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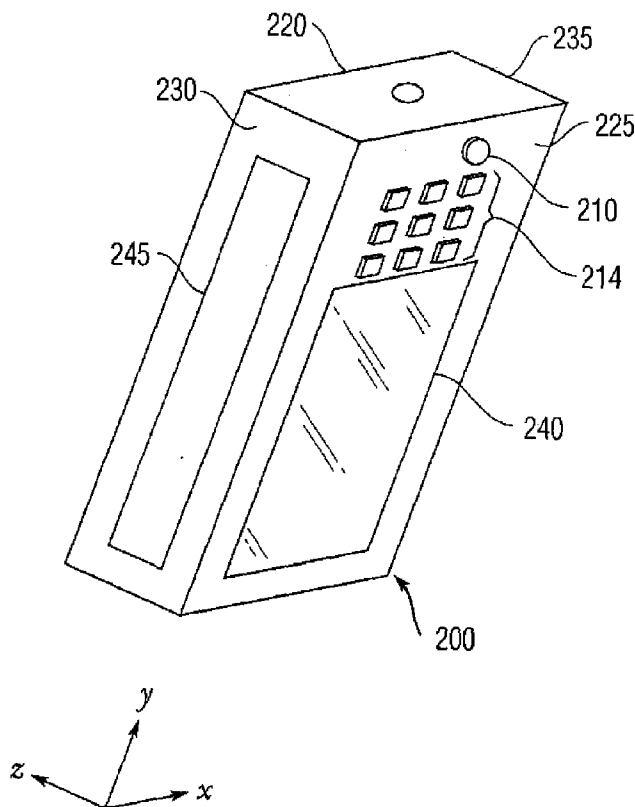
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[Continued on next page]

(54) Title: MULTI-TOUCH SKINS SPANNING THREE DIMENSIONS



(57) Abstract: One or more multi-touch skins (240, 245) can be placed along three dimensions of an object (200). The one or more multi-touch skins enable multi-touch inputs during the operation of the object. The multi-touch inputs can be tracked to monitor the operation of the object and provide feedback to the operator of the object. The one or more multi-touch skins can further enable gestures for configuring and operating the object. The one or more multi-touch skins can also be used to implement any number of GUI interface objects and actions. A multi-touch skin that measures the force of a touch in one or more directions is also provided.

Fig. 5



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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ADD. G06F1/16

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	<p>WO 2005/114624 A (DANIEL SIMON RICHARD [GB]; WRIGHT CHRISTOPHER VERITY [GB]; WELLAND SIM) 1 December 2005 (2005-12-01)</p> <p>page 1, line 9 - line 13; figures 1a, 1b, 2a, 5b, 6, 10, 12</p> <p>page 5, line 4 - line 14</p> <p>page 5, line 21</p> <p>page 6, line 21 - page 7, line 30</p> <p>page 11, line 13 - line 28</p> <p>page 14, line 14 - page 15, line 2</p> <p>page 18, line 24 - page 19, line 11</p> <p>page 23, line 11 - line 15</p> <p style="text-align: center;">----- -/--</p>	1-13

☒ 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

E earlier document but published on or after the international filing date

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)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

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

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

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.

* & * document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/089173

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/096501 A (APPLE COMPUTER [US]; KERR DUNCAN R [US]; HOTELLING STEVE [US]; HUPPI B) 14 September 2006 (2006-09-14) paragraphs [0026] - [0027]; figure 2 paragraph [0039]; figure 9 paragraphs [0045] - [0055]; figure 10 paragraphs [0071] - [0081]; figures 16-17d	14-19
Y		20-24
Y		29-35
X	US 6 268 857 B1 (FISHKIN KENNETH P [US] ET AL) 31 July 2001 (2001-07-31)	1-5, 7-11, 14-16 6,17-19
A	column 2, line 6 - line 17; figures 12,3-8 column 3, line 3 - line 55 column 4, line 59 - column 5, line 30 column 6, line 5 - line 65 column 9, line 7 - column 10, line 16	
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A	WO 2004/114105 A (BINSTEAD RONALD PETER [GB]) 29 December 2004 (2004-12-29) page 5, line 28 - page 8, line 25; figure 3 page 18, line 9 - line 20 page 23, line 24 - page 26, line 15; figure 21	20-24
Y	EP 1 418 491 A (DELPHI TECH INC [US]) 12 May 2004 (2004-05-12) paragraphs [0012], [0020] - [0022]; figures 3,4	20-24
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/089173

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/075267 A (PHILIPS INTELLECTUAL PROPERTY [DE]; KONINKL PHILIPS ELECTRONICS NV [NL] 20 July 2006 (2006-07-20) page 8, line 7 - page 10, line 12; figures 6A-6C -----	25-35
X	US 5 942 733 A (ALLEN TIMOTHY P [US] ET AL) 24 August 1999 (1999-08-24) column 3, line 60 - column 5, line 65; figure 1	25-28
Y	-----	29-35
A	US 2006/044260 A1 (HARLEY JONAH [US] ET AL) 2 March 2006 (2006-03-02) paragraphs [0019] - [0021]; figures 1,2 paragraph [0022]; figure 3 paragraph [0026]; figure 5 paragraph [0032]; figure 6 -----	25-35
A	US 2006/176270 A1 (SACHS TODD S [US]) 10 August 2006 (2006-08-10) paragraphs [0015] - [0020]; figures 1-4 -----	25-35
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/089173

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

The description discloses one embodiment (portable multi-touch skin, see figure 11 and paragraphs 90 to 95) which is not related to the technical subject matter of the claimed invention. Therefore the search has been limited to embodiments of multi-touch skins as described in the preferred embodiments and claimed in the original claims.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-19

detection of multiple touch inputs on several surfaces of a hand held device having display, and recognition of touch inputs on each surface.

2. claims: 20-24

Multi-touch sensitive skin with textured surface.

3. claims: 25-35

Multi-touch sensitive skin having a capacitive array of nodes and cover positioned over the array, the cover comprising a plurality of conductive units, each unit being positioned between at least two nodes.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/089173

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