10 correspond to magnitudes of pressure, but in other embodiments the levels resolved can be type of touch, magnitude, physical position of the switch and other attributes of contact with the button, or some combination thereof. The input signals provided by such input devices may be configured accordingly.

[0043] In the embodiment shown in Fig. 1, the input signals that are transmitted by the input devices are transmitted to a controller 9. In the embodiment shown, the controller is in communication with storage memory (not shown). Examples of such memory includes Read Only Memory (ROM). The storage memory includes a table in which input signals are associated with various haptic feedback signals. This is explained more fully in relation to Figures 9-10.

[0044] The apparatus 1 shown in Fig. 2 also includes an actuator 61. The actuator 61 is shown in representative fashion in Fig. 2, and not to scale or in physical placement. An alternate actuator 61 and physical placement of the actuator 61 is shown in Fig. 4. The actuator 61 is in communication with the various input devices, and is configured to provide vibrations of varying frequencies, magnitudes, and wave-forms to the input devices. The actuator 61 is also in communication with the controller 9. Further description of embodiments of such communication and configuration is provided below.

[0045] In the embodiment shown, the controller 9 receives an input signal from one of the input devices. The controller 9 then analyzes the input signal received to determine a signal to transmit to the actuator 61.

[0046] For example, the controller 9 of Fig. 2 is configured such that when the controller 9 receives a signal associated with the second level from button 10i (the "9" key), the controller 9 sends a first control output signal to the actuator, and when the controller receives a signal associated with the third level from the button 10i, the controller sends a second control output signal to the actuator 61, and so on. The first control output signal is one that causes the actuator to provide a vibration of a certain, first frequency. The second control output signal is one that causes the actuator to provide a vibration of a certain, higher frequency, and so on. In other embodiments, the vibrations provided may be of the same frequency.

[0047] Fig. 3 shows another embodiment of the present invention, in the form of a mobile telephone 14 having the apparatus of Fig. 2. The controller 9, actuator 61, and the PCB 62 of the apparatus 60 of Fig. 2 are encased in a case 18 of the mobile telephone 14. The mobile telephone 14 also includes a display screen 15 capable of displaying graphic objects 16 and alpha-numeric information 17. The alpha-numeric information 17 that may be displayed includes phone numbers and lists, for example of list of entries in a phone book, that are input by the alpha-numeric input buttons 10 and accessed by the assignable function buttons 12a-12c.

[0048] Fig. 4 is a schematic representation through line 4-4 of Fig. 3 illustrating that the alpha-numeric input buttons or keys 10 in the mobile telephone pass through the case 18 of the mobile telephone and contact a plurality of switches 19 disposed on the

PCB 62. The switches 19 are in communication with the controller 9 (not shown).

Suitable switches 19 include any analog or digital switch, for example rubber switches, snap dome-type switches, and pressure sensitive switches. Preferably, the switches 19 are capable of producing distinct input signals to the controller. Even more preferably, the switches 19 are capable of producing such signals for two or more positions. In the embodiment shown, the keys 10 contact a plurality of digital switches, each capable of producing four distinct input signals to the controller 9 to correspond to the four levels at which pressure is applied to the buttons 10 by the user.

[0049] The PCB 62, on a side opposite the switches, is in communication with the actuator 61. As illustrated, the actuator 61 is a piezo-electric actuator having a metal diaphragm 20 in contact with the PCB 62 through one or more spacers 21 and a piezo ceramic element 22 in contact with the metal diaphragm 20. Alternative actuator embodiments include a flexure coupled to the shaft of a motor, secured to the PCB 62.

[0050] As illustrated, the keys 10 are initially in a rest position 23. A biasing member arrangement (not shown) as is available and understood in the art is used to hold the keys in the rest position 23. An object 24, for example the user's finger or a stylus, is used to select one or more of the keys 10 by applying pressure in the direction of arrow A. This pressure causes the selected key to progress through a plurality of positions. As illustrated, after leaving the rest position 23, the keys pass sequentially through a second position 25, a third position, 26, a fourth position 27, and a fifth position, 28 as greater and greater pressure is applied to the button 10. The distance of travel between each position does not have to be equal, and the amount of pressure required to move between each position can vary. In addition, for a given key, the number of positions can vary

from two (no pressure and activated) up to the number of input signals assigned to a given key. Therefore, in the embodiment shown, a key 10i is moveable from a first level (rest) 23 to a second level 25 upon the application of a sufficient amount of pressure to the input device. In the embodiment shown in Fig. 3, the amount of pressure necessary to move the key 10i from rest 23 to the second position 25 is about equal to the amount of pressure that user's finger would exert upon contact with the key without actually selecting the key.

[0051] Accordingly, in one method of using the embodiment shown in Fig. 3, when a user of the mobile telephone 14 shown in Fig. 3 presses the "9" key 10i using a relatively light amount of pressure, the button 10i moves from rest state 23 to its second level 25. Such movement causes the button 10i to apply pressure to switch 19a, which is received by switch 19a. The switch 19a is in communication with the controller 9. The switch 19a is configured to transmit a first signal to the controller 9 upon receiving a pressure of magnitude indicating that sufficient pressure has been placed on button 10i to move from its first level 23 to its second level 25. The controller 9 receives this first signal. The controller 9 is configured to transmit a first controller output signal to the actuator 61 upon receipt of this first signal from the switch 19a. The controller transmits the first controller output signal to the actuator 61. The actuator 61 is configured to provide a vibration of a first pre-selected frequency to the metal diaphragm 20 of a pre-selected duration upon receipt of such a first signal. In the embodiment shown, the actuator 61 provides a side-to-side vibration to the diaphragm. The diaphragm 20 thus vibrates at the pre-selected frequency, in turn causing the PCB 62 to vibrate at that same frequency, and thus in turn causing the switches 19 to vibrate at that frequency. The

switch 19a is in communication with the button 10i, thus causing the button 10i to vibrate at that frequency.

[0052] When the user applies further pressure to the button 10i sufficient to cause the button to move from the second level 25 to a third level 26, the button's force is applied to switch 19a. Switch 19a receives the force and is configured to transmit a second signal to the controller 9 whenever it receives force to indicate that the button 10i has moved from the second level 25 to the third level 26. The switch 19a does so, and the controller 9 receives the second signal. The controller 9 is configured to transmit a second controller output signal to the actuator 61 upon receipt of this second signal from the switch 19a. The controller 61 transmits the second controller output signal to the actuator 61. The actuator 6 is configured to provide a vibration of a second pre-selected frequency, different from the first pre-selected frequency, for a pre-determined duration to the metal diaphragm 20 upon receipt of such a second signal. In other embodiments, the first and second pre-selected frequencies are the same. As above, the actuator 61 provides a side-to-side vibration to the diaphragm, which is communicated through the PCB 62 and switches 19 to the button 10i.

[0053] When a user applies pressure to the button 10i, which is communicated to the switch 19a, at each level 25, 26, 27, 28, a distinct signal is transmitted by the switch 19a to the controller 9. Thus, in the embodiment shown, different signals are transmitted by the switch 19a for each pressure-applied levels 25, 26, 27, 28.

[0054] In the embodiment shown, a "dwell to select" function is employed. For example, when a user provides sufficient input to cause the button to move to its second level 25, the first signal is transmitted to the controller 6 continuously while the button

receives pressure to push it at or past the second level 25 but not sufficient pressure to push the button 10i to the third level 26. The controller 9 determines the length of time the button is maintained at the second level 25 by monitoring the length of time the first signal is transmitted to the controller 9. If the first signal is received for greater than a pre-determined length of time, the controller determines that the user wishes to "select" the function associated with the second level 25 by the fact that the user "dwelled" at that level for the pre-determined time. Upon so determining, the controller 9 transmits a signal to a processor (not shown) indicating that the user has selected the function associated with the second level of button 10i, in this case the selection of the letter "W." In embodiments, the controller 9, upon so determining, also transmits a signal to the actuator 61 to cause the actuator 61 to vibrate at a frequency, magnitude, and/or wave-form indicative of selection of the function.

[0055] In one embodiment, in addition to providing haptic feedback to the input device, the controller 9 also sends a signal to the display 17 to cause the alphanumeric character associated with the input signal to be displayed. For example, in one embodiment, upon detecting the presence of a first pressure (through receipt of a first input signal) and sufficient dwell time to indicate a selection, the controller sends a signal to the display 17 indicating that the display should display the letter "X." Upon detecting the presence of a second pressure (through receipt of a second input signal) and sufficient dwell time to indicate a selection, the controller sends a signal to the display 17 indicating that the display should display the letter "Y." Upon detecting the presence of a third pressure (through receipt of a third input signal) and sufficient dwell time to indicate a

selection, the controller sends a signal to the display 17 indicating that the display should display the letter "Z." The display 17 then displays each of these characters, X, Y, Z.

[0056] Various other embodiments may be employed. For example, instead of having a single actuator to provide feedback to all input devices receiving such feedback, like the embodiments shown in Figs. 2-3, other embodiments have two or more actuators. These two or more actuators may be in communication with all or part of the input devices that provide tactile feedback. The two actuators may each provide significantly different types of feedback to the same set of input devices, or each may be in communication with a different group of input devices to provide the same or different types of feedback. As another example, the actuator and input devices may be configured to provide vibration to only the button that is receiving pressure from the user, or they may be configured to provide vibration to all buttons or at least more buttons than the one(s) receiving pressure from the user.

[0057] Moreover, although the actuator 61 is shown as disposed below the PCB 62 in Fig. 4, in other embodiments the actuator 61 may be disposed at other locations within the device having such apparatus, whether the device is a mobile telephone, PDA, or other device. Preferably, the actuator is disposed within the housing of the device. Preferably, it is communication with the PCB 62, but is placed anywhere in communication with the PCB 62 as the size and space restrictions of the application will allow. In other embodiments, the actuator 61 is located outside the housing of the device (such as beside it). In still other embodiments, the actuator 61 is in communication with the input devices other than through the PCB 62.

[0058] In the embodiment shown, a distinct tactile sensation is produced for each of the various levels at each of the various keys. In other embodiments, the controller 6 selects one of a pre-selected group of sensations to provide in response to the various signals received by the controller.

