



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	12/14/2021	11200252	011844-0034-999	2446

20583 7590 11/23/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

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):

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA;

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.

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: November 19, 2020		Page 7 of 8		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	157	6,744,423	06/2004	Kraft et al.				
	158	20040163032	08/2004	Guo et al.				
	159	20060146028	07/2006	Chang et al.	Change(s) applied			
	160	20060265648	11/2006	Rainisto et al.	to document,			
	161	7,152,213	12/2006	Pu et al.	/JKW/			
	162	20020113825	08/2002	Perlman et al.	1/11/2021			
	163	6,593,913	07/2003	Krohn et al.				
	164	5,223,924	06/1993	Strubbe				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	165	Petition for Inter Partes Review of U.S. Patent No. 9,697,264, IPR2020-00736, May 17, 2020						
	166	Patent Owner's Preliminary Response, IPR2020-00736, June 24, 2020						
	167	Patent Owner's Corrected Preliminary Response, IPR2020-00736, July 15, 2020						
	168	Samsung's Preliminary Reply, IPR2020-00736, July 22, 2020						
	169	Patent Owner's Preliminary Sur-Reply, IPR2020-00736, July 29, 2020						
	170	Decision Denying Institution of Inter Partes Review, IPR2020-00736, September 22, 2020						
	171	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00736, March 12, 2020						
	172	Petition for Inter Partes Review of U.S. Patent No. 9,436,354, IPR2020-00737, March 17, 2020						
	173	Patent Owner's Preliminary Response, IPR2020-00737, June 24, 2020						
	174	Patent Owner's Corrected Preliminary Response, IPR2020-00737, July 15, 2020						
	175	Samsung's Preliminary Reply, IPR2020-00737, July 22, 2020						
	176	Patent Owner's Preliminary Sur-Reply, IPR2020-00737, July 29, 2020						
	177	Decision Granting Institution of Inter Partes Review, IPR2020-00737, September 23, 2020						
	178	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00737, March 12, 2020						
	179	Patent Owner's Exhibit 2003, Declaration of Ravin Balakrishnan, Ph.D., IPR2020-00737, June 24, 2020						
	180	Declaration of Todd K. Viegut In Support of Patent Owner's Preliminary Response, IPR2020-00737, June 24, 2020						
	181	Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, March 17, 2020						
	182	Patent Owner's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, June 24, 2020						
	183	Patent Owner's Corrected Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, July 15, 2020						
Examiner:					Date Considered:			
*EXAMINER: Initial if citation 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.								

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: November 19, 2020		Page 3 of 8		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	58	5,787,417	07-98	Hargrove				
	59	6,311,125	10-01	Okano et al.				
	60	2002/0091690	07-02	Bailey et al.				
	61	2003/0182274	09-03	Oh				
	62	2005/0010605	01-05	Conrad et al.				
	63	7,185,286	02-07	Zondervan et al.				
	64	6,264,146	07-02	Hill et al.				
	65	6,011,554	01-00	King et al.				
	66	5,953,541	09-99	King et al.				
	67	5,911,485	06-99	Rossman				
	68	6,377,965	04-02	Hachamovitch et al.				
	69	2010/0010963	01-10	Dinn				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
	70	2317531	03-98	Great Britain				
	71	2003021418	03-03	International				
	72	2002/013001	02-02	International				
	73	2001/067725	09-01	International				
	74	2008/080192	07-08	International				
	75	2008/106729	09-08	International				
	76	JP 2005-159250	07-05	Japan				
	77	2000/059181	10-00	International				
	78	10019727	10-01	Germany				
	79	1199302	11-98	China				
OTHER RELEVANT NON-PATENT DOCUMENTS								
	80	"iTAP" Predictive Text Input Technology Technical Paper" LEXICUS, A DIVISION OF MOTOROLA, Version 1.0, 26 June 2002, pgs 1-11. Retrieved from the Internet on 28 August 2006 at URL: http://www.toptrend.com.tw/library/product%20line/Lexicus/iTAP/iTAP%20Technical%20Paper%20for%20ESC.pdf						
	81	"New Nokia 5510 is Entertainment Phone", Ana Leticia Sigvartsen, InfoSatellite.com, 11 October 2001, < http://www.infosatellite.com/news/2001/10/a11001nokia_5510.htm >						
	82	"Nokia 5510 User's Guide", Copyright 2001-2002, Selected Pages. Available at: < http://nds1.nokia.com/phones/files/guides/5510_usersguide_en.pdf >						
Examiner:				Date Considered:				
*EXAMINER: Initial if citation 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.								

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
16927723	13-Jul-2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION :

PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Regular Undiscounted	Utility under 35 USC 111(a)	2173	203000	
Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
\$1200	\$0	\$1200	01-Feb-2022	\$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
20583 Jones Day 250 Vesey Street New York NY 10281-1047 UNITED STATES 212-326-3939 japarker@jonesday.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status**Change in Entity Status**

Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.

Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.



Applicant asserting small entity status. See 37 CFR 1.27.

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.



Applicant changing to regular undiscounted fee status.

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



Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☐ Advance Order - # of copies _____

☐ If in **addition** to the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number _____.
The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. JONES DAY

2.

3.

5.Assignee Name(s) and Residence Data To Be Printed

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.

Name	City	State	Country	Category
Kannuu Pty Ltd.	Mount Kuring-Gai,		AUSTRALIA	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Vishal V Khatri/	Date	11-09-2021
Name	Vishal Vincent Khatri	Registration Number	51873

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1200

Electronic Acknowledgement Receipt

EFS ID:	44241984
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	09-NOV-2021
Filing Date:	13-JUL-2020
Time Stamp:	16:51:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 1200
RAM confirmation Number	E2021A9G51342869
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	62517	no	2
			b1ca0a234034841cce036f24432efa19f91490ca		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40409	no	2
			906b114631458881f3b701d512fbe9b15a2f7f2d		
Warnings:					
Information:					
Total Files Size (in bytes):			102926		
<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>					



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

20583 7590 11/01/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

EXAMINER	
SHIH, HAOSHIAN	
ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 11/01/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	02/01/2022

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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.

20583 7590 11/01/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	02/01/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
SHIH, HAOSHIAN	2173	715-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(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 _____

3 _____

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	11/01/2021	EXAMINER	
Jones Day			SHIH, HAOSHIAN	
250 Vesey Street			ART UNIT	
New York, NY 10281-1047			PAPER NUMBER	
			2173	
DATE MAILED: 11/01/2021				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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 30 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.

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.

Notice of Allowability	Application No. 16/927,723	Applicant(s) Dinn, Kevin W.	
	Examiner HAOSHIAN SHIH	Art Unit 2173	AIA (FITF) 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 10/18/2021.
☐ 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 27-39. 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)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>10/18/2021</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/HAOSHIAN SHIH/
Primary Examiner, Art Unit 2173

Notice of Pre-AIA or AIA Status

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

Notice of Pre-AIA or AIA Status

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

Information Disclosure Statement

The listing of references in the PCT international search report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the international search report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Item No. 103, 127, 152 of IDS dated 11/19/2020 has no date.

Allowable Subject Matter

3. Claims 27-39 are allowed.
4. The following is an examiner's statement of reasons for allowance:

The current application is directed to process and apparatus for selecting an item from a database using a four way directional controller with an activation key in the middle of the four way controller.

The art of record does not expressly disclose select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers; and wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

These limitations, in specific combination as recited in independent claims, define patentability of the claims over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAOSHIAN SHIH whose telephone number is (571)270-1257. The examiner can normally be reached on M-F 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIEU VU can be reached on 5712724057. 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.

/Haoshian Shih/
Primary Examiner, Art Unit 2173

Search Notes 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC - Searched*		
Symbol	Date	Examiner
G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237	08/14/2020	HSS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST, internet, inventor search	08/14/2020	HSS
Updated search	08/17/2021	HSS
Updated search	10/25/2021	HSS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F3	0481, 0237	10/25/2021	HSS
G06F16	26	10/25/2021	HSS
H04M1	2748	10/25/2021	HSS

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Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC						
Symbol					Type	Version
G06F	/	16	/	26	F	2019-01-01
G06F	/	3	/	0237	I	2013-01-01
H04M	/	1	/	2748	I	2020-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner) _____ (Date) 25 October 2021		O.G. Print Claim(s) 1	O.G. Print Figure 18E

<i>Issue Classification</i> 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner)	25 October 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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-	4	-	13	-	22	5	31	-	40	-	49				
-	5	-	14	-	23	6	32	-	41						
-	6	-	15	-	24	7	33	-	42						
-	7	-	16	-	25	8	34	-	43						
-	8	-	17	-	26	9	35	-	44						
-	9	-	18	1	27	10	36	-	45						

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner) _____ (Date) 25 October 2021		O.G. Print Claim(s) 1	O.G. Print Figure 18E

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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			USPAT; USOCR			
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L41	19	kannuu.as.	US- PGPUB; USPAT; USOCR;	OR	OFF	2021/10/25 19:56

			FPRS; EPO; JPO			
L42	4	L41 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:56
L43	3	(("20040163032") or ("20020151327") or ("5953541")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:56
L44	0	L41 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:56
L45	0	L41 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:56
L46	0	L41 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56
L47	0	L41 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56
L48	0	L41 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56
L49	15	L41 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56

L50	15	L41 and (screen near2 keyboard)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56
L51	4	L41 and (screen near2 keyboard) and (directional near2 controller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:56
L52	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 19:56
L53	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 19:56
L54	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L55	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US-PGPUB;	OR	OFF	2021/10/25 19:57

			USPAT; USOCR			
L56	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L57	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L58	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 19:57
L59	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57

L60	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 19:57
L61	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 19:57
L62	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L63	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:57
L64	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:57
L65	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:57
L66	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:57
L67	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:57
L68	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 19:57
L69	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 19:57
L70	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209"	US- PGPUB; USPAT	OR	OFF	2021/10/25 19:57

		"0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L71	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L72	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L73	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L83	3	((("20070080949") or ("21020023433") or ("20060276234") or ("8798237"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:57
L84	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58

L85	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:58
L86	4	L85 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:58
L87	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L88	0	L85 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:58
L89	0	L85 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:58
L90	0	L85 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L91	0	L85 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L92	0	L85 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L93	15	L85 and (screen near3 keyboard)	US- PGPUB; USPAT;	OR	ON	2021/10/25 19:58

			USOCR; FPRS; EPO; JPO			
L94	15	L85 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L95	4	L85 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L96	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L97	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L98	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58

L99	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L100	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L101	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L102	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L103	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58

		"7681124" "7802184" "7886233").PN. OR ("9582082").URPN.				
L104	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L105	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L106	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L107	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:58
L108	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L109	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L110	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L111	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:58
L112	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L113	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 19:58
L114	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002"	US- PGPUB; USPAT	OR	OFF	2021/10/25 19:58

		"0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L115	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L116	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:58
L117	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L118	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770"	US- PGPUB; USPAT	OR	OFF	2021/10/25 19:59

		"20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L119	148	("6801659").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L120	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L121	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:59
L122	4	L121 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:59
L123	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59

L124	0	L121 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:59
L125	0	L121 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 19:59
L126	0	L121 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L127	0	L121 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L128	0	L121 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L129	15	L121 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L130	15	L121 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L131	4	L121 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59

L132	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L133	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L134	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L135	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L136	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59

		"20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.				
L137	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L138	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L139	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L140	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L141	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 19:59
L142	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 19:59
L143	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR;	OR	OFF	2021/10/25 19:59

			FPRS; EPO; JPO			
L144	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L145	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L146	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 19:59
L147	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:00
L148	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:00
L149	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:00
L150	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668"	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:00

		"20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L151	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L152	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L153	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L166	6	("20020087979" "20040186819" "20050270270" "20060265208" "20060293889" "20090192786").PN.	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:00
L167	27	("2009/0192786").URPN.	USPAT	OR	OFF	2021/10/25 20:00
L168	1	("20120149477").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L169	4	((("20100241993") or ("20100277415") or ("20080297480") or ("20110063225"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L170	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:00
L171	19	kannuu.as.	US- PGPUB; USPAT; USOCR;	OR	OFF	2021/10/25 20:00

			FPRS; EPO; JPO			
L172	4	L171 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:00
L173	3	(("20040163032") or ("20020151327") or ("5953541")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01
L174	0	L171 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:01
L175	0	L171 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:01
L176	0	L171 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L177	0	L171 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L178	0	L171 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L179	15	L171 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01

L180	15	L171 and (screen near2 keyboard)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L181	4	L171 and (screen near2 keyboard) and (directional near2 controller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L182	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 20:01
L183	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 20:01
L184	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01
L185	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US-PGPUB;	OR	OFF	2021/10/25 20:01

			USPAT; USOCR			
L186	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01
L187	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01
L188	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 20:01
L189	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01

L190	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 20:01
L191	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 20:01
L192	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:01
L193	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:01
L194	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L195	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L196	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L197	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:01
L198	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:02
L199	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:02
L200	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209"	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:02

		"0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L201	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:02
L202	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:02
L203	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:02
L204	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414"	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:02

		"20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L205	148	("6801659").URPN.	USPAT	OR	OFF	2021/10/25 20:02
L206	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:02
L207	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:02
L208	4	L207 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:02
L209	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:02
L210	0	L207 and (screen near2 keyboard).clm.	US- PGPUB; USPAT;	OR	OFF	2021/10/25 20:02

			USOCR; FPRS; EPO; JPO			
L211	0	L207 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:02
L212	0	L207 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L213	0	L207 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L214	0	L207 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L215	15	L207 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L216	15	L207 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L217	4	L207 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:02
L218	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 20:02
L219	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 20:02

L220	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L221	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L222	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03

		"5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.				
L223	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L224	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 20:03
L225	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L226	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 20:03
L227	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 20:03
L228	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L229	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:03
L230	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item	US- PGPUB;	OR	ON	2021/10/25 20:03

		part identifier character word letter) same navigat\$4))	USPAT; USOCR; FPRS; EPO; JPO			
L231	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:03
L232	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:03
L233	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:03
L234	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:03
L235	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:03
L236	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992"	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:03

		"5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L237	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L238	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L239	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L240	3	((("20070080949") or ("21020023433") or ("20060276234") or ("8798237"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:03
L241	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L242	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:04
L243	4	L242 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:04
L244	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L245	0	L242 and (screen near2 keyboard).clm.	US- PGPUB;	OR	OFF	2021/10/25 20:04

			USPAT; USOCR; FPRS; EPO; JPO			
L246	0	L242 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:04
L247	0	L242 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L248	0	L242 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L249	0	L242 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L250	15	L242 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L251	15	L242 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L252	4	L242 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:04
L253	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 20:04

L254	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 20:04
L255	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L256	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L257	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04

		"20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.				
L258	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L259	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 20:04
L260	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:04
L261	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 20:04
L262	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 20:05
L263	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L264	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:05

L265	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:05
L266	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:05
L267	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:05
L268	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:05
L269	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:05
L270	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:05
L271	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963"	US-PGPUB; USPAT	OR	OFF	2021/10/25 20:05

		"3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L272	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L273	4	((("8370393") or ("9436354") or ("8676852") or ("8996579")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L274	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L275	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799"	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:05

		"5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L276	148	("6801659").URPN.	USPAT	OR	OFF	2021/10/25 20:05
L277	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L278	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:05
L279	4	L278 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:05
L280	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:05
L281	0	L278 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:05
L282	0	L278 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:05
L283	0	L278 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06

L284	0	L278 and (direction\$3 same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06
L285	0	L278 and (keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06
L286	15	L278 and (screen near3 keyboard)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06
L287	15	L278 and (screen near2 keyboard)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06
L288	4	L278 and (screen near2 keyboard) and (directional near2 controller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:06
L289	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/10/25 20:06
L290	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/10/25 20:06
L291	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672"	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06

		"5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.				
L292	58	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06
L293	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06

		"7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.				
L294	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06
L295	39	("6744423").URPN.	USPAT	OR	OFF	2021/10/25 20:06
L296	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06
L297	79	("6144378").URPN.	USPAT	OR	OFF	2021/10/25 20:06
L298	6	("7084858").URPN.	USPAT	OR	OFF	2021/10/25 20:06
L299	1	("20050043063").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:06
L300	74,265	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/10/25 20:06
L301	328	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:07
L302	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:07
L303	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR;	OR	ON	2021/10/25 20:07

			FPRS; EPO; JPO			
L304	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/10/25 20:07
L305	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:07
L306	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/10/25 20:07
L307	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.	US- PGPUB; USPAT	OR	OFF	2021/10/25 20:07
L308	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:07

L309	4	("8370393") or ("9436354") or ("8676852") or ("8996579")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:07
L310	1	("8996579").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/10/25 20:07
L311	6	("20020087979" "20040186819" "20050270270" "20060265208" "20060293889" "20090192786").PN.	US-PGPUB; USPAT	OR	OFF	2021/10/25 20:07
L312	27	("2009/0192786").URPN.	USPAT	OR	OFF	2021/10/25 20:07
L337	1	("20020078013").PN.	US-PGPUB; USPAT	OR	OFF	2021/10/25 20:09

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L28	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 19:56
L29	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 19:56
L30	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 19:56
L74	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/10/25 19:57
L75	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 19:57
L76	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 19:57
L77	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 19:57
L78	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/10/25 19:57
L79	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/10/25 19:57
L80	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 19:57

L81	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 19:57
L82	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 19:57
L154	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:00
L155	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 20:00
L156	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:00
L157	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/10/25 20:00
L158	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:00
L159	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:00
L160	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:00
L161	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/10/25 20:00
L162	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/10/25 20:00
L163	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:00
L164	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 20:00
L165	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:00
L313	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:07
L314	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item	USPAT	OR	OFF	2021/10/25 20:07

		part identifier character word letter) same navigat\$4)).clm.				
L315	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:07
L316	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/10/25 20:07
L317	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:07
L318	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:07
L319	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:08
L320	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/10/25 20:08
L321	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/10/25 20:08
L322	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:08
L323	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 20:08
L324	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:08
L325	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:08
L326	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 20:08
L327	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:08
L328	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/10/25 20:08
L329	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:08
L330	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:08

L331	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/10/25 20:08
L332	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/10/25 20:08
L333	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/10/25 20:08
L334	14,416	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/10/25 20:08
L335	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/10/25 20:08
L336	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/10/25 20:08

10/25/2021 9:03:11 PM

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LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999			
				Applicant: Kevin W. Dinn			
				Application Serial No. 16/927,723			
				Filing Date: July 13, 2020			
Date: October 18, 2021		Page 1 of 1		Examiner: Haoshian Shih		Group Art Unit: 2173	
U.S. PATENT DOCUMENTS							
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant		Class	SubClass
	1	2002/0078013	6/20/2002	Michael Josenhan			
FOREIGN PATENT DOCUMENTS							
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract
	2	WO 2002/091160	11/14/2002	International	Attached	Not Available	Attached Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS							
	3	Request for Ex Parte Reexamination of US Patent No. 9,697,264, Reexamination No. 90/014,759 (May 28, 2021).					
	4	Request for Ex Parte Reexamination of US Patent No. 8,676,852, Reexamination No. 90/014,760 (May 28, 2021).					
	5	Request for Ex Parte Reexamination of US Patent No. 8,996,579, Reexamination No. 90/014,761 (May 28, 2021).					
	6	Declaration of Clifton Forlines in Support of Samsung's Requests for Ex parte Reexamination of US Patent Nos. 8,676,852, 8,996,579, and 9,697,264 (May 27, 2021)					
	7	Petition under 1.181 for Reexamination Nos. 90/014,759, 90/014,760, and 90/014,761 (July 28, 2021).					
	8	Response to Petition under 1.181 for Reexamination Nos. 90/014,759, 90/014,760, and 90/014,761 (August 11, 2021).					
	9	Order Granting Request for Ex Parte Reexamination No. 90/014,759 (July 2, 2021).					
	10	Order Granting Request for Ex Parte Reexamination No. 90/014,760 (July 6, 2021).					
	11	Order Granting Request for Ex Parte Reexamination No. 90/014,761 (July 6, 2021).					
	12	2021-06-11 Patent Owner's Brief Regarding Additional Discovery from Samsung ('354 Patent), IPR2020-00737 (June 21, 2021).					
	13	2021-06-11 Patent Owner's Brief Regarding Additional Discovery from Samsung ('393 Patent), IPR2020-00738 (June 11, 2021).					
	14	2021-6-21 Demonstrative Exhibits for Kannuu ('354 and '393 Patent IPRs), IPR2020-00737 and IPR2020-00738 (June 21, 2021).					
	15	2021-6-30 Demonstrative Exhibits for Samsung ('354 and '393 Patent IPRs), IPR2020-00737 and IPR2020-00738 (June 30, 2021).					
	16	2021-07-20 Patent Owner's Motion to Strike ('354 Patent), IPR2020-00737 (July 20, 2021).					
	17	2021-07-20 Patent Owner's Motion to Strike ('393 Patent), IPR2020-00738 (July 20, 2021).					
	18	Petitioner's Opposition to Kannuu's Motion to Strike ('354 Patent), IPR2020-00737 (July 27, 2021).					
	19	Petitioner's Opposition to Kannuu's Motion to Strike ('393 Patent), IPR2020-00738 (July 27, 2021).					
	20	Petitioner's Brief Regarding Samsung Discovery, IPR2020-00737 (June 21, 2021).					
	21	Petitioner's Brief Regarding Samsung Discovery, IPR2020-00738 (June 21, 2021).					
	22	Judgment, Final Written Decision Determining All Challenged Claims Unpatentable, IPR2020-00737 (September 21, 2021).					
	23	Judgment, Final Written Decision Determining All Challenged Claims Unpatentable, IPR2020-00738 (September 21, 2021).					
Examiner: /HAOSHIAN SHIH/				Date Considered: 10/25/2021			
*EXAMINER: Initial if citation 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.							

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
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U.S. PATENT DOCUMENTS								
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FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
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	13	2021-06-11 Patent Owner's Brief Regarding Additional Discovery from Samsung ('393 Patent), IPR2020-00738 (June 11, 2021).						
	14	2021-6-21 Demonstrative Exhibits for Kannuu ('354 and '393 Patent IPRs), IPR2020-00737 and IPR2020-00738 (June 21, 2021).						
	15	2021-6-30 Demonstrative Exhibits for Samsung ('354 and '393 Patent IPRs), IPR2020-00737 and IPR2020-00738 (June 30, 2021).						
	16	2021-07-20 Patent Owner's Motion to Strike ('354 Patent), IPR2020-00737 (July 20, 2021).						
	17	2021-07-20 Patent Owner's Motion to Strike ('393 Patent), IPR2020-00738 (July 20, 2021).						
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	19	Petitioner's Opposition to Kannuu's Motion to Strike ('393 Patent), IPR2020-00738 (July 27, 2021).						
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	23	Judgment, Final Written Decision Determining All Challenged Claims Unpatentable, IPR2020-00738 (September 21, 2021).						
Examiner:				Date Considered:				
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Box 765 Sentrum, N-0106 Oslo (NO).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

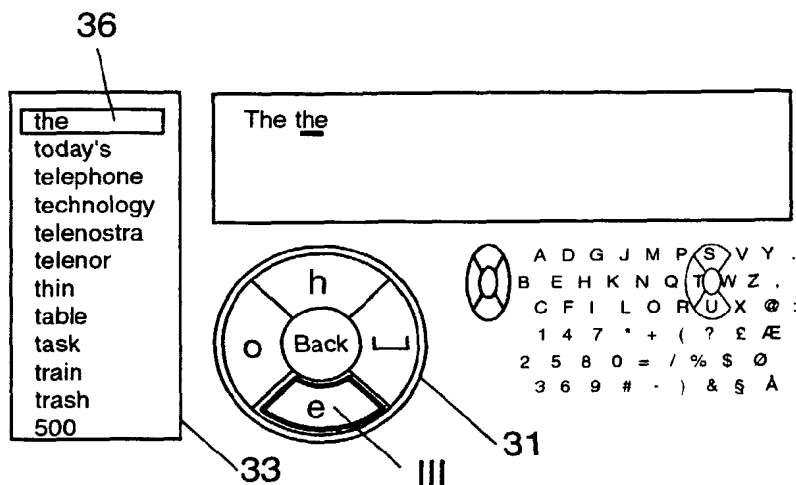
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Published:

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SYSTEM FOR PREDICTING INPUT OF DATA ELEMENTS



(57) Abstract: A system for input of data elements, e.g. letters, signs, numbers and/or symbols in connection with an electronic apparatus or device which has or is connected to a display, wherein the system is so configured that on input of at least one first data element in a data phrase it offers suggestions of the data phrase. A stepwise rotatable multifunction switch having five depression points causes on rotation movement of a marker across an array of said data elements. On the screen there is shown an animation of the multifunction switch and its depression points, and also the successive data elements over which the marker is brought to lie for selection of at least the first data element on depression of the switch

at the given depression point. The system is so configured that after input of said at least first data element and/or possibly further data element(s) predictively, it shows on the display, without further rotation of the switch, predictively at least three data elements on the switch animation for further construction of words, independent of the marker's position on the array of data elements, and at the same time offers suggestions of remaining data elements in a complete data phrase.

System for predicting input of data elements

The present application relates to a system for letter, sign and/or symbol input in connection with electronic apparatus, as disclosed in the preamble of the attached patent
5 claims.

The invention is also related to a system for the input of data elements, e.g., letters, signs, numbers and/or symbols, in connection with an electronic apparatus or device which has or is connected to a display, wherein the system is so configured that on the
10 input of at least a first data element which is part of a data phrase it offers suggestions of the data phrase, as disclosed in the preamble of attached claims 23, 24 and 25.

When using multifunction keys on electronic apparatus such as a mobile telephone, a PDA, a pocket PC, a remote control, a calculator, vessel control units etc, the user will,
15 with the system described in this application, find it easy to operate the various functions in the various apparatus.

The invention represents further development of the invention described in the applicant's earlier application PCT/NO00/00412.

20

The invention will be described in connection with the use of sliding and rotary switches. These are described in more detail in the inventor's earlier applications PCT/NO99/00373 and PCT/NO01/00057.

25 In order to describe the different systems, apparatus such as a mobile telephone and a PDA/pocket PC are used as illustrations in this application, although this should not be taken as defining the limits of the invention. The system is based on the screen showing or reflecting the possible functions of the switch and showing or giving feedback in response to the choices made and the functions operated. Thus, all screen-assisted and
30 screen-based devices can be used according to the system described herein.

Today, input of text, in particular in small apparatus without a complete keyboard (like a PC/typewriter) is somewhat cumbersome. This is because one and the same key may be a means of input for several letters/symbols/signs. This means that the user has to
35 press the same key many times in order to obtain his desired choice, and with the many functions apparatus such as PDAs and mobile telephones have today it is easy to "become bogged down in" menus or to become entangled in functions.

There are various solutions on the market which make a guess at words on the input of text. One example of such a solution is T9 from Tegic, cf. PCT/US98/20200, WO99/15952. This system guesses words/letter combinations of the same number of
5 letters as the word the user requires or enters.

Another system guesses words in response to the letters that have been entered and places the alternatives on a line for the user to choose from. (This is found, e.g., with Linux).

10

The inventor's patent application PCT/NO00/00412 describes a system which guesses words as the user writes. This means to say that the user can continue to write if the system guesses wrong. The system guesses on the basis of a list of words from which words are chosen on the basis of priority, i.e., according to how frequently they are
15 used. There are a number of documents which describe similar subjects, such as US5952942, US6002390 and WO 00/34880, although these documents cannot be regarded as anticipating the novelty of the present invention.

The characteristic features of the first aspect of the invention are set forth in attached
20 patent claim 1 and its associated subclaims 2-22, and are described with reference to the attached drawings, Figs. 1-7 in the following description.

In what follows a predictive system for use in connection with apparatus operated with just one switch will be described. The system can also be adapted to today's standard
25 pushbutton keyboards and touch screens.

It is also intended to show how the system mentioned above is meant to be implemented in practice in connection with a rotatable, multifunctional switch having five pressure points. Referring to Fig. 5, a predictive system is shown where a such a switch type is
30 used. In this case a predictive selection of letters takes place by highlighting or marking relevant letters which are arranged in a "keyboard".

It is also an object of the present invention to take the form of predictiveness shown and described in Figs. 1-7 a step further, primarily in connection with the use of the said
35 rotating, multifunctional switch.

Thus, it is an object of the invention to simplify a system for input of data elements, as for example letters, signs, numbers and/or symbols, thereby enabling words or sentences to be entered considerably faster when using a multifunctional switch of this kind than has been possible before.

5

Another object of the present invention is to be able to adapt the system to a conventional keyboard per se, although the same advantages are not obtained as when using a rotatable, multifunctional switch.

- 10 The primary characteristic features of the second aspect of the invention are set forth in attached claims 23, 24 and 35 and subclaims 25-34 and 36-39 associated therewith.

This part of the invention will be described in more detail with reference to the attached drawings, Figs. 8-12 which serve as non-limiting embodiments of the present invention.

15

In addition, reference is made to PCT NO99/00373, which relates to multifunction keys, PCT/NO01/00057, which describes multifunction keys and the use of multifunction keys in handheld apparatus such as a mobile telephone, a PDA, a mini PC, or a remote control related to PCT/NO00/00412 and in connection with a car as described in

20

PCT/NO01/00056.

Fig. 1 shows a first aspect of the system according to the invention.

Fig. 2 shows a second aspect of the system according to the invention.

Fig. 3 shows a third aspect of the system according to the invention.

- 25 Fig. 4 shows a fourth aspect of the system according to the invention.

Fig. 5 shows the use of a first version of a keyboard for operating the system.

Fig. 6 shows the use of a second version of a keyboard for operating the system.

Fig. 7 is a schematic illustration of the structure of the system according to the invention.

- 30 Fig. 8 shows by way of example a rotatable multifunctional switch with five pressure points.

Figs. 9a-9m show in steps an interactive display presentation with an animation of the actual switch with its five depression points, and also related screen images.

Figs. 10a-10h show a variant of the system disclosed in Figs. 9a-9m.

- 35 Figs. 11a-11u illustrate the entry of data using a rotatable switch as shown in Fig. 1 interactively with a display and a predictive letter and word system.

Figs. 12a-12d shows the use of a traditional pushbutton keyboard in connection with the system shown in Figs. 9-11.

In the following description it will be understood that a screen image on a display will reflect the input and navigation options which, for example, the use of a multifunction switch will have. The screen image can be adapted to a smaller display screen which is usual for a mobile telephone, but is of course adaptable to larger display screens which are not only used on mobile telephones but also for other apparatus. Therefore the system is not limited to mobile telephone application, but could also easily be used in other apparatus and applications such as ordinary telephones, PDAs, PCs, remote control units, other input devices etc.

The system shown will also be capable of being used (with modifications) on switches which vary as regards the number of pressure positions, sliding or rotational positions. This will also apply to rotary switches which operate in different planes (horizontal or vertical).

As will be apparent from some of the earlier applications, it is possible when using a multifunction switch to distinguish between a long and a short key press. The user also distinguishes between different functions and commands with a toggle or sliding function (a toggle function is a short sliding movement of a switch, where the switch will automatically move back to its previous position once actuation ceases, cf. PCT/NO01/00057). In a text mode it will be possible, for example, to enter new letters/symbols/numbers by means of a short key press. By means of a long key press, it will be possible, for example, to choose other symbols or submenus.

One alternative may be to use short and long key presses so that the user has two options for each position on the screen, but distinguishes between these by means of long or short key presses.

It should be mentioned that all the system solutions shown and described per se will be capable of being utilised in connection with the use of conventional pushbutton keyboards, but will then not be as effective in practice.

In today's pushbutton keyboards arrow keys are often used to cause a cursor to move across a screen. However, the systems discussed in this description can also be utilised directly when a touch screen is used. In this case, touching the screen at the different

positions and functions will replace the positions to which the various switches in the illustrated systems would have to be moved. However, the user will be dependent upon all information being shown on the screen.

- 5 A method for the use of a sliding switch across five steps and with four possible depression points, without toggle, will now be described.

For input or writing to take place the user must be in a write mode, i.e., for example, he must write SMS if the apparatus is, for example, a mobile telephone, as assumed in this
10 example. The apparatus will preferably have a memory in which is stored a reference book/dictionary for the language that it is to be used. However, it is conceivable that information from a reference book/dictionary can be fetched from an external memory, as for instance from a telecommunications operator (APS, Application Service
15 Provider). Other aspects concerning language will be touched upon later in the description. It may well be thought that it would be difficult to have so much memory capacity in such a small apparatus as a mobile telephone, but it looks as though this will be a problem of the past in a very short time (just like battery capacity). Another aspect is systems currently in the pipeline which will have a much larger transmission capacity and rate than we have today. This will enable users to exchange much greater amounts
20 of data and information via both fixed lines and wireless connection.

The system is intended to be programmed so that the words which the user employs most come first, that it is to say that, no matter what their length, words will come or be shown successively in the priority order they have according to previous use. If the list
25 of words does not have any priority order, the shortest words will be shown first. If a long word has been in use more than a short word with the same beginning, the long word will be shown first according to the system with priority order. The text the user is writing will be shown in a separate field in the screen image, i.e., on the display. In addition, the words the system guesses will continue to appear in the text. At the same
30 time, for example, six successive words in priority order will be shown in the six fields (in this case) at the bottom of the display screen. Of course, the number of fields may be slightly smaller or slightly greater. In addition, a number could be shown which indicates the total number of words than can be chosen from. Here, regardless of the position of the switch, the user can either confirm if the system has guessed correctly,
35 continue to enter letters, thereby reducing the number of word options, or choose another word from the list shown.

In connection with Fig. 1, especially Figs. 1e-1j, it should be noted that the splitting of letter groups is an important principle which, in combination with a predictive system, can make letter input extremely efficient. On the input of text, the user will, by means of the system, split letter groups for the selection of the right letter or sign. If the system has selected a word on the basis of a letter from a particular group of letters, but the user requires another word, the user will eliminate the suggested word based on the letter which was rejected by entering a letter from another group of letters. If the letter is correct, but the word is wrong, the letter is approved and all the predictive options which then follow include this letter of group of letters. The system thus guesses words on the basis of entered letter(s). If a letter is rejected, the possible options the system has for guessing the right word are reduced. The whole list of words is narrowed down to the words which contain the selected letters.

As indicated in Fig. 1a, field 1 will essentially show the main options which are chosen by a short key press in relation to the individual fields. Field 2 shows other functions and is chosen by a long key press of the multifunction key 3. Fig. 1a thus shows a "start" image where the main options are shown in field 1 and the subsidiary options are shown in field 2. The whole menu is shown when the user presses the function key 3 at II. As shown in Fig. 1b, the menu will spread out in the main field 4. Pushing the button 3 through Y5-Y1 will result in the selection of the desired submenu or function. If the position Y5 is chosen and the user presses the button 4 at position III, he will thus choose SMS from the menu, and thereby go straight into a write mode as shown in Fig. 1c. If the user does not choose MENU, he may go straight to SMS which is provided as a fast select field 2, X2 in Fig. 1a.

Position Y2-Y5 will contain the normal alphabet, and is shown in field 1 for each switch position. Field 2 shows commands which are activated by a long key press (or a double key press, depending upon the programming). The set-up in this case is such that the menu or main functions are in position Y1 and are thus shown in field 1. It may also be the case that the menu line can be assigned to Y5, or installed as an option in the setting of the menu for the apparatus in question.

A predictive system of a first type will now be described.

We want to write "TELENOSTRA". After choosing SMS (Short Message Service) or another write mode, the letters will be split into groups of three in field 1, cf. Fig. 1c. As shown in Fig. 1e, the switch 3 is then moved to Y3 and STU is selected by pressing

the switch or button 3 at position I thereof, whereby the letters are split up as shown in Fig. 1f. The letter T is then selected by pressing on II, cf. Fig. 1f. After input, field 1 will revert to showing the groups of letters present in the switch position in question, see Fig. 1g. In Fig. 1h the switch 3 is pushed to Y5 and the group DEF is selected and
5 splitting takes place, see Fig. 1e. Then the next letter E is entered and the predictive system will guess one word, see Fig. 1j, in this case "TELEFON". This word is selected as the memory in the system finds that this word has been used the most. If the system had not built up a memory of "used" words and had no priority of use, the system would select words alphabetically.

10

The system can also be so configured that words are guessed upon the first selection of a letter group. Thus, it is possible to pass directly from, e.g., Fig. 1e to Fig. 1j.

As regards word use, this can be preprogrammed in order to adapt to the language of
15 individual countries. There are standards (publicly available) for the most used words in different languages. Such words can be priority listed in a memory in the apparatus. There are many possibilities here, and alternatives are conceivable in which the user may choose to program the priority system and select words in an area of style or jargon, e.g., slang, academic, child-friendly, militant, old-fashioned ... etc. The
20 possibilities are virtually endless.

Fig. 1j shows in field 1 further alternative words which have the same two first letters, in this case selected according to priority. In field 4, see Fig. 1k, six alternative words are shown, which indicates the number of words that have been used earlier and that are
25 in a priority list, in this case six, with the remaining 56 words in the whole list in alphabetical or standard order as indicated by the reference numeral 5 at the bottom right-hand corner in field 4 in the example.

The number of words shown, or the position on the screen thereof should not be
30 limiting for the system. An alternative embodiment is shown in Fig. 1k where a first field 6 shows the most used words and field 7 is for the words (or as many as there is room for) from the standard list. Field 1, indicated by the reference numeral 8 in this figure, is thus placed in the main screen area 4. Here, the user can choose three words at a time by pushing the switch in the Y area. Field 2 has also been brought up on the
35 main screen area 4 and is indicated by the reference numeral 9 in this figure and represents sub-options which can be selected by a long key press. It is possible to choose to continue to browse in the list by means of a long key press III MORE.

Fig. 1l shows an example where one of the words shown in field 1 is required. The switch 3 is depressed at II, thereby selecting the word TELENOSTRA. Fig. 1m shows that a long press I on the switch 3 will allow the user to confirm OK in field 2 that the input is complete, and the system goes straight on to the input of a telephone number, see Fig. 1n. Here, the user also has the option of going straight into a telephone list by means of a long press in position II on the switch 3, see position PHB in field 2. Alternatively, the user may push the switch 3 into a position which allows him to enter the main menu, see Fig. 1o. If the user wishes to continue input, the word is confirmed by means of a long press at II on the switch 3, i.e., SPACE, see Fig. 1m. The user can then write in new letters or words.

We can also make a variation of this in that the words guessed are not shown in field 1, but only written out on the screen in the text. If the user accepts the word guessed, he presses, e.g., SPACE. If he does not accept the word, he continues to enter letters.

Alternatively, as shown in Figs. 1s and 1t, the user may keep letters in field 2 for direct further input of letters. This may be appropriate if the user does not want any of the listed words, or if the user would like to reduce the list, he can enter new letters directly. By means of a long click, the user may choose between the words in field 2. To choose from the words listed on the screen, the switch 3 is moved in the Y direction. To bring up more words in the list, the user must go via Y1 where field 2, position X3 will provide a link to more words, see also Fig. 1j.

In the above explanation, it has been assumed that words are guessed after the second letter entered. This is not limiting as it is possible to install as an option in a set-up program of the apparatus when (i.e., after how many letters) the user would like the predictive system of the apparatus to be activated.

With regard to priority lists of words as shown in Figs. 1j-1l, these may be grouped in several categories. Here, the list is split into previously used words and unused words. In addition, it is possible, as mentioned, to have a group of standard words (i.e., words which are statistically most used). The system should allow the user to preprogram the alternative(s) he would like. At the same time, all the alternatives or lists can be available if desired. The different alternatives may, for example, be alternatively coded by using colour. E.g., green = most used; yellow = standard; red = never used before. As already mentioned, this may apply both to letter groups and to word groups/lists.

The system should also contain a predictive function for signs in connection with writing. We envisage that when a word is written and accepted a sign will be suggested as well as options for direct access to other signs. See Fig. 1p – Fig. 1r. A full stop is shown after the word on the screen. Field 2 shows groups with additional signs for direct access by means of a long key press. The user confirms the guess by pressing to select letters for a new word. This also happens if the user moves the switch in the Y direction to select another group of letters, see Fig. 1r. In this case, the signs in field 2 will also be changed to allow other sign options. If the user would like a sign other than those suggested, he makes a long click for the sign group he wants so that the desired sign can be selected. When sign selection has been made, the system will automatically make a space and "normal" set-up for input is shown, see Fig. 1q. If the user does not want a sign, he pushes "CLEAR", and an automatic space will appear. The user may then key in for the desired groups of letters for further input of text.

An alternative for predictive punctuation can be limited to the most used signs such as full stop, exclamation mark and question mark. These may then be shown as a direct option in field 2 (X1, full stop, X2, exclamation mark, X3, question mark).

Predictive systems as described here must be adapted to each individual language in order to function. In this description of the language part we have used Norwegian words, but could just as easily have found English words or words from other languages.

As regard typical designations in Norwegian as prefixes, this will be described on the basis of Fig. 2. We have, for example, the prefix FOR-. Many words start with the letters FOR. By pressing II on the switch 3 as a long key press, see Fig. 1b, the user confirms the word FOR. In Fig. 1c I is selected on the switch 3, i.e., FOR-, and the system guesses at words beginning with FOR, but shows only the endings. Many of these words are combinations of FOR plus another letter or another word, as for instance –BEIN, -D, -AN, -DEL, -KVINNE, -MANN, -SIKRING.

A predictive system of another type will now be described.

We are going to write the word "TELENOSTRA" using a system which guesses the most likely letter on the basis of the preceding letter. The basis of this system is that the group of letters will select the most used letter on the basis of the preceding letter

without first making a split. Thus, if the system guesses correctly, only one key press on the letter group is required to enter the desired letter. If an obvious candidate is not found in the desired group of letters, the system will split the group and the user must select the desired letter manually, which means that the user continues to write in the normal way.

The starting point in Fig. 3a – Fig. 3b is that the user is in a mode for input of text, i.e., a variant of the starting point shown in Fig. 1a – Fig. 1e. Fig- 3b shows the splitting of the desired groups of letters and the user selects T. The user then wants the letter E and finds the group DEF as shown in Fig. 3d and presses II on the switch button 3 and obtains E straightaway. Here the system guesses the letter E because a list in the memory has registered that E is the most used of the three letters in the group in question and thus most likely after the previously entered letter T. If the system does not have any priority among the letters in the group in question, the system will split the group and a manual selection must be made, here shown in Fig. 3e and Fig. 3f. If the system automatically selects a letter the user does not want, for example E in Fig. 3d, the user presses IV (CLEAR) on the switch button 3, as shown in Fig. 3g and the system splits the group of letters in question, cf. Fig. 3h.

A variant in this system is to automatically show a selection of vowels after the input of consonants as shown in Fig. 3i. This may be appropriate at the beginning of a word. Further on in the word a selection of both vowels and consonants that are natural on the basis of previously used combinations can be shown.

