

(19) World Intellectual Property Organization
International Bureau



(10) International Publication Number
WO 2009/151826 A3

(43) International Publication Date
17 December 2009 (17.12.2009)

(51) International Patent Classification:
G06F 3/01 (2006.01)

(21) International Application Number:
PCT/US2009/042944

(22) International Filing Date:
6 May 2009 (06.05.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/137,857 12 June 2008 (12.06.2008) US

(71) Applicant (for all designated States except US): **IMMERSION CORPORATION** [US/US]; 801 Fox Lane, San Jose, CA 95131 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CRUZ-HERNANDEZ, Juan, Manuel** [CA/CA]; 500 de la Montagne, Apt. 407, Montreal, Quebec, H3C 4T6 (CA). **GRANT, Danny, A.** [CA/CA]; 1784 de Lunebourg, Laval, Quebec, H7M 2A1 (CA).

(74) Agents: **ISAF, Louis, T.** et al.; Womble Carlyle Sandridge & Rice, PLLC, P.O. Box 7037, Atlanta, GA 30357-0037 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

[Continued on next page]

(54) Title: USER INTERFACE IMPACT ACTUATOR

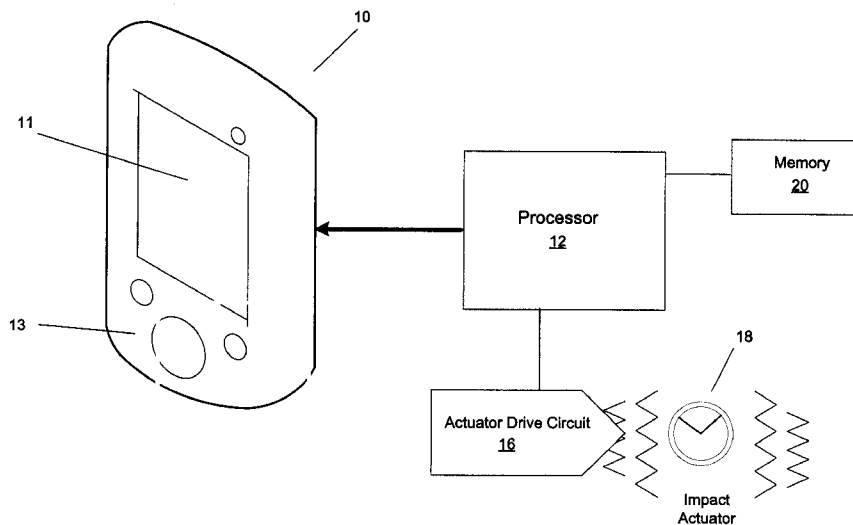
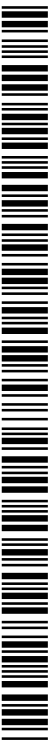


Fig. 1

(57) Abstract: A system generates a haptic effect that simulates a mechanical button. The system receives a signal that indicates that a user has contacted a user interface of the system. The system includes an impact actuator. In response to the signal, a moving element of the impact actuator contacts the user interface, which generates the haptic effect.



WO 2009/151826 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
8 July 2010

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/042944

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/01
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 08 221173 A (HITACHI LTD; HITACHI DEVICE ENG) 30 August 1996 (1996-08-30) paragraphs [0002], [0813], [0017], [0020] - [0027]; claims; figures	1-18, 20-23
X A	US 2001/017614 A1 (HARA OSAMU [JP] ET AL) 30 August 2001 (2001-08-30) paragraphs [0045], [0048] - [0050], [0055] - [0058]; figures	1-18, 20-23 19
X A	US 2002/067336 A1 (WEGMULLER DAVID [US] ET AL) 6 June 2002 (2002-06-06) paragraph [0022] - paragraph [0024] paragraph [0027]; figures	1,3,4, 7-9,11, 14-16, 19,20,22 2,5,6, 10,12, 13,17, 18,21,23
	----- -/--	

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 18 May 2010	Date of mailing of the international search report 26/05/2010
--	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Durand, Jacques
--	---

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/042944

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 8221173	A	30-08-1996	NONE
US 2001017614	A1	30-08-2001	JP 3909994 B2 25-04-2007 JP 2001242974 A 07-09-2001 TW 514820 B 21-12-2002 US 2006125788 A1 15-06-2006
US 2002067336	A1	06-06-2002	NONE
DE 10300469	A1	10-07-2003	NONE
WO 03081413	A1	02-10-2003	AU 2003213395 A1 08-10-2003