[0059] Fig. 5 shows another embodiment of the present invention. Referring to Fig. 5, a PDA 31 having an input device in the form of a pressure-sensitive touchpad 30 is shown. The PDA 31 also includes a plurality of mechanical type buttons 32. The PDA 31 also includes a display panel 33 capable of displaying computer generated graphics. Suitable display panels include flat-panel type displays including a Liquid Crystal Display (LCD), plasma displays, Thin Film Transistor (TFT) type displays or other flat displays, such as are found in laptops and color PDA's, and conventional cathode ray tube displays.

[0060] Fig. 6 shows a cross-sectional view of the PDA 31 of Fig. 5 along line 6-6. As is best displayed in Fig. 6, the display 33 is underneath the touchpad 30 and is in communication with the touchpad 30 to transmit tactile sensations thereto. The display 33 is also in communication with an actuator 64 to receive a tactile sensation therefrom for communication to the touchpad 30. Other arrangements of the touchpad 30, display 33 and actuator 64 are also possible including arrangements in which the actuator 64 is in direct contact with the touchpad 30. The display 33 is in communication with the touchpad 30 through two spacers 34. Suitable spacers are constructed of a material that can transmit the tactile sensations between the display 33 and the touchpad 30. In other embodiments, the touchpad 30 and display 33 are in direct physical contact, and the touchpad 30 and display are not in communication. The tactile sensations produced in the

touchpad 30 are transmitted to the object 24 when the object 24 is brought into contact with a surface 35 of the touchpad 30.

[0061] Referring again to Fig. 5, the display 33 displays a plurality of software-generated buttons or keys, called softkeys 36a-i. The softkeys 36a-i provide a graphical user interface for the PDA 31 and are arranged in a desired pattern or grid. Each softkey 36 occupies a distinct location on the display panel. As illustrated, the PDA 31 can function as a mobile telephone, and the softkeys 36 are arranged as a telephone keypad to provide the same functionality as the mechanical keys on a conventional telephone keypad. The display 33 of the PDA 31 also includes additional graphical outputs 37 and areas 38 without graphical output. The displayed softkeys 36 are viewable through the touchpad 30 and represent corresponding unique positions on the touchpad 30.

[0062] An object 24, for example a human finger, selects a desired softkey 36a-i by contacting the touchpad 30 at the appropriate location. A controller (not shown) is in communication with the touchpad 30. The controller of this embodiment is similar in structure and functionality to the controller described in relation to the embodiment of Fig. 3. The controller is capable of determining the location on the display screen 33 that is touched by the object 24, and the softkey 36 corresponding to the touched location. Based upon this information, the controller causes the actuator 64 to provide a corresponding tactile sensation. The actuator 64 can cause vibrations in the touchpad 35 in a direction parallel to the surface 35 of the touch pad or perpendicular to the surface 35 of the touchpad 30. The controller also determines when an input is ambiguous, such as when two or more softkeys are simultaneously selected or when an area of the display containing no graphics 38 is touched, and causes the actuator to output an appropriate

tactile sensation. Preferably, the same controller that controls the displayed softkeys 36 also controls the tactile feedback sensations produced by the actuator 64.

[0063] Certain softkeys 36b-i represent multiple positions or multiple inputs, each input or position corresponding to a distinct amount of pressure applied to the softkey 36b-i. This distinct amount of pressure is detected by the controller in communication with the touchpad 30. Alternatively, the apparatus can include a separate pressure calculator to measure the amount of pressure applied to the touchpad 30. In the embodiment shown, the amount of pressure applied to the touchpad 30 is calculated by the controller based upon the amount of area of the object 24 used to select the softkey that is in contact with the surface 35 of the touchpad 30.

[0064] The amount of pressure applied to the input device or to the softkey 36a-i on the touchpad can be determined by reading or determining the size or area of the contact patch created by the object 24, such as the user's finger, on the input device or softkey 36a-i. In addition to reading the current size of the contact patch, the rate of change of the contact patch can also be determined, using dynamic thresholds and to look at how fast the user's pressure is changing. If the contact patch area changes at a sufficiently large rate, the controller can determine that the corresponding input device or softkey 36a-i is being selected.

[0065] The functionality of the softkeys shown in Fig. 5 is similar to the mechanical key counter parts described in relation to Figs. 2 and 3. Therefore, the pressure level of a selected softkey may be moveable from a first position to a second position upon the application of a sufficient amount of pressure. The amount of pressure necessary to move the softkey 36a to the second position (the first position being at rest

or no contact) input device to the first position is about equal to the amount of pressure that user's finger would exert upon contact with the touchpad surface and sliding lightly along the surface. In this embodiment, the controller is configured to cause the actuator to produce a first tactile sensation when the softkey 36a is in the second position or when the applied pressure is less than the amount of pressure necessary to indicate that the softkey has been selected, that is the third position. The controller would then cause the actuator 64 to produce a second tactile sensation upon receipt of the input signal associated with the third position or upon detection of a sufficient amount of pressure applied to the softkey 36a. The softkey 36i has five positions associated with four distinct applied pressures and no pressure at the softkey 36i, and corresponding to the input signals for the letters W, X, Y, and Z. A dwell to select feature can be used to determine the desired position and associated input signal.

[0066] This functionality facilitates a user moving an object over the various softkeys displayed on the input device and receiving a specific frequency or tactile sensation to signal that a particular softkey has been touched. As the object 24 contacts other softkeys in the display matrix, additional distinct tactile sensations unique to these other softkeys are produced. With continued use, the user can quickly become accustomed to the various distinct tactile sensations and the associations between sensations and specific softkeys, permitting identification and selection of softkeys or buttons by touch alone. In fact, distinct tactile sensations can be used with the same button regardless of the electronic device, creating a universal tactile sensation library similar to for example, a busy signal providing a universal auditory signal that a telephone number is unavailable regardless of the type of telephone equipment used. For

example, a distinct tactile sensation can be played when the object is in contact with the "5" key, providing a "home" key indication. In addition, keys located on the center axis can have a single "pop" while keys in the columns to the left and right of the center axis have two "pops", providing an indication of the general location of the object 24 in a keypad matrix.

[0067] In another example, if the user is moving the object 24 over the "9" key, a relatively high frequency vibration can be output on all the keys. When the pressure associated with the object is detected at the "6" key, a lower frequency vibration can be output, allowing the user to determine which key is presently in contact with the object through the sense of touch. Since it is unlikely that a user would press or contact more than one softkey simultaneously, a single vibrotactile actuator outputting the same sensation to all of the buttons simultaneously can be used. When the user applies increased pressure to a softkey with the object 24 and that pressure is greater than a predetermined threshold pressure level, the function associated with that softkey is activated.

[0068] Fig. 7 is a block level diagram illustrating a representative embodiment of the present invention. The various components communicate across a common communication bus 39. The input devices 40 produce input signals in accordance with the present invention, and the input signals are communicated to the controller 41 across the communication bus 39. The controller 41 can also receive pressure or position information regarding the input devices associated with the received input signal. Based upon the received input signal, pressure and position data, the controller accesses a memory 42 to obtain the necessary data regarding the functionality and tactile feedback

associated with the received input signal. In addition, the controller 41 can update data stored in the memory as for example when the input signal relates to changing the functionality or input options associated with the input device that produced the input signal. Based upon the received functionality, the controller delivers a function signal to the electronic device 43 to which the apparatus is connected. In addition, the controller 41 modifies the output on the display 44 in particular where the display is part of the input device, such as when a touchpad is used. Alternatively, the electronic device controls and updates the display. In addition, the controller can be the CPU associated with the electronic device, and the memory can be the memory associated with the electronic device. The arrangement of the controller, memory and display depends upon whether or not the apparatus is constructed as a standalone device that can be retrofitted into an existing electronic device or is incorporated into the electronic device itself. The controller uses the tactile feedback information received from the memory to provide the necessary input to control circuitry 45 to drive the actuator 46 to produce the desired tactile sensation in the appropriate input device.

[0069] Referring to Fig. 8, a flow chart illustrating a method of producing a tactile feedback sensation in an input device according to the present invention is illustrated. A controller monitors an input device in an apparatus 47. When a plurality of input devices are included in the apparatus, the controller can either monitor each input device sequentially or in parallel. Although illustrated as a single pass function, monitoring of the input devices is preferably handled as a continuous loop function.

[0070] The input device, in response to user input, provides one or more input signals, position data, and pressure data to the controller. As the controller monitors the

input device, it first detects whether or not an input signal is being generated by the input device 48. If an input signal is being generated, the controller obtains the input signal 49 associated with the input device. The controller then detects if the same input device is generating any position data 50. If position data is being generated, the controller obtains the position data 51 associated with the input device. The controller also detects if the same input device is generating any pressure data 52. If pressure data is being generated, the controller obtains the pressure data 53 associated with the input device. The controller may detect and obtain the three types of data in any order. Preferably, the controller, while obtaining the data, maintains an association among the input device, the input signal, the pressure data, and the positions data. In some embodiments, the input signal includes pressure data, or data from which the pressure applied to the input device may be calculated, position data, or a combination of pressure and position data.

[0071] Having obtained the input data from the input device, or from a plurality of input devices, the controller then accesses a memory device 54 in which is stored at least one database containing information necessary to produce the desired function in the electronic device and the predetermined tactile sensation in an input device, and accesses this information 55. In one embodiment, this information is in the form of associations among the detected input data, the functions of the electronic device or apparatus, and the tactile sensations. An exemplars group of associations is represented in tabular form in Fig. 9.

[0072] As is shown in the table, for any given input device, a plurality of combinations of input signals, position data, and pressure data is possible, and each combination relates to a specified function of either the electronic device or a distinct

tactile sensation. These combinations vary depending on the type of input device assigned to each input signal and the current functionality of that input device. The controller, using the data obtained from monitoring the input device, reads the table and obtains the associated function and tactile feedback information.