Fig. 3j – Fig. 3n show a system where a predictive system guesses the most probable groups of letters and shows them in field 1 regardless of which row the switch is in. Fig. 1o shows an alternative where the system is so configured that after a number of letters have been written and the word ends temporarily with a vowel, the system will try to find the letters, in this case consonants, which are the most likely to be used.

It should be specified that the system at any given time selects the letters and/or words which are likely to be required by the user. These choices are shown on the screen. When it comes to showing choice of letters, nine different letters can be shown in field 1 and/or field 2 in connection with Fig. 3i and Fig. 3o which will naturally follow a previously entered or input letter. In a system of this kind the letters do not need to belong to the same group originally. In this system we have divided the alphabet into groups of three. Nine letters can be presented in three groups spread across the field in

order to then be split and selected. The probability of the right letter being among those presented is very high. After all, there is a limit to which letters naturally follow one another in an alphabet.

- 5 As already mentioned, the different options can be colour-coded. In this alternative the different letters can be coloured according to how probable it is that the letter combination will be suggested for use. For example, the group AEI in Fig. 3i can be coloured green (most used), OUY yellow (less used), ÆØÅ red (never used). The same will apply to Fig. 3o. Here it should also be mentioned that the whole group does not
 10 need to be colour-coded, but that each individual letter can be coded. It should also be pointed out that the system includes the possibility of vowels and consonants being mixed in the groups.

- Referring to Fig. 3j – Fig. 3o, it pointed out that after, e.g., the consonant T has been
 15 entered, the system will look for element groups containing vowels, or the most probable vowels in connection with the consonant. Thus, when T has been entered, field 1 will change the letter groups from STY VWX YZ@ to ABC DEF GHI as shown in Fig. 3k. A depression of the key 3 in position II will cause the automatic selection of the vowel E. Then a shift is made to the most probable groups shown in field 1 in Fig.
 20 3l and L is chosen, whereupon the field 1 changes to that shown in Fig. 3m and the system predictively selects E. In Fig. 3n the system suggests the groups STU DEF PQR and if this is not suitable, a next array of groups is suggested as shown in Fig. 3o, i.e., DFG HJK LMN. We see that, regardless of the position the switch is in, the system will show the relevant predictive options in field 1, even though they do not "match" the
 25 position the switch is in. However, this will not be a problem for a rotary switch which can also be pressed.

- In this connection, an example of how the system will work in conjunction with a standard pushbutton keypad is shown in Fig. 3p – Fig. 3u. When one, or possibly two
 30 letters have been entered, the system will guess likely letters which are suitable as the following letters, and on the basis of this also suggest a word. The letter alternatives are shown in field 21, and the group with the relevant letter is selected by pressing the OK key. If, for example, TELENOSTRA is to be entered, the following is done. The group STU is selected, the letters are split up and T is chosen by pressing the OK key 22. In
 35 the illustrated case, the system proposes the word TAKK. If this had been correct, the user could have pressed the 0_ key and continued for the next word. However, the word desired is TELENOSTRA and E is selected by pressing the OK key 22. The

system then guesses TELECOM and at the same time the likely letters for other words are put in the fields. Here, after splitting (see Fig. 3s) when OK key 23 is activated, the letter L is selected, wherein OK key 23 is activated again, see Fig. 3t. Although both TELENOSTRA and TELECOM contain the letter L, the entry of L will inform the
5 system that another word with the letter L as the third letter is desired. This results in the screen image shown in Fig. 3u.

From that explained above in connection with the two predictive systems, it will of course be seen that a combination of the systems could form a further, third system
10 which by means of advanced programming could provide an efficient input of text without having to key in all the letters.

As mentioned earlier with regard to the user forming his own menu, he may also program requests that the telephone should guess words and/or letters from first to –
15 letter etc., or not guess at all. (Similar settings are found today in telephones equipped with the T9 system, where the user may choose to have the system on or not.) In a third predictive system of this kind with several ways of guessing the right text, the user should be able to freely set the apparatus concerned so that a level of predictiveness is obtained. That is to say, e.g., to choose between word and/or letter guessing.

20 A further possibility with an extended predictive system of this kind is the option of obtaining input of letters without having to go via a selection process, i.e., as described in Fig. 3d, where the system guesses at one of the three letters on the switch on the basis of the letter arrays which give the most common or most used words.

25 As the system can guess words, it is possible to extend this so that the system guesses sentences or phrases. This requires a memory and processing power which can "go through" text to see the probability of the same sentence or phrases being used again by first analysing the first letters and words.

30

Example:

Enter: Kommer, guesses:	<i>du hjem snart?</i>
Jeg	<i>elsker deg</i>
Jeg	<i>kommer hjem snart</i>

35

As shown in previous figures, the user can quickly confirm the suggestion or move on to the input of another text.

A predictive solution in connection with the input of numbers will now be described.

Related to Fig. 4, the system of the invention will be predictive in connection with the
5 input of a telephone number. In a first alternative, the system takes into account the
numbers stored in the apparatus. It presents a list of the most used numbers on the basis
of the first digits, for example, the first three digits.

As shown in Fig. 4a - Fig. 4c, the first three digits of the telephone number are entered.
10 The telephone suggests and lists the numbers that begin with these three digits. Field 1
shows the other numbers. Indication 5 shows all the available numbers starting with the
digit combination in the same way as has been explained earlier in connection with
words. If the user wants to see more numbers, he presses on MORE (long key press).
Then numbers will appear three at a time in field 1. Alternatively, as shown in Fig. 4e,
15 many more numbers can be shown. Of course, as another alternative, names could be
shown instead of or in addition to the numbers, see Fig. 4f.

If none of the numbers are correct, the user continues by pressing CLEAR (short), or
toggle /move glider. This will allow the input to continue and the telephone will guess
20 again etc. If the user is in a mode where the screen image shows all the number
alternatives, the user can exit the whole list by means of a long key press and the system
will not guess other numbers. It is an advantage if the user knows that the number is not
already to be found in the list.

25 In connection with telephone lists, the system can sort these so that, for example,
foreign numbers are stored separately. The user can retrieve these by, for example,
entering + or 00. Different dialling codes or names of countries will appear first. When
countries are chosen, the different dialling codes will be shown on the screen according
to a priority list.

30 It is also conceivable that mobile telephones will in time be equipped with an extended
memory which will make it possible to store all incoming and outgoing calls/numbers.
These could also be stored with the net operator, but linked up to each individual
apparatus. This will allow the system, in another alternative, to guess from numbers
35 that have not been pre-stored. In a system of this kind, any pictures the users exchange
may also be stored.

One advantage of this is that the user can call up a number that has been through the telephone without having specifically stored it. This means to say that the user can remember the first digits, but when presented with a list of relevant numbers he may be reminded of the whole number when seeing it on the display.

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It is conceivable that telephone operators will store "traces", i.e. numbers (and other data) which the apparatus can retrieve when there is a need to do so.

A more detailed description of a predictive keypad will be given in what follows.

10

On the input of text in apparatus which have a standard keypad or keyboard (such as a telephone, calculator, PC (Qwerty) or the like), it may be particularly advantageous to make use of a touchscreen keyboard, i.e., a keyboard which is shown on the screen and touched directly for input of the desired functions. It will then be possible to install a function which marks the letters or numbers guessed by the system in different ways, perhaps by using colour or highlighting on the keyboards themselves. For example, the user wishes to write TELENOSTRA: T is entered; all the vowels light up on the keyboard; E is chosen; a selection of the most used consonants light up, including L which is entered. In addition, word and sentence guessing may be programmed to appear as suggestions on the screen.

20

As taught in the applicant's document PCT/NO00/00412, the user can easily control various screen-assisted apparatus by using various switch solutions (such as sliding switches, pushbutton switches and rotary switches). In this connection, reference will be made to Fig. 5 in the present description where the writing of a text can be executed by using a rotary switch. Different arrangements on the apparatus screen are controlled by using the rotary switch. If the apparatus is controlled via a touch screen, the system can still be used.

25

Fig. 5a shows an electronic apparatus (e.g., a mini-computer/PDA/mobile telephone) which is controlled by a multifunction key, in this case a rotary switch with four clicks (as shown before) and with an alternative centre click. Fig. 5b shows how the alphabet is arranged on the screen 10 for the selection of the individual letters/signs and functions by using switch 11. On the left-hand side of the field is an overview of what the different depression positions represent, here, represented as A's which show the positions for input of letters and characters. As shown in Fig. 5d, the switch will change character by positioning the right-hand III pressure position on the switch 11 on an

35

arrow in the function field. Unlike the earlier positioning of so-called global functions (described in PCT/NO00/00412), this is assigned to the III position.

We see that the major advantage of multifunction switches of this kind is that functions
5 can be placed where they are at all times practical in relation to the apparatus and the functions it is to control.

Figs. 5b - 5d show how the function field can change character. This is done by going
via a SHIFT function by a click in position III on the switch 11 after having rotated the
10 switch 11 to the right (shifted from "CLEAR" to "SHIFT").

The cursor fields will move across the functions which are in the field. Fig. 5d shows
active navigation selected (by arrows). Alternative navigation can be obtained if a
cursor control switch 11' is mounted in the centre of the switch 11 (stepless joystick-like
15 system).

On the basis of the above explanation, Fig. 5f – Fig. 5i will now be explained. As has
been stated earlier in this description, on the input of text, the user will have systems for
guessing likely words and/or letters according to priority of use /probability calculus.

20 Fig. 5f shows the started word TELE (we want to write Telecom). The system guesses
the letters PHC (that is, e.g., Telepati, Telehuset, Telecom). If we had wanted
Telenostra, i.e., N, we would have had to turn the marker to N (i.e., the option YHN).
No matter where the marker is, we do not need to turn the switch 17 now, but can press
25 II and obtain C straightaway. The system will then "pick" the letters O, A (e.g.,
Telecom/Telecamera). We press the key 11 (without rotating it) at IV and get O. The
system then goes on to pick the letter M. We can confirm this at II.

By combining a selection of probable letters with a guess of completed words, we can
30 save many key presses and rotational or sliding movements.

A typical keyboard as shown in Fig. 6 can be arranged on a screen 12 and can be used
for text input either by marker control (mouse control), multifunction keys as shown in
this application, or a touch screen. The system will also function under these conditions
35 and predictively make selections by marking likely letters.

As shown in Fig. 6b, Te has been entered and the system guesses the word Telenosträ. Here, the user can either choose to confirm this (by using "Enter") or to continue to key in letters. The system will mark on the "keyboard" 12 the letters (in this case d, l or m) which it is most likely that the user will use. This is done on the basis of a list of words
5 found in the memory. If the user does not want the selected word he enters more letters. In Fig. 6c the letter c has been marked, as have the letters n and p. These letters have been selected so that the system can guess a new word. This can be confirmed by "Enter". Further writing will take place following the same system as described above with the possible alternatives as described earlier.

10

The invention also affords the possibility of the use of sound, i.e., voice feedback. This will depend upon how well voice recognition technology develops in the coming years.

Fig. 7 is a schematic illustration of how the system can be constructed with a
15 microprocessor 14, a memory 15, an optional further memory 16 (e.g., an external memory), a reference work 17 (which also may be external), a dictionary 18 (which also may be external), an input unit 19 for input of data elements, acceptance of suggested data phrases or selection of alternative phrases and selection of other functions for controlling the system, and a display 20. The unit 19 may be adapted for, e.g., voice
20 recognition, use of a multifunction switch (e.g., of the sliding or rotary type), standard keypad or keyboard, touchscreen keyboard and the like.

Fig. 8 shows a rotatable, multifunctional switch 31' which has five pressure points indicated by I', II', III', IV' and V'. Fig. 9 shows an animation 31 of the switch 31'. In
25 addition, during the input of text numbers and/or symbols, an input field or result field 32 will be shown together with a field 33 which indicates appropriate words or options that are possible from a "dictionary" or "list of words" which shows the most likely words that begin with the entered letter or letters, preferably in an order determined by how many points the word or letter combination has been given, such points being
30 related to the frequency of use of such combinations. Word or letter combinations which have not been given any "points" will be in alphabetical order in this dictionary.

The screen image which appears on the display includes said animation 31 as an interactive figure of the actual switch 31' with an indication of the pressure positions of
35 the switches, indicated here by I-V which are related to the said depression points I'-V' in Fig. 8. A keyboard 34 is shown next to this animation in the same display area. This keyboard will preferably show all relevant letters, numbers and signs, in this case

arranged as a Qwerty keyboard, but it is also possible to arrange a keyboard of this kind in a Qwerty lay-out, but with the letters in alphabetical order. On rotation of the switch 31', a marker 35 will move across a field which covers three characters at a time. Characters can be selected by key presses in animation positions I, II and III. A key

5 press as shown in animation position IV will confirm selection, i.e., "Space". A key press on animation point V will result in a return to the preceding menu, optionally with a HOME function. This will be variable depending on where the user is in the menu. If the cursor 35 is placed over the "keyboard" 34, V will be used as an "undo" or "clear" button in the system as indicated in Fig. 9c. In Fig. 9 it is assumed that there will be

10 room for all letters, numbers, signs and/or symbols on the screen image in connection with the keyboard 34. Turning the switch 31' as shown in Fig. 8 will result in the marker 35 moving across the keyboard 34 step by step. The system is preferably designed so that the data elements, e.g., letters, from the keyboard marked by the marker 35 are shown in the animation 31 in fields I, II and III. The data elements that

15 are guessed, e.g., letters, will also appear here no matter where cursor 35 is over the keyboard 34. This will mean that it is unnecessary to rotate the switch 31' to all the data elements required, as the most appropriate data elements will most probably be present as direct options shown in animation fields I-III.

20 Figs. 9a-9m thus show an example of how the predictive system according to the invention will be able to assist a user with the input of, e.g., text. Fig. 9b shows what a start position in the animation 31 might look like. Here, it will be seen that the marker 35 field is "parked" in position 35'.

25 The intention is to write "the telephone number". In this connection reference is made to Figs. 9c-9e. The switch 31' is rotated and the marker 35 is placed over the appropriate letters, in this case the letters STU. In the animation 31, the field II for the letter is T is selected, see Fig. 9d. The system now guesses the word "The", which is thus written out in full in the text field 32, see Fig. 9e. Field 33 shows the candidate

30 words which are picked from the available list of word in the order made according to how often these words have been used statistically. On the basis thereof, the system will choose letters which follow the previously entered letter. In this case, HOE are chosen as the letters which will provide letter number two in the first words that are chosen from the displayed list. These letters appear in the animation 31. However, here

35 the system will guess right and acceptance is made by selecting the "Space" function represented by function field IV in the animation 31. By using this function, a space will automatically be generated and the entry of a new word can then be made.

As shown in Fig. 9f, the letter T is entered by activating function field II, and the word "the" is selected again by the system, see Fig. 9g, as this word comes at the top of the list shown in field 33. The letters "HOE" are presented as an option in the animation
5 field 31, and the letter e is selected by activating the function field III. This means that the list of words 33 will shift to words beginning with "te" in the prioritised order, see Fig. 9h. The word "telephone" is then suggested in the field 32, see Figs. 9h and 9i. The word is confirmed by activating the function field IV (see Fig. 9h), i.e., the "Space" field, and the screen image will then return to the earlier image, i.e., as it was in Fig. 9f
10 where the predictive system started to function.

With reference to Fig. 9j, it will be appreciated that the switch 31' is now rotated and the marker 35 is moved to the letter combination MNO, where the letter "n" is chosen. As a consequence thereof, as shown in Fig. 9k, the system will then suggest the word "name"
15 which lies as a priority. The letters AOU which are thus predictively selected will appear in the switch animation fields I, II, III. However, "name" is not the desired word and the letter "u" is chosen by activating the function field III. The list of words will then shrink to four words, from which the system writes out "number" which is confirmed by a key press related to the function field IV is confirmed, see Fig. 9l.

20 When in the foregoing, and also in the following, reference is made to the activation of the function fields in the animation 31, it should be understood that the user will make corresponding depressions in positions I', II', III', IV' or V' for activating switches at these depression points which are respectively arranged at the depression points.

25 In Fig. 9e, for instance, it will be seen that a number indicated by 33' appears at the bottom of the list of words 33, in this case the number 500. This number indicates how many words in the selected category there are in the list, but it will be understood that there is not room to show the whole contents of the list and nor would this be practical. Fig. 9h shows that possible words in the list are "reduced" considerably after the entry
30 of letter number two. If the user wants to enter a long word which is at the bottom of the list of words that appears, it will be possible by using the system to turn the switch 1' to a start position as shown in Fig. 9a and to press the switch at the point II' (function field II in animation 31) in order to activate a word list marker 36 and on rotation of the switch 31' to move this marker 36 downwards until the desired word has been selected.
35 This selected word is confirmed by another depression related to function field II.

Fig. 10 will now be explained in more detail, wherein Figures 10a-10h show a variant of the system which has just been described in connection with Figs. 9a-9m.

A program for input of text is selected according to main menu and a screen image as shown in Fig. 10a then appears. If the user selects a function linked to field II on the animation 31, it will be possible to move down the list 33. The field 32 is also a text field in this case. By selection linked to the function field I, the animation 31 will shift to the "Edit" mode, see Fig. 10b, whereby it is possible to edit a written text. A marker 37 can thus be moved by first depressing that represented by function field I, i.e., depression of the switch 31' at depression point I, and then rotating the switch 31', i.e., its control element 31". By selection linked to the function field V, the user will move back to the preceding menu. If the function field IV is selected as shown in Fig. 10a, the fields 38 and 39 will appear, see Fig. 10c. The animation 31 will show the alternative numbers and letters over which a marker 40 will move when the switch 31' control element 31" is rotated, or alternatively the letters 41 which the predictive system selects. Fig. 10d shows that the field 41, here indicated by means of 41', can contain a plurality of fields for showing additional letters. However, for simplicity, in this case emphasis has been given to showing the principle and therefore the further explanation includes only a field 41 which provides the possibility of showing three data elements.

Fig. 10e shows that the field 38 frames a part of the keyboard 42. Obviously, it will be understood here that the architecture and design of such a keyboard 42 will by no means be limiting for the inventive idea, but merely serves as an exemplary embodiment to aid understanding of the principle of the system according to the invention. The keyboard may, for example, be in alphabetical form or in Qwerty form as shown in Figs. 10 and 11, or in another form. Figs. 10e and 10f show a switching of the field 38 between the main body 42 of the keyboard and its subsidiary part 42'. Switching can take place by placing the marker 40 over the keyboard symbol 43, as shown in Fig. 10f. In this position, the marker 40 will also cover a function such as "Back" 44 and "Enter" 45, as known from "standard keyboards". Fig. 10g and Fig. 10h show that it is possible to allow only one of the keyboard parts 42 or 42' to be visible at a time, so that visually they are on top of each other, as also indicated by the fields 38 and 38'.

The system according to the invention will now be described further in connection with that shown in Figs. 11a-11u. Here, the input of data elements by using a rotatable multifunction switch which has five depression points, as shown in Fig. 8, will be described, and where there is an interactive interplay between the display and the

predictive letter and word system that the invention has provided. In the illustrated example, the user wishes to write "The telephone number is 22 35 70 18". When the user shifts to the numeric keypad, like the subsidiary part 42' of the keyboard, the predictive system will naturally switch to guessing numbers, as explained in the following.

In Fig. 11a, the user has gone from a main menu, such as that shown in Fig. 10a and is now in a mode for writing, e.g., selection of function field IV in Fig. 10a ("Keyboard"). The switch 31 control element 31' is rotated to move the cursor 40 to a region on the keyboard where the desired character is found. The letter T is entered by pressing at position I', see Fig. 8, on the switch 31', which effects function selection I as shown in Fig. 11a where this function selection field is thus highlighted. The character that is thus entered or keyed in will appear in field 32. This causes the predictive system according to the invention to be activated. All the words in the list of words that begin with the letter "t" will be listed in prioritised order and shown in the field 33 insofar as there is room for these words. A number 33' will be given at the bottom of the field which indicates the total number of words found in this category, optionally how many words are found in addition to those shown. The predictive system picks the word "The" on the basis that this is the most used word, statistically speaking, in the list, and it is placed in the field 41. As shown in Fig. 33d, the field 41 may optionally consist of several fields 41', whereby it will be possible to pick out several candidates for the second letter.

However, in the example chosen here, the user wants the selected word and function field IV, i.e., "Space" is chosen and the suggested word is thus written inside the text field 32. As shown in Fig. 11d, the letter "t" is then entered and the system will again choose "the". However, in this case another word is required and the user continues to enter the letter "e", see Fig. 11e, which in this case is easily accessible, as the predictive system has presented it as a direct option in the field 41. Here, it will be seen that the same letters also appear more clearly in the animation 31. In this case, the letter "e" appears in the function field III in the animation 31. Again, it can be seen here that rotation of the switch 31' control element 31" will not be necessary to fetch the right letter.

Referring now to Fig. 11f, it will be seen that the first word that is prioritised in the list 33, in this case "telephone" is now written out. The list has now been "shrunk" as there are no longer so many alternatives linked to the two-letter combination "te" that has

been entered. The function field IV in the animation 31, related to depression point IV' on the switch 31' is chosen to confirm the word "telephone" and this word is then written out on the screen image, see the field 32 in Fig. 11g. The switch 31 control element 31' is then rotated until the marker covers the letter group "YHN", these letters
 5 also being shown simultaneously in function fields I, II and III in the animation. The letter "N" is selected, as indicated in Fig. 11h and as shown in Fig. 11i all the words with the first letter "N" are listed in the list 33, whilst the word "name" is written in the field 39. This word is at the top of the list and is also marked by the list marker 36. The letters "aou" are spread in respective fields I, II and III in the animation 31 and are the
 10 different options for the letter after the first letter "n" as is evident from the list of words in field 33. It will be seen from the list of words that the first word has as its second letter "a", the next three words have the second letter "o" and the next word has the second letter "u". Referring now to Fig. 11j, the letter "u" is selected by activating function field III and the system will then present the word "number". This word can be
 15 confirmed by using the space depression point represented by the function field IV, see Fig. 11j.

Referring now to Figs. 11k-11m, the word "is" is to be written following the same principles as already discussed. As will be understood, the control element 31" of the
 20 multifunction switch will be rotated until the marker 40 lies over the letters "ikx" as shown in Fig. 11k, and on depression of the control element 31" at position 1', i.e., function field I, as shown in Fig. 11k, the letter "i" will be written inside field 32. As indicated by the field 41, the system now chooses predictively the three most likely letters as the second letter in the word which has now been started, and these letters are
 25 "stn", which also appear on the animation 31 in the respective fields I, II, III. Here, it will be correct to choose the letter "s" linked to field I by another depression of the switch control element 31" at position I'. The word "is" thus appears in the field 39. At the same time the phrase "The telephone number is" is now found in the field 32.

30 Numbers are now to be entered, and this means that the user must have access to numbers in the keyboard. This means that the user must bring up the subsidiary part 42' of the keyboard, as shown and described in connection with Figs. 10e-10h. In Fig. 11n it can be seen that the marker has been moved to the position 43, and respectively "back", "enter" and "switch keyboard part" appear in the respective function fields I, II
 35 and III on the animation 31. Here, depression of the switch control element 31" linked to the function field III is chosen as the user thus switches to a keyboard part which primarily consists of numbers and symbols, indicated by the reference numeral 42'. As

indicated in Fig. 11o and Fig. 11q, a switch between keyboard parts could also be executed by rotating the switch control element 31" so as to thus scroll the marker 40 past "p!", whereby the subsidiary keyboard part 42' appears as shown in Fig. 11p. Entry of numbers can be done in the same way as shown and explained in detail in connection with the entry of letters. Figs. 11n, 11p and Figs. 11r-11u show this. Here, previously used numbers will be stored, so that the system according to the invention can guess which number the user will probably enter based on statistic frequency of use. This can easily be transferred directly to a number directory and in apparatus where the system is used in a connection situation, as for instance in a telephone.

Lastly, the invention will now be described in connection with an embodiment which does not make use of a stepwise rotatable multifunction switch as shown in Fig. 8, but employs a conventional pushbutton keypad per se.

In this case the user does not need to employ the key showing the letter group in a writing process where the system guesses letters independent of which group they belong to. On the input of letters, the system according to the invention will save the guessed letters which form words that the system finds to be "correct", and by using arrow /ok keys 44, 45, 46 the user can select one of the new groups, or as shown in Figs. 12a-12d one of the selected letters. If the system guesses wrong, the user can by using the "normal keypad" go directly to the letter group which has the letter the user is looking for. Another alternative, if the display screen is large enough, is to go direct to the list of words and choose from the selected words. It will be possible to scroll up and down in this list by using arrow keys 47, 48, but it will also be possible to use a roller switch such as the roller switch 49 shown in Fig. 12d. Basically, this is a roller switch with three depression points and on rotation it can be used to scroll through the list of words and in addition it can replace the OK keys 44-46 as shown in Figs. 12a-12c. As indicated in Fig. 12a, depression of the key 50 will cause the letters STU to appear in the display screen 51. Depression of the key 45 results in the selection of the letter "T". This brings up on the display screen a predictive list 52 of the words which seem to be suitable, greatest frequency statistically being taken into account. The system will predictively choose the letters "HOE" as these appear as second letters in the words which are given in part of the list of words 52. The predictive system has suggested the word "the", but this is not the desired word, as telephone is the word the user wishes to write. The predictiveness therefore suggests that key 46 should be depressed to select the letter e. If the word "the" had been correct, it could have been confirmed, for example, by depressing the key 53 as shown in Fig. 12b. On selection of the letter e the

word "telephone" appears at the top of the list 52, whilst the three letters "lca" are indicated as a third suggested letter in the desired word. However, in the illustrated example, "telephone" is the desired word, and this can then be chosen by depressing, for example, the key 53. It will also be seen that the list as shown in Fig. 12b has in the
5 version found in Fig. 12c shrunk from 500 words to 27 as the choice of the second letter
limits the content of the list.

Similarly, the use of a roller switch 49 has shown in Fig. 17, with three depression points can be made in the same way as just shown and described in connection with
10 Figs. 12a-12c. Here, the user will also have the advantage of being able to move the cursor, as for instance the marker 54, by rotation of the switch.

It is also possible to envisage a guessing of a person/name and number on the basis of an entered combination of numbers and letters. Predictiveness can be present as regards
15 names in a letter combination. For example, there may be a list of names with associated numbers. A user may wish to find, e.g., the name Noia Erison, plus 47 22 23 24 25. In this case the user can enter "N" and all the persons who have a name beginning with N are chosen. If an "E" is also entered, only the names beginning with these two letters will appear. There is also a possibility of predictiveness in the system
20 with regard to number and letter combinations. In this case, this will take place essentially as described above, but here both numbers and letters are used in combination to find the right name. For example, it is possible to write "N22", and, for example, all the persons living in Oslo with a name beginning with "N" will be selected. If an "E" is added, it will be highly unlikely to find more the person or the telephone
25 number for which the user is looking.

Thus, there is a possibility of a system which in the illustrated example can make use of combinations of a first letter in a name and the first number in, for example, a telephone number. In this case the system will be capable of being adapted to what the user wants
30 to find in lists, as for example, in a telephone directory, an address book etc. The system will therefore be able to give innumerable possibilities for predictive searches of names, number, addresses etc through a combination of letters, numbers, symbols etc. When searching for e-mail addresses it is possible to make a system whereby the user enters a letter plus @ plus a letter for a domain (e.g., "no", "com"). For net addresses
35 (WEB), it will be possible, e.g., to enter a letter plus the domain or perhaps more letters.

It is also possible through a further application of the present system to guess on the basis of sentence patterns and on the basis of grammar. This means that words are guessed on the basis of a preceding word, and also that the right conjugation of the verb or declension of the noun is guessed. However, this calls for substantial storage capacity and processor power, but the predictiveness will per se be the same as when selecting letters in a word. The system is thus in reality simply expanded so that it can put together sentences according to priority, possibly related to a grammatically correct word order. Correction of spelling and grammar are known per se, so that in this case this function can be used as an addition to the possibilities that the system described already has been shown to be capable of having.

Through a further application of the system according to the present invention, it is possible to envisage that it can predictively be used in connection with the completion of forms, as for instance filling in personal details and other data. By using the system in a predictive operation mode, it will be easy per se to be able, e.g., to fill in forms, either internally or externally (net sites). The individual columns will require specific data, e.g., name, number etc based of what the form relates to, and the system will in this case have a database which contains the options and data that should be available.

In connection with names that are exchanged between, for example, a mobile telephone apparatus, options may be found which enable the exchange of data. In this connection, e.g., meeting reminders, agendas etc may be envisaged. However, this will require that software is tailored to this use. In this way it will also be possible to exchange predictive list of words whether they are personal or standard lists.

P a t e n t c l a i m s

1.

A system for input of data elements, e.g., letters, signs, numbers and/or symbols, in
5 connection an electronic apparatus or device which has or is connected to a display,
wherein the system comprises a means in the form of a plurality of discrete fields shown
on the display screen to assist in the input, and the system includes an input device,
actuatable with a finger, which has a control element that is stepwise slidable or
rotatable, and also depressible and two- to four-way tiltable, or which consists of parts
10 of a conventional keypad, and wherein data elements shown on the display screen
represent available input alternatives for the input device,
characterised in

- that the input device is designed to effect selection of at least one data element from
one of said plurality of fields which have a data element or elements displayed on the
15 screen in order to activate the system to offer suggestions for a subsequent data
element or elements in each available field and with contents which come from a list
of prioritised data phrases.

2.

20 A system as disclosed in claim 1, characterised in

- that the system is configured to predictively show suggestions of a subsequent data
element or elements in the available fields independent of which group the data
elements normally belong to.

25 3.

A system as disclosed in claim 2, wherein the control element of the input device is
stepwise slidable,
characterised in

- that the system is configured to show the suggestion of the subsequent data element or
30 elements independent of the control element's stepwise position.

4.

A system as disclosed in claim 1, characterised in

- that the system is so configured that before the selection of a data element in a field
35 containing several data elements it splits the data elements in the field in question
thereby spreading them out in the available fields on the screen, whereupon the
desired data element can be selected.

5.

A system as disclosed in claim 1, characterised in

- that on the input of at least two data elements the system is configured to first suggest
5 a data phrase retrieved from a memory where said data phrase is the most frequently occurring, and where said data phrase contains said data elements as a beginning or an ending, or constitutes the suffix or the prefix of said at least two data elements.

6.

10 A system as disclosed in one of claims 1-5, characterised in

- that the system is so configured that on the input of at least a first data element it predictively suggests the next data element in a series of data elements; and
- that the system is so configured that when the next data element selected is wrong it will receive a system user selected data element as replacement for the wrongly
15 selected element.

7.

A system as disclosed in one or more of claims 1- 6, characterised in

- that the system is so configured that on input of at least a first data element
20 it predictively suggests selectable groups of data elements, where each group contains at least one selectable data element harmonised with the preceding, selected data element; and
- that the system is configured for user selection of a desired group where a selectable, correct or probably correct data element is found.

25

8.

A system as disclosed in one or more of claims 1-7, characterised in

- that the data phrase is selected from the group consisting of: a telephone number, a data code, an internet, extranet or intranet address, an e-mail addresses, a name,
30 a designations, a list of words, a reference book.

9.

A system as disclosed in one or more of the preceding claims, characterised in that the system is configured to sort said selectable data phrases based on:

- 35 a) the frequency of previous use of the phrases, or
- b) standard frequency of the occurrence of the phrases, or
- c) alphabetical order, or

- d) most probable phrases in conjunction with other used phrases, or
- e) style, terminology, dialect or language.

10.

- 5 A system as disclosed in one or more of the preceding claims, characterised in
- that the system is configured to sort the selectable phrases as a function of their length.

11.

- 10 A system as disclosed in one or more of the preceding claims, characterised in
- that the system is configured to show on the display the selectable phrases in a primary field and a secondary field.

12.

- 15 A system as disclosed in claim 11, characterised in
- that the secondary field contains part of a phrase catalogue, and that the rest of the contents of the phrase catalogue is retrievable in sections.

13.

- 20 A system as disclosed in one or more of the preceding claims, characterised in
- that the system is configured to indicate on a keyboard or the screen the said at least one data element which will be enterable in the series of data elements, e.g., based on consonant and vowel analysis, permitted adjacent data elements, and phrases that are retrievable.

25

14.

- A system as disclosed in one or more of the preceding claims, characterised in
- that the system is configured to predictively suggest selectable data phrases once a pre-determined number of data elements have been entered in the system.

30

15.

- A system as disclosed in one or more of preceding claims 2-14, characterised in
- that the system is configured to suggest a first data phrase on the basis of a data element from a particular group; and
 - 35 - that the system is configured so that on user selection of a second data phrase it receives a data element from another selected group, whereby the first data phrase suggestion is eliminated.

16.

A system as disclosed in one or more of preceding claims 2-15, characterised in

- that the system is configured to suggest a first data phrase on the basis of a data element from a particular group; and
- 5 - that the system is configured so that on user selection of a second data phrase it registers that the selected data element is correct, whereupon all data phrase suggestions subsequently presented by the system include this data element and/or other data elements in the selected group.

10 17.

A system as disclosed in one or more of the preceding claims, characterised in

- that the data phrase consists of one or more selectable data elements or a plurality of sets of data elements, e.g., so as to form word or phrase formulations.

15 18.

A system as disclosed in one or more of the preceding claims, characterised in

- that a correctly selected data phrase is selectively or automatically converted by the system to one or more items of displayable information which are directly related to the selected data phrase.

20

19.

A system as disclosed in claim 18, characterised in

- that the correctly selected data phrase is one fetched from the group:
 - a) a telephone number or part thereof;
 - 25 - b) a name;
 - c) an electronic related address, e.g., an e-mail address;
 - d) an entry word or formulation.

20.

30 A system as disclosed in claim 19, characterised in

- that said items of information are fetched from the group:
 - a) a name, address etc. of a telephone subscriber;
 - b) an electronic related address, e.g., a telephone number, e-mail address, network address etc.;
 - 35 - c) a name and any other data related to the owner of the address;
 - d) a more detailed definition or explanation of an entry word or word formulation.

21.

A system as disclosed in one or more of the preceding claims, characterised in

- that the selection or suggested selection a data element and/or data phrase is based
5 on retrieval from one of several selectable memories, e.g., categorised by respectively
a) most used data, b) standard available data, c) little used data, and d) data never used
before, and
- that these options appear with different markings, e.g., colour codes.

10 22.

A system as disclosed in one or more of the preceding claims, characterised in

- that the system is configured to convert data from a first working language to a
second working language, and at the same time bring up predictiveness rules related
to the second language.

15

23.

A system for input of data elements, e.g., letters, signs, numbers and/or symbols in
connection with an electronic apparatus or device which has or is connected to a
display, wherein the system is so configured that on the input of at least a first data
20 element in a data phrase it offers suggestions of the data phrase,
characterised in

- that the system includes a stepwise rotatable multifunction switch having five
depression points and where rotation of the switch causes movement of a marker
across an array of data elements;
- 25 - that on the screen there is shown an animation of the multifunction switch and its
depression points, and also the successive data elements over which the marker is
brought to lie in order to select at least the first data element on depression of the
switch at the given depression point; and
- that after input of said at least first data element and any additional data element(s)
30 predictively, the system is configured to indicate in the depression points on said
animation at least one of the next most probable data elements in the data phrase
independent of the marker's position on the array of data elements.

35

24.

A system for input of data elements, e.g., letters, signs, numbers and/or symbols in connection with an electronic apparatus or device which has or is connected to a screen, where the system is so configured that on the input of at least one first data element in a data phrase it offers suggestions of the data phrase, characterised in

- a) that the system includes a stepwise rotatable multifunction switch having five depression points;
- 10 - b) that rotation of the switch causes movement of a marker across an array of said data elements;
- c) that the display is designed to show an animation of the multifunction switch and its depression points, and the successive data elements over which the marker is brought to lie for selection of at least the first data element on depression of the switch on the given depression point; and
- 15 - d) that the system is so configured that after input of said at least first data element and/or any additional data element(s) predictively, it shows on the display, without further rotation of the switch, predictively at least three data elements on the switch animation for further construction of words, independent of the marker's position on the array of data elements, and at the same time suggestions of remaining data elements in a finished data phrase, the suggested data phrase
 - either e) being selectable as acceptable so that it becomes the final data phrase or so that it can be followed by at least one additional data phrase;
 - 25 - or f) being rejected in that one of said three predictive data elements is chosen instead;
 - or g) being rejected in that the marker is moved to lie over at least three data elements in the array, and one of these is selected on depression of the switch at the indicated pressure point.

30

25.

A system as indicated in claim 23 or 24, characterised in

- that the predictive suggestion is designed to be activated once rotation of the switch has caused movement of the marker, marking of least three data elements in the array and on the switch animation, and selecting one of these on depression of the switch at the desired depression point.

35

26.

A system as disclosed in claim 23 or 24, characterised in

- that the predictive suggestion of the next data element is related to a pre-stored reference list of data phrases, preferably data phrases in prioritised order.

5

27.

A system as disclosed in claim 26, characterised in

- that the reference list is designed to be shown in a separate field on the display.

10 28.

A system as disclosed in claim 23 or 24, characterised in

- that on the suggestion of a data phrase as a part of several data phrases in a context, the system is configured to
 - either predictively suggest at least one first possible data element in a subsequent data phrase;
 - or predictively suggest the most probable subsequent data phrase;
 - or scroll through the list of pre-stored data phrases on rotation of the switch.

15

29.

20 A system as disclosed in one or more of preceding claims 23-28, characterised in

- that one of said depression points is designed to represent a space between entered data elements or entered data phrases, and/or accept a predictive data phrase which is to be followed by a further data phrase.

25

30.

A system as disclosed in one or more of preceding claims 23-29, characterised in

- that a centrally positioned one of the depression points is designed to represent a
- 30 a "BACK" function or "back to main menu" ("HOME") function.

31.

A system as disclosed in one or more of preceding claims 23-30, characterised in

- that on the screen there is also shown a predictive data element field consisting of at least one set of at least three data elements.

35

32.

A system as disclosed in claim 30, characterised in

- that the set represents the at least three next, unique data elements in a next data phrase in a list of selected data phrases.

5

33.

A system as disclosed in one or more of preceding claims 23-32, characterised in

- that on the screen there is shown a function field over which the marker can be moved,
10 where a first function is related to a "Back" function, a second function is related to an "Enter" function, and a third function is related to a switching of data element type.

34.

15 A system as disclosed in claim 32, characterised in

- that the switching of data elements is between a) letters and b) numbers/special characters.

35.

20 A system for input of data elements, e.g., letters, signs, numbers and/or symbols in connection with an electronic apparatus or device which has or is connected to a display, wherein the system is so configured that on the input of at least a first data element in a data phrase it offers suggestions of the data phrase, characterised in

- 25 - that the system comprises a standard keyboard or keypad having
 - either three confirming pushbutton keys and three keys which in addition to another function have a marker control function;
 - or a roller switch having three depression points and an optionally axially directed push switch function, and three keys which in addition have a marker control function, where rotation of the switch causes movement of a marker
30 across an array of said data elements;
- that on the display there is shown a field indicating said depression points, and the successive data elements which pressure on the keyboard's letter or number/sign keys produces for selection of at least the first data element on depression on one of
35 the confirming depression points; and
- that the system is so configured that after input of said at least first data element and optionally additional data element(s) predictively, it shows in said field the

depression points at least one of the next most likely data elements in the data phrase.

36.

- 5 A system as disclosed in claim 35, characterised in
- that the predictive suggestion of the next data element is related to a reference list of data phrases, preferably data phrases in prioritised order.

37.

- 10 A system as disclosed in claim 36, characterised in
- that the reference list is designed to be shown in a separate field on the display.

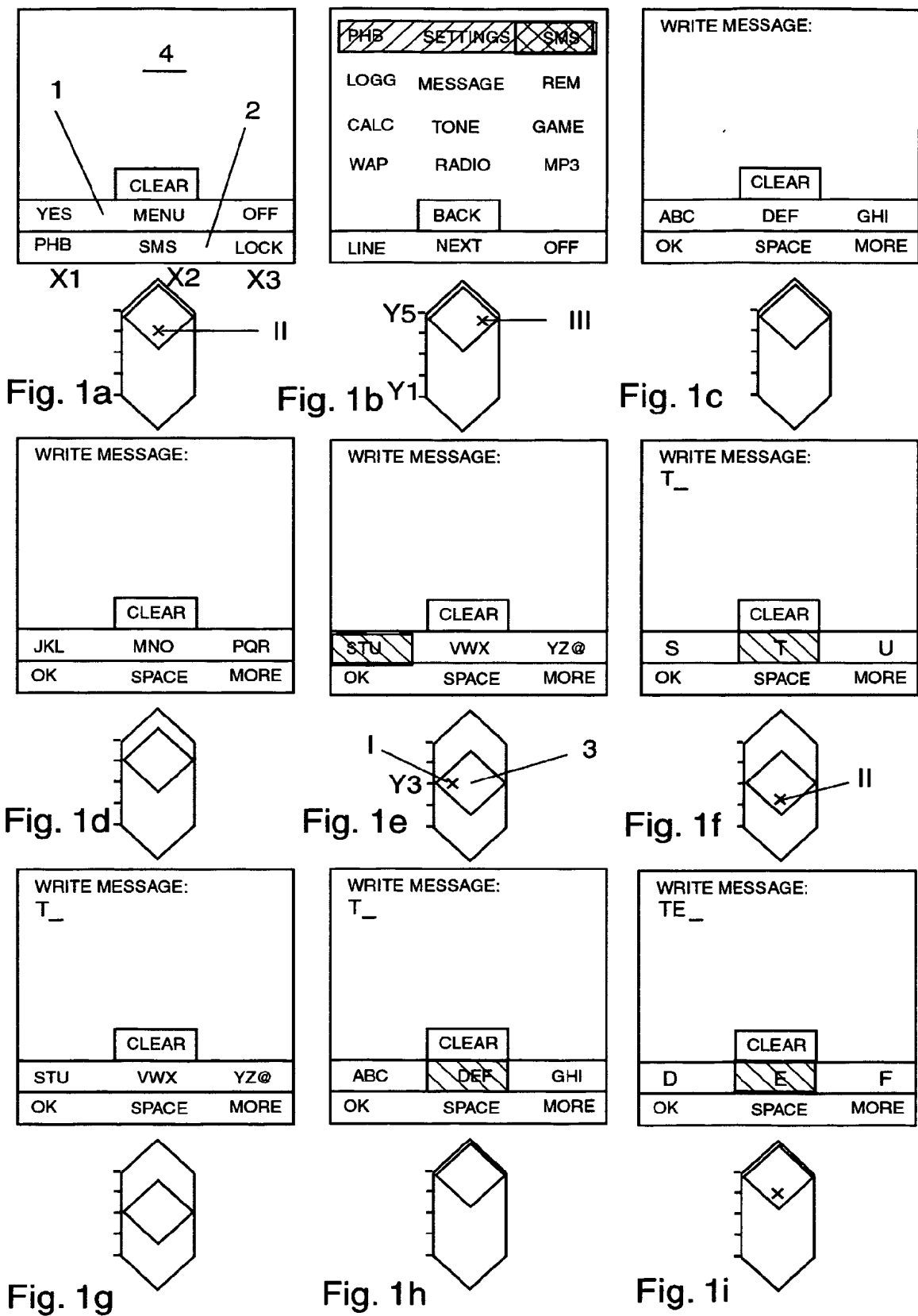
38.

- A system as disclosed in claim 35, 36 or 37, characterised in
- 15 - that on the suggestion of a data phrase as a part of several data phrases the system is configured to predictively:
- suggest at least one first possible data element in the subsequent data phrase and/or
 - indicate the selectable data elements which predictably follow the already existing, entered data element, said selectable data elements being selected in prioritised order
- 20 from at least three subsequent data phrases in the reference list.

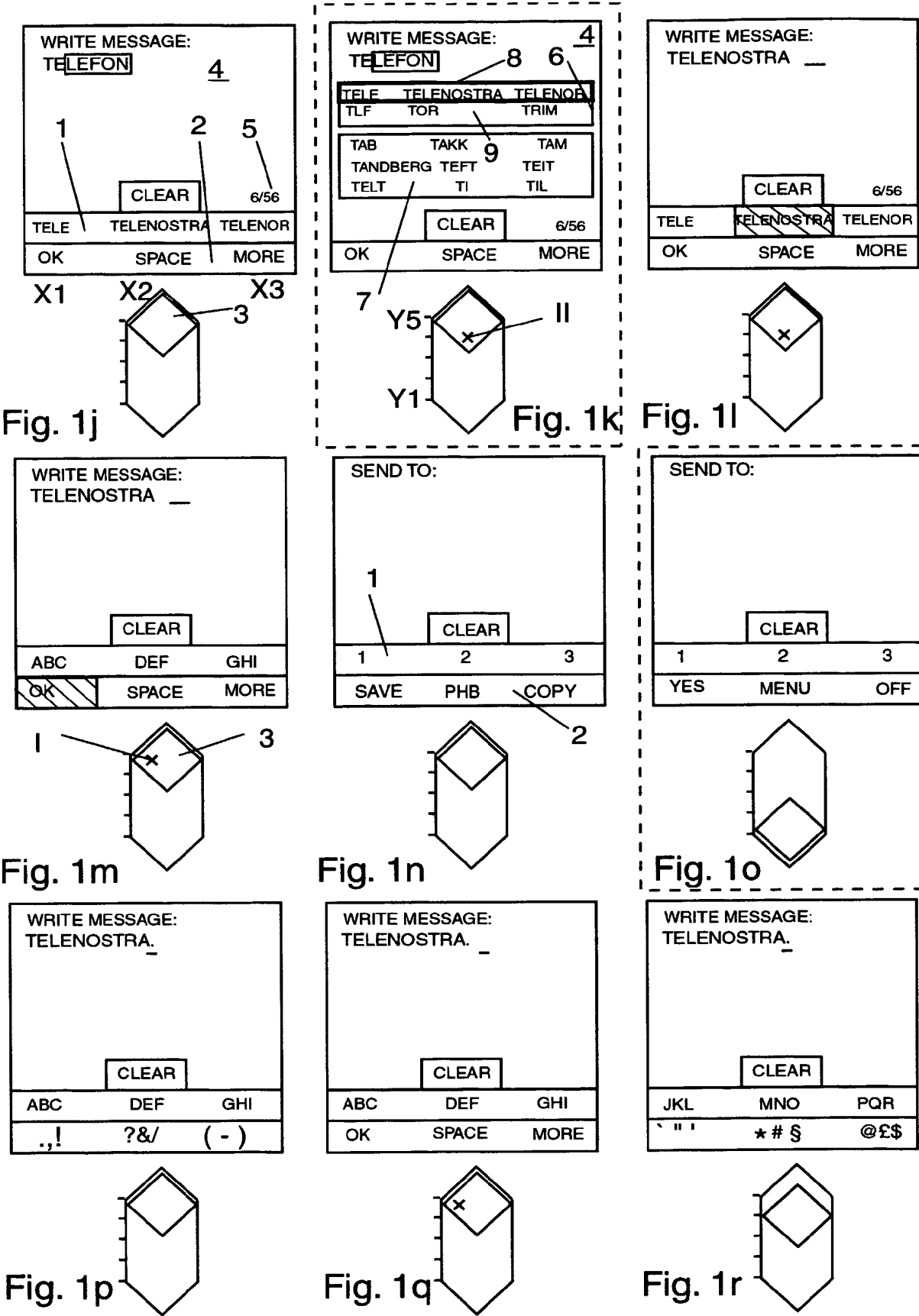
39.

- A system as indicated in one or more of preceding claims 35-38, characterised in
- 25 - that one of the keys is designed to provide on depression either confirmation of a predictively suggested data phrase or a space between subsequent data elements.

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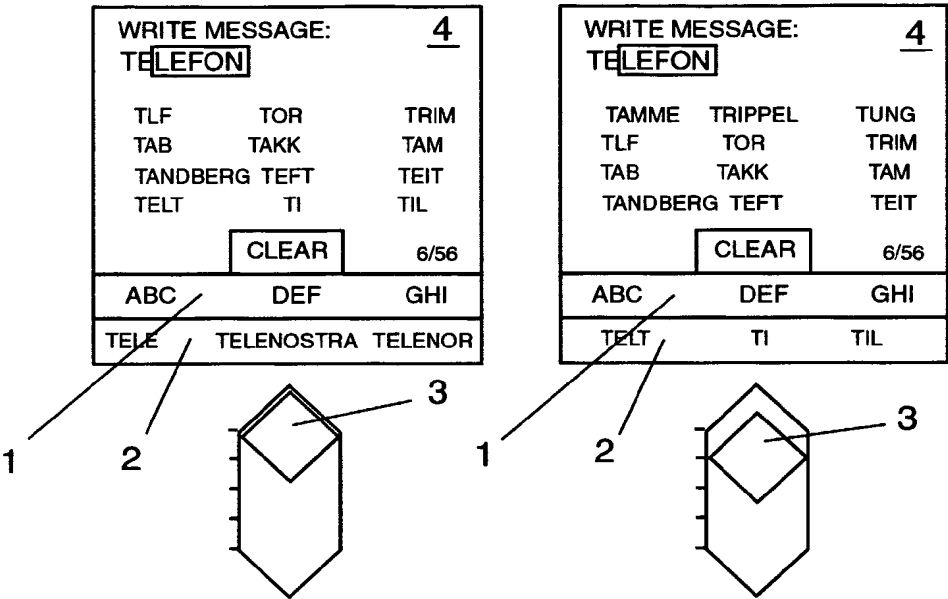


Fig. 1s

Fig. 1t

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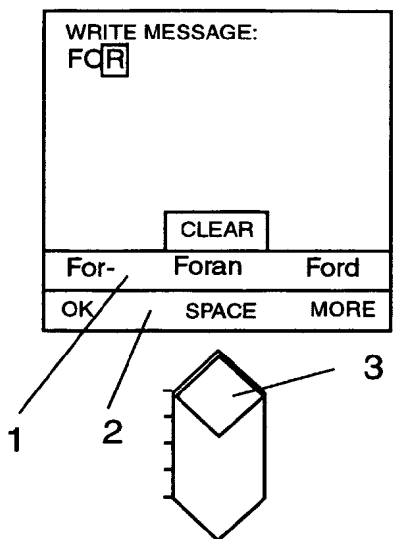


Fig. 2a

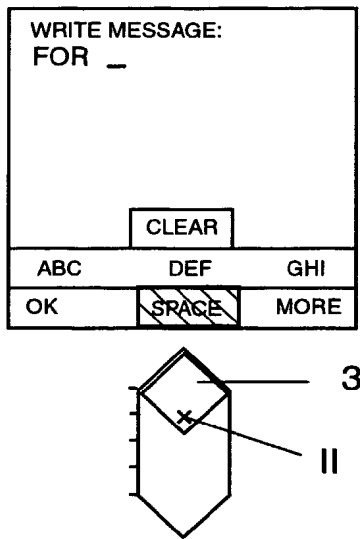


Fig. 2b

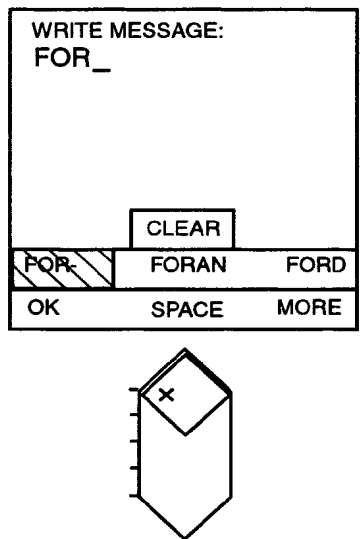


Fig. 2c

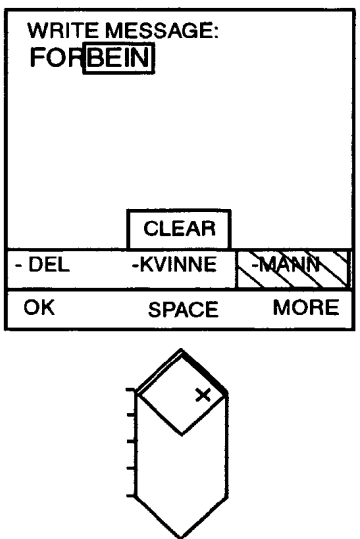


Fig. 2d

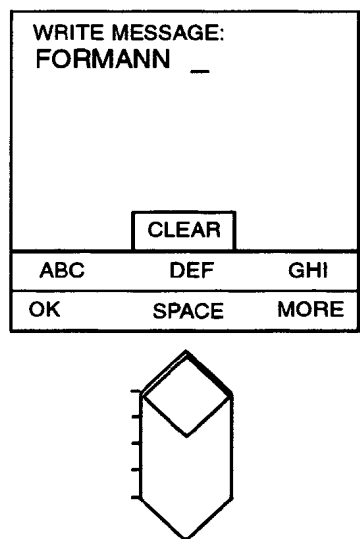
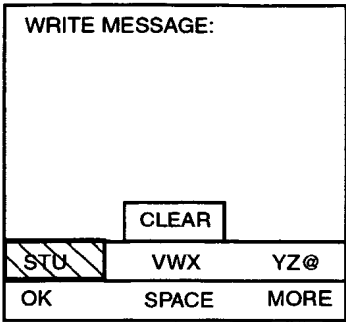
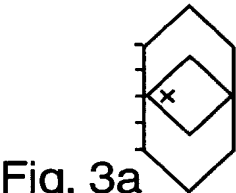
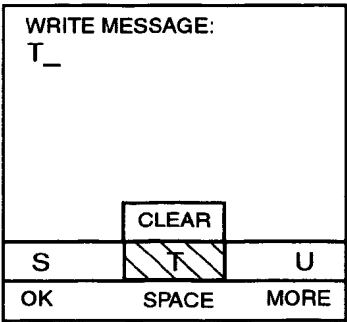
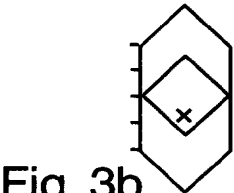
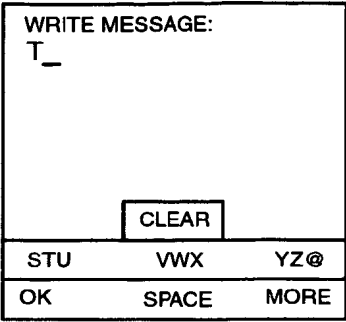
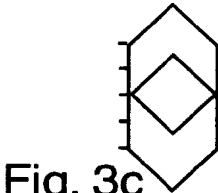
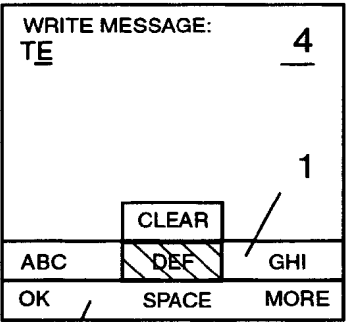
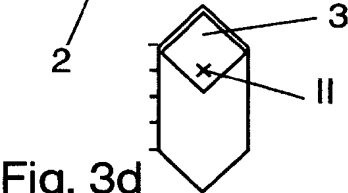
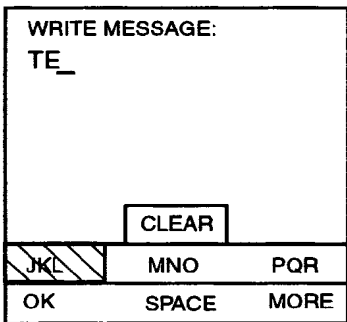
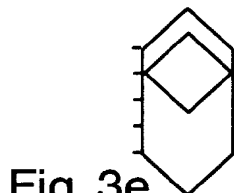
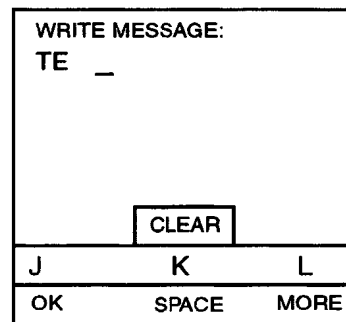
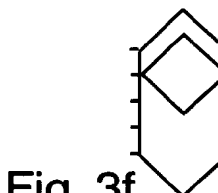
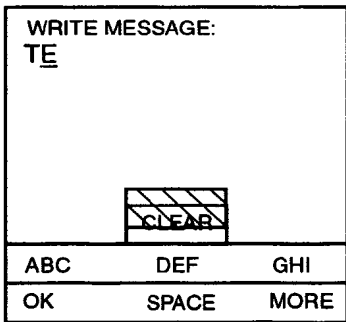
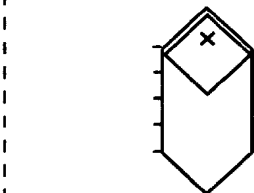
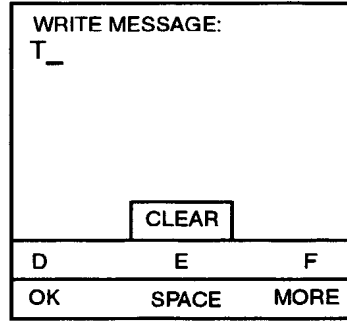
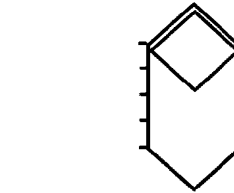
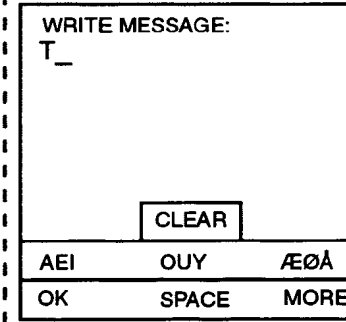
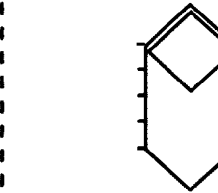


Fig. 2e

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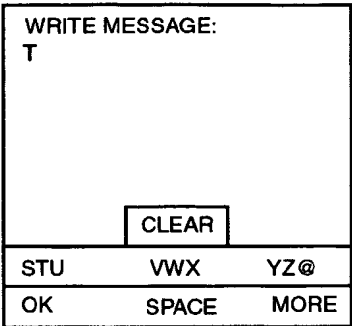
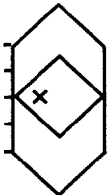


Fig. 3j

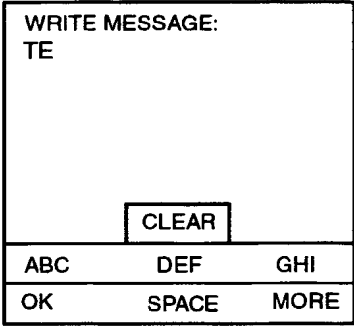
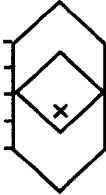


Fig. 3k

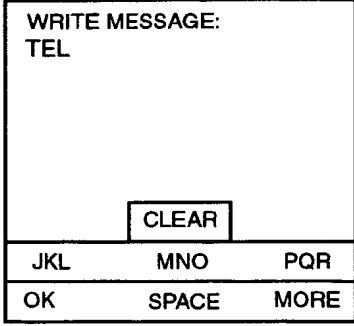
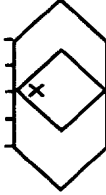


Fig. 3l

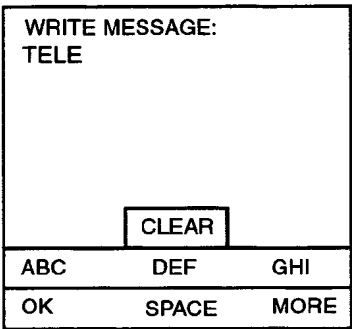
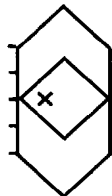


Fig. 3m

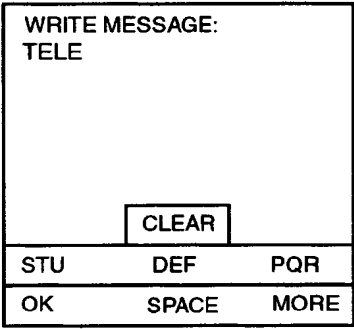
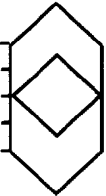


Fig. 3n

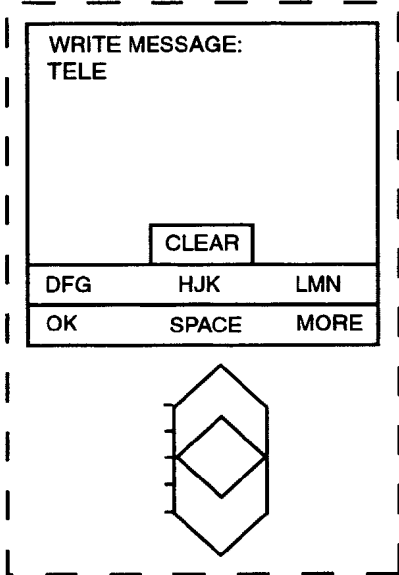
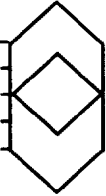


Fig. 3o

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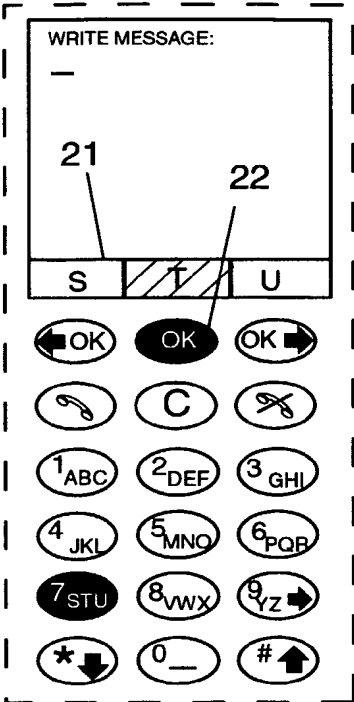


Fig. 3p

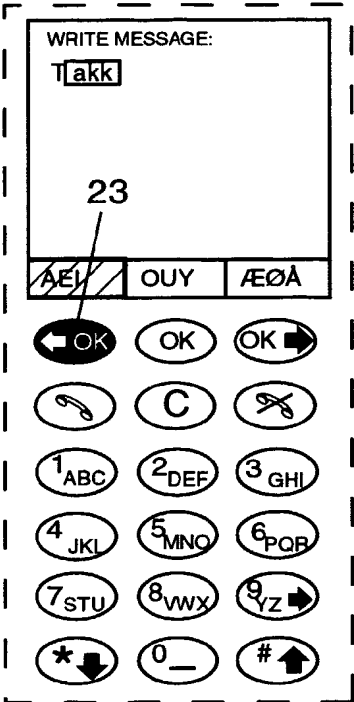


Fig. 3q

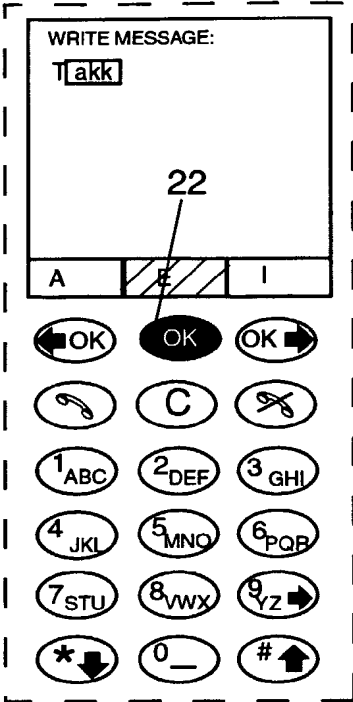


Fig. 3r

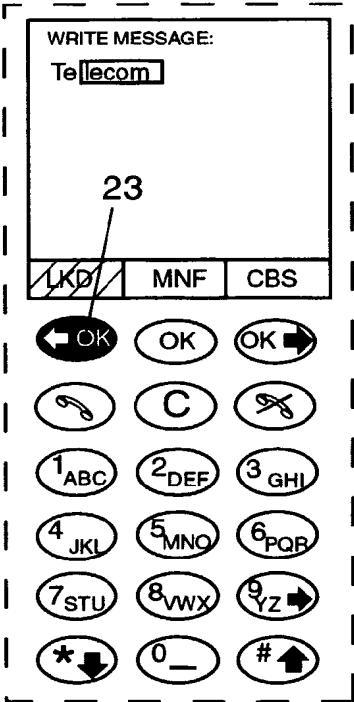


Fig. 3s

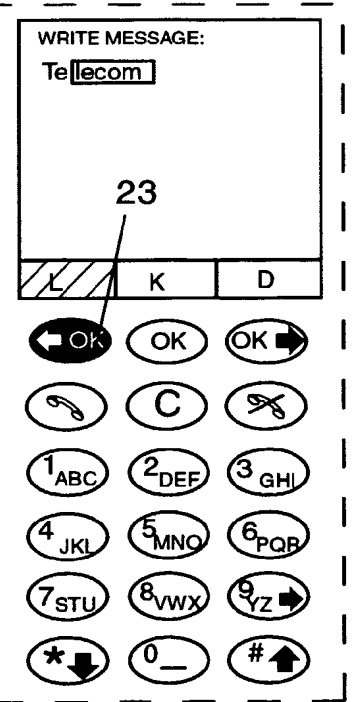


Fig. 3t

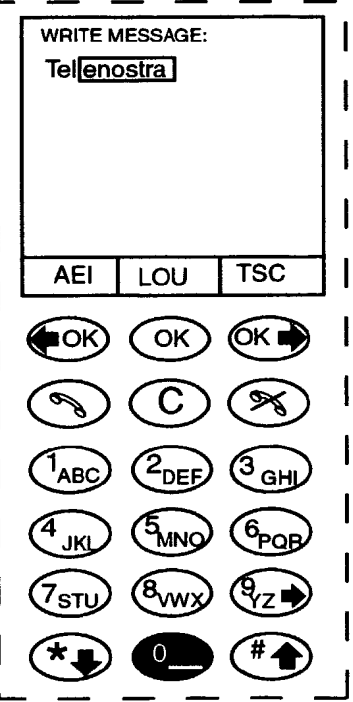


Fig. 3u

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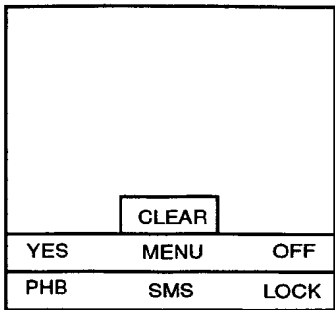
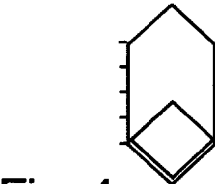


Fig. 4a

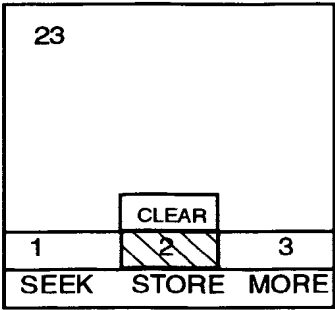
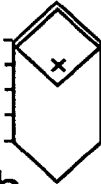


Fig. 4b

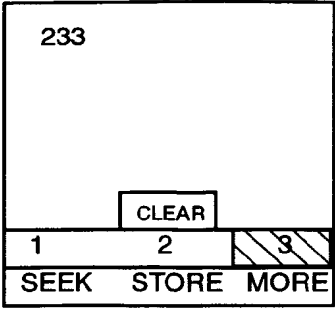
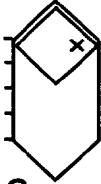


Fig. 4c

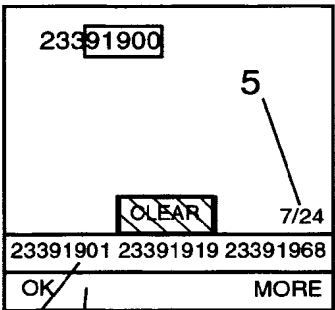
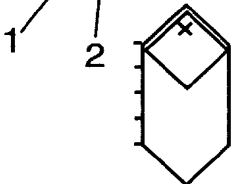


Fig. 4d

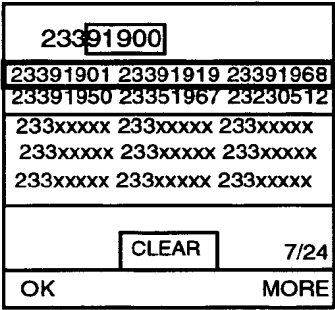
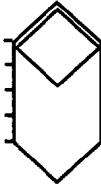


Fig. 4e

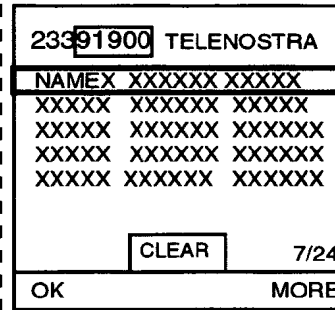
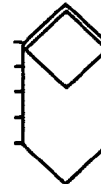


Fig. 4f

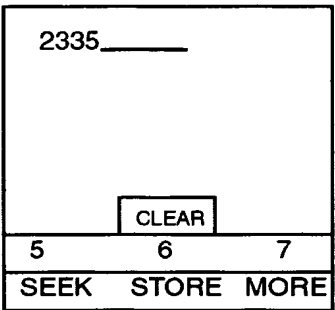
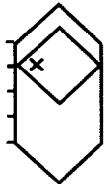


Fig. 4g

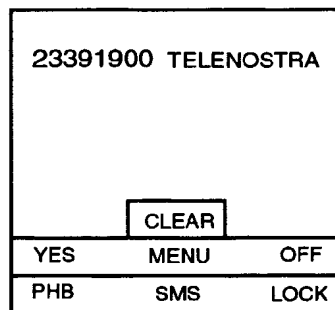


Fig. 4h

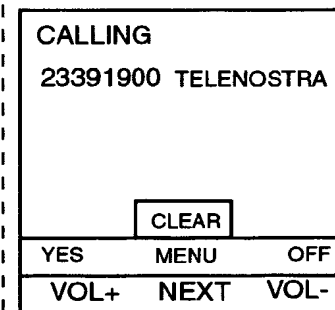
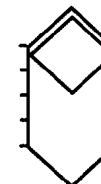


Fig. 4i

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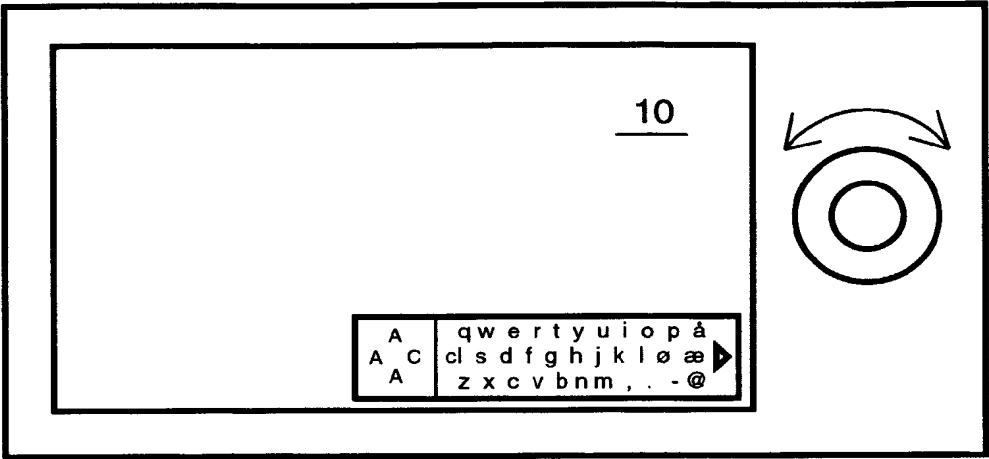


Fig. 5a

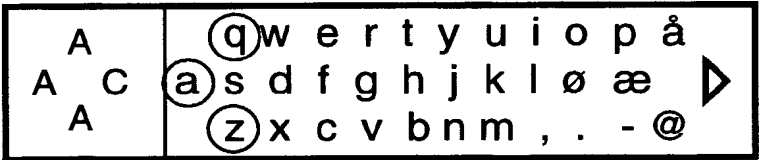


Fig. 5b

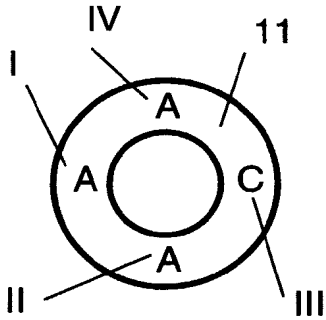


Fig. 5c

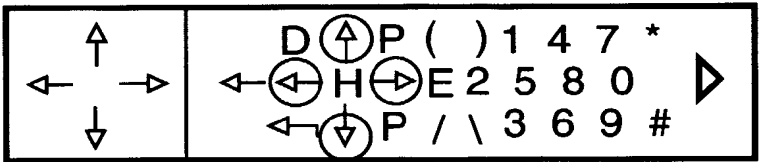


Fig. 5d

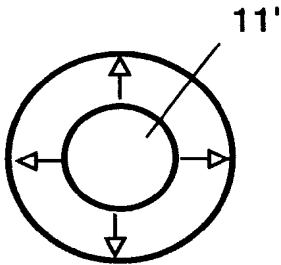


Fig. 5e

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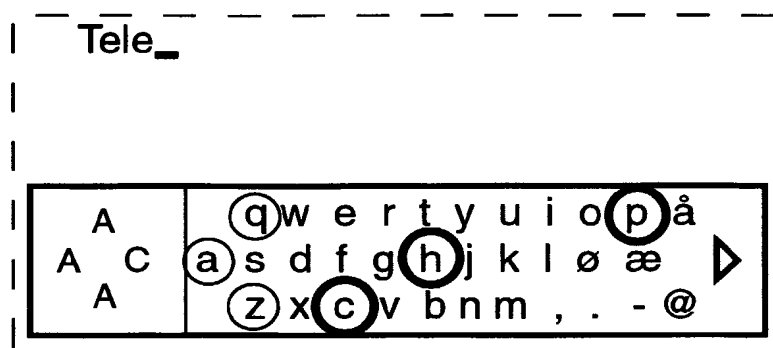
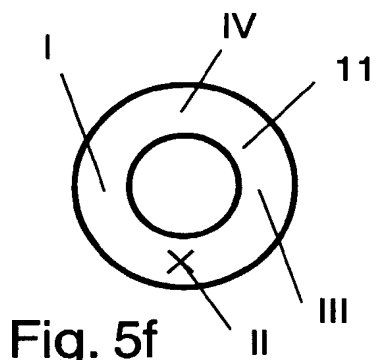


Fig. 5f

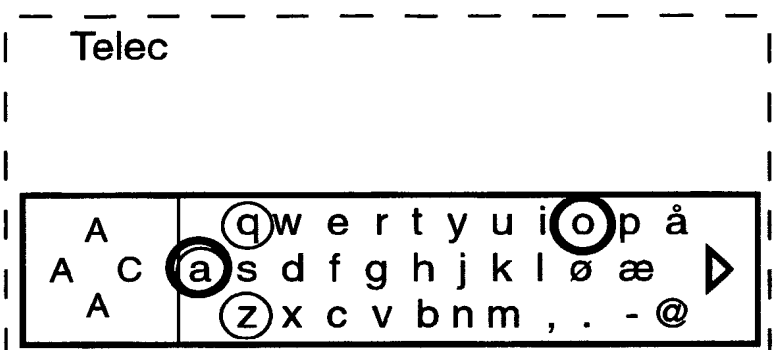
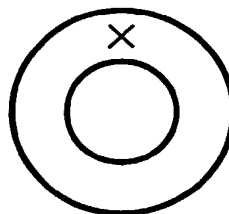


Fig. 5g

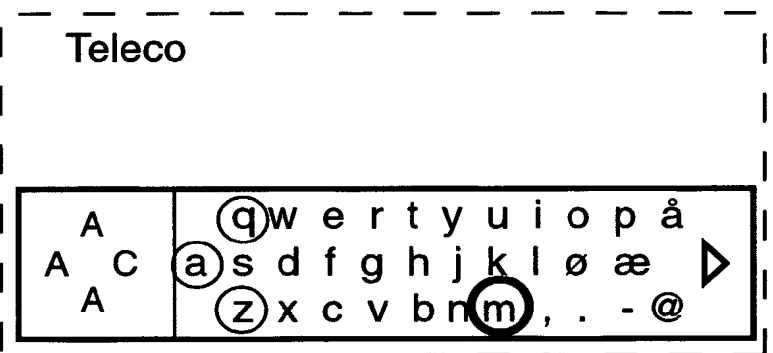
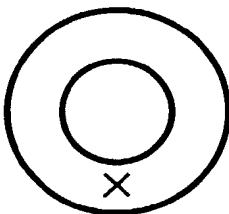


Fig. 5h

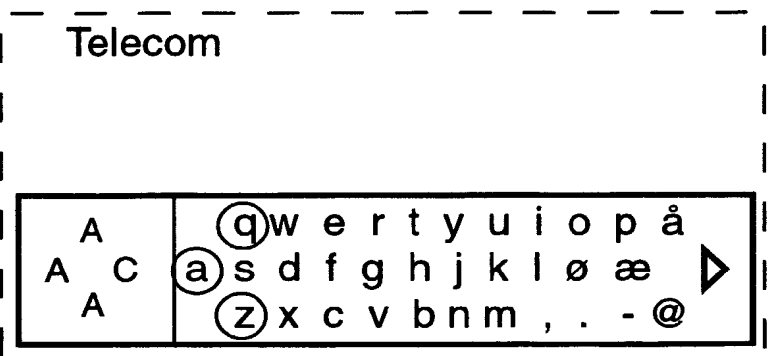
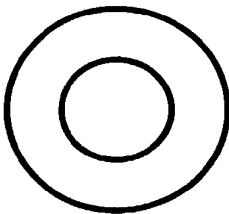


Fig. 5i

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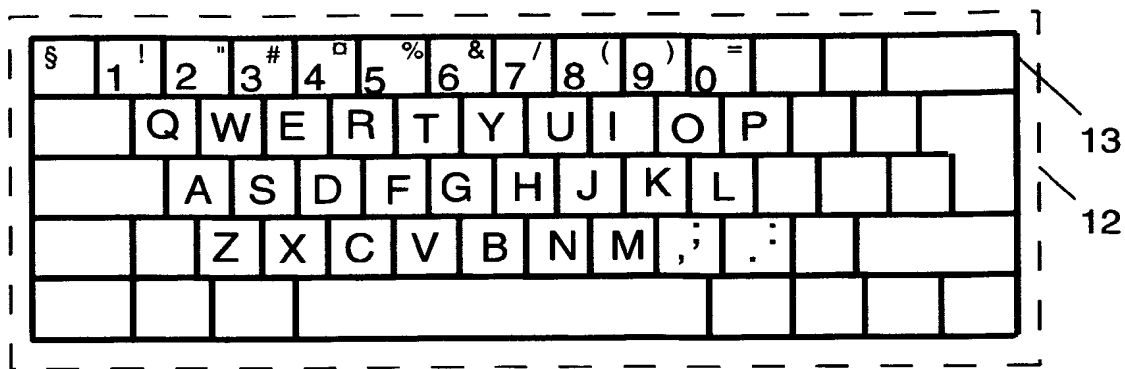


Fig. 6a

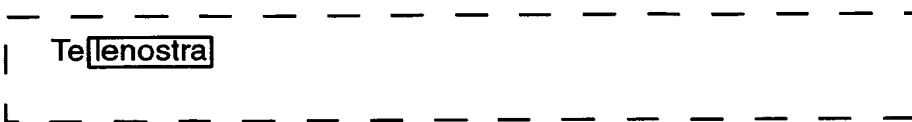


Fig. 6b



Fig. 6c



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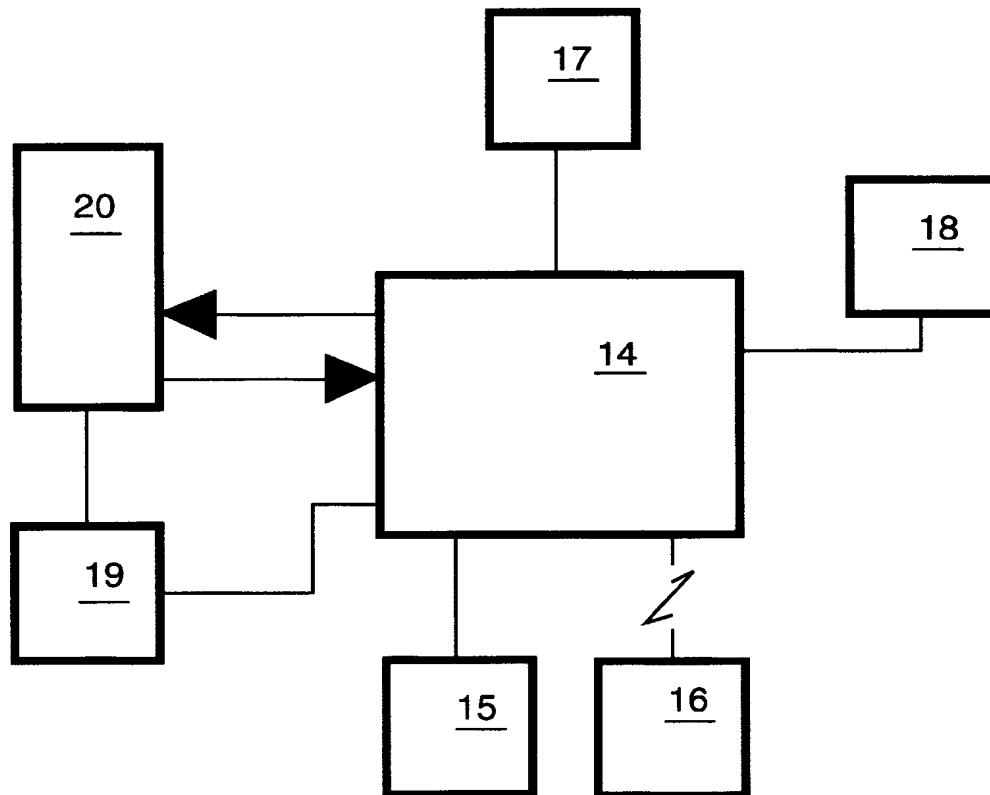


Fig. 7

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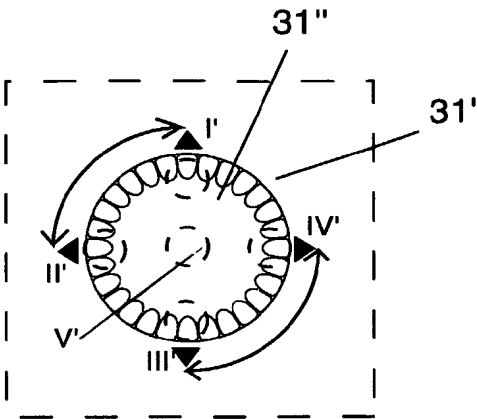


Fig. 8

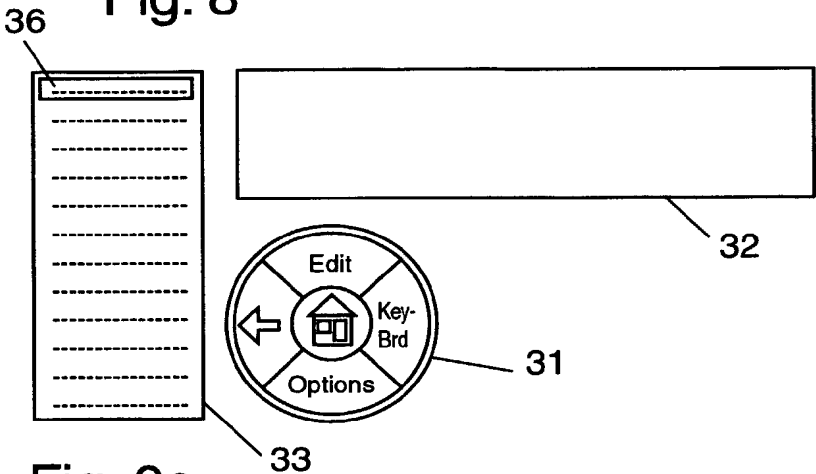


Fig. 9a

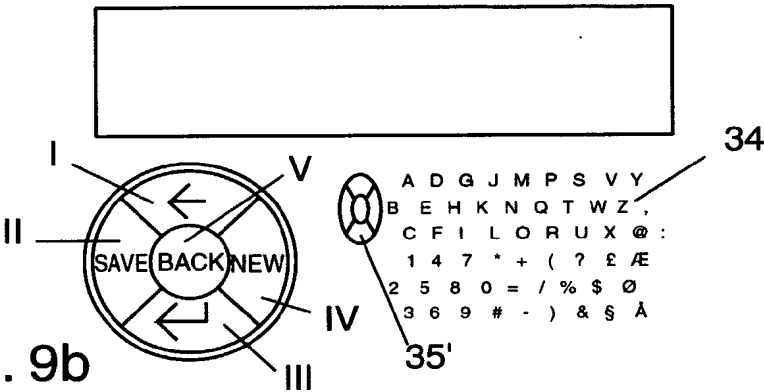


Fig. 9b

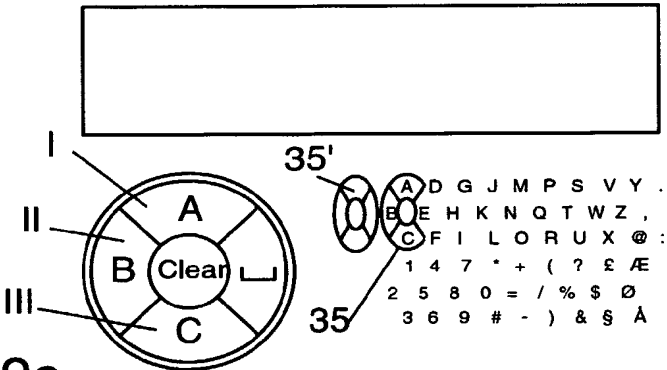


Fig. 9c

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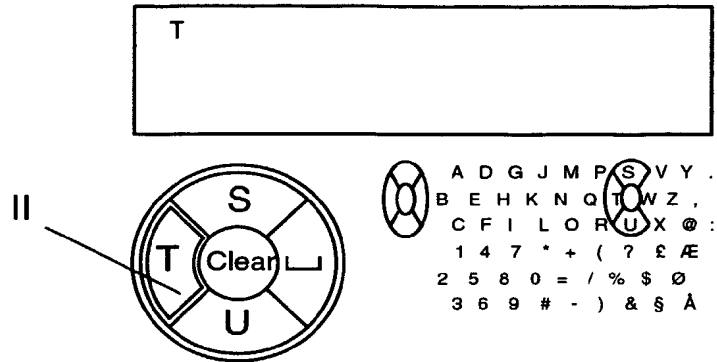