[0073] Referring to Fig. 9, in one embodiment, a controller monitors input device number 5. On subsequent monitoring passes, the controller does not detect either an input signal or position data, but detects a distinct pressure, Pressure 1. Based upon the information in the table associated with Pressure 1, the controller obtains the associated function information for selecting the number "2", and information for distinct tactile Sensation 13. The controller delivers the function information to the electronic device 70 which uses that information to display the number "2" or to indicate that the number "2" has been selected. The controller uses the information for distinct tactile Sensation 13 to produce Sensation 13 in an input device 56, by for example, causing an actuator to cause the input device to vibrate at a frequency associated with Sensation 13.

[0074] On a later monitoring pass, the controller detects a pressure magnitude of pressure 3 on input device number 5. Similarly, based upon the information in the table associated with Pressure 3, the controller obtains the associated function information for selecting the letter "B" and information for distinct tactile Sensation 15. The controller delivers the function information to the electronic device which uses that information to display the letter "B" or to enter the letter "B" in a program such as a telephone keypad. Therefore, in response to the detection of at least two distinct pressures applied to the input devices, the controller has produced at least two distinct tactile sensations in the input device number 5. The controller can also detect a plurality of distinct pressures

applied to input device number 5 and can produce a plurality of distinct tactile sensations in input device 5, each tactile sensation related to one of the plurality of distinct pressures. Although illustrated for a single input device, the controller can detect two distinct pressures for a plurality of input devices and can produce at least two distinct tactile sensations in each one of these input devices. In another embodiment, the controller can detect a plurality of distinct pressures in the plurality of input devices and produce a plurality of distinct tactile sensations in the plurality of input devices. The distinct pressures can represent either discrete pressures or a range of applied pressure.

[0075] In another embodiment, the controller monitors input device number 3, which is capable of inputting a plurality of input signals, Inputs 2A-E, to the apparatus. Each input signal corresponds to a distinct pressure applied to input device number 3, Pressures 1-5. Each input signal and pressure corresponds to a distinct function and a distinct tactile sensation, Sensations 5-9. In one embodiment, each input signal corresponds to an alphanumeric character. In this embodiment, the controller delivers function information to the electronic device related to displaying the proper alphanumeric character on an output device associated with the electronic device. Alternatively, the controller can display the associated alphanumeric character directly on the output device.

[0076] Referring still to Fig. 9, in another embodiment of a method according to the present invention, the controller monitors input device number 1 and detects a first pressure being applied on a first location on input device number 1. Preferably, input device number 1 is a touchpad input device. In one embodiment, the first pressure is a discrete pressure, pressure 1. In another embodiment, the first pressure represents a range

of pressures having a value less than Pressure 1. The function associated with the first applied pressure indicates that this is the pressure range associated with a user simply searching or feeling for the location of the desired button or key. Therefore, the controller does not provide a function input to the electronic device. The controller does, however, provide a first tactile sensation, Sensation 1, to input device number 1.

[0077] The controller then detects an input signal, Input 1 and a pressure greater than or equal to Pressure 1 at Input 1. In response, the controller delivers a function input corresponding to "Select" to the electronic device and produces a second distinct tactile sensation, Sensation 2, in Input Device 1.

[0078] In another embodiment, the controller monitors Input Device 7 and detects a first pressure, Pressure 1, at a first location, Location 1 on the input device. Preferably, the input device is a touchpad input device. In response, the controller provides a first tactile sensation, Sensation 20, in Input Device 7. In addition, the controller detects a second pressure, Pressure 2, applied at a second location, Location 2, on Input Device 7. In response, the controller provides a second tactile sensation, Sensation 21 in Input Device 7. The first pressure can correspond to a first input signal, Input 7, and a first function, Function 1, and the second pressure can correspond to a second input signal, Input 8, and a second function, Function 2. The controller delivers the associated function input to the electronic device in response to each received pressure. Note that the controller may cause the actuator to include a different wave form, frequency, and/or magnitude as tactile feedback in relation to different pressures, modes, menus, and other functionality.

[0079] The controller can also determine if any an ambiguous input is received 71. The ambiguous input can represent a combination of input device, input signal, position data, and pressure data that is not represented the data contained in memory. Alternatively, an ambiguous input signal can represent input simultaneously from two input devices or an input from a portion of a touchpad that is not associated with an input device. In response to receiving an ambiguous input signal, the controller obtains the associated ambiguous tactile feedback information 72 and produces the associated distinct tactile sensation, Sensation 22, in one or more input devices associated with the ambiguous input. In one embodiment, when the controller detects both a first and second input, the controller determines if either one of the inputs is ambiguous. If not, then the controller produces the associated first and second tactile sensations. If either input signal is ambiguous, then the controller produces the ambiguous output tactile sensation 56 in the appropriate input device.

[0080] Since the function corresponding to the input signals, positions, and pressures detected by the controller may involve modification of the functions associated with a given combination, the controller can also update the database stored in memory 57. In one embodiment, the controller is monitoring Input Device 6, and detects a first pressure, Pressure 1, applied to that input device. The first pressure corresponds to one of a plurality of input signals, Input 4, corresponding to a first set of input functions, Functions 1-3. The controller obtains Function 1 and Sensation 17 information and produces the appropriate tactile sensation at Input Device 6. Function 1 can represent one set of menus from a list of menus or one operating mode out of a plurality of operating

modes. Suitable operating modes include instant messaging, electronic mail, voice mail, games, and missed phone calls.

[0081] Since Function 1 represents a menu or mode that may have additional sub-menus or mode functions associated with it, the controller, in response to Function 1 updates the database as illustrated in Figure 10. As the controller continues to monitor Input Device 6, it detects a second pressure 3" corresponding to one of the input signals, Input 6, which corresponds to one function in the second set of functions, Function 6. The controller also obtains the tactile sensation, Sensation 19", associated with the selected second set function and provides this tactile sensation at Input Device 6. In addition, the controller provides an associated function signal to the electronic device. Suitable second set functions include sub-menus and functions corresponding to the selected first set function. In addition, the second set functions can include a function that returns the set of functions to the first set of functions. Although the pressures and tactile sensations associated with the first and second set of functions can be the same, preferably, the first pressures and tactile sensations, Pressures 1-3 and Sensations 17-19, are distinct from the second pressures and tactile sensations, Pressures 1"-3" and Sensations 17"-19".

[0082] In an embodiment of the apparatus of the present invention, for example, the apparatus is incorporated into a mobile phone and includes an assignable-function input device and assignable function rocker switch input device. In a main or home screen of the mobile telephone that is displayed upon powering up the mobile telephone, the assigned function for the assignable-function input device is "PHONEBOOK" and the rocker switch has no current function assigned to it. Light searching pressure applied to the assignable input device and the rocker switch will produce first and second distinct

tactile sensations to indicate which input device is being contacted. Selecting the rocker switch will not produce any function in the mobile phone since no function is currently assigned and a function failure tactile sensation, as described herein, will be output through the rocker switch. Selecting the assignable input device will place the mobile telephone in "Phonebook" mode and a third distinct tactile sensation will be output through the assignable input device.

[0083] A list of phonebook entries is now displayed on the screen of the mobile telephone. The assignable input device is assigned the function "SELECT" and the rocker switch is assigned a scroll function. Light pressure on the assignable input device or the rocker switch produce a fourth and fifth distinct tactile sensations, indicating that the mobile phone and the input devices are in "Phonebook" mode. Selecting the rocker switch to either scroll up and down produces bumps or clicks associated with scrolling a list of entries in the rocker switch. Special clicks can be output for passing each alphabetical tab in the phonebook or for passing frequently called entries. In one embodiment, an analog switch is included under the rocker switch to provide an analog signal roughly in proportion to the pressure registered on the rocker switch. This allows the list that is being scrolled to be scrolled at a rate that can be controllable with the amount of pressure applied, and which is communicated to the user by corresponding increase in the rate of haptic events played on the rocker switch. Once the rocker switch has been used to highlight the desired entry, the assignable input device is pushed to select that entry and a sixth distinct tactile sensation is output through the assignable input device.

[0084] The assignable input device continues to be assigned the function of select and the rocker switch is still used as a scrolling device. The display of the mobile

telephone, however, display another menu list containing the functions "EDIT", "VIEW", "CALL", and "DELETE". Light pressure on assignable input device and rocker switch again produces the fourth and fifth tactile sensations, indicating that the "Phonebook" mode or function is still active. Using the rocker switch to scroll up or down through the list again produces a click in the rocker switch as each entry is passed. The magnitude of each click and the spacing between clicks can be varied to indicate that a relatively short list is being scrolled. In addition to a click, seventh, eighth, ninth and tenth distinct tactile sensations as output to the rocker switch as the switch scrolls past "EDIT", "VIEW", "CALL", and "DELETE" respectively. Scrolling is stopped on the "CALL" entry, and the assignable input device is pushed, calling the number associated with the chosen entry from the phonebook. In addition, the ninth tactile sensation is output to the assignable input device. An attempt to active one of the functions, such as "CALL", before the device is ready causes the controller to indicate that the function is available.

[0085] Various other functions may be initiated by using the buttons. For example, in a mobile telephone having the functionality of instant messaging, electronic mail, voice mail, games, and missed call read-out, the user may select one of these functions. In an embodiment, a distinct tactile sensation is initiated by the controller whenever the user initiates one of these functions, and the distinct tactile sensation is different for each function.

[0086] Regardless of the input device being monitored by the controller, upon detection of first and second input signals, first and second pressures or first and second positions and obtaining the associated first and second functions, the controller can determine if these functions are available for execution 58. Alternatively, the controller

provides the necessary function signals to the electronic device which determines the availability of those functions. If the first and second functions are available, then the controller produces the associated tactile sensations in the appropriate input devices. If one of the first or second functions are not available then the controller obtains the tactile sensation information for the tactile sensation associated with function failure 59, Sensation 23, and produces that sensation in the appropriate input device. Examples of function failure include selecting the re-dial feature on a telephone when no number is stored in the re-dial memory, attempting to access a program or menu for which the user does not have authority to access, and attempting to initiate a mobile telephone call having entered an incomplete phone number.

[0087] Figure 11 aids in illustrating another embodiment of the present invention. In one embodiment of the present invention, a device provides haptic feedback while navigating a menu structure, allowing a user to navigate the menu structure more efficiently, preferably without having to refer to the visual display. In such an embodiment, an actuator generates distinct sensations that represent various sections of the menu structure, specific menu options, and events that occur while navigating the menu structure.