Fig. 9d

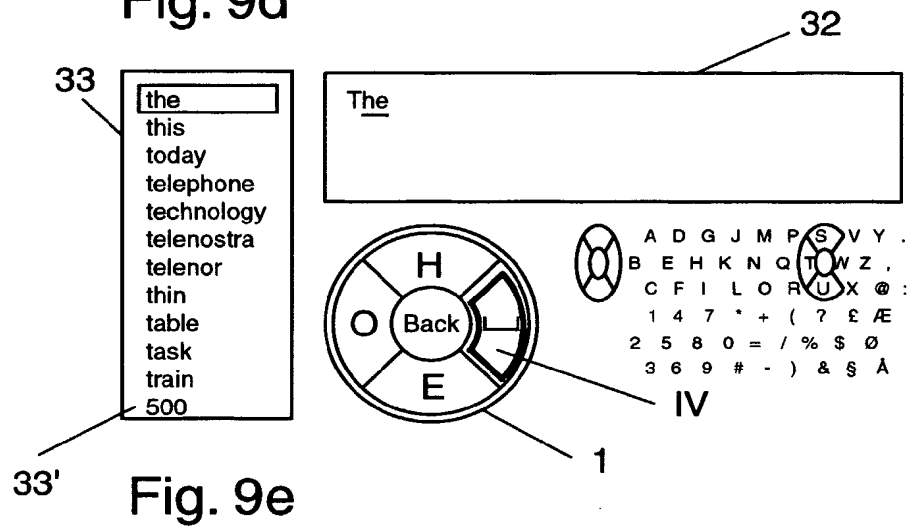


Fig. 9e

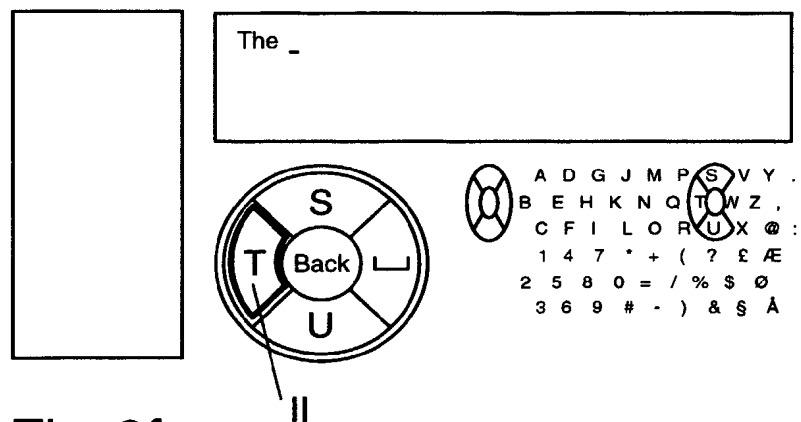


Fig. 9f

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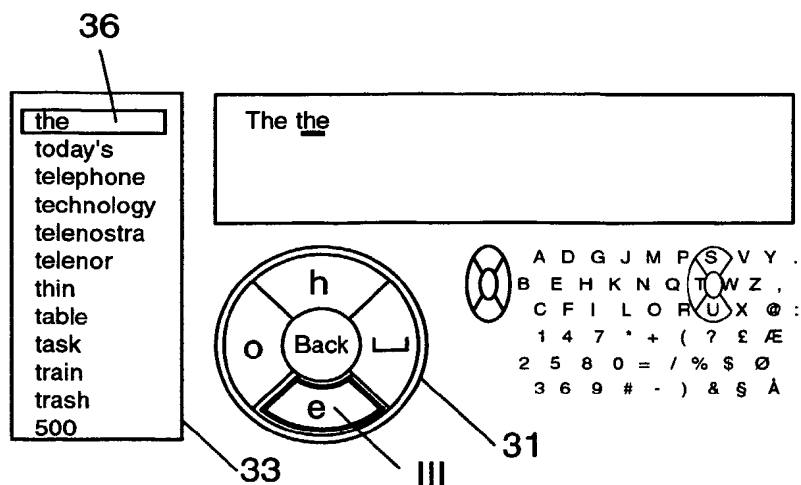


Fig. 9g

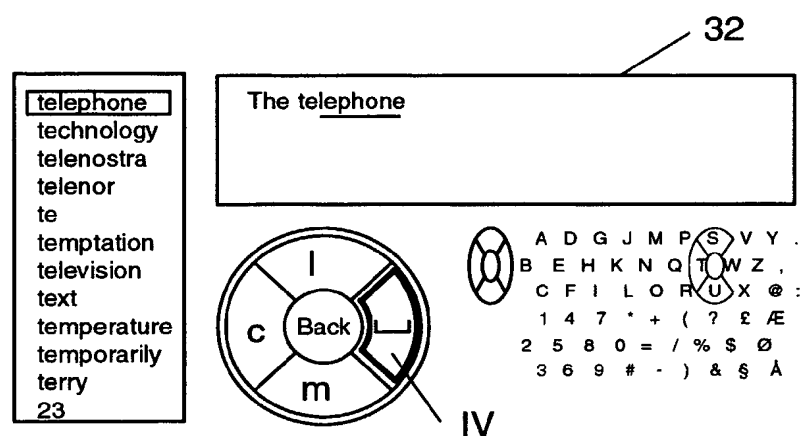


Fig. 9h

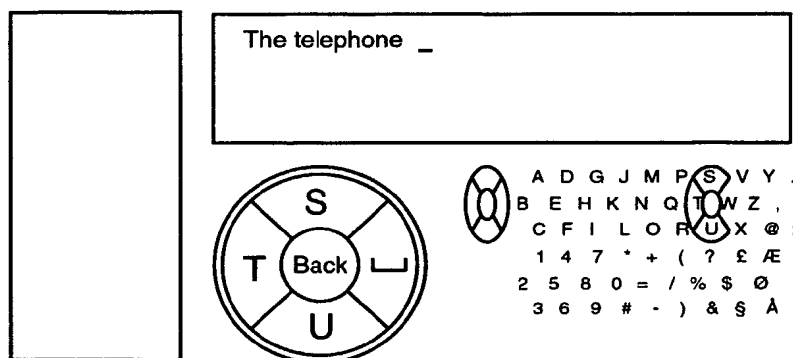


Fig. 9i

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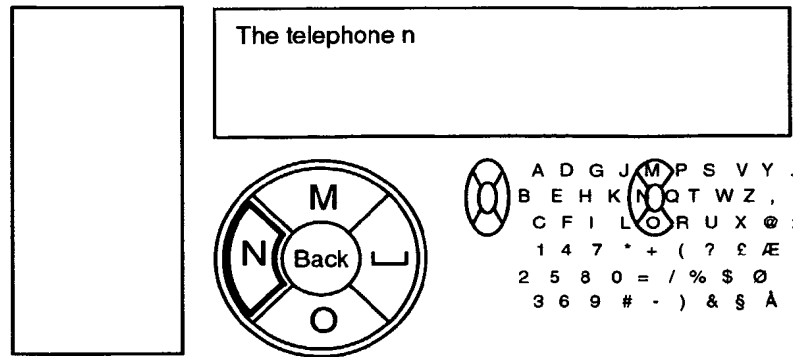


Fig. 9j

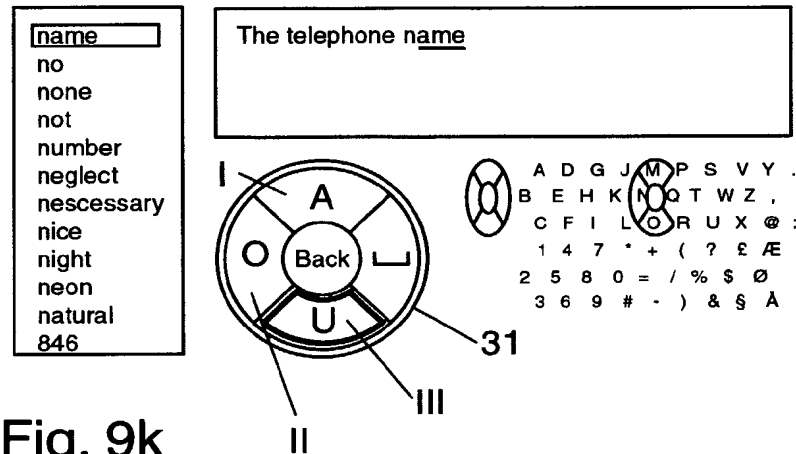


Fig. 9k

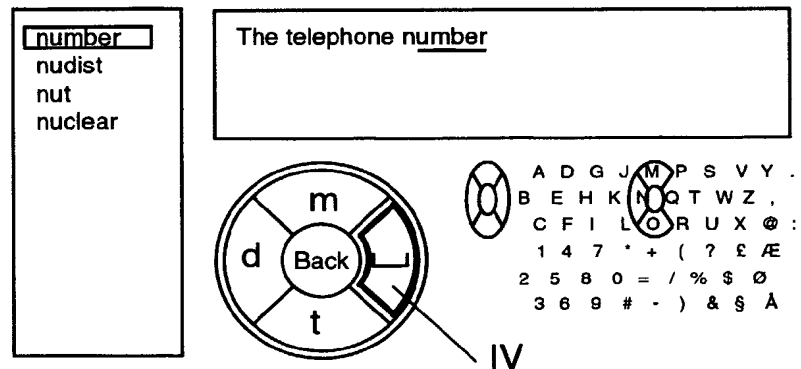


Fig. 9l

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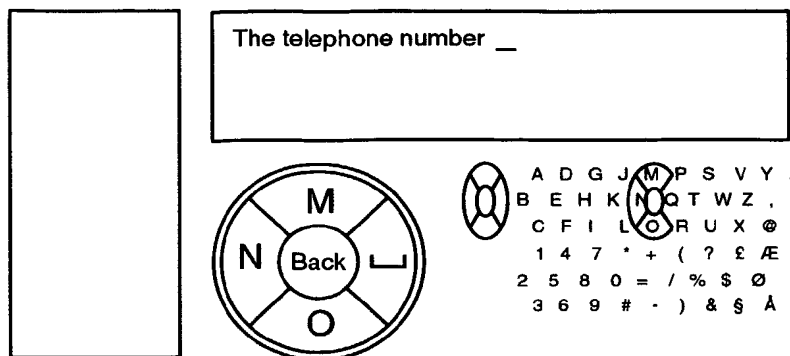


Fig. 9m

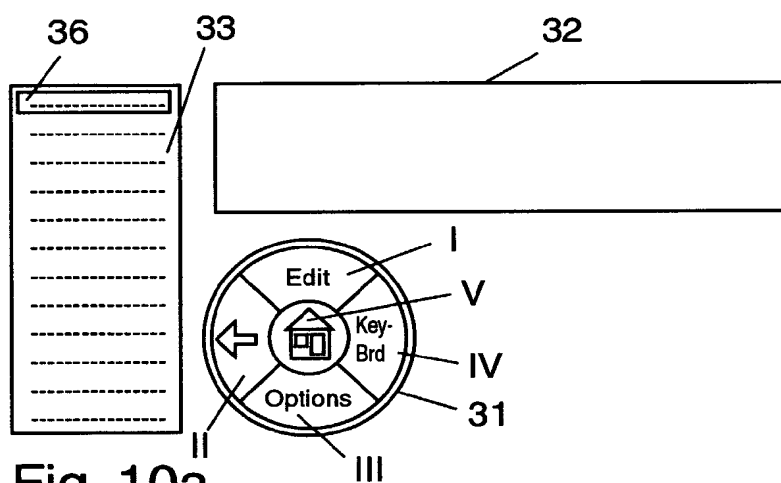


Fig. 10a

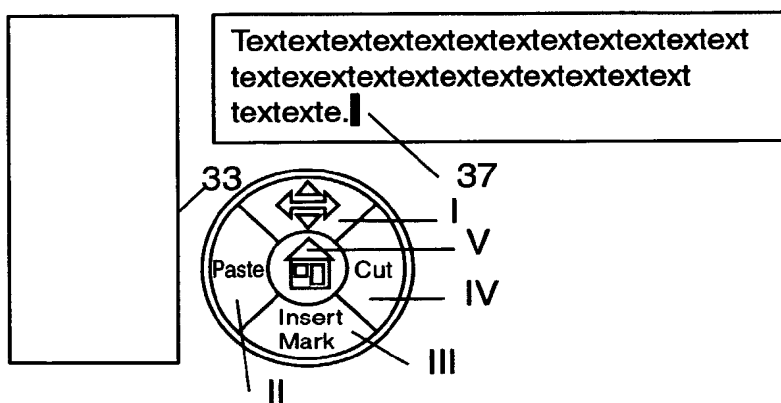


Fig. 10b

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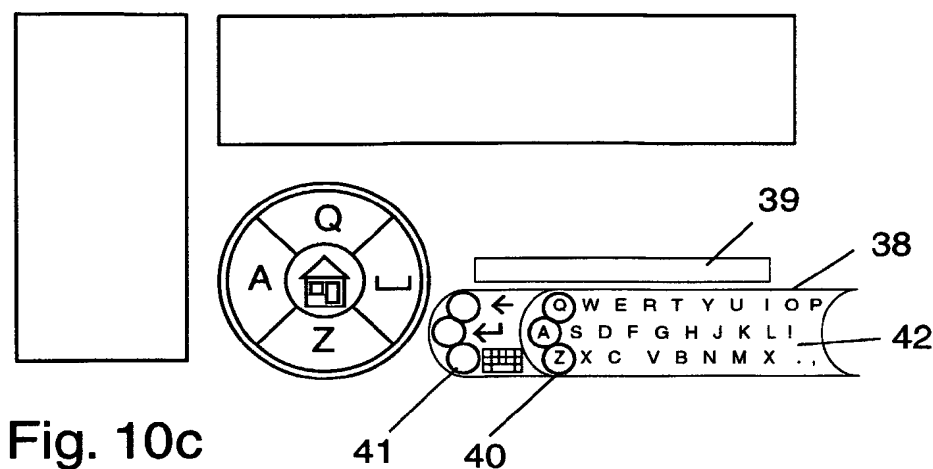


Fig. 10c

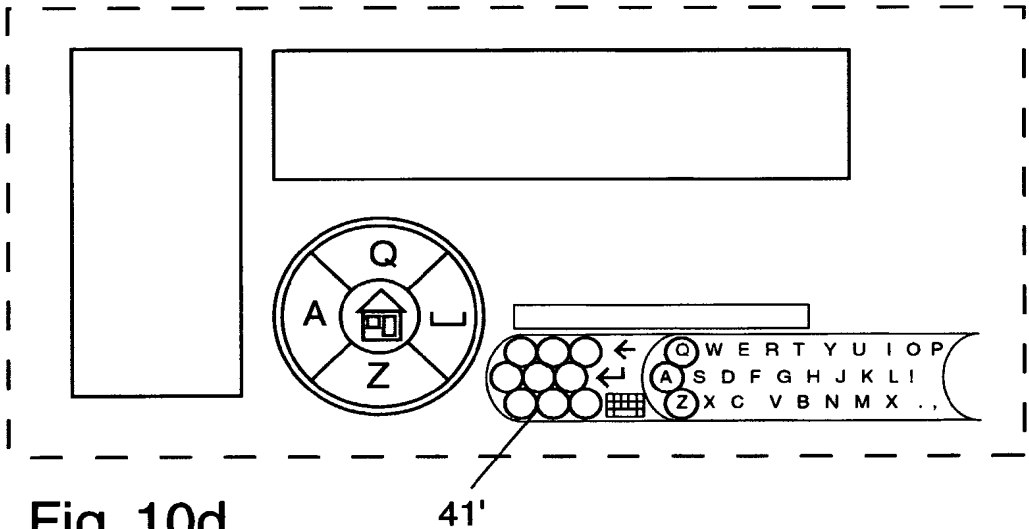


Fig. 10d

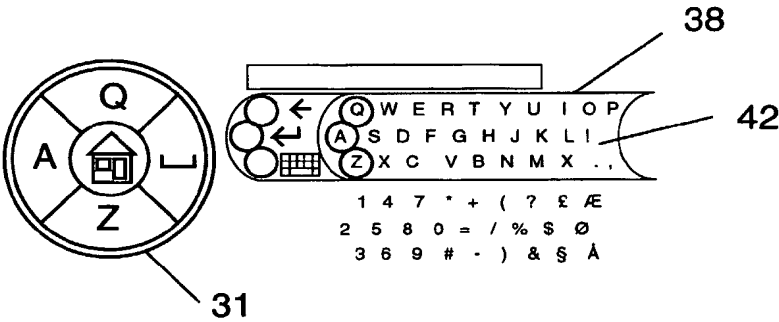
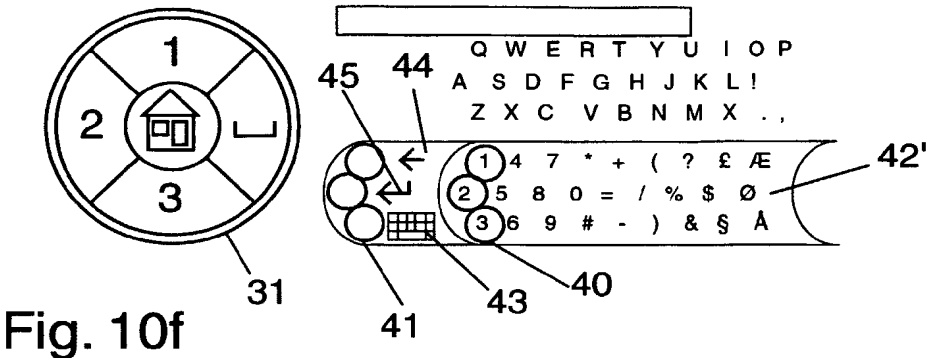
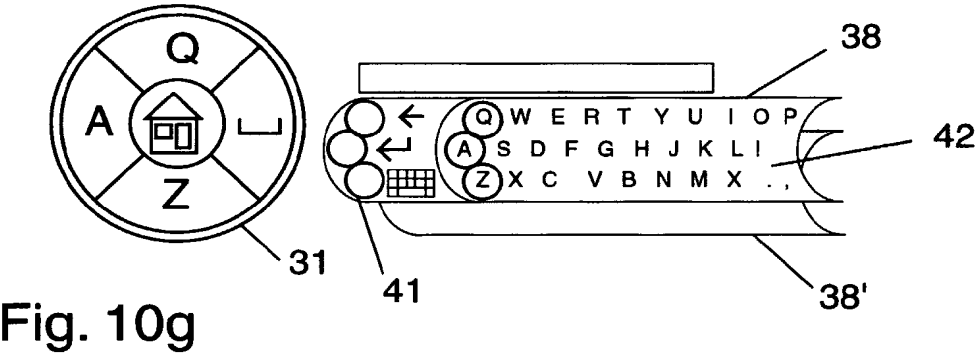
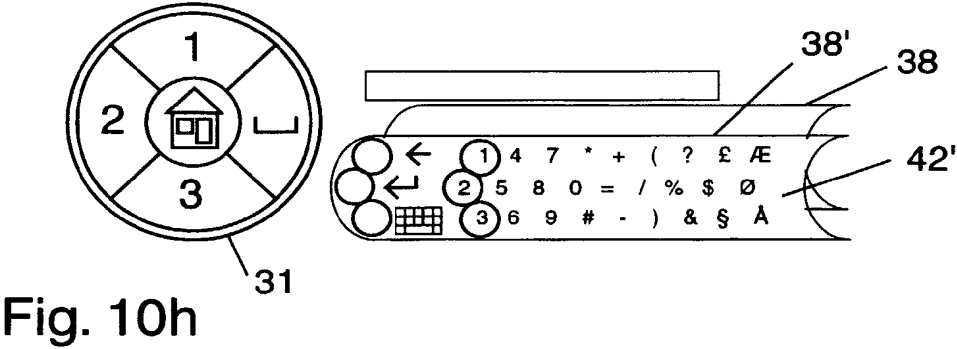


Fig. 10e



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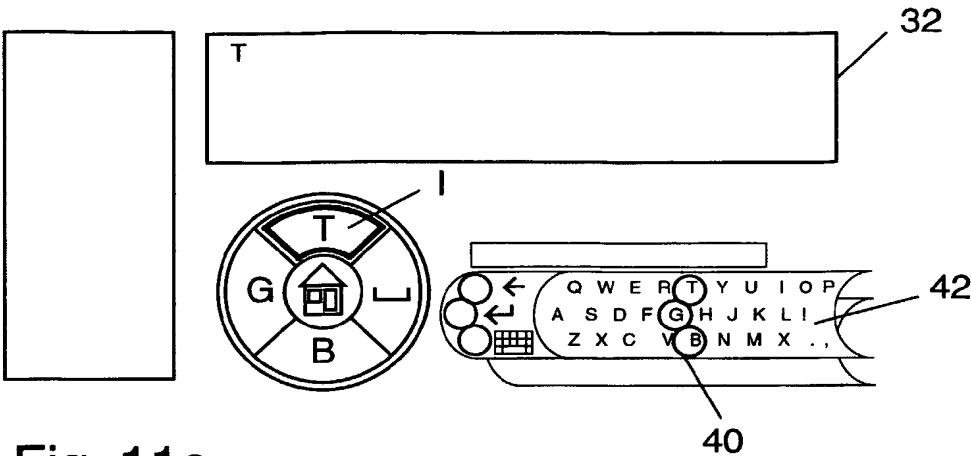


Fig. 11a

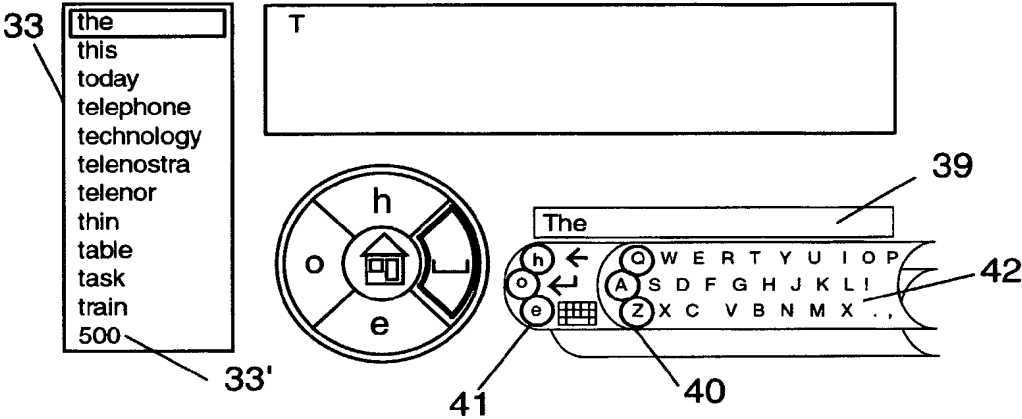


Fig. 11b

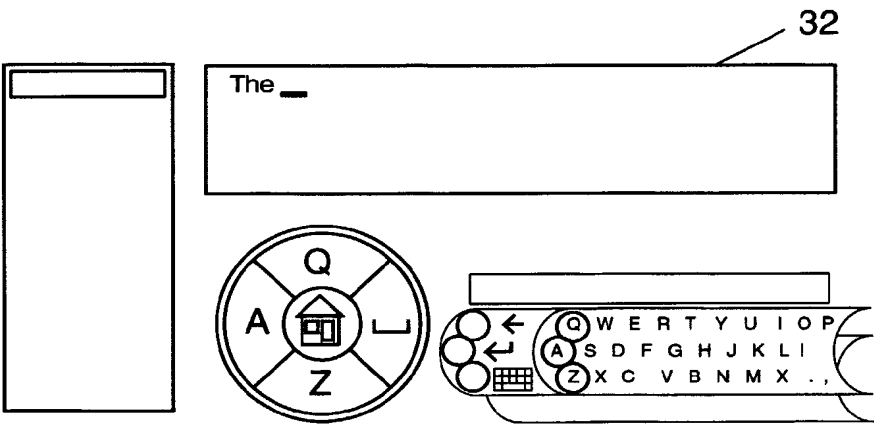


Fig. 11c

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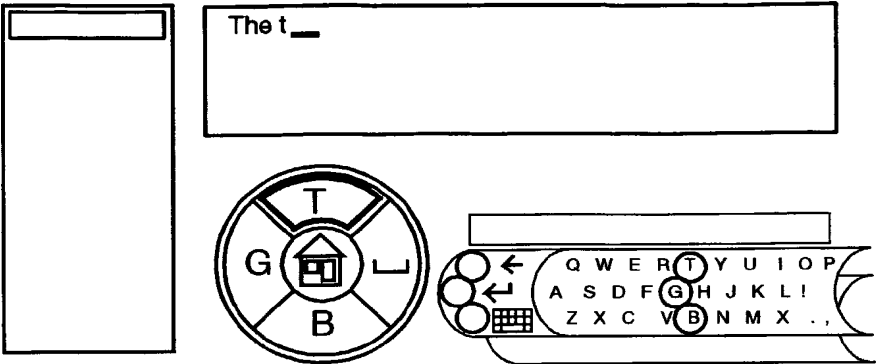


Fig. 11d

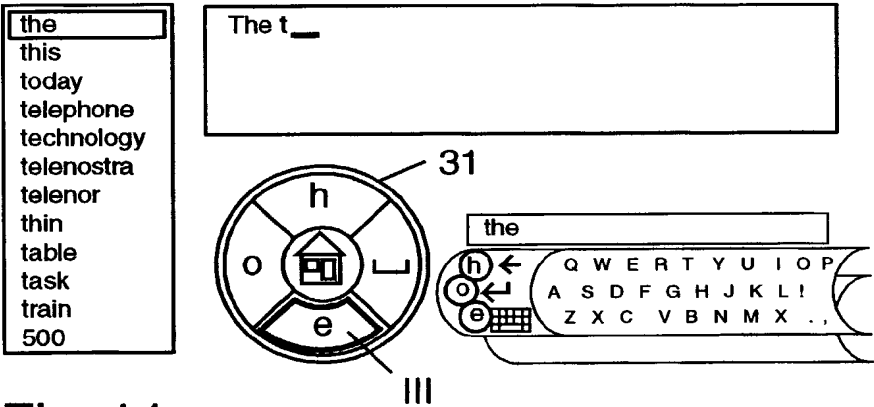


Fig. 11e

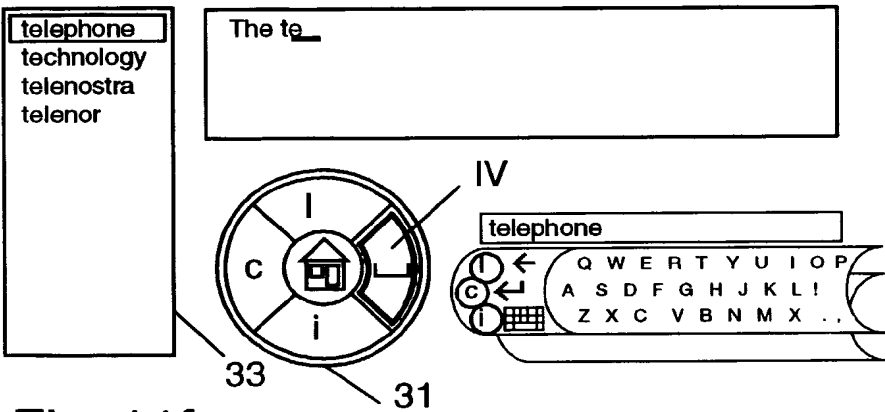


Fig. 11f

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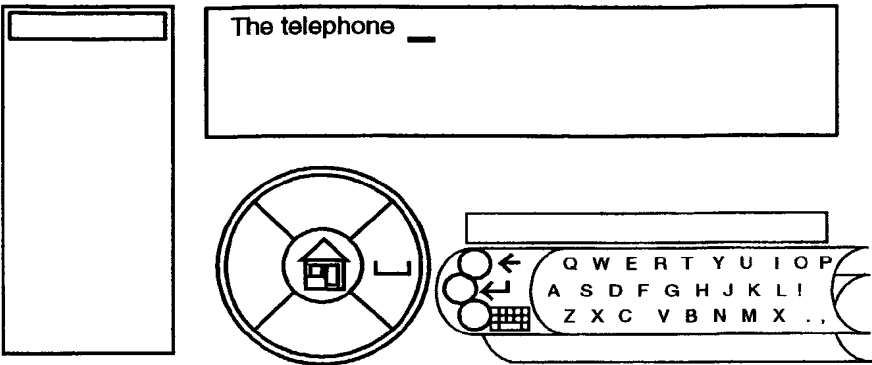


Fig. 11g

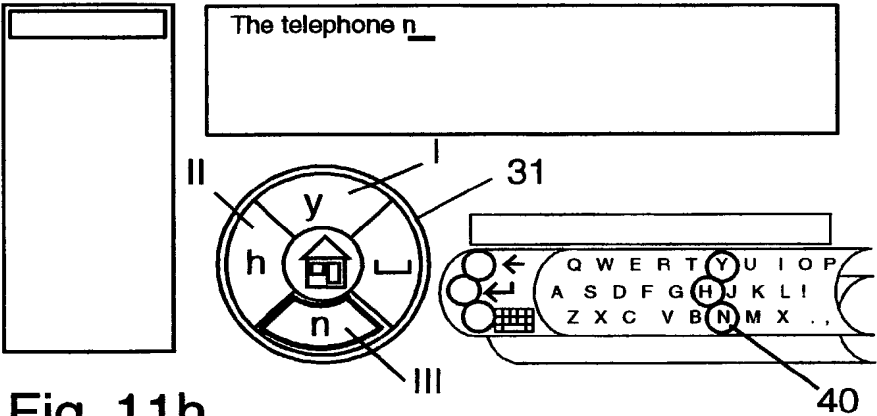


Fig. 11h

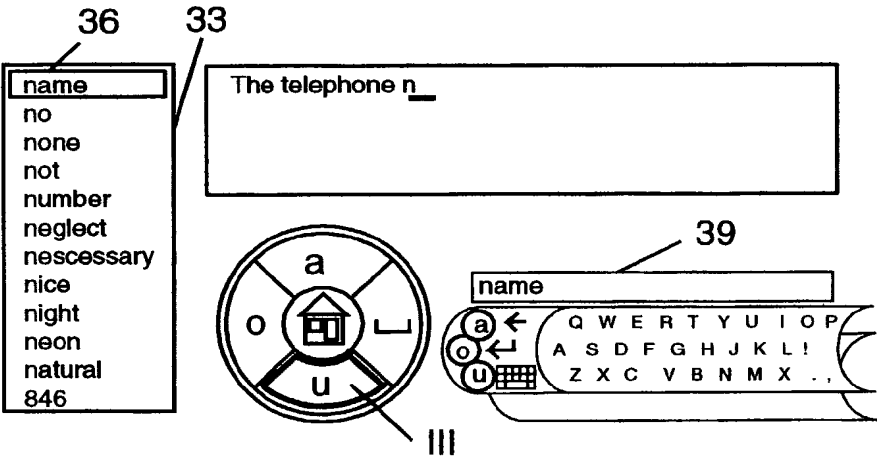


Fig. 11i

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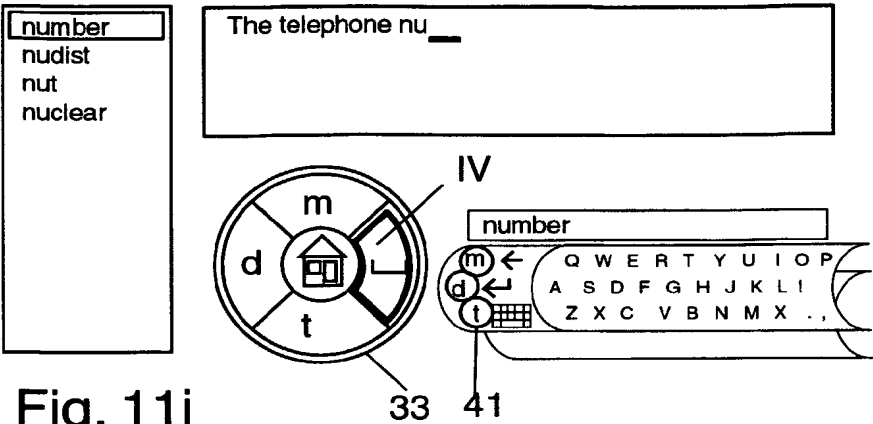


Fig. 11j

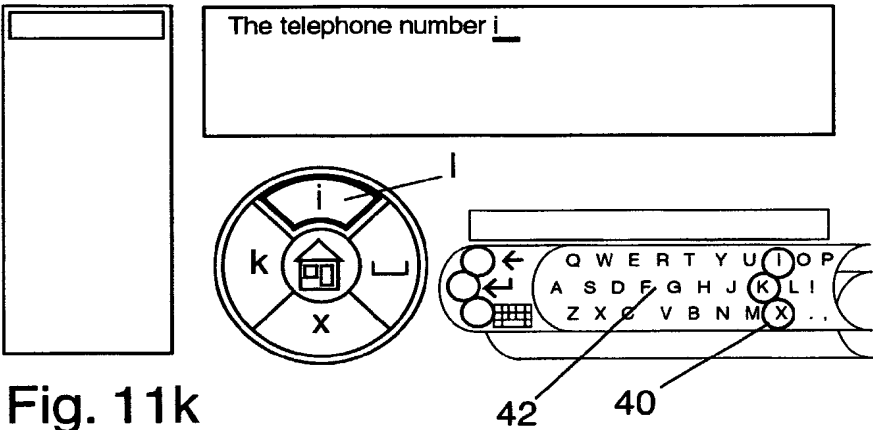


Fig. 11k

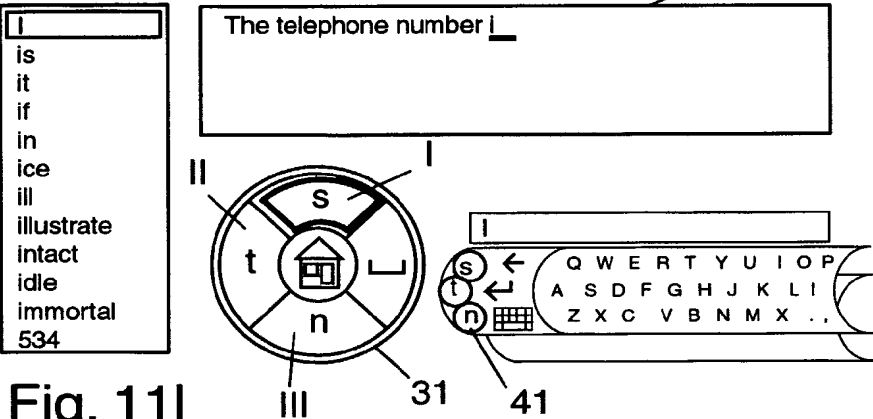


Fig. 11l

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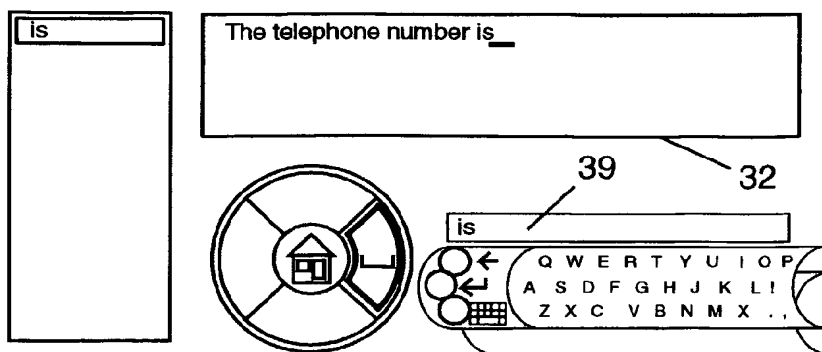


Fig. 11m

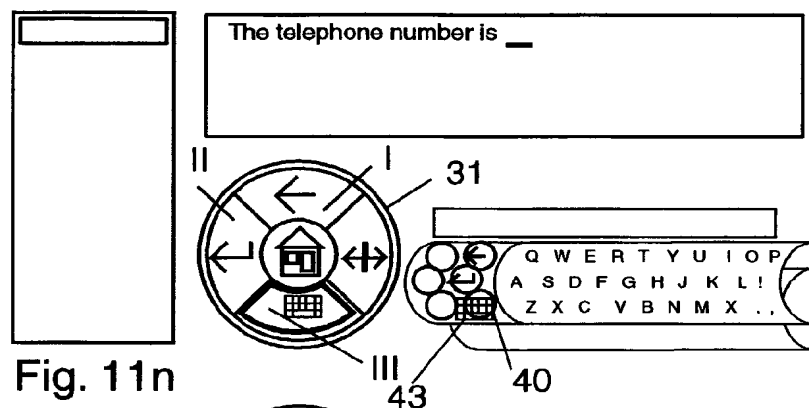


Fig. 11n

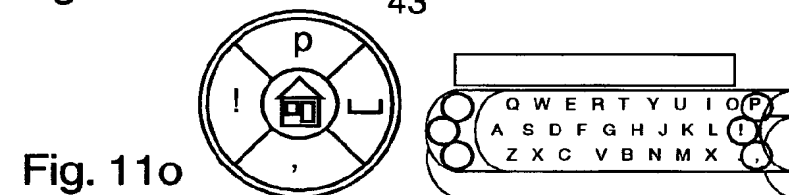


Fig. 11o

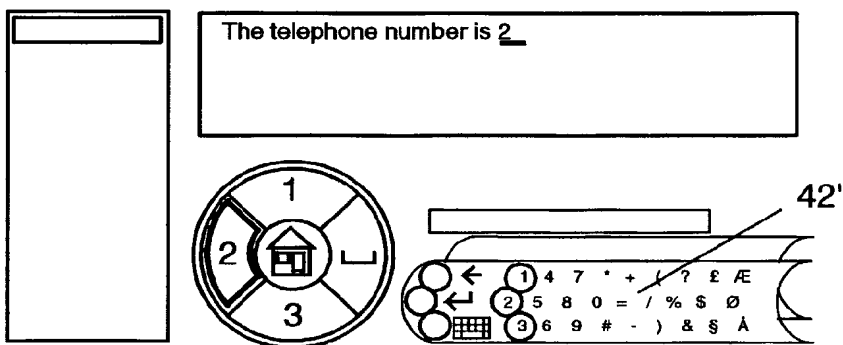


Fig. 11p

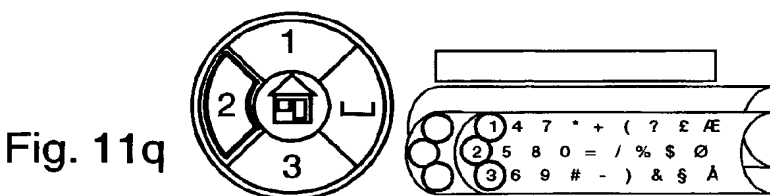


Fig. 11q

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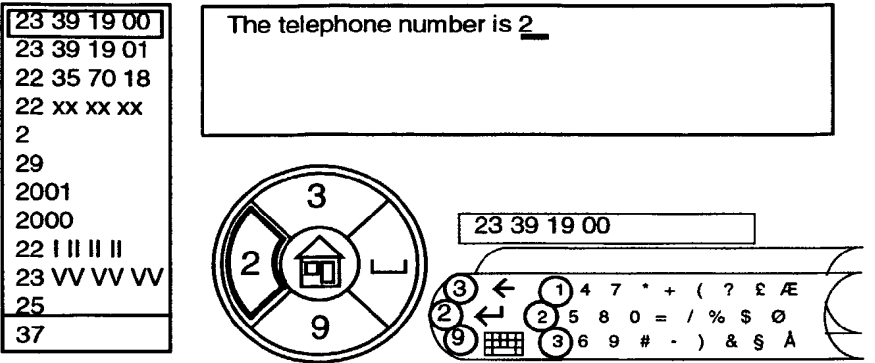