[0088] For example, in one embodiment, each of the highest level or main menu options corresponds to a distinct vibrotactile sensation that varies in pitch. As the user navigates between the main menu topics, the actuator produces a distinct number of pulses. The varying pitch combined with the alternating pulses provides feedback that identifies to the user the menu currently selected or highlighted.

[0089] In another embodiment, the number of occurrences of a distinct vibrotactile sensation, such as a pop, corresponds to the index number of the menu option within a list of menu options. In such an embodiment, one pop signifies the first option; two pops signifies the second option. In yet another embodiment, a distinct vibrotactile effect signifies that the user is cycling from the end of a particular menu back to the beginning ("rolling over").

[0090] Fig. 11 is a front view of a personal digital assistant (PDA) 100 in one such embodiment of the present invention. The PDA 100 includes a display 102, a plurality of buttons, including button 104, for executing specific functions and applications, and a 5-way directional pad (D-pad) 105 for navigation within the various interfaces displayed on the PDA 100. With the 5-way D-pad, a user clicks the directional keys to move up and down and left and right through the menu structure and clicks the center of the D-pad to select a particular option. In the embodiment shown, the active application is displaying a menu structure. The menu structure 108 includes main menu topics 110. Selection of the main menu topics results in either the display of a sub-menu or the execution of an associated function or application. In the embodiment shown, selection of the File menu option on the main menu 110 results in the display of a sub-menu 112. As with the main menu options, selection of any of the topics on the sub-menu 112 results in either the display of a secondary sub-menu or the execution of an associated function or application. For example, selection of the Send To option on sub-menu 112 results in display of secondary sub-menu 114.

[0091] In the embodiment shown in Figure 11, a user presses button 104 to activate an application. Within the application, the user utilizes D-pad 106 to navigate to

the main menu 108. An actuator (not shown) as described herein, such as an eccentric rotating mass or voicecoil, provides a brief, distinct haptic effect as the user highlights each of the options in the main menu 108. The effect may change in pitch or in some other manner to alert the user to the fact that the highlighted option has changed. The user may either click the center of the D-pad 106 to select an option or click the down arrow. Performing either of these actions over the File option produces sub-menu 112.

[0092] The user clicks the down arrow to move through the sub-menu 112. In the embodiment shown, when a directional arrow of the D-pad 106 is held down, the menu options in sub-menu 112 scroll at a fixed rate, and a haptic effect plays with each option that appears below the cursor. The longer the directional arrow is held down, the faster the rate of scrolling. The PDA 100 communicates the rate of scrolling by a corresponding change in the haptic effect, such as an increase in frequency. If the user clicks the right arrow when the cursor highlights the Send To option, the secondary sub-menu 114 is displayed. Navigation through the secondary sub-menu 114 occurs in a manner similar to that which occurs in sub-menu 112. To select an option within the secondary sub-menu 114, the user clicks the center of the D-pad 106. Clicking the center of the D-pad 106 triggers the playing of yet another distinct haptic effect. In addition, the D-pad switch 106, either a 5-way or a 4-way, can provide haptic effects indicating the direction that the switch was being pressed.

[0093] The embodiment shown in Figure 11 is applicable to a variety of applications, particularly to applications that display lists. For example, in one embodiment, an address book containing a list of names is displayed on the PDA 100. In such an embodiment, the actuator plays an effect as the user scrolls through the list.

Further, the actuator plays a distinct haptic effect as the user navigates from names starting with one letter, for example A, to the next letter, B. Such an embodiment may also include a distinct effect corresponding to names that the user has previously identified as favorites in the address book.

[0094] Another embodiment of the present invention provides the user with distinct haptic effects corresponding to the operational mode of an electronic device. For example, in an embodiment utilizing a PDA, such as PDA 31 in Fig. 5, a user may activate one of many modes, including, for example, the phone interface shown in Fig. 5, the application interface shown in Fig. 11, an address book, email, or other modes. Referring to Fig. 5, in one such embodiment, the user clicks a button 32 to activate the phone application. When the user clicks the button, the PDA 31 displays a phone interface 38. While the PDA 31 is in phone mode, the actuator provides a persistent haptic effect indicating to the user that the phone mode is active. In this way, the user is able to determine the mode of the PDA 31 without visually referring to it.

[0095] Another embodiment of the present invention provides the user with distinct haptic effects for modes within a cell phone or other electronic device. Referring to Fig. 3, users of cell phones, such as cell phone 14, often store a list of number that are frequently dialed in a memory associated with one or a combination of number keys 10. In such an embodiment, the user may click a function key before clicking the number key 10, providing a signal to the phone 31 that the user will specify a number to dial by clicking a number key combination. In one embodiment of the present invention, when the user clicks the function button, the actuator provides a persistent haptic effect, indicating to the user that the cell phone is in the rapid-dialing mode. The haptic effect

alerts the user to the fact that when the user selects a number-key combination, the cell phone will dial the phone number associated with the number-key combination in memory. By providing a haptic effect identifying the mode that the cell phone 31 is in, the embodiment minimizes or eliminates the user's need to refer to the cell phone 31 visually.

[0096] In another embodiment of the present invention, an actuator provides feedback when an option or function is unavailable (referred to herein as "negative feedback"). In such an embodiment implemented in a cell phone, such as cell phone 31 shown in Fig. 3, the user is able to place calls. The user dials a combination of number keys 10 and then presses the send key 11 to execute the phone call. In an embodiment utilizing negative feedback, if the user enters an invalid phone number, for example, a phone number including only 6 digits, the cell phone provides negative feedback, indicating that the send function is not available. The negative feedback may, for example, comprise a very low frequency buzz. In another embodiment, the actuator provides negative feedback to the user if the user clicks a redial button (not shown) without having previously dialed a number.

[0097] Other embodiments and uses of the present invention will be apparent to those skilled in the art from consideration of this application and practice of the invention disclosed herein. The present description and examples should be considered exemplary only, with the true scope and spirit of the invention being indicated by the following claims. As will be understood by those of ordinary skill in the art, variations and modifications of each of the disclosed embodiments, including combinations thereof, can be made within the scope of this invention as defined by the following claims.

That which is claimed is:

1. A method, comprising:
 - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
 - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
 - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
 - generating an actuator signal based at least in part on the interaction; and
2. The method of claim 1 wherein, the actuator signal is configured to cause a haptic effect to be output.
3. The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.
4. The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
5. The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

6. The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
7. The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
8. The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
9. The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
10. A system, comprising:
 - a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;
 - an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal; and

a processor in communication with the sensor and the actuator, the processor configured to:

- output a display signal configured to display a graphical object on the touch-sensitive input device;
- receive the sensor signal from the touch-sensitive input device;
- determine an interaction between the object contacting the touch-sensitive surface and the graphical object,
- generate the actuator signal based at least in part on the interaction; and
- transmit the actuator signal to the actuator.

11. The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

13. The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

14. The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
15. The method of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
16. The method of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
17. The method of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
18. A computer-readable medium comprising program code, comprising:
 - program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;
 - program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
 - program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and

program code for generating an actuator signal based at least in part on the interaction, the actuator signal configured to cause a haptic effect to be output.

19. The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

ABSTRACT

Products and processes for providing tactile sensations to input devices or electronic devices are provided. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected.

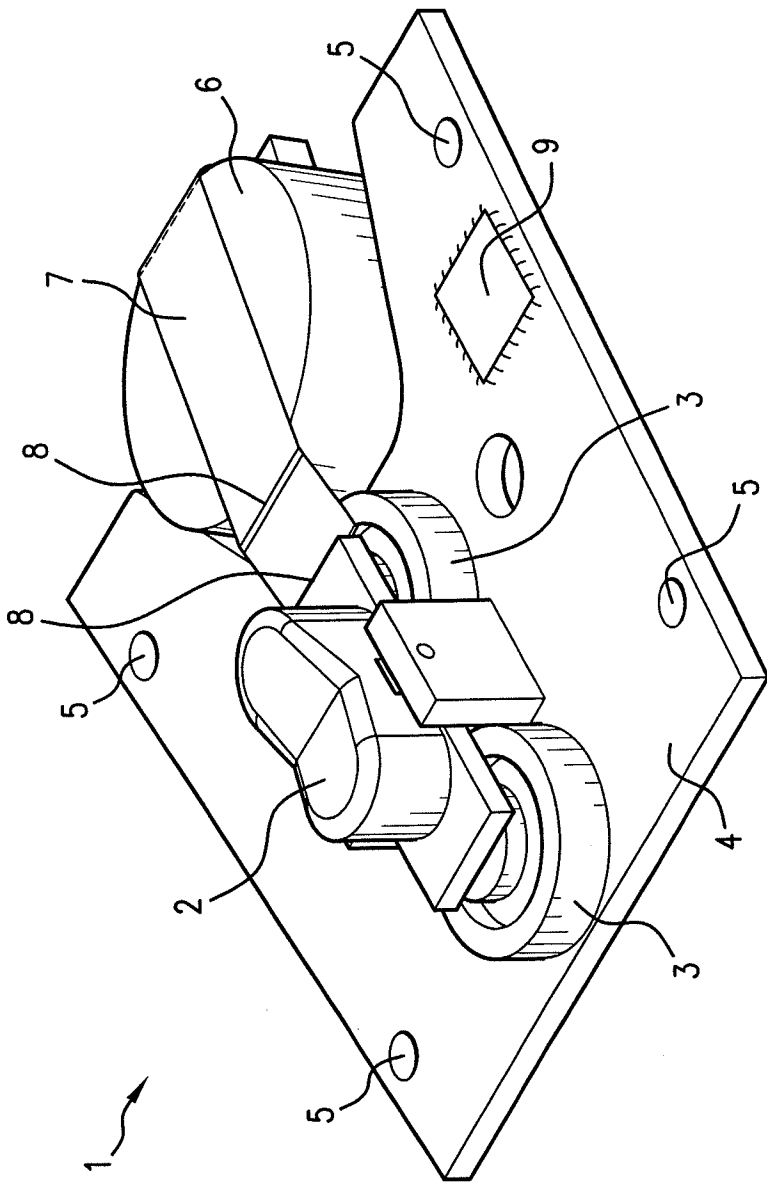


FIG.1

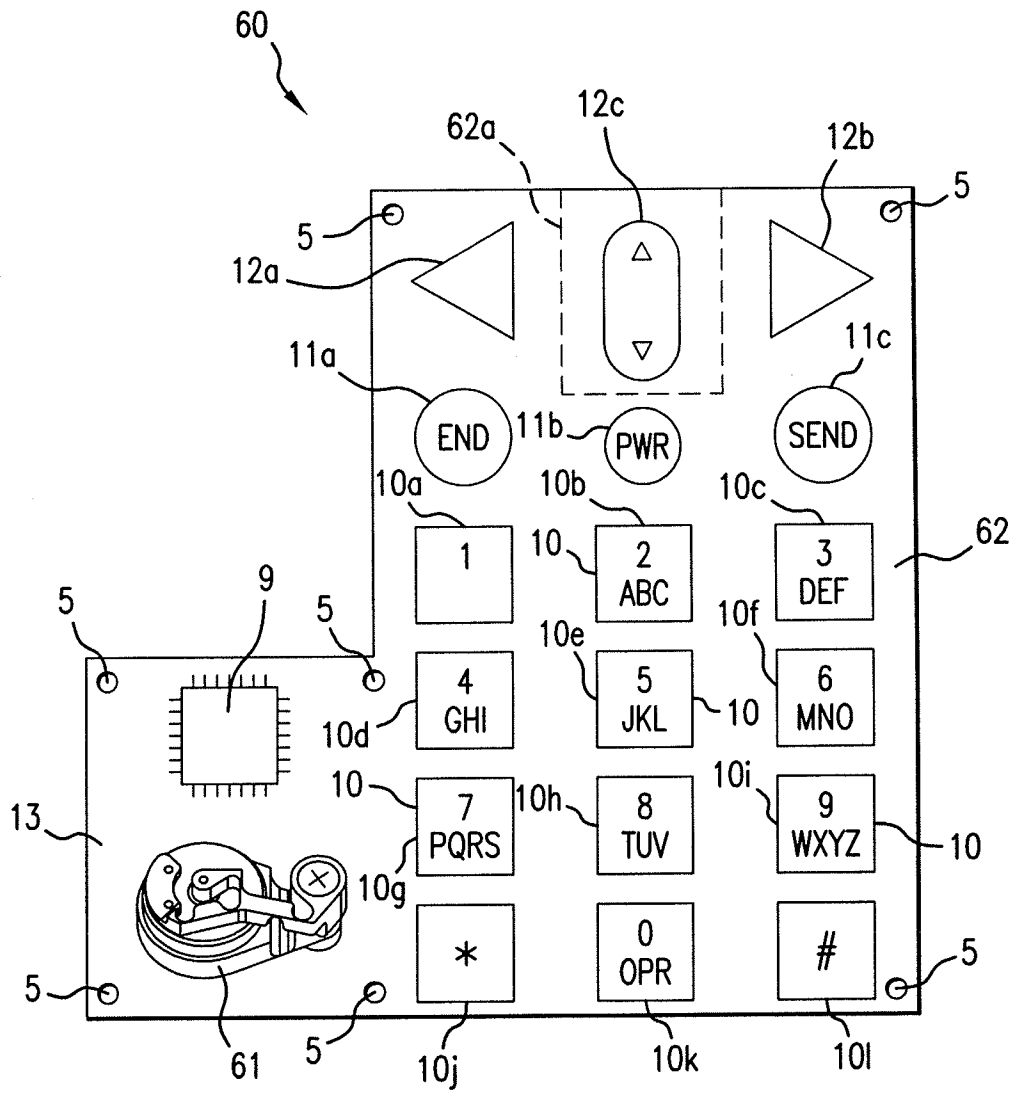


FIG. 2

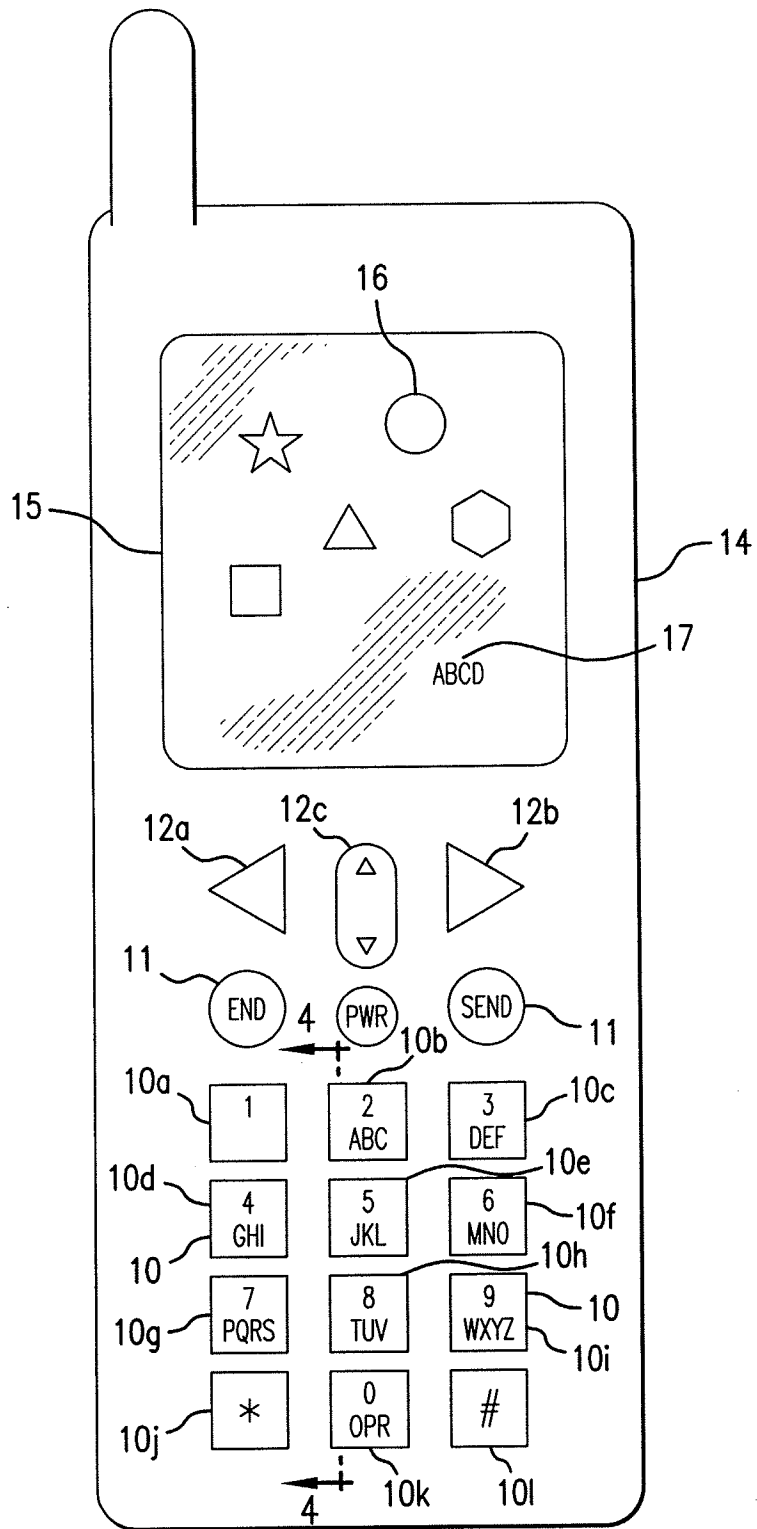


FIG.3

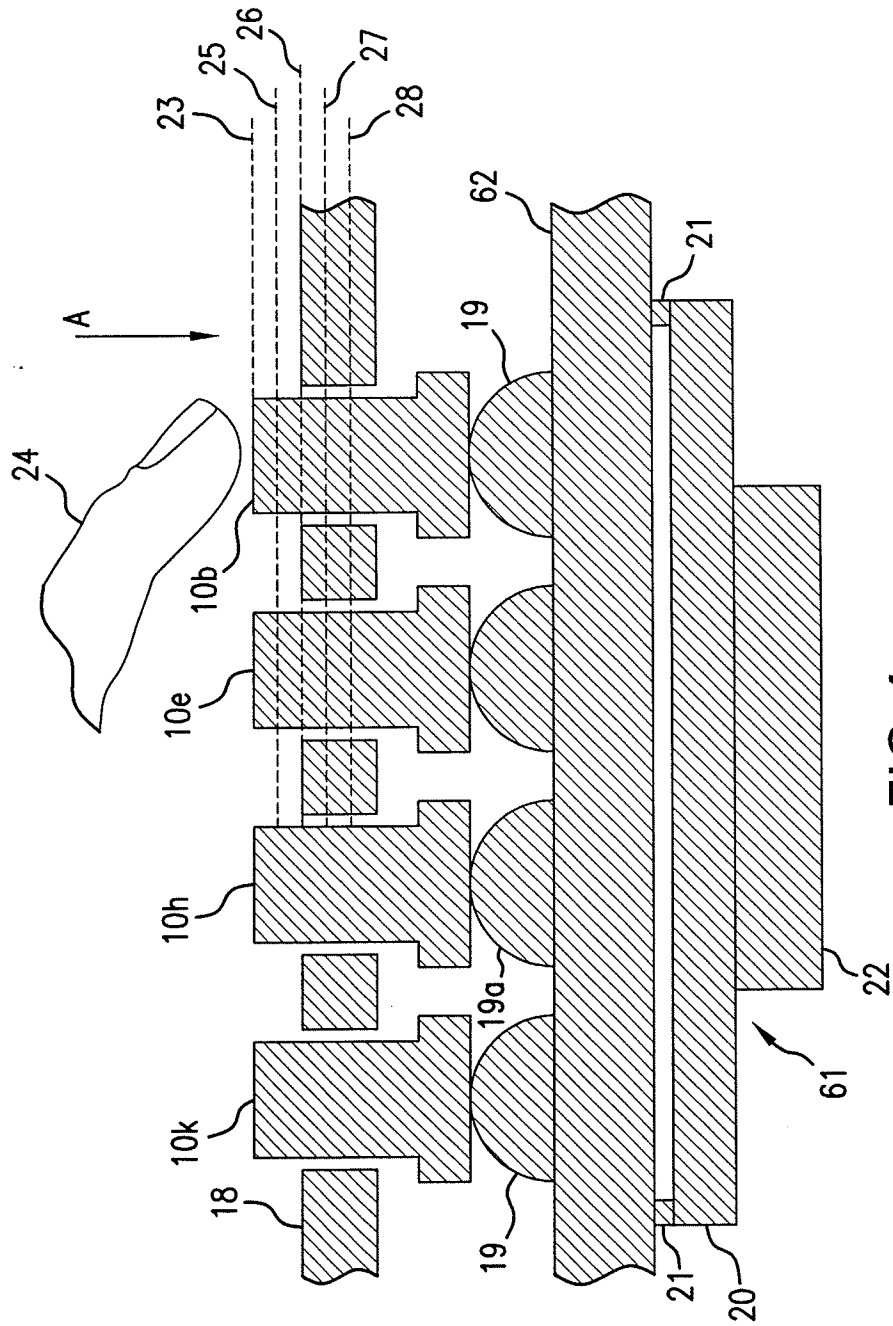


FIG. 4

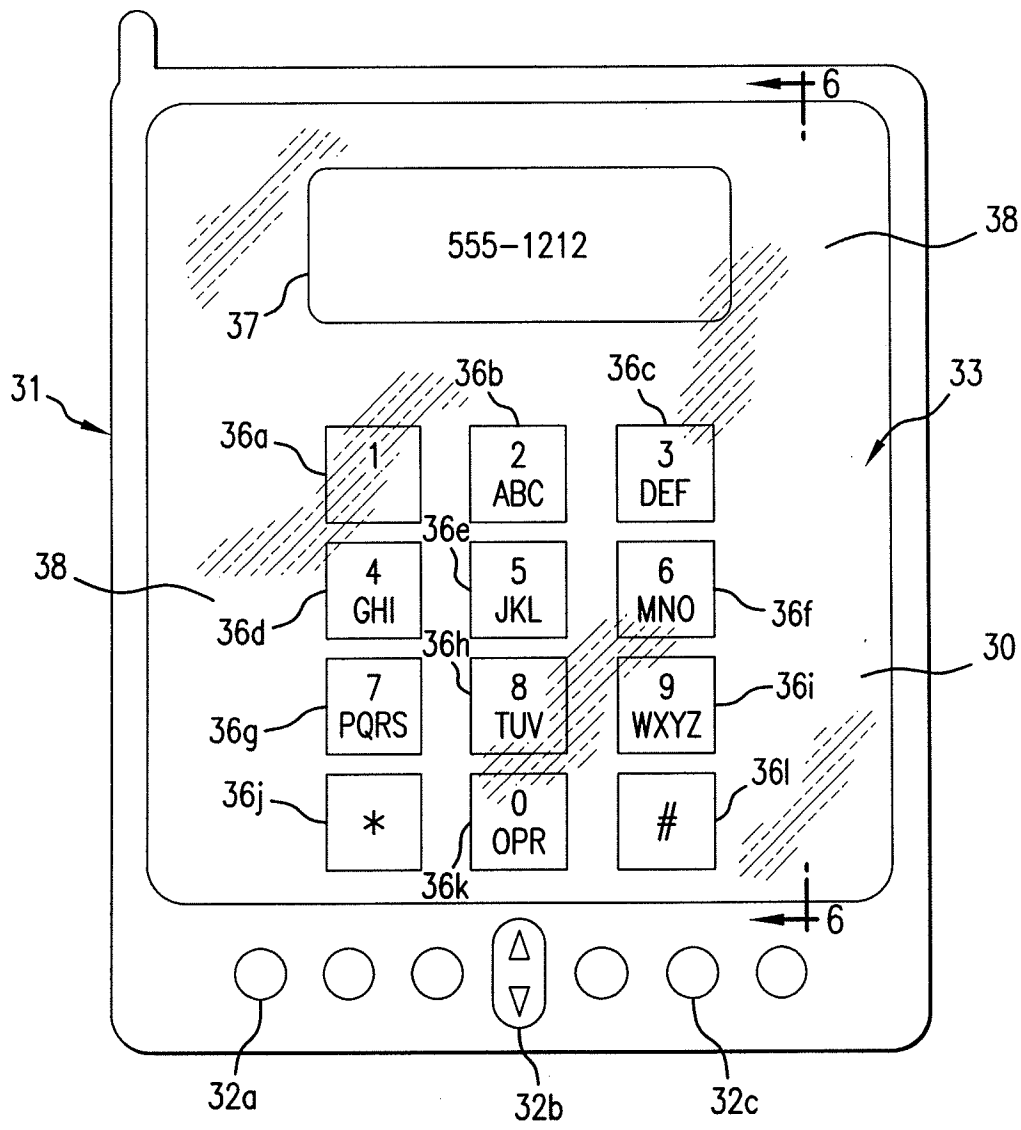


FIG. 5

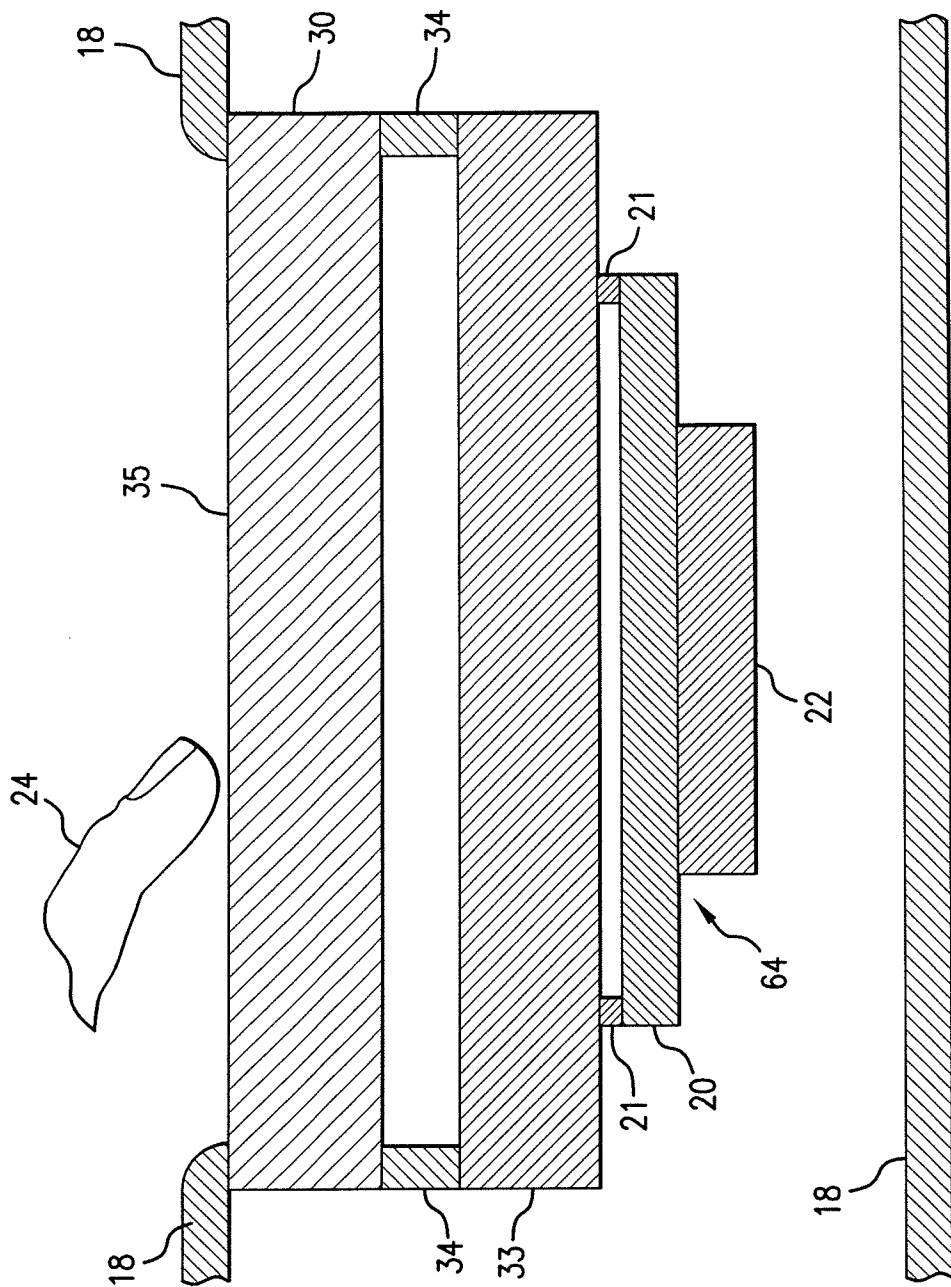


FIG. 6

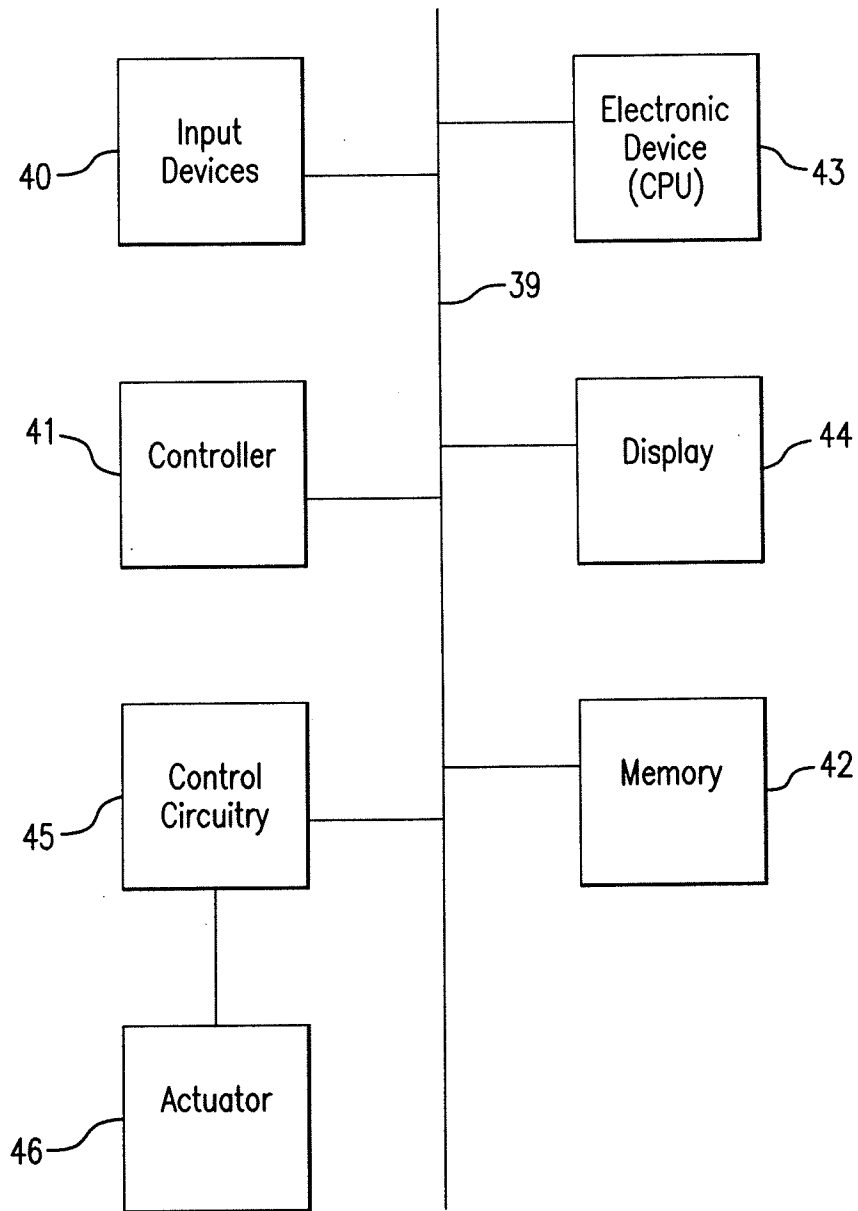


FIG. 7

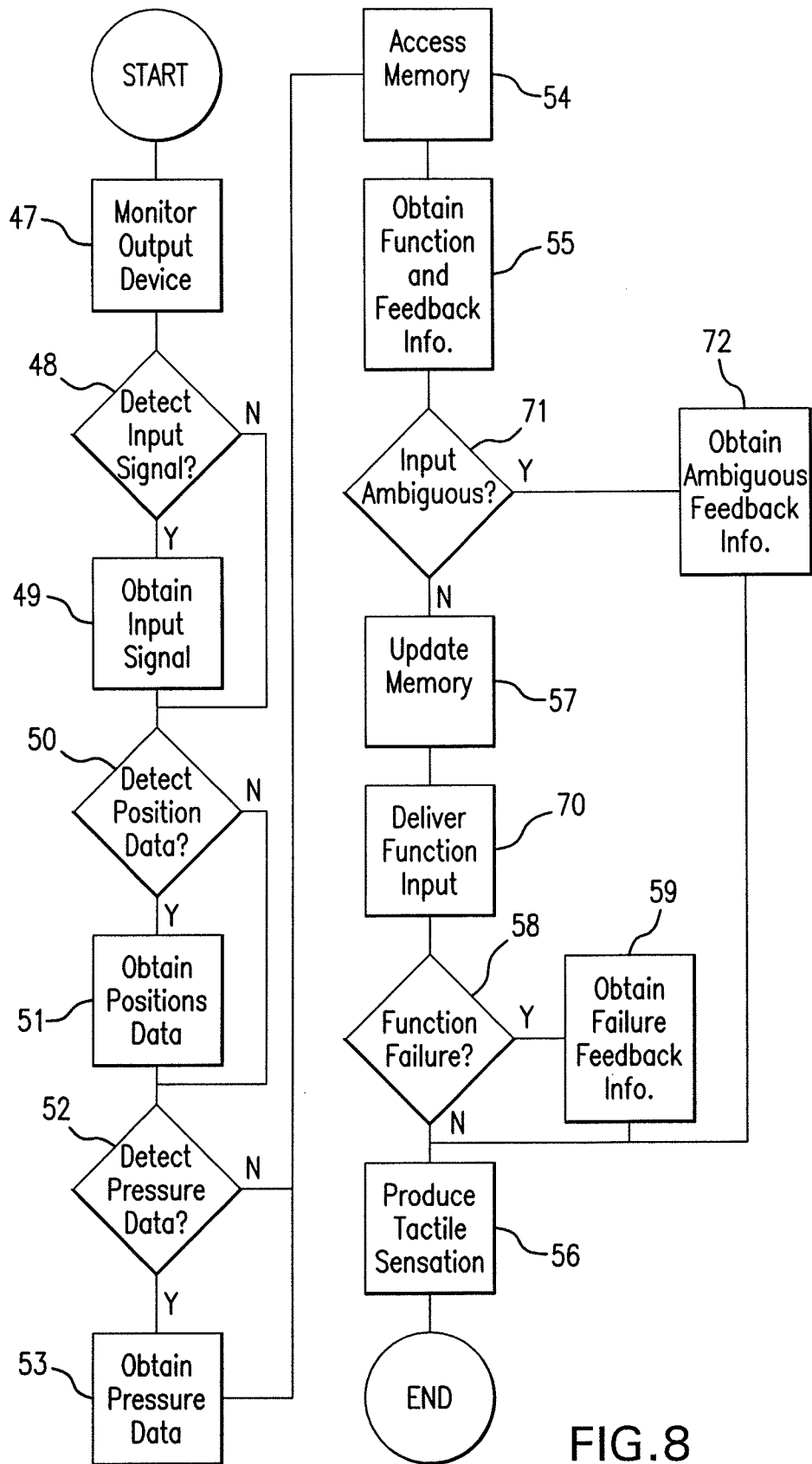