Fig. 11r

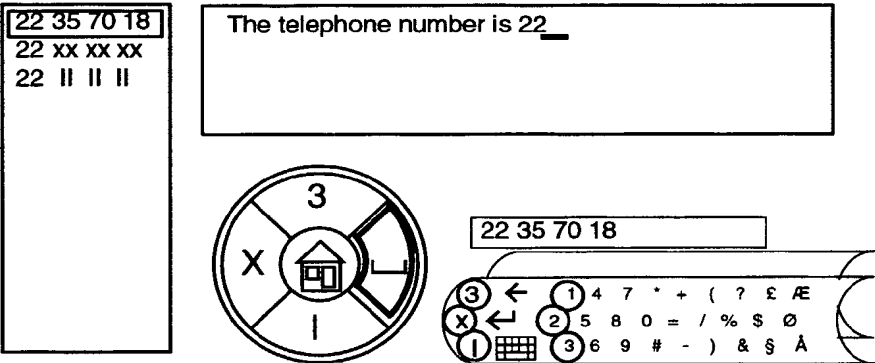


Fig. 11s

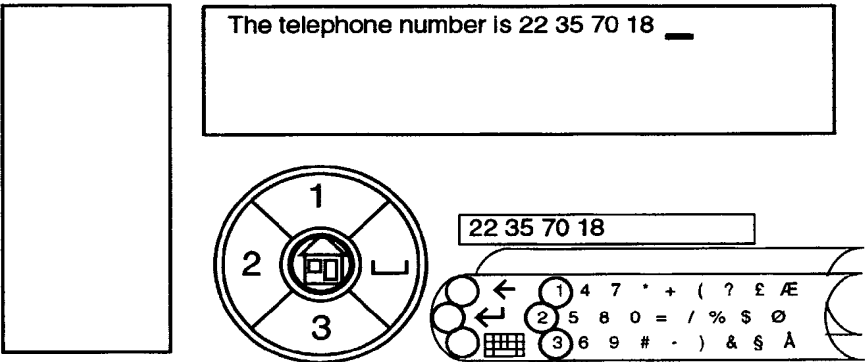


Fig. 11t

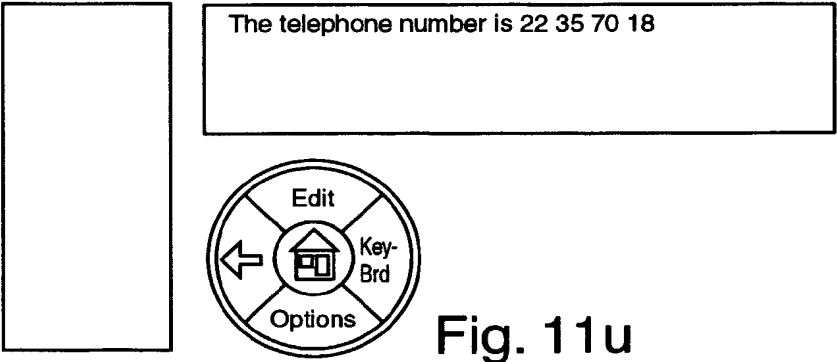


Fig. 11u

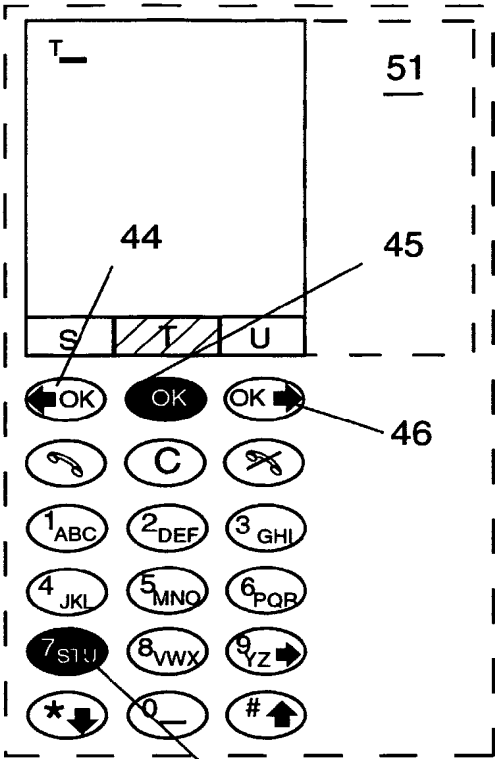


Fig. 12a

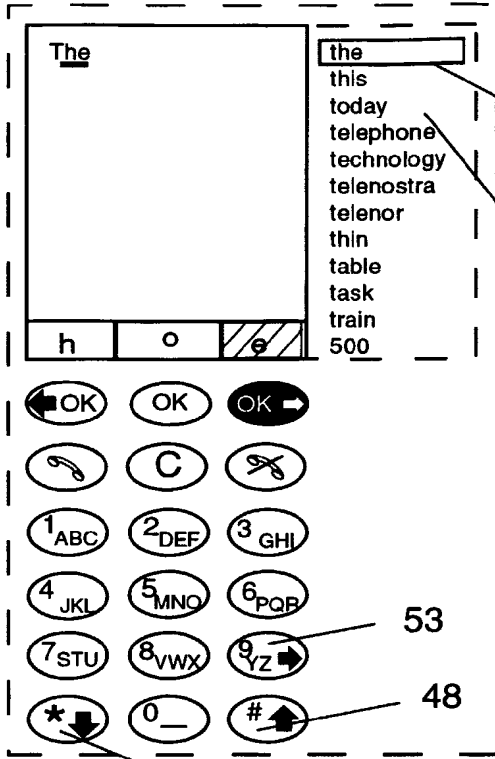


Fig. 12b

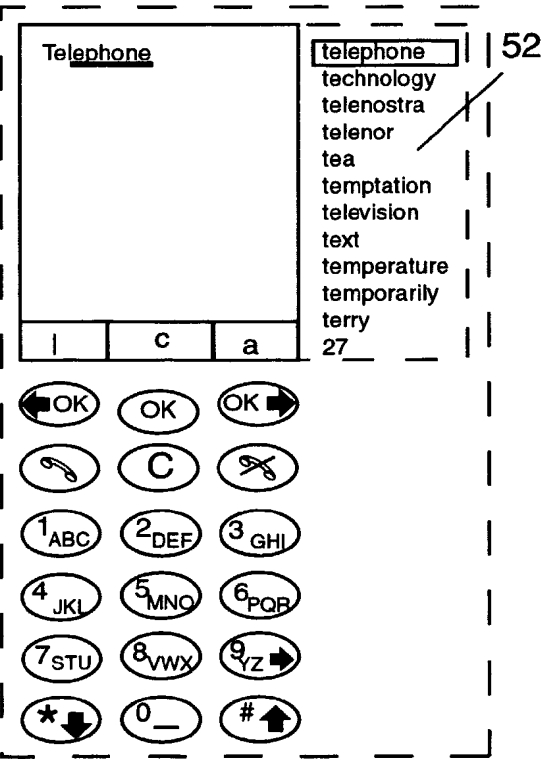


Fig. 12c

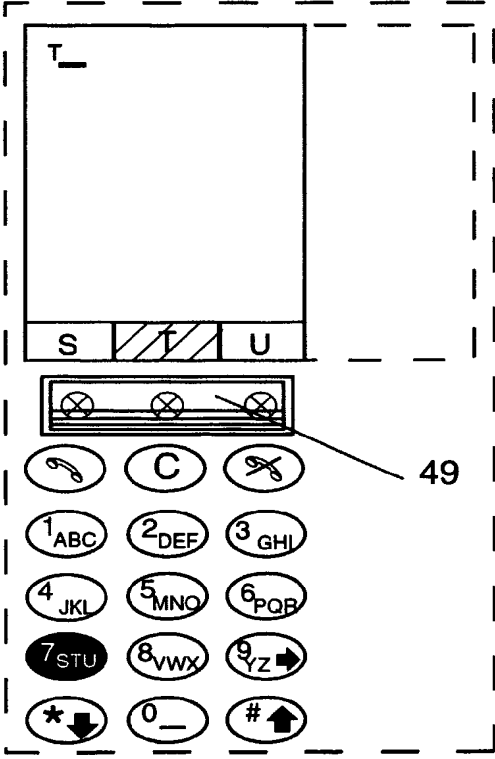


Fig. 12d

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 02/00171

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 3/023, G06F 3/033

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)

IPC7: G06F

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 0075765 A1 (MALVERN SCIENTIFIC SOLUTIONS LTD), 14 December 2000 (14.12.00), page 14, line 15 - page 15, line 8; page 15, line 36 - line 37; page 27, line 19 - page 28, line 25 --	1-39
X	WO 9704580 A1 (PACIFIC COMMUNICATION SCIENCES, INC), 6 February 1997 (06.02.97), figure 4, claim 1 --	1-39
X	WO 0058816 A2 (NOW SEE HEAR INTERACTIVE INC), 5 October 2000 (05.10.00), page 5, line 20 - line 32; page 7, line 4 - line 9; page 9, line 7 - line 15 --	1-39

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

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

12 July 2002

Date of mailing of the international search report

26 -07- 2002

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 02/00171

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 9833111 A1 (TEGIC COMMUNICATIONS, INC), 30 July 1998 (30.07.98), page 26, line 1 - page 27, line 29, abstract --	1-39
A	EP 0844570 A2 (SONY CORP), 27 May 1998 (27.05.98), claims 1-28 --	1-39
A	US 6011542 A (DURRANI, S. ET AL.), 4 January 2000 (04.01.00), column 1, line 24 - line 37; column 5, line 30 - line 56 --	1-28
P,X	WO 0141402 A2 (BADARNEH, ZIAD), 7 June 2001 (07.06.01), page 25, line 13 - page 26, line 34 --	1-39
P,X	US 6307541 B1 (HO, C.-Y. ET AL.), 23 October 2001 (23.10.01), claim 1 -- -----	1-39

INTERNATIONAL SEARCH REPORT

Information on patent family members

10/06/02

International application No.

PCT/NO 02/00171

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
WO	0075765	A1	14/12/00	AU	5238100	A	28/12/00
				EP	1183590	A	06/03/02
				GB	9913283	D	00/00/00
				GB	9924342	D	00/00/00
WO	9704580	A1	06/02/97	CA	2224895	A	06/02/97
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				JP	2001519933	T	23/10/01
				US	5797098	A	18/08/98
				US	6032053	A	29/02/00
WO	0058816	A2	05/10/00	AU	3546200	A	16/10/00
WO	9833111	A1	30/07/98	AU	727539	B	14/12/00
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				EP	1010057	A	21/06/00
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				NO	20005610	D	00/00/00
				WO	0135203	A	17/05/01
US	6307541	B1	23/10/01	NONE			

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
Total in USD (\$)				2000

Electronic Acknowledgement Receipt

EFS ID:	44055186
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	18-OCT-2021
Filing Date:	13-JUL-2020
Time Stamp:	15:28:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$2000
RAM confirmation Number	E20210HF28390319
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	16927723_RCE.pdf	1349899	no	3
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Warnings:					
Information:					
2	Transmittal Letter	16927723_IDS.pdf	140520	no	3
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3	Information Disclosure Statement (IDS) Form (SB08)	16927723_ListofRefs.pdf	113199	no	1
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4	Other Reference-Patent/App/Search documents	2021621DemonstrativeExhibits forKannuu.pdf	5676879	no	40
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15	Foreign Reference	WO2002091160A1.pdf	2461850	no	63
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22	Other Reference-Patent/App/Search documents	OppositiontoMotiontoStrike737IPR.pdf	206250	no	8
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Information:					
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Total Files Size (in bytes):			56221121		

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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

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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL (Submitted Only via EFS-Web)

Application Number	16/927,723	Filing Date	2020-07-13	Docket Number (if applicable)	011844-0034-999	Art Unit	2173
First Named Inventor	Kevin W. Dinn			Examiner Name	Haoshian Shih		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
Deposit Account No 503013

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Vishal V. Khatri/	Date (YYYY-MM-DD)	2021-10-18
Name	Vishal V. Khatri	Registration Number	51873

This collection of information is required by 37 CFR 1.114. 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.

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Haoshian Shih
Entitled : IMPROVED PROCESS AND APPARATUS FOR
SELECTING AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP RCE

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of the cited references can be found in the file of the parent application (*U.S. Serial No. , filed*).
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in the International Search Report issued for the corresponding International application, and copies of the International Search Report and the cited references are attached for the Examiner's consideration.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in a communication from a foreign or international patent office in a counterpart foreign or international application(s), and copies of both the relevant communication and the cited references, where required, are attached for the Examiner's consideration.

CERTIFICATION

The undersigned certifies that, pursuant to 37 CFR §1.97(e)(1),

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign or international patent office in a counterpart foreign or international application not more than three months prior to the filing of this Statement.

RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☐ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☒ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☐ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The Examiner is further respectfully requested to return of a copy of the enclosed List of Cited References with the Examiner's initials in the left column.

The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: October 18, 2021

Attachment(s): List of Cited References and copies as required



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

20583 7590 09/16/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

EXAMINER	
SHIH, HAOSHIAN	
ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 09/16/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	12/16/2021

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450

By fax, send to: (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.

20583 7590 09/16/2021
Jones Day
 250 Vesey Street
 New York, NY 10281-1047

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

	(Typed or printed name)
	(Signature)
	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	12/16/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
SHIH, HAOSHIAN	2173	715-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(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 _____

3 _____

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	09/16/2021	EXAMINER	
Jones Day			SHIH, HAOSHIAN	
250 Vesey Street				
New York, NY 10281-1047				
			ART UNIT	PAPER NUMBER
			2173	
DATE MAILED: 09/16/2021				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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 30 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.

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.

Notice of Allowability	Application No. 16/927,723	Applicant(s) Dinn, Kevin W.	
	Examiner HAOSHIAN SHIH	Art Unit 2173	AIA (FITF) 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 08/11/2021.
☐ 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 27-39. 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)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>08/11/2021</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/HAOSHIAN SHIH/
Primary Examiner, Art Unit 2173

Notice of Pre-AIA or AIA Status

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

Allowable Subject Matter

2. Claims 27-39 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The current application is directed to process and apparatus for selecting an item from a database using a four way directional controller with an activation key in the middle of the four way controller.

The art of record does not expressly disclose select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers; and wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

These limitations, in specific combination as recited in independent claims, define patentability of the claims over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany

the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAOSHIAN SHIH whose telephone number is (571)270-1257. The examiner can normally be reached on M-F 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIEU VU can be reached on 5712724057. 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.

/Haoshian Shih/
Primary Examiner, Art Unit 2173

<i>Search Notes</i> 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC - Searched*		
Symbol	Date	Examiner
G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237	08/14/2020	HSS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST, internet, inventor search	08/14/2020	HSS
Updated search	08/17/2021	HSS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F3	0481, 0237	08/17/2021	HSS
G06F16	26	08/17/2021	HSS
H04M1	2748	08/17/2021	HSS

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Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC						
Symbol					Type	Version
G06F	/	16	/	26	F	2019-01-01
G06F	/	3	/	0237	I	2013-01-01
H04M	/	1	/	2748	I	2020-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner) _____ (Date) 17 August 2021		O.G. Print Claim(s) 1	O.G. Print Figure 18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173	17 August 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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-	5	-	14	-	23	6	32	-	41						
-	6	-	15	-	24	7	33	-	42						
-	7	-	16	-	25	8	34	-	43						
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-	9	-	18	1	27	10	36	-	45						

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner) _____ (Date) 17 August 2021		O.G. Print Claim(s) 1	O.G. Print Figure 18E

Bibliographic Data

Application No: 16/927,723

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /HAOSHIAN SHIH/

Examiner's Signature

Initials

Title:

PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/13/2020	715	2173	011844-0034-999
RULE			

APPLICANTS

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA

INVENTORS

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA

CONTINUING DATA

This application is a CON of 16806753 03/02/2020ABN

16806753 is a CON of 15615478 06/06/2017ABN

15615478 is a CON of 12448601 02/22/2010 PAT 9697264

12448601 is a 371 of PCT/AU2007/002010 12/28/2007

PCT/AU2007/002010 has PRO of 60960345 09/26/2007

PCT/AU2007/002010 has PRO of 60878083 01/03/2007

FOREIGN APPLICATIONS

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07/21/2020

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New York, NY 10281-1047

UNITED STATES

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\$6,160

EAST Search History

EAST Search History (Prior Art)

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L28	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:40

L29	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:40
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L62	76	("6144378").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L63	6	("7084858").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L64	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L65	73,198	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:41
L66	322	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L67	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L68	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L69	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L70	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L71	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:41

L72	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.	US- PGPUB; USPAT	OR	OFF	2021/08/17 21:41
L73	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L74	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L75	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L85	3	((("20070080949") or ("21020023433") or ("20060276234") or ("8798237"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41

L86	2	((("20080259022") or ("20050043063")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L87	19	kannuu.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:41
L88	4	L87 and (up same down same left same right).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:41
L89	3	((("20040163032") or ("20020151327") or ("5953541")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L90	0	L87 and (screen near2 keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:41
L91	0	L87 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:41
L92	0	L87 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L93	0	L87 and (direction\$3 same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L94	0	L87 and (keyboard).clm.	US-PGPUB; USPAT; USOCR;	OR	ON	2021/08/17 21:41

			FPRS; EPO; JPO			
L95	15	L87 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L96	15	L87 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L97	4	L87 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:41
L98	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L99	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L100	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566"	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41

		"6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.				
L101	57	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L102	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L103	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:41
L104	39	("6744423").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L105	23	("20050027524" "20050264584" "20070216659" "20080158201"	US- PGPUB;	OR	OFF	2021/08/17 21:41

		"20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	USPAT; USOCR			
L106	76	("6144378").URPN.	USPAT	OR	OFF	2021/08/17 21:41
L107	6	("7084858").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L108	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L109	73,198	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:42
L110	322	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L111	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L112	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L113	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L114	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:42

L115	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L116	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.	US- PGPUB; USPAT	OR	OFF	2021/08/17 21:42
L117	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L118	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L119	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42

L120	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.	US- PGPUB; USPAT	OR	OFF	2021/08/17 21:42
L121	147	("6801659").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L122	2	((("20080259022") or ("20050043063"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L123	19	kannuu.as.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:42
L124	4	L123 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR;	OR	OFF	2021/08/17 21:42

			FPRS; EPO; JPO			
L125	3	(("20040163032") or ("20020151327") or ("5953541")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L126	0	L123 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:42
L127	0	L123 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:42
L128	0	L123 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L129	0	L123 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L130	0	L123 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L131	15	L123 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L132	15	L123 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42

L133	4	L123 and (screen near2 keyboard) and (directional near2 controller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L134	0	("2012/0109948").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L135	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L136	77	("20010012769" "20010018351" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069" "20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5109352" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6580932" "6744423" "6748242" "6792287" "6826566" "6955602" "7185286" "7293231" "7443316" "7487147" "7543244" "7616191" "7669111" "7681124" "7716579" "7793228" "7836044" "7886233" "7921361").PN. OR ("8370393").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L137	57	("5128672" "5488725" "5963671" "6317683" "6573844" "6998971").PN. OR ("7487147").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L138	90	("20010012769" "20010018351" "20010042080" "20020049795" "20020061770" "20020091690" "20020151327" "20020183099" "20030073414" "20030078069"	US-PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42

		"20030182274" "20040105714" "20040163032" "20040192276" "20050010605" "20050188330" "20050233769" "20060009861" "20060031591" "20060146028" "20060217953" "20060221058" "20060265648" "20060265668" "20060294462" "20070016862" "20070060114" "20070089070" "20070179776" "20090327888" "20100010963" "3937939" "5128672" "5263174" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5894276" "5896321" "5901222" "5911485" "5953541" "5990890" "6009444" "6011554" "6032053" "6047196" "6055439" "6150962" "6223059" "6247043" "6264146" "6311125" "6377965" "6418432" "6580932" "6681222" "6744423" "6748242" "6748376" "6769032" "6792287" "6826566" "7089237" "7185286" "7209915" "7236631" "7242805" "7443316" "7487147" "7543244" "7616191" "7669111" "7761286" "7793228" "7836044" "7886233").PN. OR ("8140560").URPN.				
L139	43	("5797098" "5818437" "6483913" "6556841").PN. OR ("6744423").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L140	39	("6744423").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L141	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L142	76	("6144378").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L143	6	("7084858").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L144	1	("20050043063").PN.	US- PGPUB;	OR	OFF	2021/08/17 21:42

			USPAT; USOCR			
L145	73,198	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/08/17 21:42
L146	322	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L147	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L148	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L149	162	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/08/17 21:42
L150	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L151	26	("2010/0153880").URPN.	USPAT	OR	OFF	2021/08/17 21:42
L152	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714"	US- PGPUB; USPAT	OR	OFF	2021/08/17 21:42

		"20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.				
L153	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:42
L154	4	((("8370393") or ("9436354") or ("8676852") or ("8996579"))).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:43
L155	1	("8996579").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/08/17 21:43
L168	6	("20020087979" "20040186819" "20050270270" "20060265208" "20060293889" "20090192786").PN.	US- PGPUB; USPAT	OR	OFF	2021/08/17 21:43
L169	27	("2009/0192786").URPN.	USPAT	OR	OFF	2021/08/17 21:43

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L30	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/08/17 21:40
L31	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item	USPAT	OR	OFF	2021/08/17 21:40

		part identifier character word letter) same navigat\$4)).clm.				
L32	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/08/17 21:40
L76	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/08/17 21:41
L77	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:41
L78	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:41
L79	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:41
L80	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/08/17 21:41
L81	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/08/17 21:41
L82	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/08/17 21:41
L83	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/08/17 21:41
L84	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/08/17 21:41
L156	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/08/17 21:43
L157	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/08/17 21:43
L158	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/08/17 21:43
L159	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/08/17 21:43
L160	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:43
L161	96	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:43

L162	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/08/17 21:43
L163	7	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/08/17 21:43
L164	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/08/17 21:43
L165	14,175	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/08/17 21:43
L166	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/08/17 21:43
L167	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/08/17 21:43

8/17/2021 9:52:41 PM

C:\Users\hshih\Documents\EAST\Workspaces\16927723.wsp

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: August 11, 2021		Page 1 of 1		Examiner: Haoshian Shih		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	1	2002/0087979	07-02	Dudkiewicz et al.				
	2	2004/0186819	09-04	Baker				
	3	2006/0265208	11-06	Assadollahi				
	4	2006/0293889	12-06	Kiss et al.				
	5	2009/0192786	07-09	Assadollahi				
	6	2005/0270270	12-05	Chandha				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	7	Patent Owner's Sur-Reply, IPR2020-00738, May 10, 2021.						
	8	Patent Owner's Sur-Reply, IPR2020-00737, May 10, 2021.						
Examiner: /HAOSHIAN SHIH/					Date Considered: 08/17/2021			
*EXAMINER: Initial if citation 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.								

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL (Submitted Only via EFS-Web)

Application Number	16/927,723	Filing Date	2020-07-13	Docket Number (if applicable)	011844-0034-999	Art Unit	2173
First Named Inventor	Kevin W. Dinn			Examiner Name	Haoshian Shih		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
Deposit Account No 503013

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Vishal V. Khatri/	Date (YYYY-MM-DD)	2021-08-11
Name	Vishal V. Khatri	Registration Number	51873

This collection of information is required by 37 CFR 1.114. 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.

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Haoshian Shih
Entitled : IMPROVED PROCESS AND APPARATUS FOR
SELECTING AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP RCE

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of the cited references can be found in the file of the parent application (*U.S. Serial No. , filed*).
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in the International Search Report issued for the corresponding International application, and copies of the International Search Report and the cited references are attached for the Examiner's consideration.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in a communication from a foreign or international patent office in a counterpart foreign or international application(s), and copies of both the relevant communication and the cited references, where required, are attached for the Examiner's consideration.

CERTIFICATION

The undersigned certifies that, pursuant to 37 CFR §1.97(e)(1),

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign or international patent office in a counterpart foreign or international application not more than three months prior to the filing of this Statement.

RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☐ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☒ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☐ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The Examiner is further respectfully requested to return of a copy of the enclosed List of Cited References with the Examiner's initials in the left column.

The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: August 11, 2021

Attachment(s): List of Cited References and copies as required

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Attorney Reference: 011844-0034-999

Applicant: Kevin W. Dinn

Application Serial No. 16/927,723

Filing Date: July 13, 2020

Date: August 11, 2021

Page 1 of 1

Examiner: Haoshian Shih

Group Art Unit: 2173

U.S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

[illegible]

OTHER RELEVANT NON-PATENT DOCUMENTS

	7	Patent Owner's Sur-Reply, IPR2020-00738, May 10, 2021.
	8	Patent Owner's Sur-Reply, IPR2020-00737, May 10, 2021.

Examiner:

Date Considered:

***EXAMINER:** Initial if citation 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.

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
Total in USD (\$)				2000

Electronic Acknowledgement Receipt

EFS ID:	43482585
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	11-AUG-2021
Filing Date:	13-JUL-2020
Time Stamp:	13:54:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$2000
RAM confirmation Number	E20218AD55131798
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	16927723_RCE.pdf	1349934	no	3
			95812e6bc8d59b1670fbf85d646aed1d83a6e13f		
Warnings:					
Information:					
2	Transmittal Letter	16927723_IDS.pdf	140553	no	3
			a0b3665428d1e3f1c56a291b960b54968e570e54		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	16927723_ListofRefs.pdf	116671	no	1
			1cedc5cbdfb2e0dd06149d6a8331eae24a501be1		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Other Reference-Patent/App/Search documents	16927723_SurReply_00737.pdf	818575	no	41
			0ea1bf3d5bb6082f1f5a12dcd8fb99bda7431f51		
Warnings:					
Information:					
5	Other Reference-Patent/App/Search documents	16927723_SurReply_00738.pdf	617732	no	41
			0830cbb2dca7bca1d0ed03b1417d07423732bdd		
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	38149	no	2
			628d3bcc0e656238bc5dd9aecf7add8a8725fcca		
Warnings:					

Information:	
Total Files Size (in bytes):	3081614
<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>	



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

20583 7590 05/12/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

EXAMINER	
SHIH, HAOSHIAN	
ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 05/12/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	08/12/2021

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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.

20583 7590 05/12/2021
Jones Day
250 Vesey Street
New York, NY 10281-1047

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	08/12/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
SHIH, HAOSHIAN	2173	715-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(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 _____

3 _____

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	05/12/2021	EXAMINER	
Jones Day			SHIH, HAOSHIAN	
250 Vesey Street				
New York, NY 10281-1047			ART UNIT	PAPER NUMBER
			2173	
DATE MAILED: 05/12/2021				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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 30 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.

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.

Notice of Allowability	Application No. 16/927,723	Applicant(s) Dinn, Kevin W.	
	Examiner HAOSHIAN SHIH	Art Unit 2173	AIA (FITF) 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 01/27/2021.
☐ 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 27-39. 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)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>01/27/2021, 01/28/2021, 03/24/2021</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/HAOSHIAN SHIH/
Primary Examiner, Art Unit 2173

Notice of Pre-AIA or AIA Status

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

Information Disclosure Statement

The listing of references in the PCT international search report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the international search report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Item No. 103, 127, 152 of IDS dated 11/10/2020 has no date.

Allowable Subject Matter

2. Claims 27-39 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The current application is directed to process and apparatus for selecting an item from a database using a four way directional controller with an activation key in the middle of the four way controller.

The art of record does not expressly disclose select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers; and wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

These limitations, in specific combination as recited in independent claims, define patentability of the claims over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAOSHIAN SHIH whose telephone number is (571)270-1257. The examiner can normally be reached on M-F 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIEU VU can be reached on 5712724057. 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.

/Haoshian Shih/
Primary Examiner, Art Unit 2173

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC						
Symbol					Type	Version
G06F	/	16	/	26	F	2019-01-01
G06F	/	3	/	0237	I	2013-01-01
H04M	/	1	/	2748	I	2020-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173	04 May 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048
NON-CLAIMED			
	/		/

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173	04 May 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1	-	10	-	19	2	28	11	37	-	46				
-	2	-	11	-	20	3	29	12	38	-	47				
-	3	-	12	-	21	4	30	13	39	-	48				
-	4	-	13	-	22	5	31	-	40	-	49				
-	5	-	14	-	23	6	32	-	41						
-	6	-	15	-	24	7	33	-	42						
-	7	-	16	-	25	8	34	-	43						
-	8	-	17	-	26	9	35	-	44						
-	9	-	18	1	27	10	36	-	45						

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173	04 May 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	18E

Search Notes 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC - Searched*		
Symbol	Date	Examiner
G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237	08/14/2020	HSS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST, internet, inventor	08/14/2020	HSS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F3	0481, 0237	12/04/2020	HSS
G06F16	26	12/04/2020	HSS
H04M1	2748	12/04/2020	HSS

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LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: January 27, 2021		Page 1 of 2		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	1	2007/0080949	04-2007	Chung et al.				
	2	2012/0023433	01-2012	Choi et al.				
	3	2006/0276234	12-2006	Kang et al.				
	4	8,798,237	08-2014	Lee				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	5	Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-738, Jan. 7, 2021.						
	6	Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737, Jan. 7, 2021.						
	7	Exhibit 2024 (Second Expert Declaration of R. Balakrishnan) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	8	Exhibit 2025 (Colin Dixon Declaration) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	9	Exhibit 2026 (Colin Dixon bio) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	10	Exhibit 2027 (Clifton Forlines_PDF Tran) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	11	Exhibit 2032 (Viegut_Declaration-tviegut_tkv6strategies.com Redacted) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	12	Exhibit 2033 (354 Claim Chart Updated – Claims and POC) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	13	Exhibit 2034 (393 Claim Chart Updated – Claims and POC) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	14	Exhibit 2035 (Samsung bdh8500 Manual) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	15	Exhibit 2036 (Samsung E Manual) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	16	Exhibit 2041 (US20060276234A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	17	Exhibit 2042 (Dostie Reference – US20060276234A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	18	Exhibit 2043 (US20120023433A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
Examiner:				Date Considered:				
*EXAMINER: Initial if citation 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.								

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999			
				Applicant: Kevin W. Dinn			
				Application Serial No. 16/927,723			
				Filing Date: July 13, 2020			
Date: January 27, 2021		Page 2 of 2		Examiner: Shih, Haoshian		Group Art Unit: 2173	
U.S. PATENT DOCUMENTS							
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant		Class	SubClass
FOREIGN PATENT DOCUMENTS							
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract
					Attached	Not Available	Attached
							Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS							
	19	Exhibit 2044 (Dostie Reference – US20120023433A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	20	Exhibit 2045 (US20070080949A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	21	Exhibit 2046 (Krohn Reference – US20070080949A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	22	Exhibit 2047 (US20070080949A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	23	Exhibit 2048 (Perlman Reference – US20070260452A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	24	Exhibit 2049 (US8798237) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	25	Exhibit 2050 (Pu Reference – US8798237) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	26	Exhibit 2051 (US20070080949A1) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	27	Exhibit 2052 (Mail, Lewis Hudnell, Outlook 12-31-20) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	28	Exhibit 2058 (Goldberg Declaration) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.					
	29	Website Screenshots for WayBackMachine for n-e-ware.com, February 15, 2006.					
	30	Website Screenshots for WayBackMachine for n-e-ware.com, May – October 2004.					
	31	Website Screenshots for WayBackMachine for n-e-ware.com, February – December 2005.					
	32	Website Screenshots for WayBackMachine for n-e-ware.com, October 19, 2006.					
	33	Website Screenshots for WayBackMachine for n-e-ware.com, July to August 2007.					
	34	www.francemobiles.com/teimob/pack/tineris/pa086271.php?from=aol , March 6, 2004.					
	35	Ward, et al, "Dasher – A Data Entry Interface Using Contiguous Gestures and Language Models", November 2000.					
Examiner: /HAOSHIAN SHIH/				Date Considered: 03/12/2021			
*EXAMINER: Initial if citation 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.							

2.7 results

Top 27 results

07123433 | ARXIV.ORG | 19-DEC-2007

Relevance

0 Results

0 Results

27 Reads

Collections

VIEW

Publication Date

VIEW

DEATHS FROM COVID-19 IN THE UNITED STATES

1974 2018

1974 2018

IEEE Xplore | IEEE CONFERENCES | 01-JAN-2004 | 37th Annual Hawaii International Conference on System Sciences, 2004. Proceedings of the (Page(s): 10 pp.)

IEEE Xplore | IEEE PERIODICALS | 05-SEP-2018 | IEEE Transactions on Visualization and Computer Graphics

IEEE Xplore | IEEE CONFERENCES | 01-OCT-2016 | 2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC) (Page(s): 003688-003693)

The widespread adoption of mobile electronic devices and the advent of wearable computing have encouraged the development of compact alternatives to the keyboard and mouse. These include one-handed keyboards, digitizing tablets, and glove-based devices. This paper describes a combination pointer...

10. A graphics interpreter language

A GRAPHIC INTERPRETER LANGUAGE BY JAMES BRENDAN STYNES DEPARTMENT OF COMPUTER SCIENCE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN URBANA, ILLINOIS 61801 *Supported in part by the Atomic Energy Comission under contract US AEC ---(11-1) 2383 and submitted in partial fulfillment of the requirements...

INCOM000151328D | SOFTWARE PATENT INSTITUTE | 31-MAY-1975 | Software Patent Institute

11. Complete as you go: A constructive Korean text entry method for smartwatches

Researchers have proposed various methods to improve efficiencies of smartwatch input while overcoming fat finger and display occlusion problems. However, much work has focused on English text entry. Since Korean text entry operates on different orthographic principles, an efficient Korean input..

IEEE Xplore | IEEE CONFERENCES | 01-OCT-2016 | 2016 International Conference on Information and Communication Technology Convergence (ICITC) (Page(s): 1185-1187)

12. Air-Writing Recognition---Part I: Modeling and Recognition of Characters, Words, and Connecting Motions

Air-writing refers to writing of linguistic characters or words in a free space by hand or finger movements. Air-writing differs from conventional handwriting, the latter contains the pen-up-pen-down motion, while the

More Visuals

Result #1

PREV

NEXT

Bibliographic Data

Application No: 16/927,723

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /HAOSHIAN SHIH/

Examiner's Signature

Initials

Title:

Process and Apparatus for Selecting An Item From A Database

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/13/2020	715	2173	011844-0034-999
RULE			

APPLICANTS

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA

INVENTORS

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA

CONTINUING DATA

This application is a CON of 16806753 03/02/2020ABN

16806753 is a CON of 15615478 06/06/2017ABN

15615478 is a CON of 12448601 02/22/2010 PAT 9697264

12448601 is a 371 of PCT/AU2007/002010 12/28/2007

PCT/AU2007/002010 has PRO of 60960345 09/26/2007

PCT/AU2007/002010 has PRO of 60878083 01/03/2007

FOREIGN APPLICATIONS

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07/21/2020

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New York, NY 10281-1047
UNITED STATES

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\$6,160

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: January 28, 2021		Page 1 of 1		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	1	Petitioner's Request for Rehearing Under 37 C.F.R. § 42.71(d), Case IPR 2020-739, Oct. 22, 2020.						
	2	Petitioner's Request for Rehearing Under 37 C.F.R. § 42.71(d), Case IPR 2020-740, Oct. 22, 2020.						
	3	Decision Denying Petitioner's Request for Rehearing, 37 C.F.R. § 42.71(d), Case IPR 2020-739, Dec. 17, 2020.						
	4	Decision Denying Petitioner's Request for Rehearing, 37 C.F.R. § 42.71(d), Case IPR 2020-740, Dec. 17, 2020.						
Examiner:		/HAOSHIAN SHIH/			Date Considered:			03/12/2021
*EXAMINER: Initial if citation 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.								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	((("20070080949") or ("21020023433") or ("20060276234") or ("8798237"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 17:59
L2	2	((("20080259022") or ("20050043063"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:05
L3	19	kannuu.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:05
L4	4	L3 and (up same down same left same right).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:05
L5	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:05
L6	0	L3 and (screen near2 keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:05
L7	0	L3 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:05
L8	0	L3 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05

L9	0	L3 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
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L11	15	L3 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
L12	15	L3 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
L13	4	L3 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
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L15	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/03/12 18:05
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L22	76	("6144378").URPN.	USPAT	OR	OFF	2021/03/12 18:05
L23	6	("7084858").URPN.	USPAT	OR	OFF	2021/03/12 18:05
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L25	70,430	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:05
L26	309	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
L27	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
L28	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US-PGPUB; USPAT; USOCR;	OR	ON	2021/03/12 18:05

			FPRS; EPO; JPO			
L32	161	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:05
L33	23	("2010/0153880").URPN.	USPAT	OR	OFF	2021/03/12 18:05
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L36	1	("9697264").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06

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L38	1	("8996579").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L39	87	("0000107" "0000211" "0000402" "0000407" "0000499" "0000601" "0000609" "0000805" "0000807" "0000906" "0000910" "0001002" "0001008" "0001100" "0001104" "0001193" "0001206" "0001209" "0001299" "20010012769" "20010018351" "20020061770" "20020091690" "20020113825" "20020183099" "20030073414" "20030078069" "20030095102" "20030129570" "20030182274" "20040021691" "20040105714" "20040125073" "20040163032" "20040192276" "20040227732" "20050010605" "20050043063" "20050233769" "20060009861" "20060031591" "20060146028" "20060164382" "20060221058" "20060265648" "20060265668" "20070060114" "20080059915" "20080235621" "20100010963" "3937939" "5128672" "5223924" "5299125" "5398023" "5496992" "5633912" "5724069" "5754655" "5787417" "5797098" "5867799" "5894276" "5901222" "5911485" "5953541" "5983214" "6011554" "6032053" "6047196" "6055439" "6223059" "6264146" "6311125" "6377965" "6580932" "6593913" "6744423" "6748242" "6792287" "6801659" "7152213" "7185286" "7487147" "7616191" "7669111" "7836044").PN.	US-PGPUB; USPAT	OR	OFF	2021/03/12 18:06
L40	146	("6801659").URPN.	USPAT	OR	OFF	2021/03/12 18:06
L41	2	((("20080259022") or ("20050043063")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L42	19	kannuu.as.	US-PGPUB;	OR	OFF	2021/03/12 18:06

			USPAT; USOCR; FPRS; EPO; JPO			
L43	4	L42 and (up same down same left same right).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:06
L44	3	((("20040163032") or ("20020151327") or ("5953541")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L45	0	L42 and (screen near2 keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:06
L46	0	L42 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:06
L47	0	L42 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L48	0	L42 and (direction\$3 same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L49	0	L42 and (keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L50	15	L42 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR;	OR	ON	2021/03/12 18:06

			FPRS; EPO; JPO			
L51	15	L42 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L52	4	L42 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
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L54	0	("2012/0246591").URPN.	USPAT	OR	OFF	2021/03/12 18:06
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		"7681124" "7802184" "7886233").PN. OR ("9582082").URPN.				
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L62	6	("7084858").URPN.	USPAT	OR	OFF	2021/03/12 18:06
L63	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L64	70,430	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2021/03/12 18:06
L65	309	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L66	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L67	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
L68	161	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/03/12 18:06
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L70	23	("2010/0153880").URPN.	USPAT	OR	OFF	2021/03/12 18:06
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L72	1	("9697264").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L73	4	((("8370393") or ("9436354") or ("8676852") or ("8996579")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06
L74	1	("8996579").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/12 18:06

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L29	13,529	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2021/03/12 18:05

L30	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/03/12 18:05
L31	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/03/12 18:05
L75	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2021/03/12 18:06
L76	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2021/03/12 18:06
L77	95	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2021/03/12 18:06
L78	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2021/03/12 18:06
L79	6	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2021/03/12 18:06
L80	13,529	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2021/03/12 18:06
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L82	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2021/03/12 18:06
L83	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2021/03/12 18:06

3/12/2021 6:12:51 PM

C:\Users\hshih\Documents\EAST\Workspaces\16927723.wsp

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: March 24, 2021		Page 1 of 1		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	1	http://arstechnica.com/gadgets/2013/02/smart-tvs-have-a-serious-communication-problem/ February 10, 2013 (last accessed on March 23, 2021).						
	2	https://youtu.be/iY1NMea1VOk February 25, 2020, Screen Shots submitted (video last accessed on March 23, 2021).						
	3	https://play.google.com/store/search?q=keytouch%20input&hl=en December 10, 2020 (last accessed on March 23, 2021).						
Examiner: /HAOSHIAN SHIH/				Date Considered: 05/04/2021				
*EXAMINER: Initial if citation 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.								

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Attorney Reference: 011844-0034-999	
		Applicant: Kevin W. Dinn	
		Application Serial No. 16/927,723	
		Filing Date: July 13, 2020	
Date: March 24, 2021	Page 1 of 1	Examiner: Shih, Haoshian	Group Art Unit: 2173

U.S. PATENT DOCUMENTS

Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass

FOREIGN PATENT DOCUMENTS

Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available

OTHER RELEVANT NON-PATENT DOCUMENTS

	1	http://arstechnica.com/gadgets/2013/02/smart-tvs-have-a-serious-communication-problem/ February 10, 2013 (last accessed on March 23, 2021).
	2	https://youtu.be/iY1NMea1VOk February 25, 2020, Screen Shots submitted (video last accessed on March 23, 2021).
	3	https://play.google.com/store/search?q=keytouch%20input&hl=en December 10, 2020 (last accessed on March 23, 2021).

Examiner:	Date Considered:
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*EXAMINER: Initial if citation 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.

Electronic Acknowledgement Receipt

EFS ID:	42273474
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	24-MAR-2021
Filing Date:	13-JUL-2020
Time Stamp:	17:15:42
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	Transmittal Letter	16927723_IDS.pdf	140006	no	3
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Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	16927723_ListofRefs.pdf	148277	no	1
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3	Non Patent Literature	KeytouchInput_GooglePlay.pdf	553129	no	6
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Information:					
4	Non Patent Literature	SmartTVs_ArsTechnica.pdf	1815201	no	12
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Information:					
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Warnings:					
Information:					
Total Files Size (in bytes):			4555379		
<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 Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Shih, Haoshian
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP RCE

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of the cited references can be found in the file of the parent application (*U.S. Serial No. , filed*).
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in the International Search Report issued for the corresponding International application, and copies of the International Search Report and the cited references are attached for the Examiner's consideration.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in a communication from a foreign or international patent office in a counterpart foreign or international application(s), and copies of both the relevant communication and the cited references, where required, are attached for the Examiner's consideration.

CERTIFICATION

The undersigned certifies that, pursuant to 37 CFR §1.97(e)(1),

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign or international patent office in a counterpart foreign or international application not more than three months prior to the filing of this Statement.

RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☐ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☒ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☐ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The Examiner is further respectfully requested to return of a copy of the enclosed List of Cited References with the Examiner's initials in the left column.

The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: March 24, 2021

Attachment(s): List of Cited References and copies as required

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Attorney Reference: 011844-0034-999	
		Applicant: Kevin W. Dinn	
		Application Serial No. 16/927,723	
		Filing Date: July 13, 2020	
Date: January 28, 2021	Page 1 of 1	Examiner: Shih, Haoshian	Group Art Unit: 2173

U.S. PATENT DOCUMENTS						
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass

FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available

OTHER RELEVANT NON-PATENT DOCUMENTS		
	1	Petitioner's Request for Rehearing Under 37 C.F.R. § 42.71(d), Case IPR 2020-739, Oct. 22, 2020.
	2	Petitioner's Request for Rehearing Under 37 C.F.R. § 42.71(d), Case IPR 2020-740, Oct. 22, 2020.
	3	Decision Denying Petitioner's Request for Rehearing, 37 C.F.R. § 42.71(d), Case IPR 2020-739, Dec. 17, 2020.
	4	Decision Denying Petitioner's Request for Rehearing, 37 C.F.R. § 42.71(d), Case IPR 2020-740, Dec. 17, 2020.

Examiner:	Date Considered:
*EXAMINER: Initial if citation 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.	

Electronic Acknowledgement Receipt

EFS ID:	41776215
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	28-JAN-2021
Filing Date:	13-JUL-2020
Time Stamp:	17:07:53
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	Transmittal Letter	16927723_IDS.pdf	139704	no	3
			49e05d1f988ce5773aa8cc740c66113c523e fb4d		

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	16927723_ListofRefs.pdf	137647	no	1
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Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	IPR202000739_ReqforRehearing.pdf	223804	no	18
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Warnings:					
Information:					
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Warnings:					
Information:					
Total Files Size (in bytes):			1089559		

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 Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Shih, Haoshian
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP RCE

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents.
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RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☐ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☒ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☐ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

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The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: January 28, 2021

Attachment(s): List of Cited References and copies as required

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: January 27, 2021		Page 1 of 2		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	1	2007/0080949	04-2007	Chung et al.				
	2	2012/0023433	01-2012	Choi et al.				
	3	2006/0276234	12-2006	Kang et al.				
	4	8,798,237	08-2014	Lee				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	5	Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-738, Jan. 7, 2021.						
	6	Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737, Jan. 7, 2021.						
	7	Exhibit 2024 (Second Expert Declaration of R. Balakrishnan) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	8	Exhibit 2025 (Colin Dixon Declaration) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	9	Exhibit 2026 (Colin Dixon bio) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	10	Exhibit 2027 (Clifton Forlines_PDF Tran) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	11	Exhibit 2032 (Viegut_Declaration-tviegut_tkv6strategies.com Redacted) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	12	Exhibit 2033 (354 Claim Chart Updated – Claims and POC) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	13	Exhibit 2034 (393 Claim Chart Updated – Claims and POC) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	14	Exhibit 2035 (Samsung bdh8500 Manual) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
	15	Exhibit 2036 (Samsung E Manual) from Patent Owner's Response Under 37 C.F.R. § 42.120 (redacted), Case IPR 2020-737 and Case IPR 2020-738, Jan. 7, 2021.						
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*EXAMINER: Initial if citation 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.								

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		Applicant: Kevin W. Dinn	
		Application Serial No. 16/927,723	
		Filing Date: July 13, 2020	
Date: January 27, 2021	Page 2 of 2	Examiner: Shih, Haoshian	
		Group Art Unit: 2173	

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					Attached	Not Available	Attached	Not Available

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(54) **CHARACTER INPUT METHOD FOR
ADDING VISUAL EFFECT TO CHARACTER
WHEN CHARACTER IS INPUT AND
MOBILE STATION THEREFOR**

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(52) **U.S. Cl.** **455/566**

(57) **ABSTRACT**

Disclosed is a apparatus and a method for displaying various character effects on a character input screen of a mobile station using a differentiated graphic element according to a key input signal. In the method a visual character theme set by a user is displayed in a character input mode, and a character input effect corresponding to the visual character theme is shown according to a key input signal. Accordingly, since the mobile station can show a visual character input effect in every key input sequence by allowing the user to select a desired visual character theme in advance, an entertaining effect is added to a user interface of the mobile station.

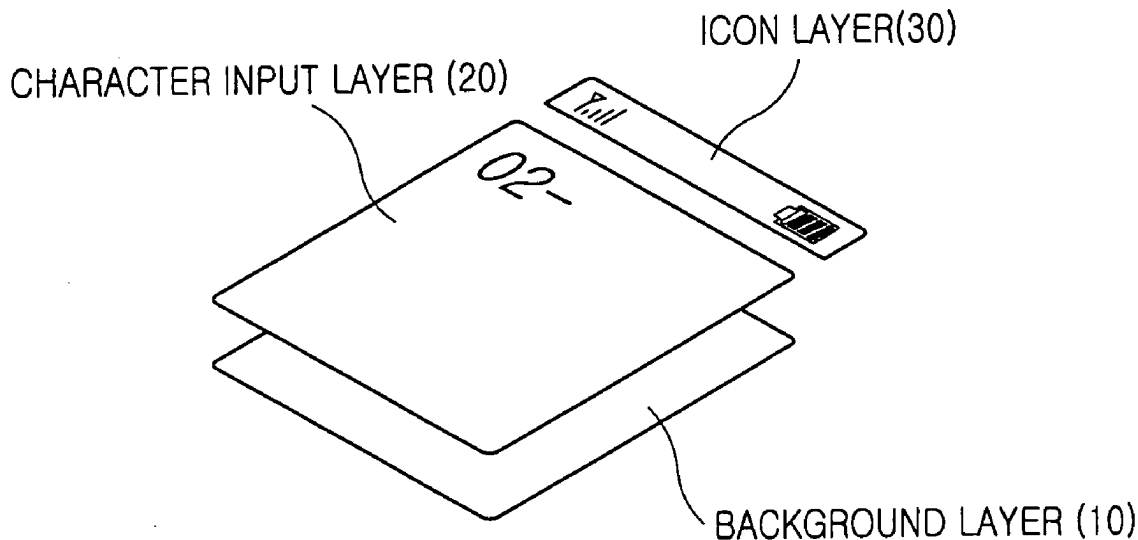
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(21) Appl. No.: **11/444,864**

(22) Filed: **Jun. 1, 2006**



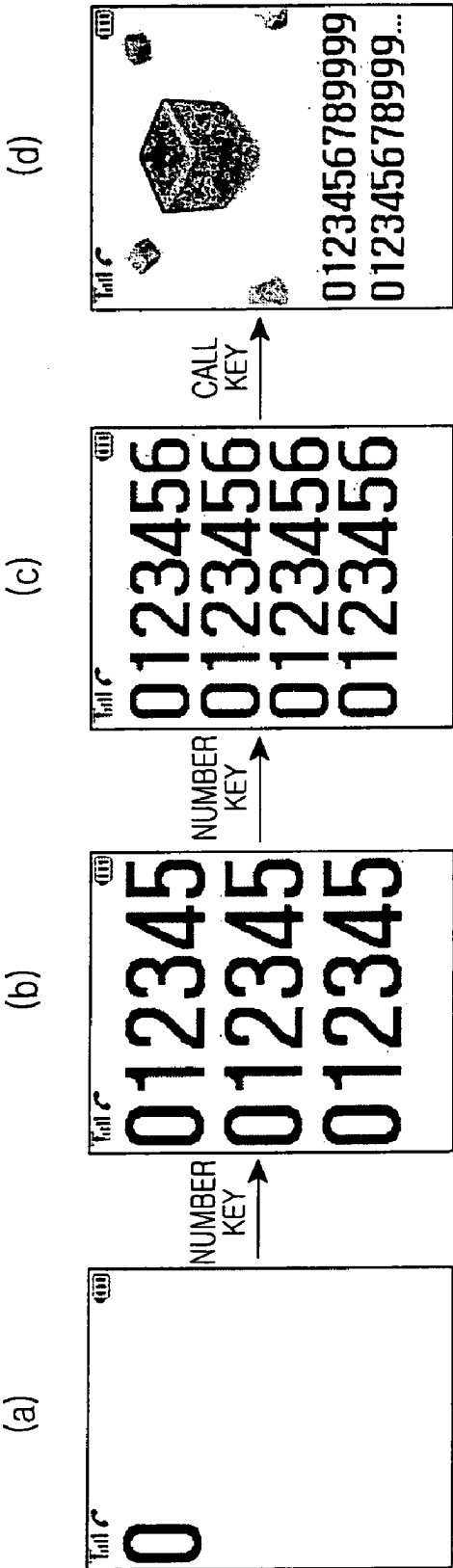


FIG. 1
(PRIOR ART)

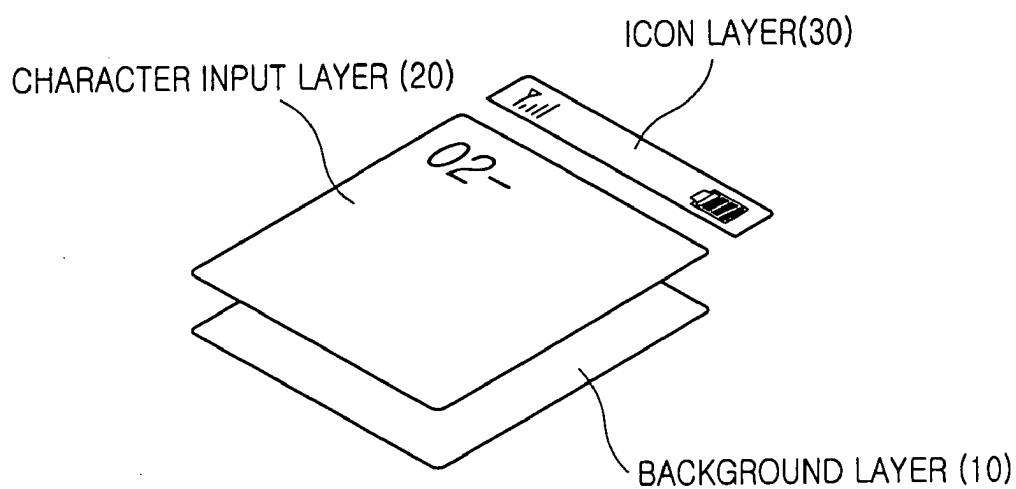


FIG. 2

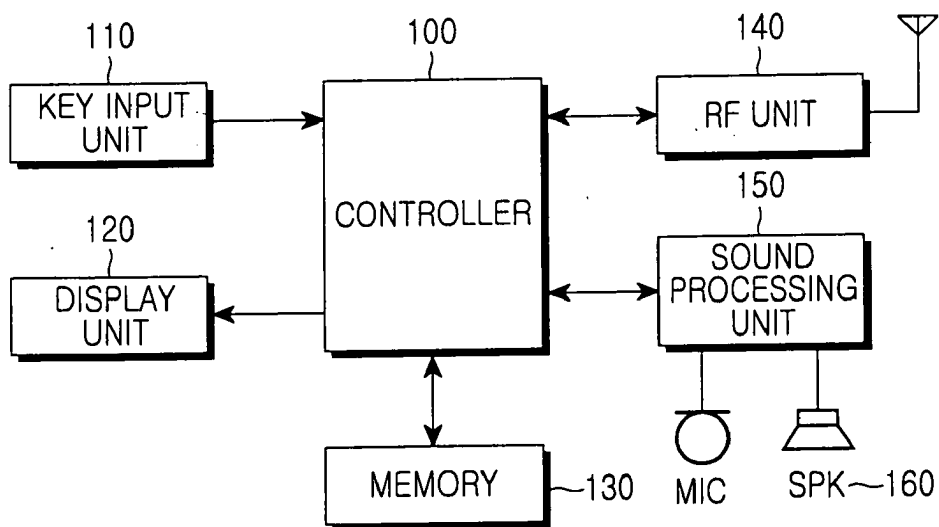


FIG. 3

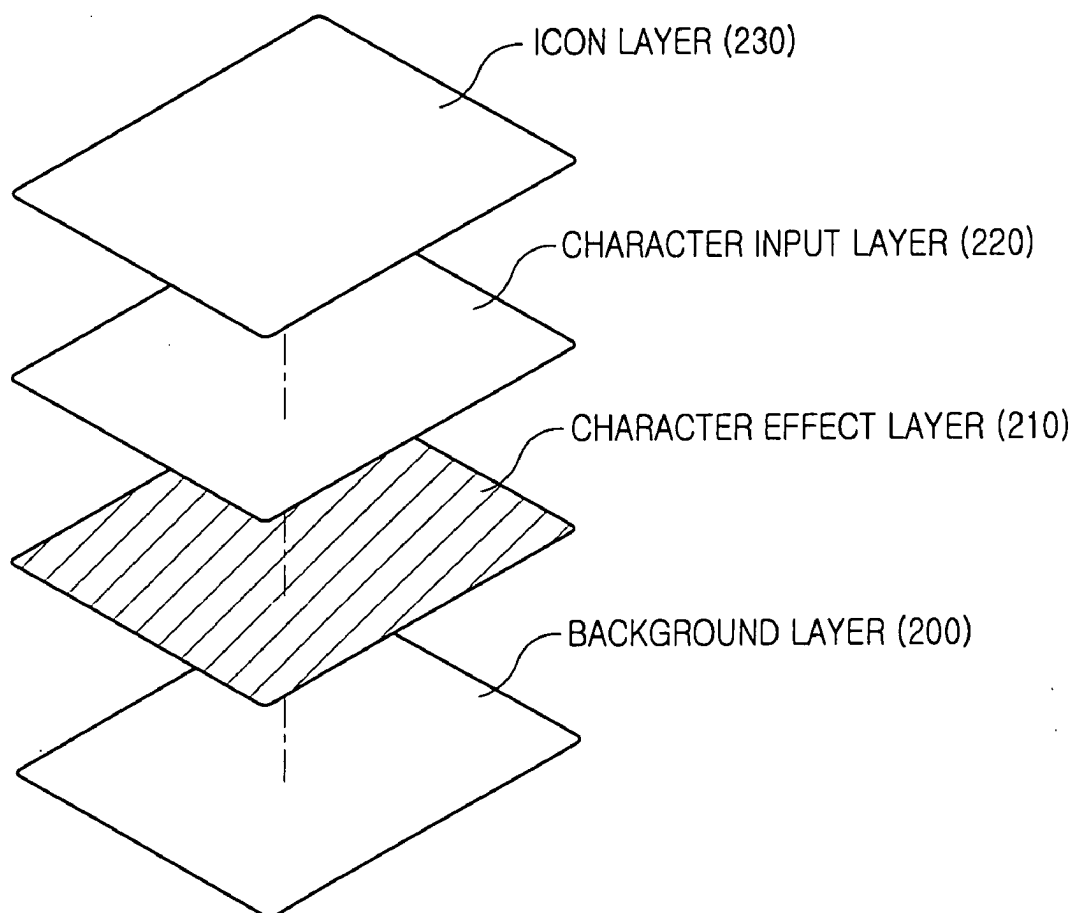


FIG.4

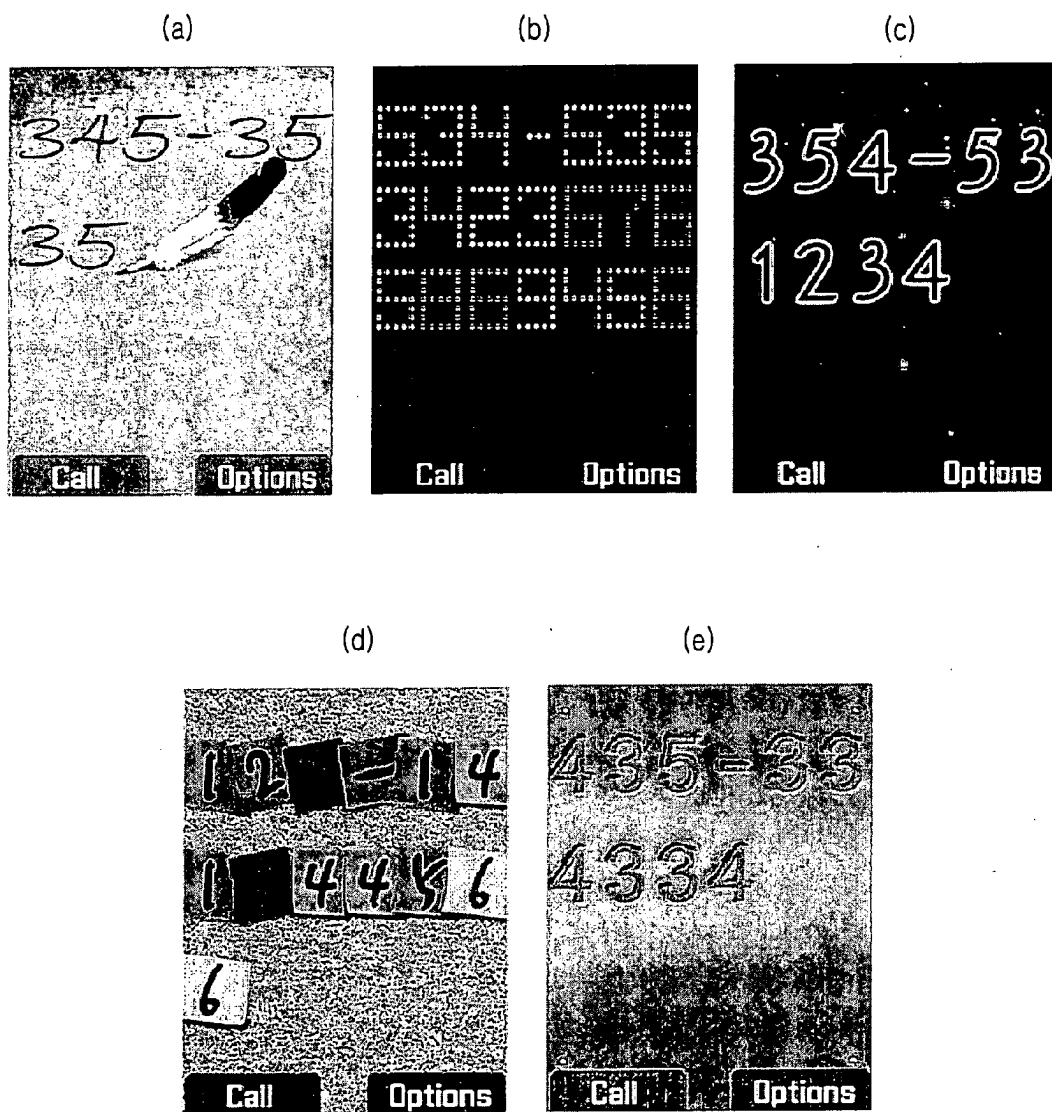


FIG.5

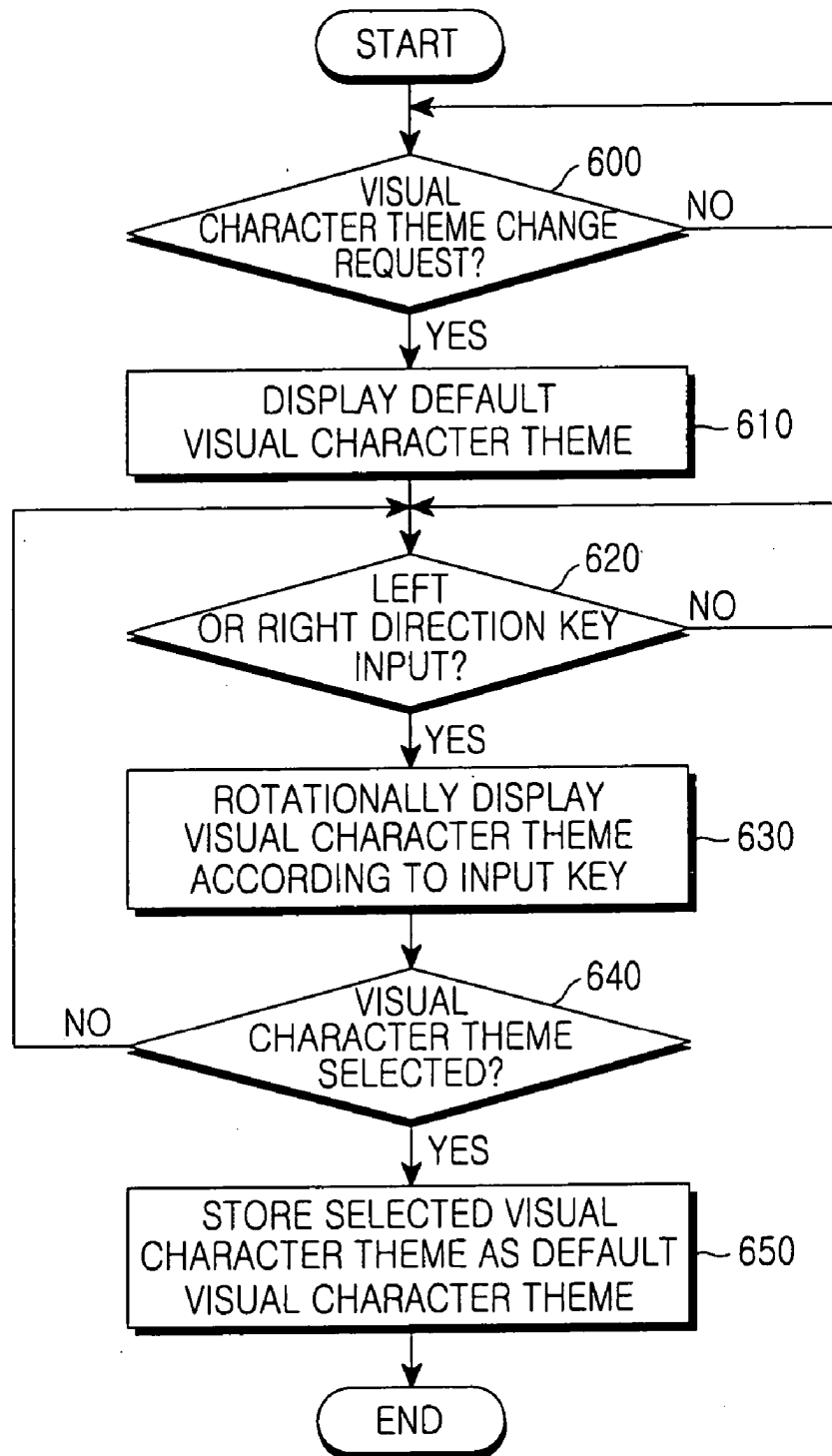


FIG.6

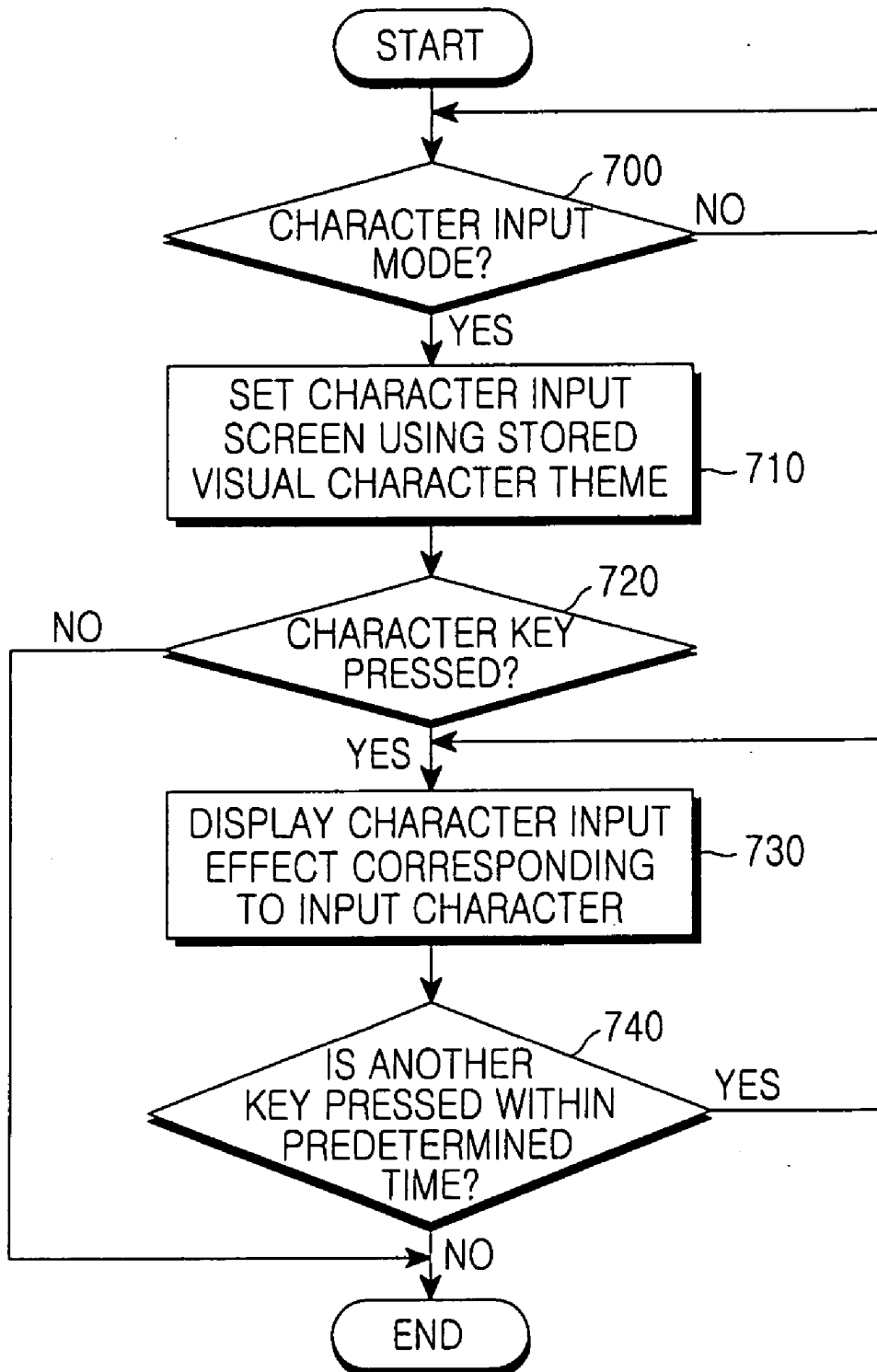


FIG.7

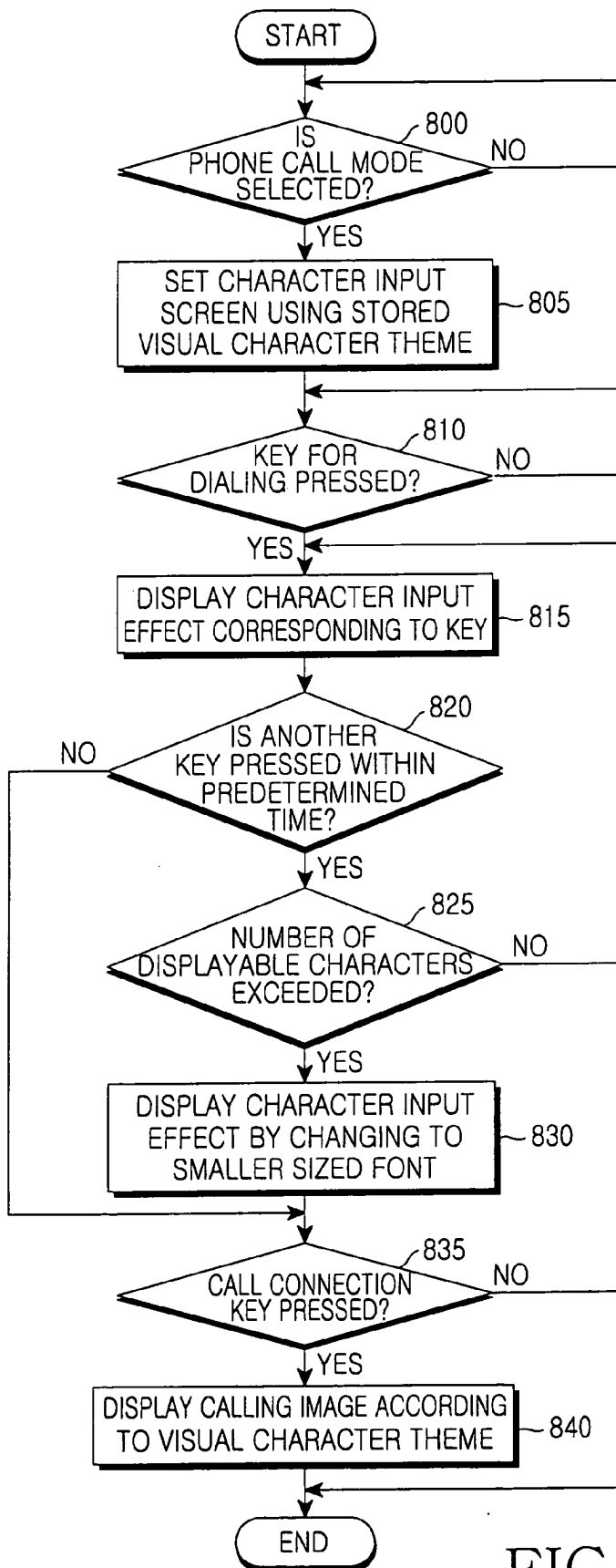


FIG. 8

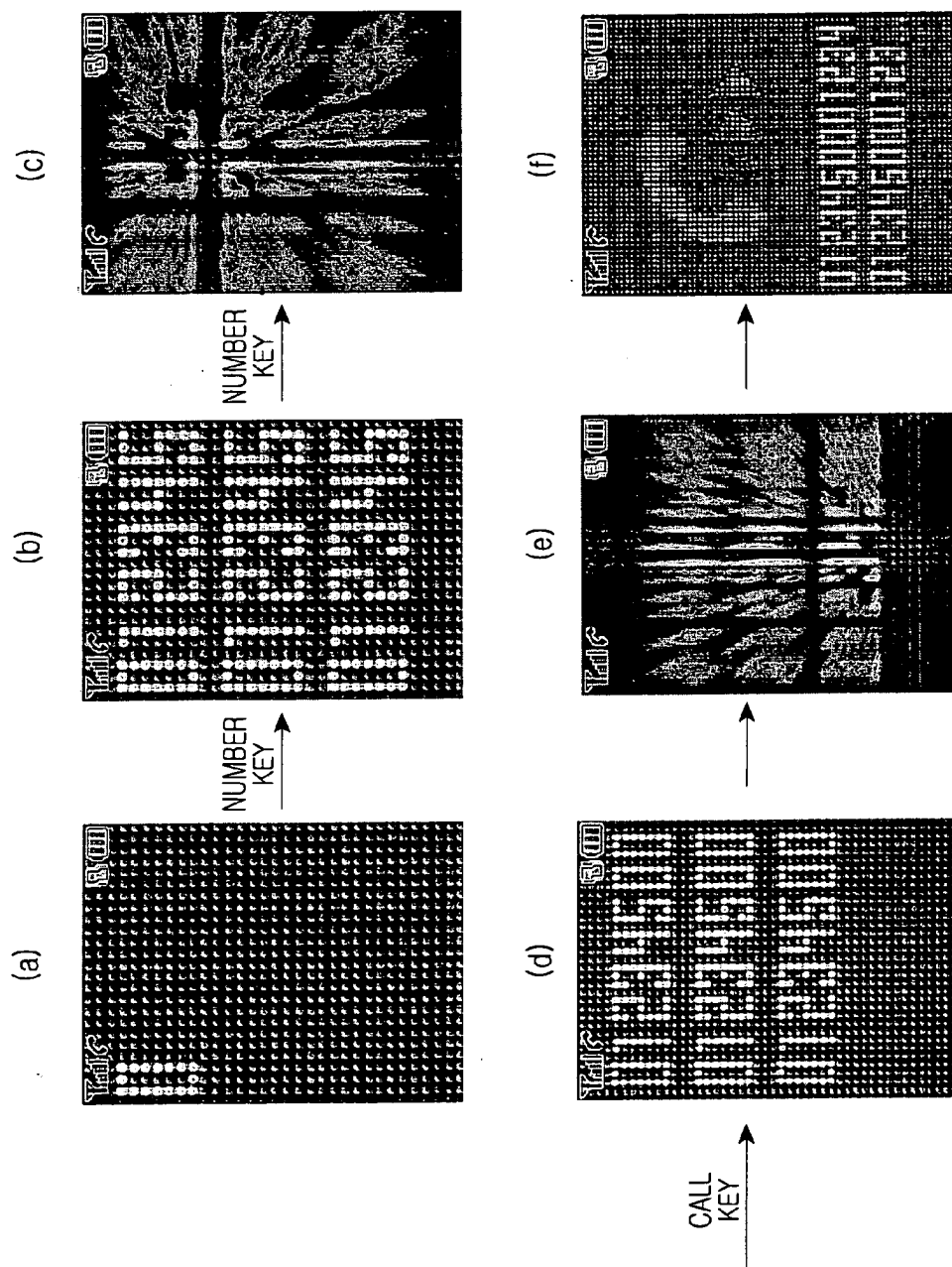


FIG. 9

CHARACTER INPUT METHOD FOR ADDING VISUAL EFFECT TO CHARACTER WHEN CHARACTER IS INPUT AND MOBILE STATION THEREFOR

PRIORITY

[0001] This application claims priority under 35 U.S.C. § 119 to an application entitled "Character Input Method For Adding Visual Effect To Character When Character Is Input And Mobile Station Therefor" filed in the Korean Intellectual Property Office on Jun. 1, 2005 and assigned Ser. No. 2005-46918, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates generally to a mobile station, and in particular, to a character input method for adding various effects to a character displayed on a screen when the character is input and a mobile station therefor.

[0004] 2. Description of the Related Art

[0005] Recently, as mobile stations have become more popular, they have incorporated additional functions so that users of the mobile stations can use the mobile stations for these additional functions in addition to a phone communication function. Moreover, in scope with the expansion of various services and additional functions, a mobile terminal's display screen size and color palette has also increased. Due to the users' demands being more various and detailed than in the past, the screen space of the mobile stations must now be used more efficiently using various methods. Accordingly, screen space should be used such that, various demands of the users are satisfied and a user is not inconvenienced.

[0006] However, although current mobile stations can generate sound and images desired by users using a download service, when a recipient's number is input or a short message is edited, characters having the same font shape and/or size are typically used.

[0007] For example, a mobile station displays a number having a single font shape illustrated in **FIG. 1(A)** when a user presses a key when dialing. The number having a normal size or double size as the font size. When the user continues to dial, input numbers fill a screen as illustrated in **FIG. 1(B)**, and if the user continues to press more keys, the input numbers are converted to a smaller font size and displayed as illustrated in **FIG. 1(C)**. When the user presses a "call" key, an image of trying to connect a call to the input recipient's number is displayed as illustrated in **FIG. 1(D)**.

[0008] **FIG. 2** is a structural diagram illustrating a conventional dialing screen having a layered structure. The conventional dialing screen includes a background layer **10** for providing a single unicolor background image, a character input layer **20** for displaying key-input data according to a key press, and an icon layer **30** for informing of a current operation state according to the key press by displaying icons or images. That is, the icon layer **30** displays icons of various shapes, such as a telephone shape representing a conversation state and a speaker shape representing a sound setting item.

[0009] Accordingly, when a conventional mobile station displays key-input data input by a user when dialing, the conventional mobile station simply displays monotonous key-input data having an assigned font shape and size. That is, in the character display method described above, the mobile station does not allow the user to set various methods such as an assignment of the font size and color of characters.

[0010] As described above, a conventional mobile station displays a character by changing the font size and color of the character according to setting of a user when the character is input. Accordingly there is a need for a mobile station which can display a user selected font type, size, and color.

SUMMARY OF THE INVENTION

[0011] An object of the present invention is to substantially solve at least the above problems and/or disadvantages and to provide at least the advantages below. Accordingly, an object of the present invention is to provide a character input method for adding a visual effect to a character when the character is input in order to reflect a user's personal style and individuality, and a mobile station therefor.

[0012] Another object of the present invention is to provide a character input method for adding a visual effect to a character so that various images can be displayed when the character is input in order to efficiently use various colors and an image magnification function of a mobile station and a mobile station therefor.

[0013] According to one aspect of the present invention, there is provided a character input method for adding a visual effect to a character when the character is input to a mobile station, the method including the steps of selecting a visual character theme for adding a visual effect to the character and displaying a background image according to the selected visual character theme on a screen of the mobile station; receiving a request for displaying the character; adding the visual effect corresponding to the selected visual character theme to the character; and displaying the visual character to which the visual effect is added on the displayed background image.

[0014] According to another aspect of the present invention, there is provided a character input method for adding a visual effect to a character when the character is input to a mobile station, the method including the steps of displaying a background image according to a visual character theme provided by the mobile station using a background layer and displaying an input character on a screen of the mobile station to which the visual character theme is set by adding a visual effect to the input character using a character input layer.

[0015] According to another aspect of the present invention, there is provided a mobile station adding a visual effect to an input character, the mobile station including a memory for storing a plurality of visual character themes, data of a display item for each layer according to each visual character theme, and a visual character theme selected by a user as a default visual character theme; a key input unit for generating key input data according to a key input signal when a display of a character on a screen of the mobile station according to the character input is requested; a

controller for adding a visual effect corresponding to the default visual character theme stored in the memory to the input character and controlling a display unit to display the input character to which the visual effect is added on a background image according to the default visual character theme; and the display unit for displaying the input character to which the visual effect is added by overlapping the background image according to the default visual character theme under a control of the controller.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The above and other objects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

[0017] **FIG. 1** illustrates screens of a conventional mobile station when dialing;

[0018] **FIG. 2** is a schematic structural diagram of layers of a conventional dialing screen;

[0019] **FIG. 3** is a block diagram of a mobile station according to a preferred embodiment of the present invention;

[0020] **FIG. 4** is a schematic structural diagram of layers of a character input screen in a mobile station according to a preferred embodiment of the present invention;

[0021] **FIG. 5** illustrates visual character effects in a mobile station according to a preferred embodiment of the present invention;

[0022] **FIG. 6** is a flowchart illustrating a process of setting a visual character theme according to a preferred embodiment of the present invention;

[0023] **FIG. 7** is a flowchart illustrating a process of adding a visual effect to a character using a layered structure of a character input screen according to a preferred embodiment of the present invention;

[0024] **FIG. 8** is a flowchart illustrating a method of adding a visual effect to a character according to a preferred embodiment of the present invention; and

[0025] **FIG. 9** illustrates screen shots showing visual effects added to a character according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Preferred embodiments of the present invention will be described herein below with reference to the accompanying drawings. In the drawings, the same or similar elements are denoted by the same reference numerals even though they are depicted in different drawings. In the following description, well-known functions or constructions are not described in detail since they would obscure the invention in unnecessary detail.

[0027] The present invention implements a function of displaying various character effects on a character input screen of a mobile station by using a differentiated graphic element according to a key input signal. To do this, a visual character theme set by a user is displayed in a character input mode, and a character input effect corresponding to the

visual character theme is shown according to a key input signal. Accordingly, since the mobile station can show a visual character input effect for every key input sequence by allowing the user to select a desired visual character theme in advance, an entertaining effect can be added to a user interface of the mobile station.

[0028] Components and operations of a mobile station having the function described above will now be described with reference to **FIG. 3** which is a block diagram of a mobile station according to the present invention. Hereinafter, the character is the general term for any sign which can be displayed on a screen, such as an English character, a Korean character, a number, and a special character (e.g., “*”, “!”, etc.).

[0029] Referring to **FIG. 3**, the mobile station includes a controller **100**, a key input unit **110**, a display unit **120**, a memory **130**, a radio frequency (RF) unit **140**, and a sound processing unit **150**.

[0030] The controller **100** controls all operations of the mobile station, and particularly, controls the display unit **120** to display a character input effect according to a preferred embodiment of the present invention. Herein, the character input effect is displayed differently according to a pre-set visual character theme, and if effect sound is included in the visual character theme, the controller **100** controls the display unit **120** to display the character input effect and simultaneously controls the sound processing unit **150** to output the effect sound through a speaker every time a character is input.

[0031] As described above, when a character display on a screen is requested by inputting a character, the controller **100** adds a visual effect corresponding to the pre-set visual character theme to the input character and displays the visual-effect-added character on a background image displayed according to the visual character theme. For example, the character input effect can be displayed in all character input modes such as a phone-call mode in which a user inputs a recipient's number to make a phone call and a message edit mode in which a message is input and/or edited.

[0032] In another case, the controller **100** can display visual effect added characters even when a display of characters received through a Short Message Service (SMS) or a Multimedia Message Service (MMS) is requested. Herein, a message received from another party's mobile station through the SMS or MMS can be processed by a corresponding message processing control unit included in the controller **100**, i.e., an SMS or MMS character processing unit. For example, when a message according to a visual character theme is received, to display the message edited by the other party's mobile station, a corresponding message processing control unit determines whether a corresponding visual character theme exists. If it is determined that the visual character theme exists, the corresponding message processing control unit displays visual-effect-added characters according to the visual character theme when the message is displayed. Likewise, it is preferable that a display of visual characters to which a visual effect according to a visual character theme is added be always applicable in all cases where a character display is required besides in the character input modes.

[0033] The key input unit **110** provides an interface with the user, has various types of keys such as various function

keys, number keys (e.g., 0 to 9), and special keys (e.g., * and #), and provides key input data corresponding to a key pressed by the user to the controller 100. That is, the key input unit 110 generates key input data unique to each key input signal and outputs the generated key input data to the controller 100. The controller 100 detects which key corresponds to the key input data and performs a corresponding operation according to the detection result.

[0034] The control unit 100 controls the display unit 120 to receive display data corresponding to the key input data from the key input unit 110 and display the display data, or display an operational state and a plurality of types of information of the mobile station using icons and characters. In addition, when the user sets or operates a needed function, the control unit 100 controls the display unit 120 to visually display a state of the setting or operation so that the user is informed as required. Moreover, the display unit 120 to which the present embodiment is applied displays a visual character effect by which a visual effect is added to a character input by the user in the character input mode.

[0035] The memory 130 includes a ROM (Read Only Memory) and RAM (Random Access Memory) for storing a plurality of programs and data. In particular, according to a preferred embodiment of the present invention, the memory 130 stores data of a display item for each layer according to a visual character theme. The memory 130 also stores a plurality of visual character themes and stores a visual character theme set by the user as a default visual character theme.

[0036] The RF unit 140 is connected to the controller 100, converts sound data and control data to an RF signal and transmits the RF signal, and receives an RF signal and converts the received RF signal to sound data and control data.

[0037] The sound processing unit 150 is connected to the controller 100, converts sound data input from the controller 100 to audible sound and outputs the audible sound through the speaker 160, and converts a sound signal received through a microphone to sound data and transmits the sound data to the controller 100. In addition, the sound processing unit 150 to which the present embodiment is applied outputs effect sound according to a corresponding visual character theme whenever a character input effect according to a character input is displayed on the screen. For example, if a visual character theme is "steel", a steel plate (not shown) is displayed as a background image, and when a key is pressed, a character corresponding to the key can be displayed on the steel plate as the character is carved on steel, and simultaneously, a striking hammer effect sound can be output through the speaker.

[0038] A layered structure of a screen of a mobile station having the above-described configuration on which a pre-determined character input effect is displayed when a character is input will now be described.

[0039] FIG. 4 is a schematic structural diagram of layers of a character input screen in a mobile station according to the present invention. The character input screen of the mobile station according to the present invention basically includes a background layer 200 for displaying a background image according to a visual character theme and a character input layer 220 for displaying an input character

by not changing a font of the character but adding a visual effect to the character, and further includes a character effect layer 210 for displaying a pre-defined specific visual effect on a background portion on which the input character is displayed or on the entire screen in order to add a visual effect to the input character and an icon layer 230 for displaying images of various input tools when the character is input. Herein, the visual effect is usually overlapped on the background image of the visual character theme provided by the background layer 200, so that the character can be visually distinguished from the character effect. In addition, an icon indicating an input device provided by the icon layer 230 is overlapped on the background image of the visual character theme, as well as the character and the character effect.