FIG. 8

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

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 4	Sensation 17'
	Input 5	Position 2	Pressure 2'	Function 5	Sensation 18'
	Input 6	Position 3	Pressure 3'	Function 6	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.10

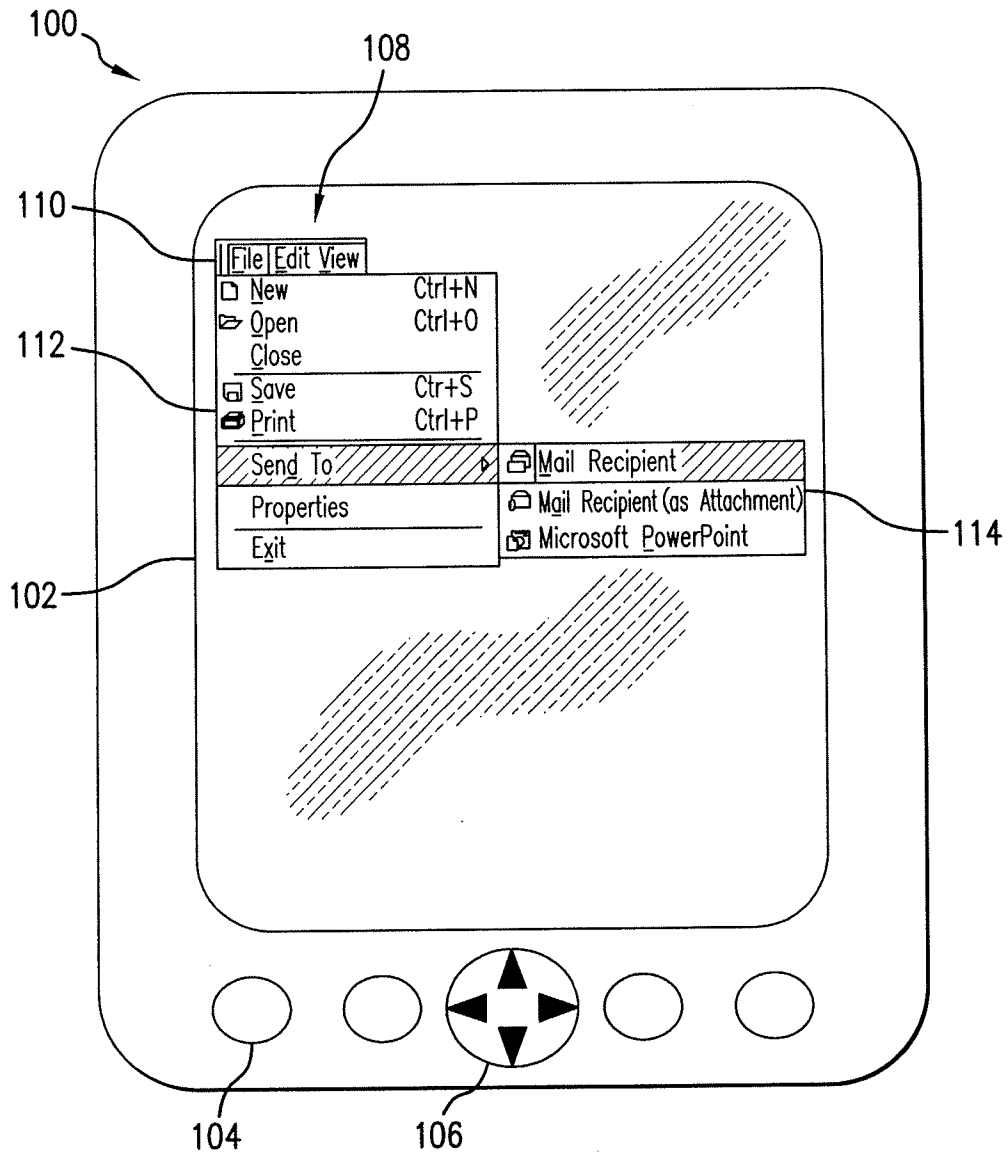


FIG. 11

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	First Named Inventor	Kenneth M. MARTIN
	<i>COMPLETE IF KNOWN</i>	
	Application Number	10/285450
	Filing Date	November 1, 2002
	Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

the specification of which *(Title of the Invention)*

is attached hereto

OR

was filed on (MM/DD/YYYY) 11/01/2002 as United States Application Number or PCT International

Application Number 10/285450 and was amended on (MM/DD/YYYY) 12/19/2002 (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

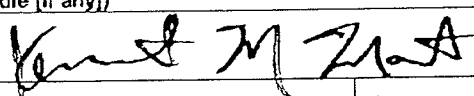
Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY) Country	Priority Not Claimed	Certified Copy Attached?	
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Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

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NAME OF SOLE OR FIRST INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor		
Given Name (first and middle [if any])			Kenneth M.		Family Name or Surname
			Martin		
Inventor's Signature					Date
			12/19/02		
Los Gatos		CA	USA	Canada	
Residence: City		State	Country	Citizenship	
21560 Old Mine Road					
Mailing Address					
Los Gatos		CA	95033	USA	
City		State	Zip	Country	
NAME OF SECOND INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor		
Given Name (first and middle [if any])			Steven P.		Family Name or Surname
			Vassallo		
Inventor's Signature			Date		
Redwood City		CA	USA	USA	
Residence: City		State	Country	Citizenship	
3632 Jefferson Avenue					
Mailing Address					
Redwood City		CA	94062	USA	
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NAME OF SOLE OR FIRST INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor			
Given Name (first and middle [if any]) Kenneth M.				Family Name or Surname Martin			
Inventor's Signature						Date	
Los Gatos			CA	USA		Canada	
Residence: City			State	Country		Citizenship	
21560 Old Mine Road							
Mailing Address							
Los Gatos			CA	95033		Canada	
City			State	Zip		Country	
NAME OF SECOND INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor			
Given Name (first and middle [if any]) Steven P.				Family Name or Surname Vassallo			
Inventor's Signature <i>Steven P. Vassallo</i>						Date 12/20/02	
Redwood City			CA	USA		USA	
Residence: City			State	Country		Citizenship	
3632 Jefferson Avenue							
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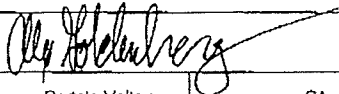
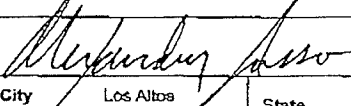
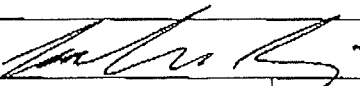
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Supplemental Sheet
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Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle (if any))		Family Name or Surname	
Alex S.		Goldenberg	
Inventor's Signature 		Date 12/19/02	
Residence: City	Portola Valley	State	CA
Country	USA	Citizenship	USA
Mailing Address 271 Gabarda Way			
Mailing Address			
City	Portola Valley	State	CA
ZIP	94028	Country	USA
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle (if any))		Family Name or Surname	
Alexander		Jasso	
Inventor's Signature 		Date 12/17/02	
Residence: City	Los Altos	State	CA
Country	USA	Citizenship	USA
Mailing Address 405 Fremont Ave			
Mailing Address			
City	Los Altos	State	CA
Zip	94024	Country	USA
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle (if any))		Family Name or Surname	
Kollin		Tierling	
Inventor's Signature 		Date 12/17/02	
Residence: City	Milpitas	State	CA
Country	USA	Citizenship	USA
Mailing Address 622 Costigan Circle			
Mailing Address			
City	Milpitas	State	CA
Zip	93035	Country	USA

Burden Hour Statement: This form is estimated to take 21 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Immersion Corporation

Application No./Patent No.: To be assigned Filed/Issue Date: Herewith

Titled: Method And Apparatus For Providing Tactile Sensations

Immersion Corporation, a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1. the assignee of the entire right, title, and interest in;
- 2. an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or
- 3. the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Carl Sanders
Signature

January 31, 2012
Date

Carl Sanders
Printed or Typed Name

Attorney for Applicant
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

ASSIGNMENT OF PATENT APPLICATION

Whereas I/we the undersigned inventor(s) have invented certain new and useful improvements as set forth in the patent application entitled:

METHOD AND APPARATUS FOR PROVIDING TACTILE FEEDBACK SENSATIONS

for which I (we) have executed an application for a United States Letters Patent which was filed in the U.S. Patent and Trademark Office on November 1, 2002, and which bears the Application No. 10/285,450.

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I/we the undersigned inventor(s) hereby:

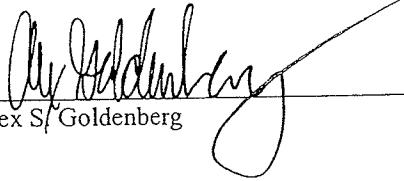
- 1) Sell(s), assign(s) and transfer(s) to Immersion Corporation, a Delaware corporation having a place of business at 801 Fox Lane, San Jose, CA 95131, (hereinafter referred to as "ASSIGNEE"), the entire right title and interest in any and all improvements and inventions disclosed in, application(s) based upon, and Patent(s) (including foreign patents) granted upon the information which is disclosed in the above referenced application.
- 2) Authorize and request the Commissioner of Patents to issue any and all Letters Patents resulting from said application or any division(s), continuation(s), substitute(s) or reissue(s) thereof to the ASSIGNEE.
- 3) Agree to execute all papers and documents and, entirely at the ASSIGNEE'S expense, perform any acts which are reasonably necessary in connection with the prosecution of said application, as well as any derivative and applications thereof, foreign applications based thereon, and/or the enforcement of patents resulting from such applications.
- 4) Agree that the terms, covenants and conditions of this assignment shall inure to the benefit of the Assignee, its successors, assigns and other legal representative, and shall be binding upon the inventor(s), as well as the inventor's heirs, legal representatives and assigns.
- 5) Warrant and represent that I/we have not entered, and will not enter into any assignment, contract, or understanding that conflicts with this assignment.

Signed on the date(s) indicated beside my (our) signature(s).

- 1) Signature: Kenneth M. Martin Date: 09/15/03
Typed Name: Kenneth M. Martin

METHOD AND APPARATUS FOR PROVIDING
TACTILE FEEDBACK SENSATIONS


2) Signature: _____ Date: _____
Typed Name: Steven P. Vassallo

3) Signature:  _____ Date: 6/2/03
Typed Name: Alex S. Goldenberg

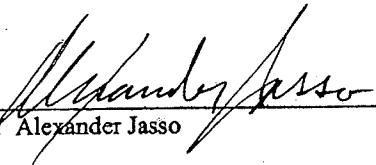
4) Signature: _____ Date: _____
Typed Name: Alexander Jasso

8181:51851-279590
WINLIB01:995871.1

METHOD AND APPARATUS FOR PROVIDING
TACTILE FEEDBACK SENSATIONS

- 2) Signature:  Date: 6.2.03
Typed Name: Steven P. Vassallo

- 3) Signature: _____ Date: _____
Typed Name: Alex S. Goldenberg

- 4) Signature:  Date: 6/4/03
Typed Name: Alexander Jasso

8181:51851-279590
WINLIB01:995871.1

**ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS IN
PATENT APPLICATION**

Whereas, I, the undersigned inventor, have invented certain new and useful innovations as set forth in the patent application:

METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

for which I have filed United States Patent Application No. 11/693,117;

and also the patent application:

METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

for which I have filed United States Patent Application No. 10/285,450.

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the undersigned inventor, hereby:

1) Agree to sell, assign, transfer, and convey, and hereby do sell, assign, transfer, and convey, to Immersion Corporation, a Delaware corporation having a place of business at 801 Fox Lane, San Jose, CA, (hereinafter referred to as "ASSIGNEE"), the entire right, title, and interest in and to (a) any intellectual property (including without limitation any innovation, information, invention, discovery, product, process, work, copyright, or design) disclosed, embodied, affixed, shown, or claimed in the above-referenced patent application, implicitly or explicitly; (b) the above-referenced patent application, any application based in whole or in part upon the above-referenced patent application, and any application claiming priority to the above-referenced patent application (including without limitation any continuation, continuation-in-part, reissue, reexamination, or foreign patent application based in whole or in part on the above-referenced patent application or claiming priority to the above-referenced patent application); and (c) any Patent (including without limitation domestic and foreign patents, utility models, industrial designs, divisionals, reissues, and reexaminations) that is granted or issued upon, or that claims priority to, any and all applications under (b) of this paragraph or that discloses or claims intellectual property under (a) of this paragraph, in whole or in part.

2) Authorize and request the Commissioner of Patents or any other agency, domestic or foreign, to issue any and all Letters or other Patent(s), or other document(s), resulting from patent applications or intellectual property under paragraph 1 (including without limitation any division(s), continuation(s) (in whole or in part), substitute(s), or reissue(s) thereof) to the ASSIGNEE.

3) Agree to execute all papers and documents, including without limitation applications, declarations, oaths, petitions, and other papers, and, entirely at the

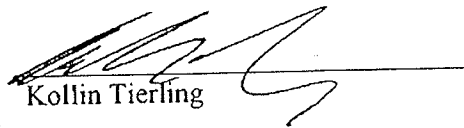
ASSIGNEE'S expense, perform any acts which are necessary in connection with the prosecution of patent applications or intellectual property under paragraph 1 and/or the enforcement of patents or other rights resulting from such applications or intellectual property.

4) Agree that the terms, covenants and conditions of this assignment shall inure to the benefit of the ASSIGNEE, its successors, assigns and other legal representative, and shall be binding upon the inventor, as well as the inventor's heirs, legal representatives, and assigns.

5) Warrant and represent that I have not entered, and will not enter into, any assignment, contract, or understanding that conflicts with this assignment.

Signed on the date indicated beside my signature.

10/22/10
Date


Kollin Tierling

State of California

County of SANTA CLARA

On October 22, 2010 before me, AMANDEEP KAUR, NOTARY PUBLIC
(Here insert name and title of the officer)

personally appeared Kollin Tierling, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

(Notary Seal)

WITNESS my hand and official seal.

A Kaur
Signature of Notary Public