[0040] In more detail, the background layer 200 displays the background image of the visual character theme using the entire screen (or a substantial portion thereof) of the mobile station. According to a preferred embodiment of the present invention, the character effect layer 210 can display various effects, such as a wave effect or a flame effect, around a location of a displayed cursor or at which characters are being displayed. For example, when the background image of the visual character theme is a lake, a character is displayed by the character input layer 220 on the lake background image provided by the background layer 200, and then the character effect layer 210 can give such an effect that tiny waves rise below a current cursor, below displayed characters, and/or all over the screen. By doing this, a character is displayed on water in what appears to be three dimensions. Additionally, an effect of tiny waves rising and falling can be provided when a character is input.

[0041] To add a visual effect to a character corresponding to each key input signal, the character input layer 220 displays the character using various graphic elements and various fonts, such as an ink pen font, a light bulb font, a Post-it™ font, and a twinkle font. The icon layer 230 displays an ink-pen image as an input tool image when a visual effect added character, for instance, having the ink-pen font, is displayed by overlapping the background image (e.g., letter paper image) of the visual character theme. For example, when the visual effect added character is displayed, the icon layer 230 displays an image indicating an input tool tracing strokes of the character in order to give a feeling of writing the character for a user. While the character strokes are being drawn according to a drawing sequence, the image indicating the input tool simultaneously moves to trace the character strokes, and when the character is fully drawn, the image indicating the input tool is displayed at the ending point of the character strokes. Additionally, an optional scratching sound (e.g., a sound similar to a quill scratching paper as it draws a character can be played by the speaker as the character is drawn.

[0042] The character input screen is provided to the user as illustrated in FIG. 5, and a character input effect corresponding to each visual character theme is displayed when the user inputs a character. According to a preferred embodiment of the present invention, visual character themes having various character input effects, such as an ink pen theme illustrated in FIG. 5(A), an LED panel theme illustrated in FIG. 5(B), a twinkle theme illustrated in FIG. 5(C), a Post-it™ theme illustrated in FIG. 5(D), a steel theme illustrated in FIG. 5(E), and a blackboard theme (not

shown), can be used. While **FIG. 5** illustrates the ink pen, LED panel, twinkle, Post-it™, and steel themes according to a preferred embodiment of the present invention, the present invention is not limited to this. That is, visual character themes having various character input effects can be displayed according to a selection of the user, a service provider, or a mobile station manufacturer. In addition, the character input effects according to a preferred embodiment of the present invention can be created by the user, or received by a content provider as a kind of content and modified according to a selection of the user.

[0043] There are various methods of displaying a visual-effect-added character on the character input layer **220** according to the present invention. Three of these methods will now be described below.

[0044] The first method of displaying a visual-effect-added-character is known as an animated pen input method in which a character is drawn to trace strokes of the character corresponding to a key input signal as writing the character for the user when a key is pressed, i.e., a method of inputting a character by adding an animation effect thereto. In this method, animated pen input data of each input character is stored in the mobile station, a corresponding visual character theme is set, and then if a certain character is input to the character input screen, animated pen input data corresponding to the input character is displayed. Although a method of storing and displaying animated pen input data of each input character is illustrated, it is also possible to set an animated pen effect and move an animated pen to trace an input character by adding drawing sequence information of the input character to the animated pen effect. When this animated pen effect is used, the animated pen input method can be used not only when a simple number key is pressed but also when a character having a high degree of freedom, such as a drawing input through a touch screen or a separate input tool, is input.

[0045] To describe in more detail the animated pen input method, reference will be made to **FIG. 5(A)**, which illustrates the ink pen theme as a visual character theme. This method is achieved by allocating a drawing sequence of a corresponding character to each key in advance. For example, when a number key is pressed for dialing, the controller **100** of the mobile station obtains a drawing sequence allocated in advance to correspond to the input number and draws character strokes of the input number according to the drawing sequence. When a character other than a number is input, strokes of the input character are also drawn according to a drawing sequence of the character, thereby being displayed on the screen. Besides, for the LED panel theme illustrated in **FIG. 5(B)**, when a character key is pressed, a character corresponding to the character key is displayed in a form of illuminating LEDs according to a drawing sequence of the character. As another example, for the twinkle theme illustrated in **FIG. 5(C)**, when a character key is pressed, a character corresponding to the character key is displayed in a form of sequentially flashing starlight on a universe background image according to a drawing sequence of the character.

[0046] The second method of displaying a visual-effect-added-character is known as a collage method of displaying a character by loading a stored character image corresponding to a key input signal when a key is pressed. For example,

referring to the Post-it™ theme illustrated in **FIG. 5D**, when a number key is pressed, a number image having a Post-it™ form corresponding to the number key is loaded and displayed. That is, character images are loaded and displayed one-by-one when keys are pressed in a feeling of attaching "Post-it™" on a cork wall or other background.

[0047] The third method of displaying a visual-effect-added-character is known as a relief method of displaying a character as embossing or intaglioing the character when a key is pressed. For example, referring to the steel theme illustrated in **FIG. 5(E)**, when a number key is pressed, a number corresponding to the number key is displayed as being raised in relief on a steel plate. Likewise, effects according to each visual character theme can be variously provided.

[0048] A process of setting one of visual character themes displayed variously as described above will now be described with reference to **FIG. 6** which is a flowchart illustrating a process of setting a visual character theme according to the present invention.

[0049] Referring to **FIG. 6**, the controller **100** determines in step **600** whether a request to change a visual character theme is input by a user. The request can be achieved by the user selecting a visual character theme change menu from a main menu. As a result of the determination in step **600**, if a request to change a visual character theme is input, the controller **100** displays a default visual character theme in step **610**. In step **620**, the controller **100** determines whether a left or right direction key is pressed. That is, for the user's convenience, the user can see another visual character theme using the direction key in the present embodiment. As a result of the determination in step **620**, if the left or right direction key is pressed, the controller **100** rotationally displays another visual character theme in a left or right direction according to the key input signal in step **630**. In step **640**, the controller **100** determines whether one of a plurality of visual character themes is selected by the user. As a result determined in step **640**, if a certain visual character theme is selected, the controller **100** stores the selected visual character theme as the default visual character theme in step **650**. Thereafter, the user can use a desired visual character theme.

[0050] A process of displaying the visual character theme selected as described above will now be described with reference to **FIG. 7** which is a flowchart illustrating a process of adding a visual effect to character using a layered structure of a character input screen according to the present invention.

[0051] Referring to **FIG. 7**, if a character input mode is selected by the user in step **700**, in step **710**, the controller **100** loads a stored default visual character theme and sets the character input screen using the default visual theme. That is, the controller **100** displays a background image corresponding to the default visual character theme on the character input screen through the background layer **200**. Herein, if the default visual character theme is achieved in a manner of writing a character for the user, an input tool image is displayed through the icon layer **230** (e.g., a corresponding animated pen is displayed on the background image). In step **720**, the controller **100** determines whether a character key is pressed. Herein, the character key is a key for inputting

any sign which can be displayed on a screen, such as an English character, a Korean character, a number, and a special character.

[0052] If a character key is pressed, the controller 100 displays a character input effect according to the default visual character theme in response to a key input signal corresponding to the character key in step 730. In more detail, when the key input unit 110, for instance, senses that the user presses the character key and transmits key input data to the controller 100, the controller 100 adds a visual-effect-corresponding to the default visual character theme to an input character according to the key input data. Then, the controller 100 displays the visual-effect-added character on the background image displayed according to the default visual character theme. In step 740, the controller 100 determines whether another key is pressed within a predetermined time, i.e. whether a character key is further pressed. As a result of the determination in step 740, if another a character or key is pressed, the controller proceeds to step 730 and displays an input-visual-effect-added character on the background image according to the default visual character theme by following the displayed character.

[0053] A detailed example using the present invention will now be described with reference to FIGS. 8 and 9.

[0054] FIG. 8 is a flowchart illustrating a method of providing a character input effect according to the present invention, and FIG. 9 illustrates screen shots showing the character input effect according to the present invention.

[0055] Although an example will now be described by illustrating FIGS. 8 and 9, the method of providing a character input effect according to a preferred embodiment of the present invention should not be construed as limited to the embodiment shown in FIGS. 8 and 9.

[0056] Referring to FIGS. 8 and 9, if a phone call mode is selected in step 800 by the user in the layered screen structure illustrated in FIG. 4, the controller 100 sets a character input screen using a stored visual character theme in step 805. That is, a background image corresponding to the default visual character theme is displayed through the background layer 200. Herein, if the default visual character theme is a light bulb theme, an LED panel background image is displayed through the background layer 200. In step 810, the controller 100 determines whether a key for dialing is pressed. As a result in the determination in step 810, if a key for dialing is pressed, the controller 100 displays a pre-defined character input effect on the background image in response to a key input signal corresponding to the key in step 815. For example, an effect of illuminating light bulbs as illustrated in FIG. 9A is displayed. Herein, the effect can be achieved by sequentially illuminating the light bulbs displayed on the LED panel background image according to a drawing sequence of a character corresponding to the key or illuminating the light bulbs at once.

[0057] In step 820, the controller 100 determines whether another key is pressed within a predetermined time. As a result of the determination in step 820, if another key is pressed, the controller 100 determines in step 825 whether the number of characters which can be displayed on the screen is exceeded. As a result of the determination in step 825, if a character corresponding to the key can be displayed on the screen, the controller 100, by proceeding back to step

815, adds the character input effect to the character and displays the character on the screen next to the previously displayed character. While repeating the above-described procedures in the same manner according to subsequently pressed keys, the controller 100 determines in step 825 whether the number of characters which can be displayed on the screen is exceeded. As a result of the determination in step 825, if the number of characters which can be displayed on the screen is exceeded, i.e., if the screen is filled up by input characters as illustrated in FIG. 9B, the controller 100 changes a current image to an image having a smaller sized font as illustrated in FIG. 9(D) in step 830. Herein, to present a visually pleasing effect when the images are changed, the controller 100 may display a zoom-out image for temporarily displaying a flash on the LED panel background image as illustrated in FIG. 9(C).

[0058] In a state where a recipient's number is input as illustrated in FIG. 9(D), the controller 100 determines in step 835 whether a call connection key for trying to make a phone call with the recipient's number is pressed. As a result of the determination in step 835, if the call connection key is pressed, the controller 100 displays a calling image according to a visual character theme illustrated in FIG. 9(F) in step 840. Herein, when the recipient's number input image is changed to the calling image, the controller 100 may also display a zoom-out image illustrated in FIG. 9(E).

[0059] As described above, according to embodiments of the present invention, by suggesting a method of providing a character input layer and a character input effect according to the layer, an entertainment element can be added to a user interface of a mobile station.

[0060] While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention. For example, while a visual character effect has been described only for a character input mode and a message receiving mode, the visual character effect can be applied to various modes in which a visual character can be displayed. Therefore, the spirit and scope of the invention will be defined by the appended claims and the equivalent not by the described preferred embodiments.

What is claimed is:

1. A character input method for adding a visual effect to a character when the character is input to a mobile station, the method comprising the steps of:

selecting a visual character theme for adding a visual effect to the character and displaying a background image according to the selected visual character theme on a screen of the mobile station;

receiving a request for displaying the character;

adding the visual effect corresponding to the selected visual character theme to the character; and

displaying the visual character to which the visual effect is added on the displayed background image.

2. The method of claim 1, wherein in the adding step further includes drawing, according to an animated pen input method, a character corresponding to a key input signal according to a drawing sequence of the character.

3. The method of claim 2, further comprising displaying, according to the animated pen input method, the input character on a background image using drawing sequence information stored for each input sequence when the character is input through the character input screen of the mobile station.

4. The method of claim 2, further comprising, loading animated pen input data stored for each input character, according to the animated input pen method, when the character is input.

5. The method of claim 2, further comprising displaying, according to the animated pen input method, a moving animated pen according to a drawing sequence by adding drawing sequence information of the input character to a relevant animated pen effect.

6. The method of claim 1, wherein the adding step further includes displaying a character, using a collage method, by loading a character image stored for each input character.

7. The method of claim 1, wherein the adding step further includes, displaying, according to a relief method, the character embossed or intaglioed on the displayed background image.

8. The method of claim 1, further comprising outputting an effect sound corresponding to the selected visual character theme when the character is displayed.

9. The method of claim 1, further comprising displaying a pre-defined effect at a location which is below a current cursor, below the displayed visual character, or throughout the screen, when the visual character is displayed.

10. The method of claim 1, further comprising outputting an effect sound corresponding to the visual character theme when the visual character is displayed.

11. The method of claim 1, wherein the request for displaying the character is made by inputting the character through the character input screen of the mobile station.

12. The method of claim 1, wherein the request for displaying the character is made by a message processing control unit of the mobile station.

13. The method of claim 12, wherein the message processing control unit includes a Short Message Service (SMS) character processing unit.

14. The method of claim 12, wherein the message processing control unit includes a multimedia message service (MMS) character processing unit.

15. The method of claim 1, wherein the step of selecting a visual character theme comprises:

setting the character input screen using a default visual character theme when a request of changing the visual character theme is input by a user;

determining whether a certain key is pressed in a state where a background image according to the default visual character theme is displayed on the character input screen;

displaying rotationally stored visual character themes in response to a key input signal corresponding to the key; and

if one of the visual character themes is selected, setting the selected visual character theme as the default visual character theme.

16. The method of claim 15, wherein the stored visual character themes include at least one of an ink pen theme, an LED panel theme, a Post-it™ theme, and a steel theme.

17. The method of claim 16, wherein if the selected visual character theme is the ink pen theme, the background image according to the default visual character theme is a letter paper image, and when a character key is pressed, a character is displayed on the letter paper image according to a drawing sequence assigned to the character key.

18. The method of claim 17, wherein when the character is displayed on the letter paper image according to the drawing sequence, a writing tool image moving according to the drawing sequence is also displayed.

19. The method of claim 16, wherein the selected visual character theme is the LED panel theme, the background image according to the default visual character theme is an LED panel image, and when a character key is pressed, a character is displayed on the LED panel image in a form of illuminated light bulbs according to a drawing sequence assigned to the character key.

20. A character input method for adding a visual effect to a character when the character is input to a mobile station, the method comprising the steps of:

displaying a background image according to a visual character theme provided by the mobile station using a background layer; and

displaying an input character on a screen of the mobile station to which the visual character theme is set by adding a visual effect to the input character using a character input layer.

21. The method of claim 20, further including displaying a character effect layer for adding a pre-defined specific visual effect to a background image portion on which the input character is displayed.

22. The method of claim 20, wherein the input character is drawn on the background image according to the visual character theme by following a drawing sequence corresponding to the input character using the visual effect provided by the character input layer.

23. The method of claim 22, further including displaying an animated pen moving according to the drawing sequence corresponding to the input character when the input character is displayed by adding the visual effect to the input character on an icon layer.

24. The method of claim 20, further including displaying the input character on the background image according to the visual character theme by loading a character image corresponding to the input character using the visual effect provided by the character input layer.

25. A mobile station adding a visual effect to an input character, the mobile station comprising:

a memory for storing a plurality of visual character themes, data of a display item for each layer according to each visual character theme, and a visual character theme selected by a user as a default visual character theme;

a key input unit for generating key input data according to a key input signal when it is requested to display a character on a screen of the mobile station according to the input character;

a controller for adding a visual effect corresponding to the default visual character theme stored in the memory to the input character and controlling a display unit to display the input character to which the visual effect is

added on a background image according to the default visual character theme; and

the display unit for displaying the input character to which the visual effect is added by overlapping the background image according to the default visual character theme under a control of the controller.

26. The mobile station of claim 25, further comprising a sound processing unit for outputting effect sound when the visual character effect is displayed if the default visual character theme includes the effect sound.

* * * * *



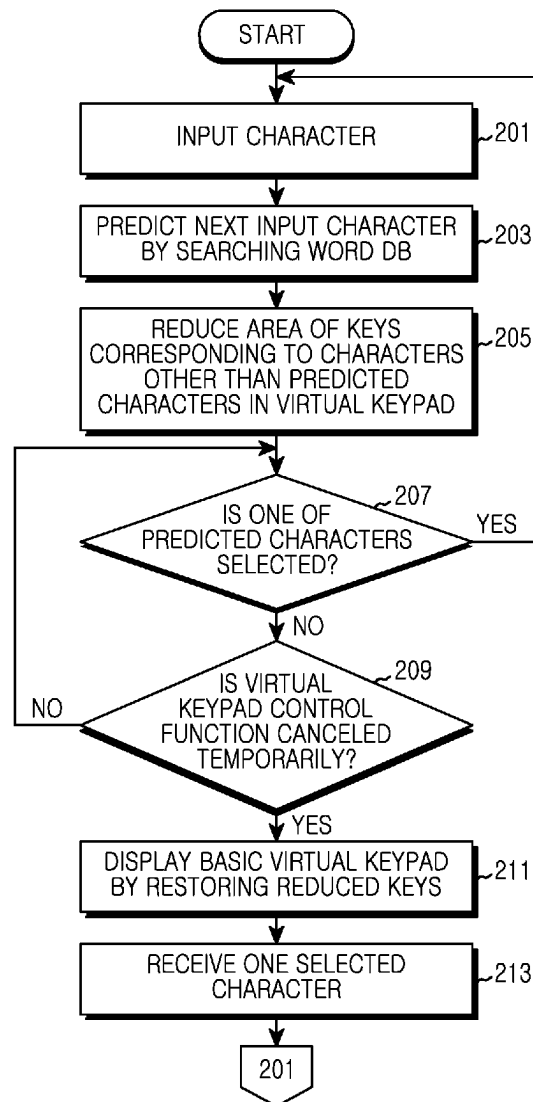
US 20120023433A1

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(52) **U.S. Cl.** **715/773**(57) **ABSTRACT**

A method and apparatus for inputting a character in a portable terminal are provided. The method includes displaying a virtual keypad on a screen, inputting the character by detecting a user touch, predicting at least one next input character associated with the input character, and controlling at least one area between a key area of the predicted character and a key area of an unpredicted character in the virtual keypad so that the respective key area is displayed in different scale for distinction.

(73) Assignee: **SAMSUNG ELECTRONICS
CO., LTD.**, Gyeonggi-Do (KR)(21) Appl. No.: **13/183,699**(22) Filed: **Jul. 15, 2011**

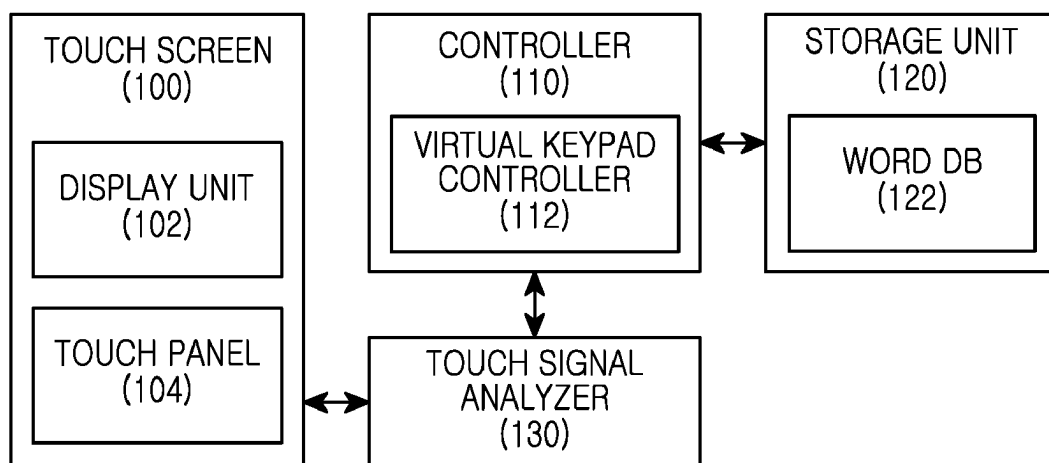


FIG. 1

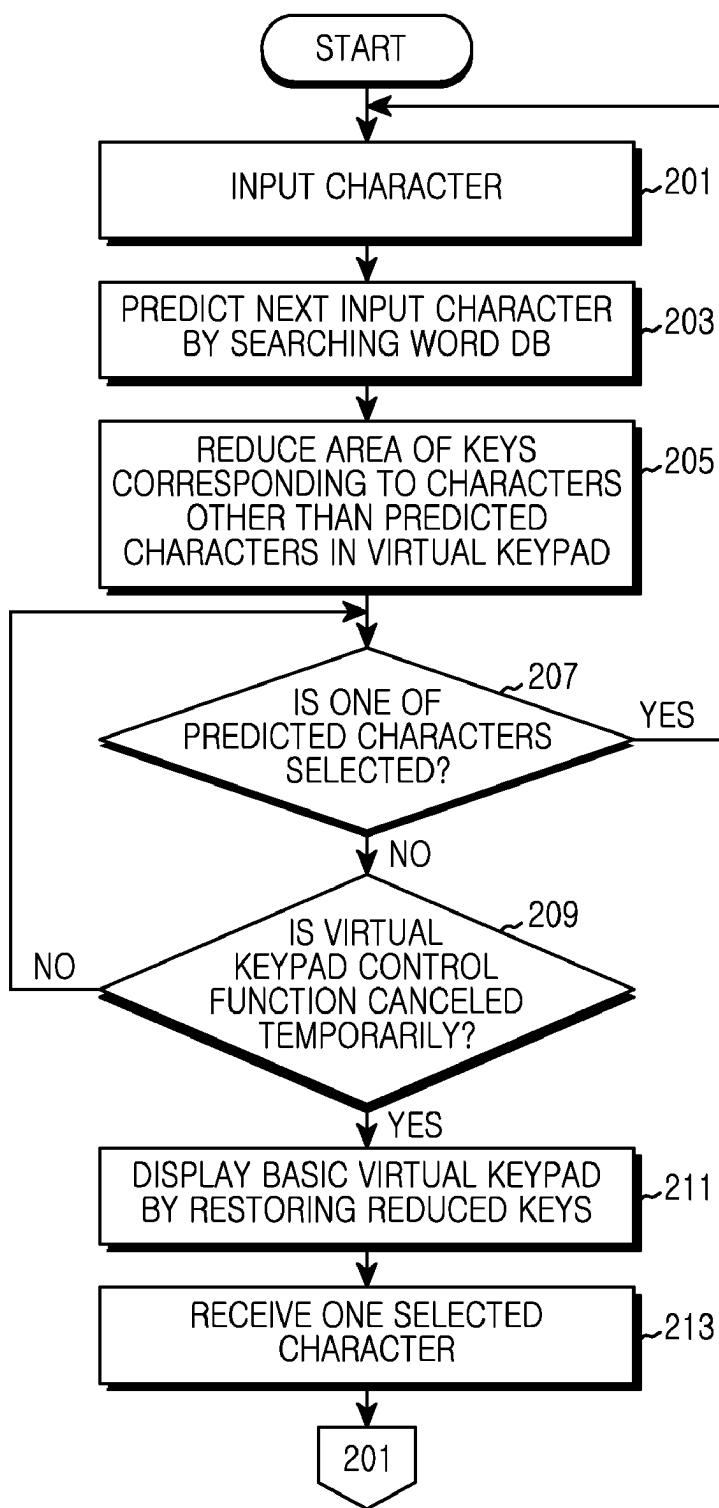


FIG.2

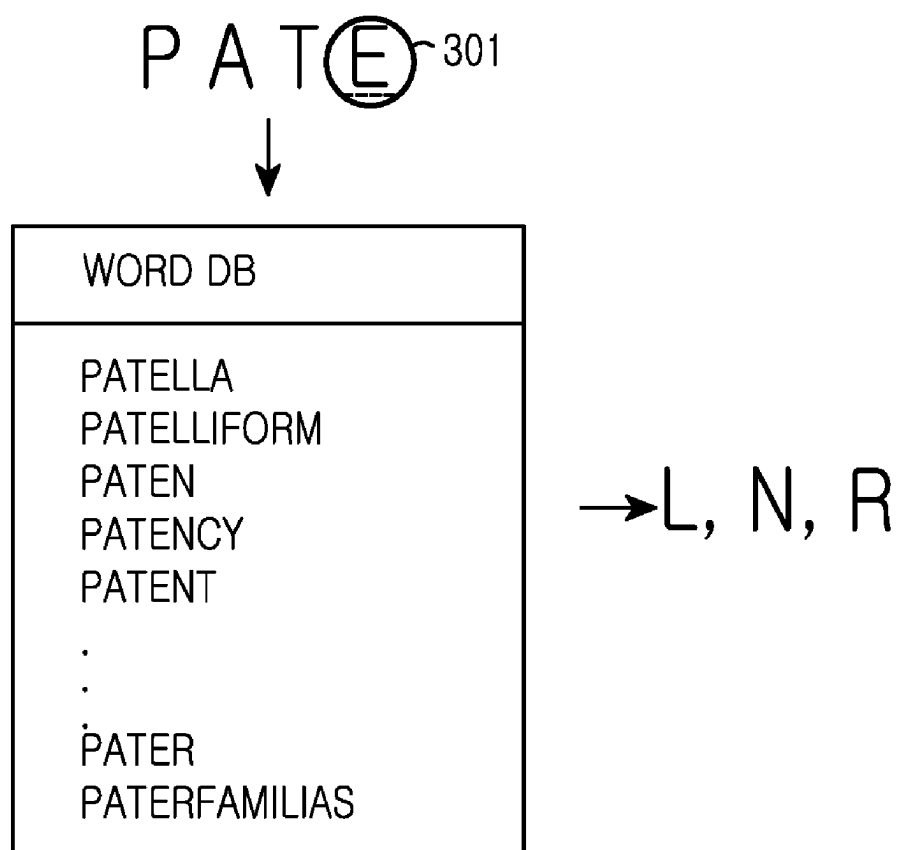


FIG.3

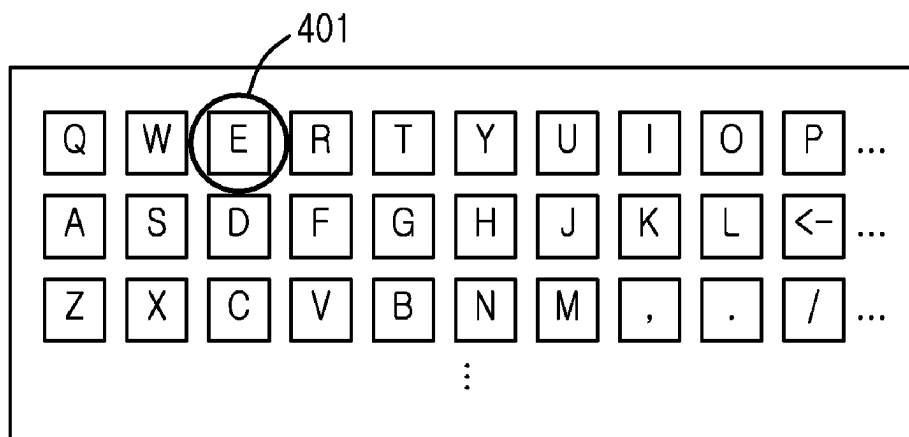


FIG. 4A

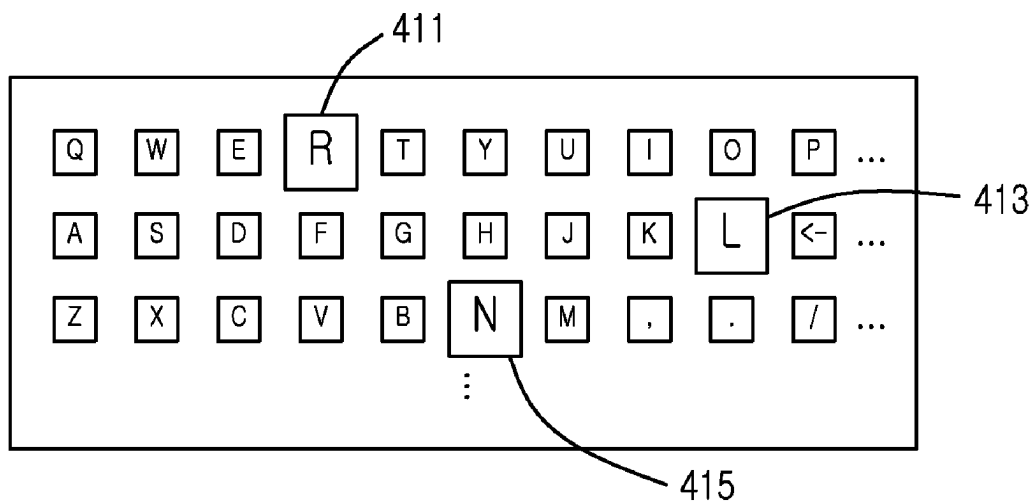


FIG. 4B

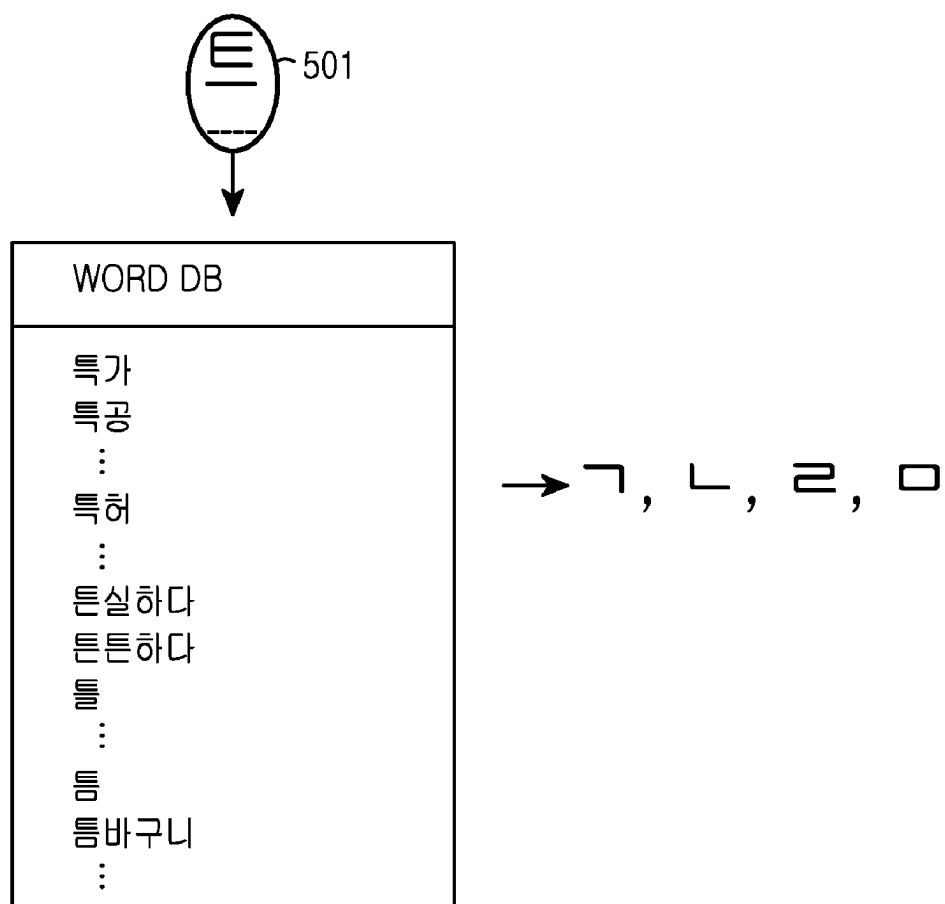


FIG.5

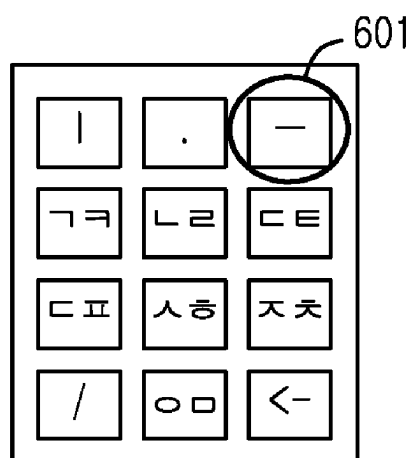


FIG. 6A

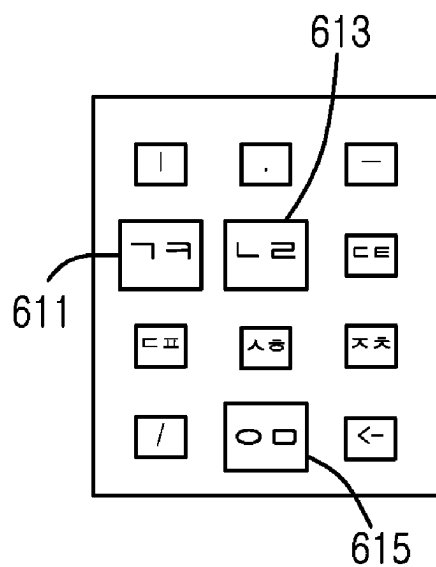


FIG. 6B

METHOD AND APPARATUS FOR INPUTTING CHARACTER IN A PORTABLE TERMINAL

[0001] This application claims the benefit under 35 U.S.C. § 119(a) of a Korean patent application filed in the Korean Intellectual Property Office on Jul. 23, 2010 and assigned Serial No. 10-2010-0071192, the entire disclosure of which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a method and apparatus for inputting a character in a portable terminal. More particularly, the present invention relates to a method and apparatus for inputting a character in a portable terminal that supports a virtual keypad via a touch screen.

[0004] 2. Description of the Related Art

[0005] With the widespread use of portable terminals in recent years, portable terminal providers are competitively developing terminals with more convenient features and additional functions to entice more users. In particular, various functions that require a character input in the portable terminal are under development.

[0006] Meanwhile, instead of using a hardware-type keypad device that occupies a fixed space, a touch screen is widely being used to provide a virtual keypad for a slimmer design and compact size.

[0007] In the portable terminal that supports a character input mechanism using the aforementioned virtual keypad, respective characters constituting the virtual keypad are located very closely in distance as the touch screen has a limited size. Therefore, there is a high possibility that the user incorrectly inputs a character located near a character to be input.

SUMMARY OF THE INVENTION

[0008] An aspect of the present invention is to solve at least the above-mentioned problems and/or disadvantages and to provide at least the advantages described below.

[0009] Accordingly, an aspect of the present invention is to provide a method and apparatus for inputting a character to avoid an incorrect character input in a portable terminal that supports a virtual keypad via a touch screen.

[0010] Another aspect of the present invention is to provide a method and apparatus for providing a character input guideline to a user by predicting a character to be input in a portable terminal that supports a virtual keypad via a touch screen.

[0011] In accordance with an aspect of the present invention, a method of inputting a character in a portable terminal includes displaying a virtual keypad on a screen, inputting the character by detecting a user touch, predicting at least one next input character associated with the input character, and controlling at least one area between a key area of the predicted character and a key area of an unpredicted character in the virtual keypad so that the key area defining the predicted character and the unpredicted character is displayed distinctively.

[0012] In accordance with another aspect of the present invention, an apparatus for inputting a character in a portable terminal includes a touch screen for displaying a virtual keypad on a screen and for detecting a user touch, and a controller for inputting the character according to the detected user

touch, for predicting at least one next input character associated with the input character, and for controlling at least one area between a key area of the predicted character and a key area of an unpredicted character in the virtual keypad, so that the key area defining the predicted character and the unpredicted character is displayed distinctively.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The above and other aspects, features and advantages of certain exemplary embodiments of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0014] FIG. 1 is a block diagram illustrating a portable terminal according to an exemplary embodiment of the present invention;

[0015] FIG. 2 is a flowchart illustrating a process of inputting a character in a portable terminal according to an exemplary embodiment of the present invention;

[0016] FIG. 3 illustrates a screen configuration for predicting a character to be input in a portable terminal according to an exemplary embodiment of the present invention;

[0017] FIGS. 4A and 4B illustrate a screen configuration for providing a character input guideline in a portable terminal according to an exemplary embodiment of the present invention;

[0018] FIG. 5 illustrates a screen configuration for predicting a character to be input in a portable terminal according to another exemplary embodiment of the present invention; and

[0019] FIGS. 6A and 6B illustrate a screen configuration for providing a character input guideline in a portable terminal according to another exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] The following description with reference to the accompanying drawings is provided to assist in a comprehensive understanding of exemplary embodiments of the invention as defined by the claims and their equivalents. It includes various specific details to assist in that understanding but these are to be regarded as merely exemplary. Accordingly, those of ordinary skill in the art will recognize that various changes and modifications of the embodiments described herein can be made without departing from the scope and spirit of the invention. For the purposes of clarity and simplicity, descriptions of well-known functions and constructions are omitted to not to obscure the invention.

[0021] The terms and words used in the following description and claims are not limited to the bibliographical meanings, but, are merely used by the inventor to enable a clear and consistent understanding of the invention. Accordingly, it should be apparent to those skilled in the art that the following description of exemplary embodiments of the present invention are provided for illustration purpose only and not for the purpose of limiting the invention as defined by the appended claims and their equivalents. Further, it is to be understood that the singular forms “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to “a component surface” includes reference to one or more of such surfaces.

[0022] The present invention described hereinafter relates to a method and apparatus for providing a character input guideline to a user by predicting a character to be input in a

portable terminal that supports a virtual keypad by using a touch screen. The portable terminal of the present invention described hereinafter is a terminal that employs a touch screen. Examples of such a portable terminal include a Portable Multimedia Player (PMP), a MPEG-1 Audio Layer 3 (MP3) player, a navigation device, etc.

[0023] FIG. 1 is a block diagram illustrating a portable terminal according to an exemplary embodiment of the present invention.

[0024] Referring to FIG. 1, the portable terminal includes a touch screen 100, a controller 110, a storage unit 120, and a touch signal analyzer 130. The touch screen includes a display unit 102 and a touch panel 104. The controller 110 includes a virtual keypad controller 112. The storage unit 120 includes a word DataBase (DB) 122.

[0025] The touch screen 100 includes the display unit 102 and the touch panel 104 disposed above the display unit 102.

[0026] The display unit 102 is a Liquid Crystal Display (LCD), and displays status information generated during an operation of the portable terminal, various moving images and still images, etc. In particular, the display unit 102 displays a virtual keypad on the screen to input a character, and reduce a key area of an unpredicted character on the virtual keypad under the control of the controller 110. Herein, the keypad may have a Qwerty keyboard format or a 3×4 keypad format. The format of the virtual keypad may change variously.

[0027] In addition, the touch panel 104 recognizes an electrical analog signal depending on a contact made on the screen and delivers the recognition result to the touch signal analyzer 130.

[0028] The touch signal analyzer 130 analyzes the electrical analog signal provided from the touch panel 104 included in the touch screen 100, and outputs a location coordinate depending on a location at which the contact is made on the screen to the controller 110.

[0029] The controller 110 controls and processes overall operations of the portable terminal. In particular, by including the virtual keypad controller 112, the controller 110 performs a function for controlling a size of key areas included in the virtual keypad displayed on the display unit 102 when a character is input.

[0030] The virtual keypad controller 112 evaluates a character corresponding to a key area touched by a user by using the location coordinate input from the touch signal analyzer 130, and determines the evaluated character as a current input character. The virtual keypad controller 112 searches the word DB 122 stored in the storage unit 120 according to at least one the current input character and a character string which has been input up to now, and predicts a next input character. For example, as illustrated in FIG. 3, if a character which is input by a current touch is “e” and a current input character string is “pate”, the virtual keypad controller 112 searches the word DB 122 to find words (i.e., patella, patelliform, paten, patency, . . . , pater, etc.) corresponding to the “pate”, and can predict any one of “l”, “n”, and “r” as the next input character.

[0031] If a specific number (or more) of characters are predicted as a next input character, the virtual keypad controller 112 may determine only the specific number (or less) of characters as predicted next input characters by considering a usage frequency of word. That is, the virtual keypad controller 112 searches the word DB 122 to find words corresponding to the character string which has been input up to

now. If a result of predicting the next input character from the found words shows that the number of predicted characters is greater than or equal to the specific number, the virtual keypad controller 112 may select only the specific number of words frequently used among the found words and then may predict the next input character from the selected words. Of course, for this, the storage unit 120 or the word DB 122 has to store information indicating how frequently the user uses each word, and the virtual keypad controller 112 has to update a usage frequency of a corresponding word whenever one complete word is input.

[0032] If the next input character is predicted, the virtual keypad controller 112 controls a function for reducing a size of a key area corresponding to the remaining characters other than the predicted next input character in the virtual keypad. For example, if “l”, “n”, and “r” are predicted as the next input character in a state where the current input character is a character “e” 401 as illustrated in FIG. 4A, the virtual keypad controller 112 can reduce the key area of the remaining characters other than the character “l” 413, the character “n” 415, and the character “r” 411 in the virtual keypad as illustrated in FIG. 4B. Herein, the virtual keypad controller 112 reduces the key area of the unpredicted characters in order to facilitate an input of the next character by intuitively recognizing the predicted next input character. Also, the virtual keypad controller 112 reduces the key area of the unpredicted characters in order to decrease generation of an incorrect input by preventing a touch on key area of unpredicted character.

[0033] Further, the virtual keypad controller 112 may turn off a touch detection function with respect to the key area of the unpredicted characters in order to avoid the incorrect input of the user, or may ignore the detected touch operation even if a touch is detected for the key area of the unpredicted characters. Furthermore, the virtual keypad controller 112 may decrease a probability of incorrect inputs of unpredicted characters by separately displaying the predicted characters on an area other than the virtual keypad area.

[0034] In addition, since the user may want to input a word not existing in the word DB 122, the virtual keypad controller 112 is allowed to turn on/off a function for controlling the virtual keypad according to user’s manipulation. For example, when assuming a situation where the user inputs a schedule, the function for controlling the virtual keypad can be turned off throughout time when the schedule is input. Alternatively, the function for controlling the keypad can be turned off only during time when a specific word or character is input while the schedule is input. For example, if the user intends to input a word “patent”, the virtual keypad control function may be turned on until “pate” out of “patent” is input, but after the inputting of “pate”, the keypad control function may be turned off by using a predetermined function key, icon, or menu and then “nt” may be input.

[0035] The storage unit 120 stores data and a variety of programs for overall operations of the portable terminal, and stores the word DB 122 according to the present invention. The word DB 122 includes words of a language for characters constituting the keypad. For example, the word DB 122 may include a DB including English words and a DB including Korean words.

[0036] FIG. 2 is a flowchart illustrating a process of inputting a character in a portable terminal according to an exemplary embodiment of the present invention.

[0037] Referring to FIG. 2, the portable terminal receives a character corresponding to a key area touched by a user in a state where a virtual keypad is displayed on a touch screen in step 201.

[0038] In step 203, the portable terminal searches the word DB 122 to find words corresponding to a current input character or character string, and predicts a next input character on the basis of the found words. For example, as illustrated in FIG. 3, if a character which is input by a current touch is “e” and a current input character string is “pate”, the portable terminal searches the word DB 122 to find words (i.e., patella, patelliform, paten, patency, . . . , pater, etc.) corresponding to the “pate”, and can predict from the found words that any one of “l”, “n”, and “r” can be input next to the word “e”. In addition, as illustrated in FIG. 5, if the current input character is “—” and the current input character string is “트”, the portable terminal searches the word DB 122 to find words corresponding to “트” (i.e., 특가, 특공, . . . , 특허, . . . , 튜실하다, 튜튼하다, 툴, . . . , 톱, 톱바구니, etc.), and can predict that any one of “l”, “n”, “r”, and “o” can be input next to “—” from the found words. Herein, if the portable terminal predicts a specific number (or more) of characters to be input as a next input character, the portable terminal may predict only the specific number (or less) of characters as the next input character by considering a word usage frequency.

[0039] In step 205, the portable terminal reduces an area of keys corresponding to characters other than the predicted characters in a virtual keypad displayed on the touch screen. For example, if “l”, “n”, and “r” are predicted as the next input character in a state where the current input character is the character “e” 401 as illustrated in FIG. 4A, the portable terminal can reduce the key area of the remaining characters other than the character “l” 413, the character “n” 415, and the character “r” 411 in the virtual keypad as illustrated in FIG. 4B. In addition, as illustrated in FIG. 6A, if “l”, “n”, “r”, and “o” are predicted as the next input character in a state that the current input character is a character “—” 601, the portable terminal can reduce a key area of the remaining characters other than characters “l” 611, “n” 613, “r” 615, and “o” 615 predicted as the next input character in the virtual keypad as illustrated in FIG. 6B.

[0040] In step 207, the portable terminal examines whether one of the predicted characters is selected by a user’s touch. When one of the predicted characters is selected, returning to step 201, the portable terminal receives the selected character, and then the subsequent steps are repeated. Of course, after the predicted character is input, the portable terminal restores the reduced key areas to the original size.

[0041] For example, as illustrated in FIG. 3, if “l”, “n”, and “r” are predicted as a next input character in a state where “pate” is input and “n” is input among the predicted characters, then words (e.g., paten, patency, patent, etc.) corresponding to “paten” which has been currently input are searched from the word DB 122 and then “c”, “t”, and a blank character can be predicted as the next input character. Herein, if the character string which has currently been input is a word having one meaning, the portable terminal can predict that the blank character is input as the next input character.

[0042] Otherwise, if one of the predicted characters is not selected, proceeding to step 209, the portable terminal examines whether an event for temporarily canceling or stopping a virtual keypad control function is generated by the user. The

event may occur by an input of a function key predetermined by the user, an icon touch, or menu setting. If the event for temporarily canceling or stopping the virtual keypad control function does not occur, the procedure returns to step 207. Otherwise, if the event occurs, proceeding to step 211, the portable terminal restores the key areas reduced in step 205 and displays a basic virtual keypad. The reason above is to prepare for a case where the user wants to input a word not existing in the word DB 122.

[0043] Thereafter, the portable terminal receives one character selected on the virtual keypad by the user’s touch in step 213, and then returning to step 201, the subsequent steps are repeated.

[0044] According to exemplary embodiments of the present invention, a portable terminal that supports a virtual keypad provides a character input guideline to a user by predicting a character to be input. Therefore, a possibility of incorrectly inputting a character can be decreased, and a character can be easily input even if a user does not recognize a character configuration of the keypad.

[0045] The above-described methods according to the present invention can be implemented in hardware or as software or computer code that can be stored in a recording medium such as a CD ROM, an RAM, a floppy disk, a hard disk, or a magneto-optical disk or downloaded over a network and stored on a non-transitory machine readable medium, so that the methods described herein can be rendered in such software using a general purpose computer, or a special processor or in programmable or dedicated hardware, such as an ASIC or FPGA. As would be understood in the art, the computer, the processor, microprocessor controller or the programmable hardware include memory components, e.g., RAM, ROM, Flash, etc. that may store or receive software or computer code that when accessed and executed by the computer, processor or hardware implement the processing methods described herein. In addition, it would be recognized that when a general purpose computer accesses code for implementing the processing shown herein, the execution of the code transforms the general purpose computer into a special purpose computer for executing the processing shown herein.

[0046] While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A method of inputting a plurality of characters in a portable terminal, the method comprising:
 - displaying a virtual keypad on a screen;
 - inputting at least one character by detecting a user touch;
 - predicting at least one next input character associated with the input character; and
 - selectively adjusting a key area of the at least one predicted next input character in the virtual keypad.
2. The method of claim 1, wherein adjusting the key area of the next input character in the virtual keypad comprises reducing a key area of at least one unpredicted character by a predetermined amount.
3. The method of claim 1, wherein the next input character is predicted based a user’s history in usage frequency of words.

4. The method of claim 1, wherein adjusting the key area of the next input character in the virtual keypad comprises enlarging the key area of the next input character by a predetermined amount.

5. The method of claim 1, wherein adjusting the key area of the next input character in the virtual keypad comprises enlarging the key area of the next input character substantially larger than the key area of at least one unpredicted character.

6. The method of claim 1, wherein adjusting the key area of the next input character in the virtual keypad comprises turning off a touch detection function for the key area of the unpredicted character.

7. The method of claim 1, wherein adjusting the key area of the next input character in the virtual keypad comprises ignoring a detected touch operation upon detecting a touch in the key area of the unpredicted character.

8. The method of claim 1, wherein the next input character is predicted based on words corresponding to the input character among pre-stored words.

9. The method of claim 7, wherein the predicting of the next input character is based on a usage frequency of each of words corresponding to the input character.

10. The method of claim 1, further comprising displaying the next input character on an area other than the virtual keypad area.

11. The method of claim 1, further comprising storing and updating information indicating how frequently a particular word is used.

12. An apparatus for inputting a plurality of characters in a portable terminal, comprising:

- a touch screen for displaying a virtual keypad on a screen; and
- a controller for inputting at least one input character, for predicting at least one next input character associated

with the input character, and for selectively adjusting a key area of the predicted character and a key area of an unpredicted character in the virtual keypad.

13. The apparatus of claim 12, wherein the controller reduces the key area of the unpredicted character by a predetermined amount.

14. The apparatus of claim 12, wherein the controller turns off a touch detection function for the key area of the unpredicted character.

15. The apparatus of claim 12, wherein the controller ignores a detected touch operation for the key area of the unpredicted character.

16. The apparatus of claim 12, further comprising a storage unit for storing a plurality of words, wherein the controller predicts the next input character based on a usage frequency of each of words corresponding to the input character.

17. The apparatus of claim 12, wherein adjusting the key area of the next input character in the virtual keypad comprises enlarging the key area of the next input character by a predetermined amount.

18. The apparatus of claim 12, wherein adjusting the key area of the next input character in the virtual keypad comprises enlarging the key area of the next input character substantially larger than the key area of at least one unpredicted character.

19. The apparatus of claim 12, further the controller further displays the next input character on an area other than the virtual keypad area.

20. The apparatus of claim 12, further the controller further stores and updates information indicating how frequently a particular word is used.

* * * * *



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(54) **CHARACTER-INPUT METHOD AND MEDIUM AND APPARATUS FOR THE SAME**

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(57) **ABSTRACT**

A character-input method is provided. The character-input method includes providing a plurality of objects having a predetermined arrangement, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped.

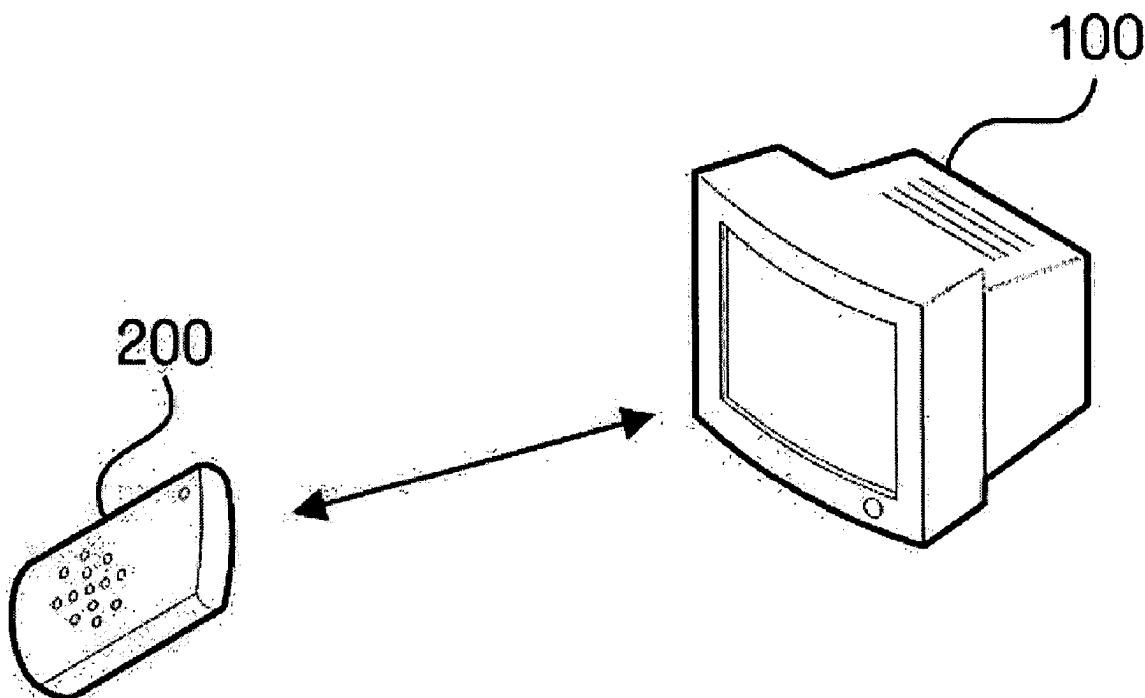


FIG. 1

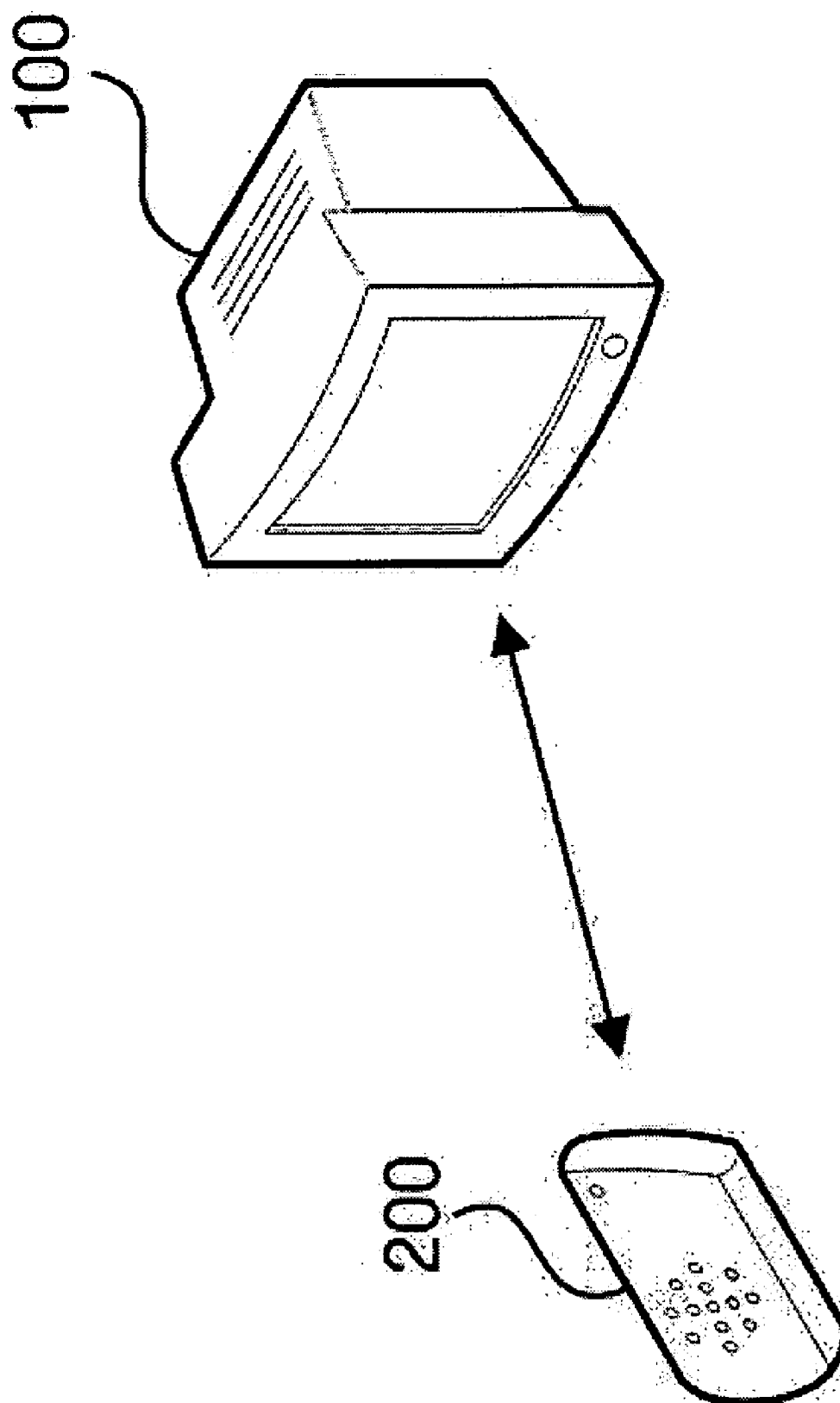


FIG. 2

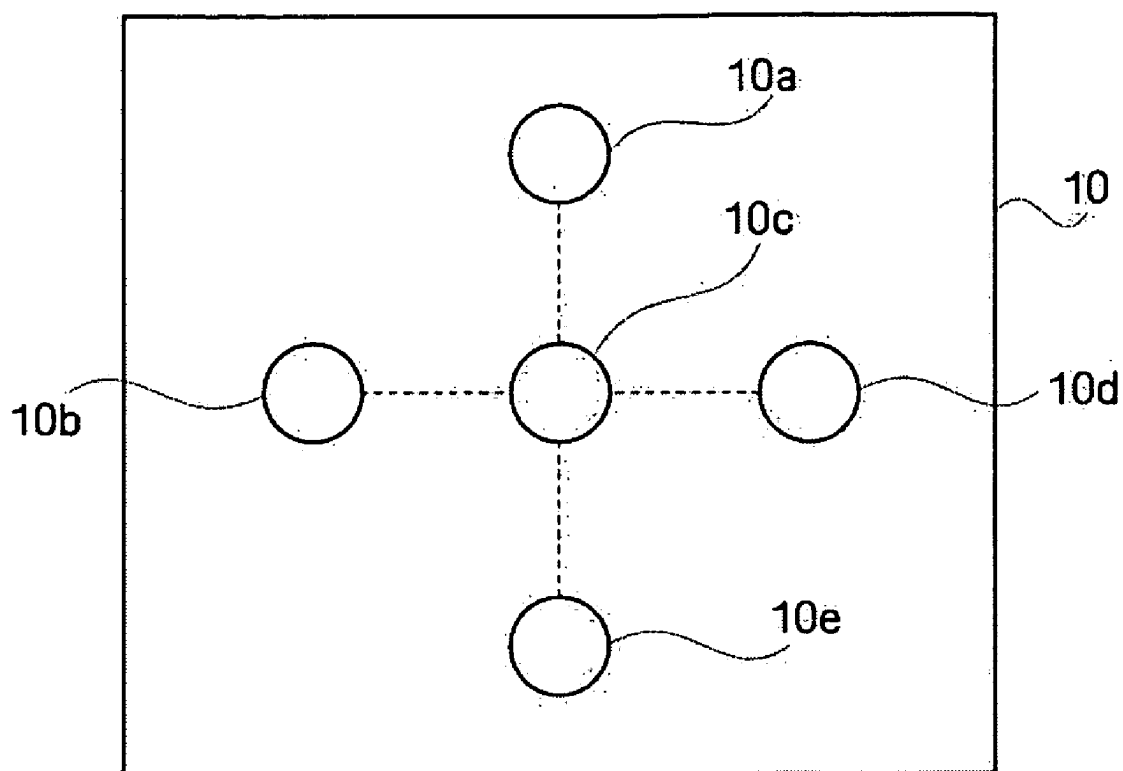
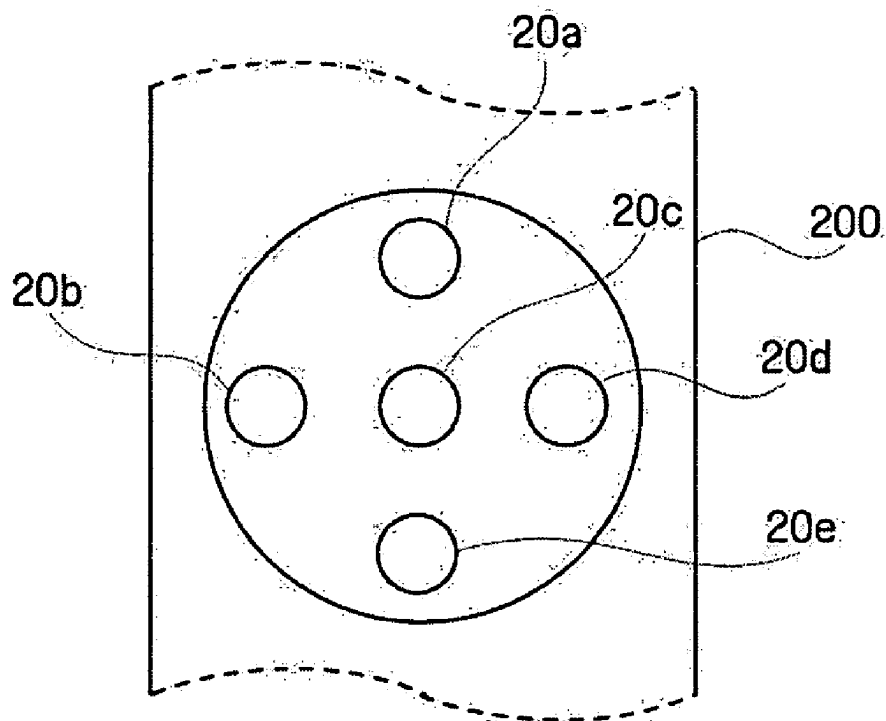


FIG. 3A

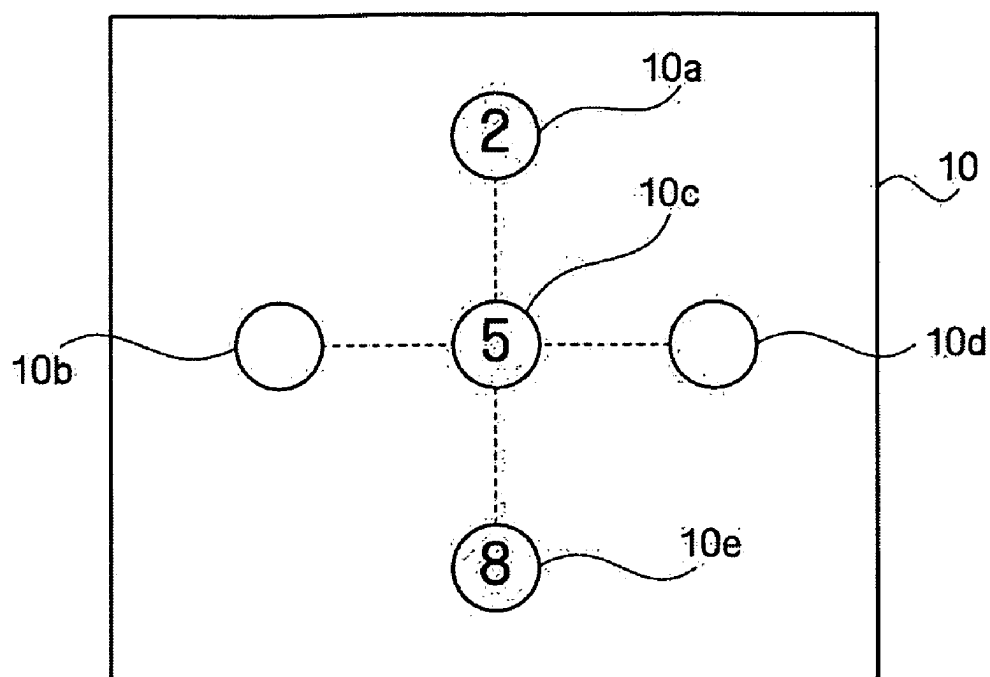


FIG. 3B

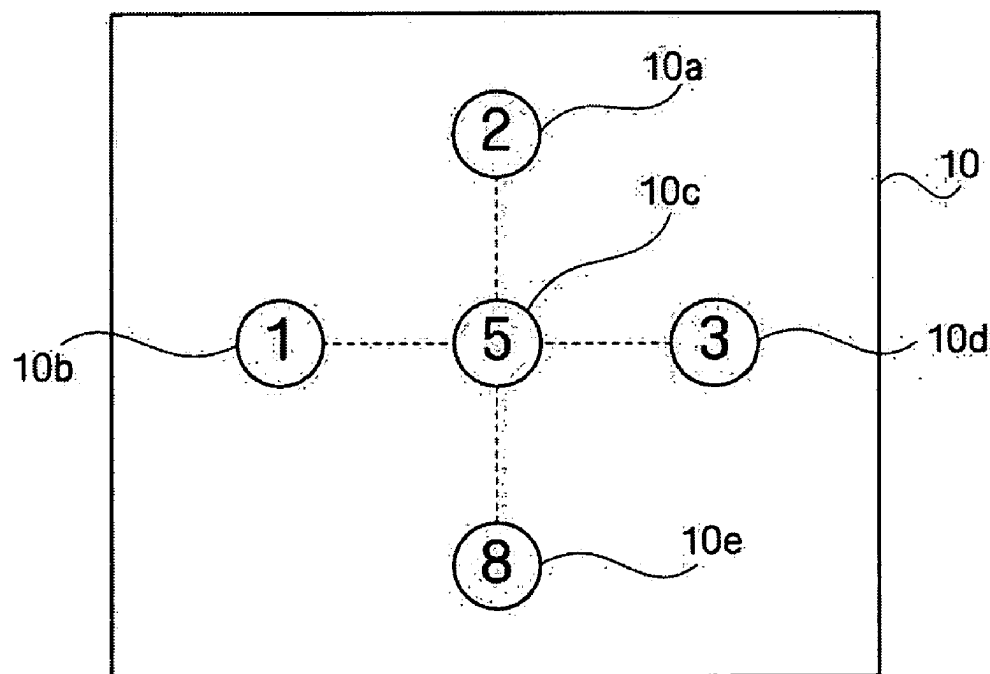


FIG. 3C

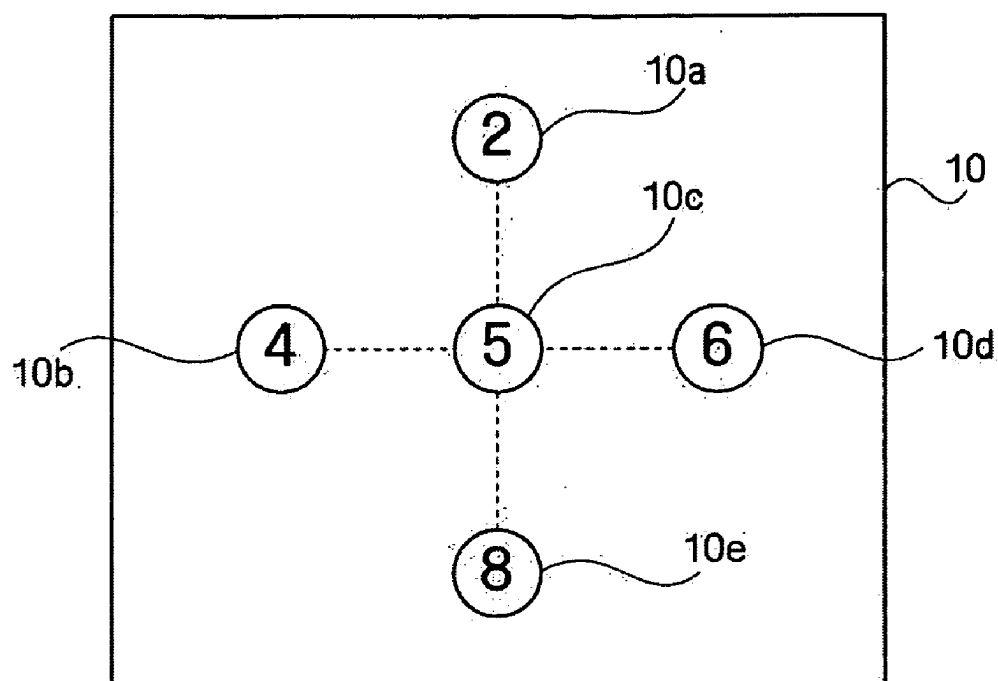


FIG. 3D

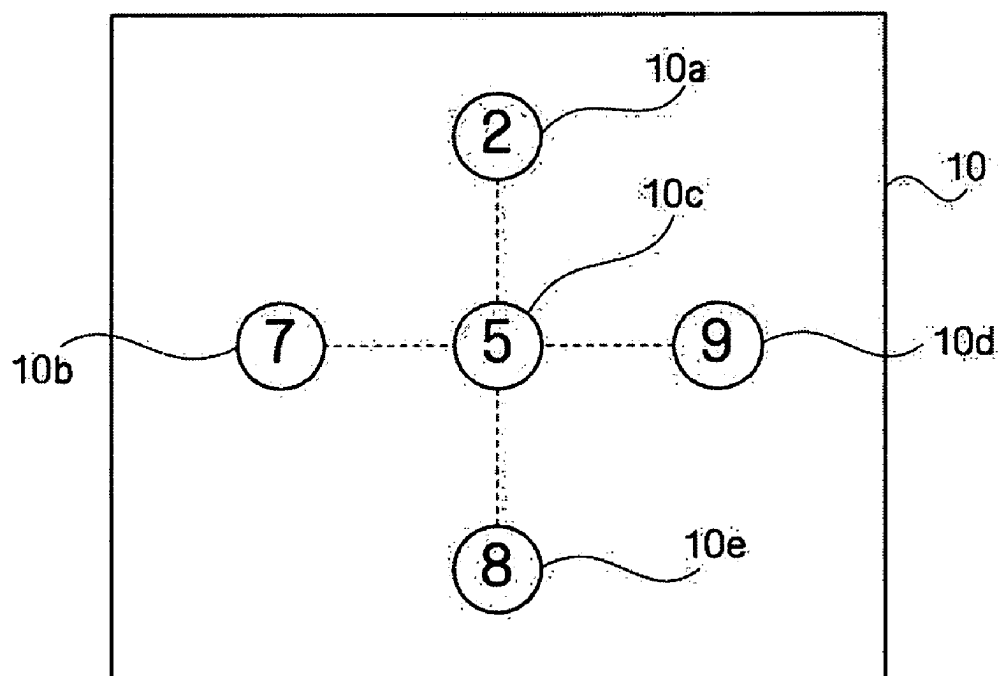


FIG. 4A

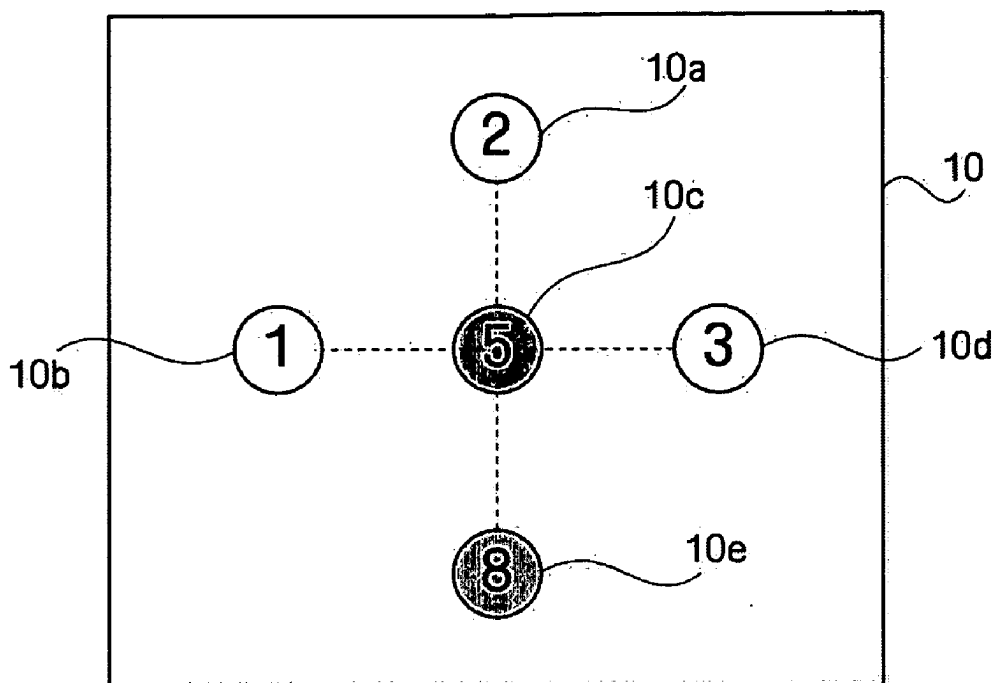


FIG. 4B

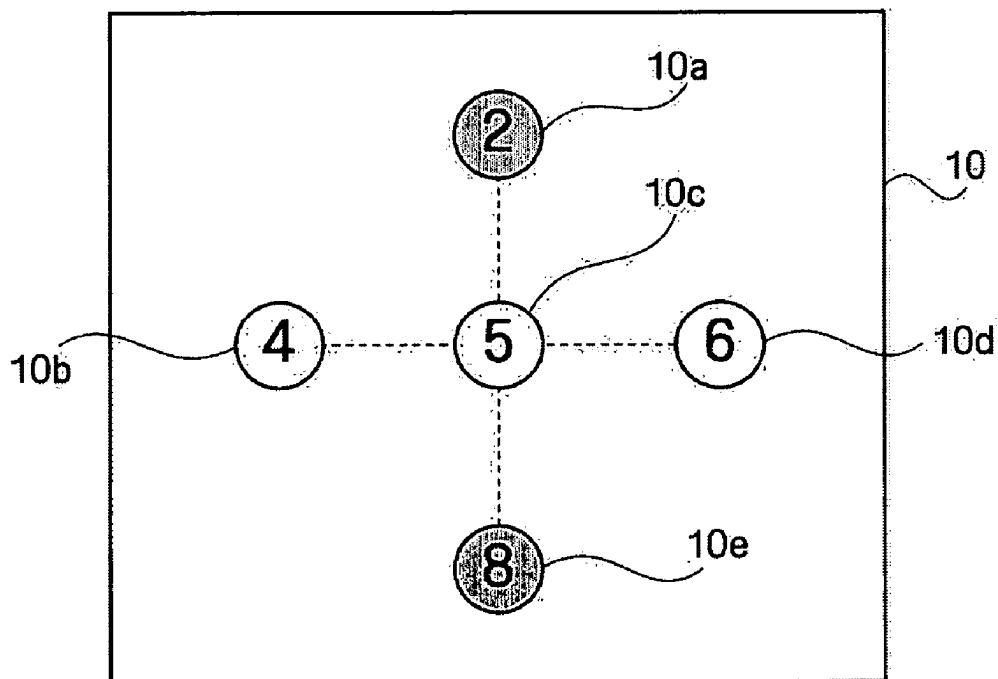


FIG. 4C

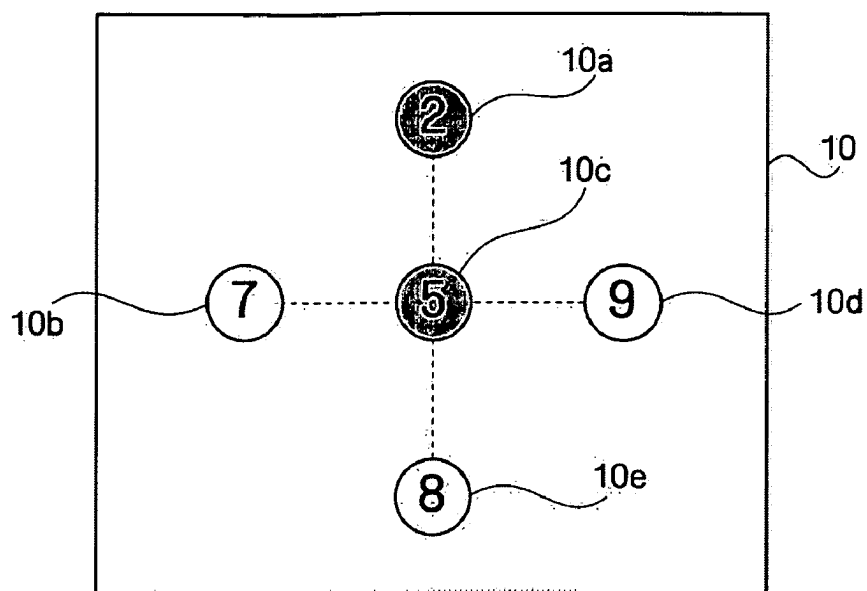


FIG. 5

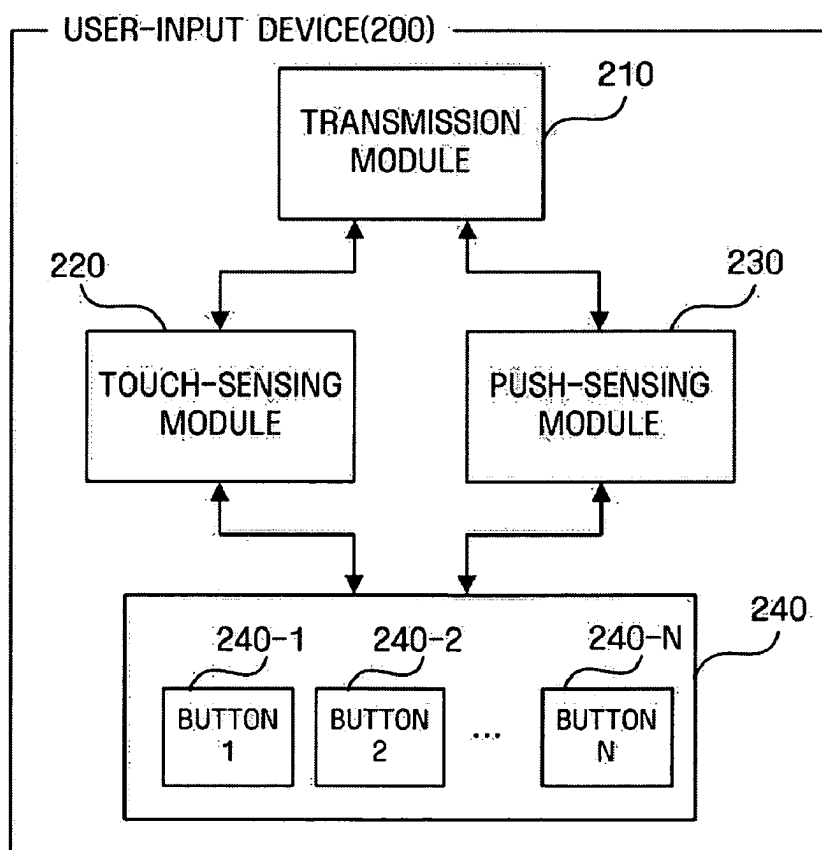


FIG. 6

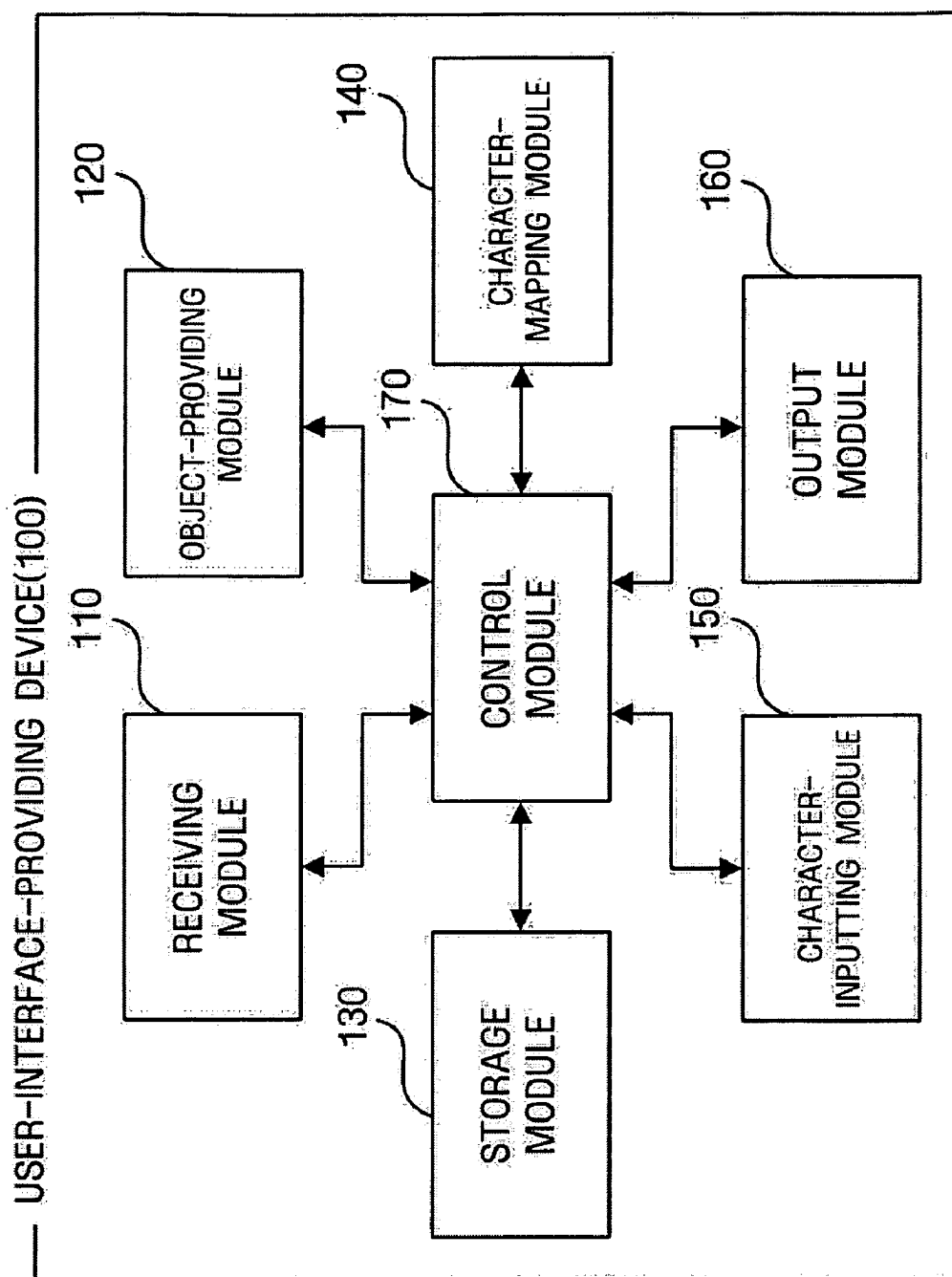


FIG. 7

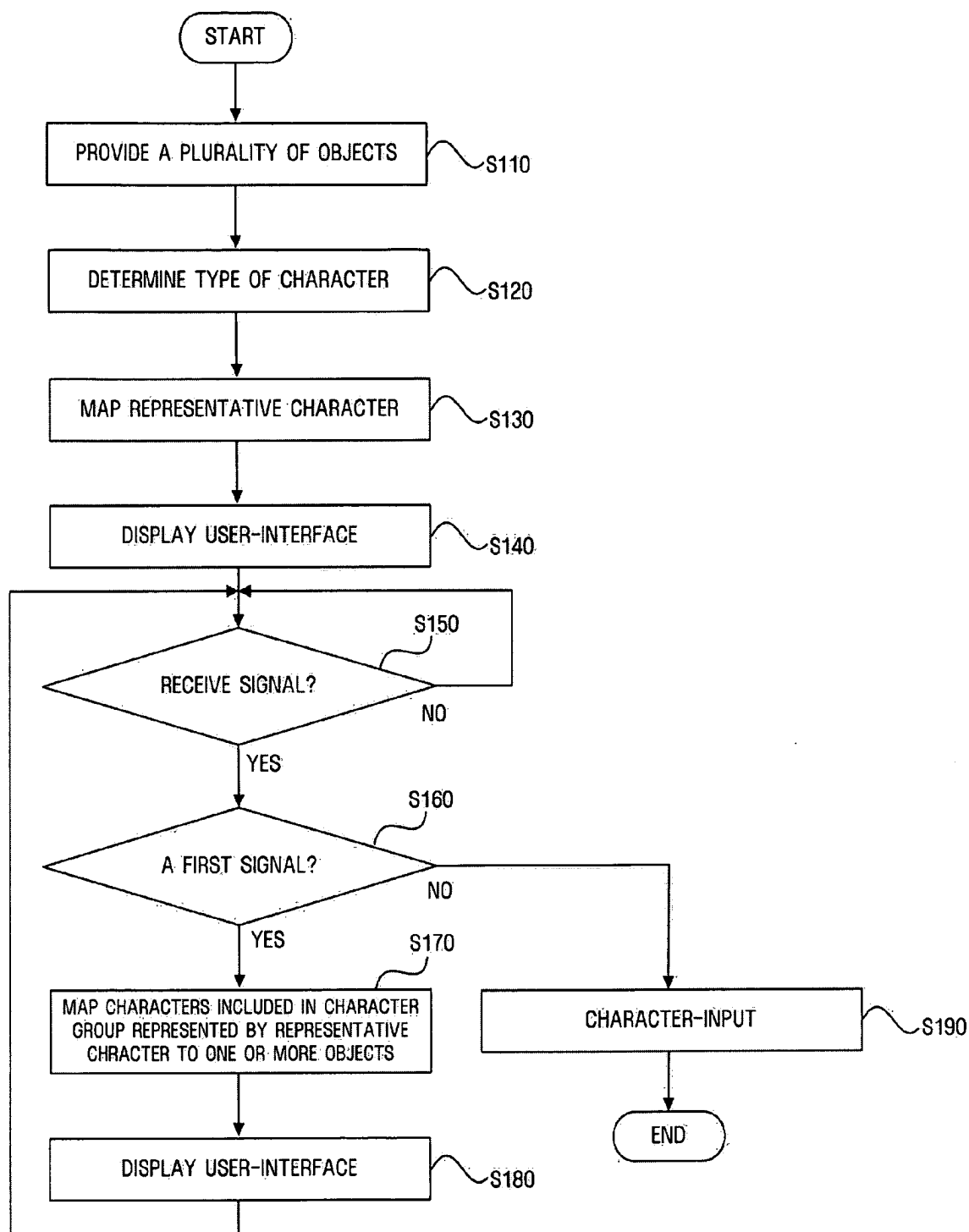


FIG. 8

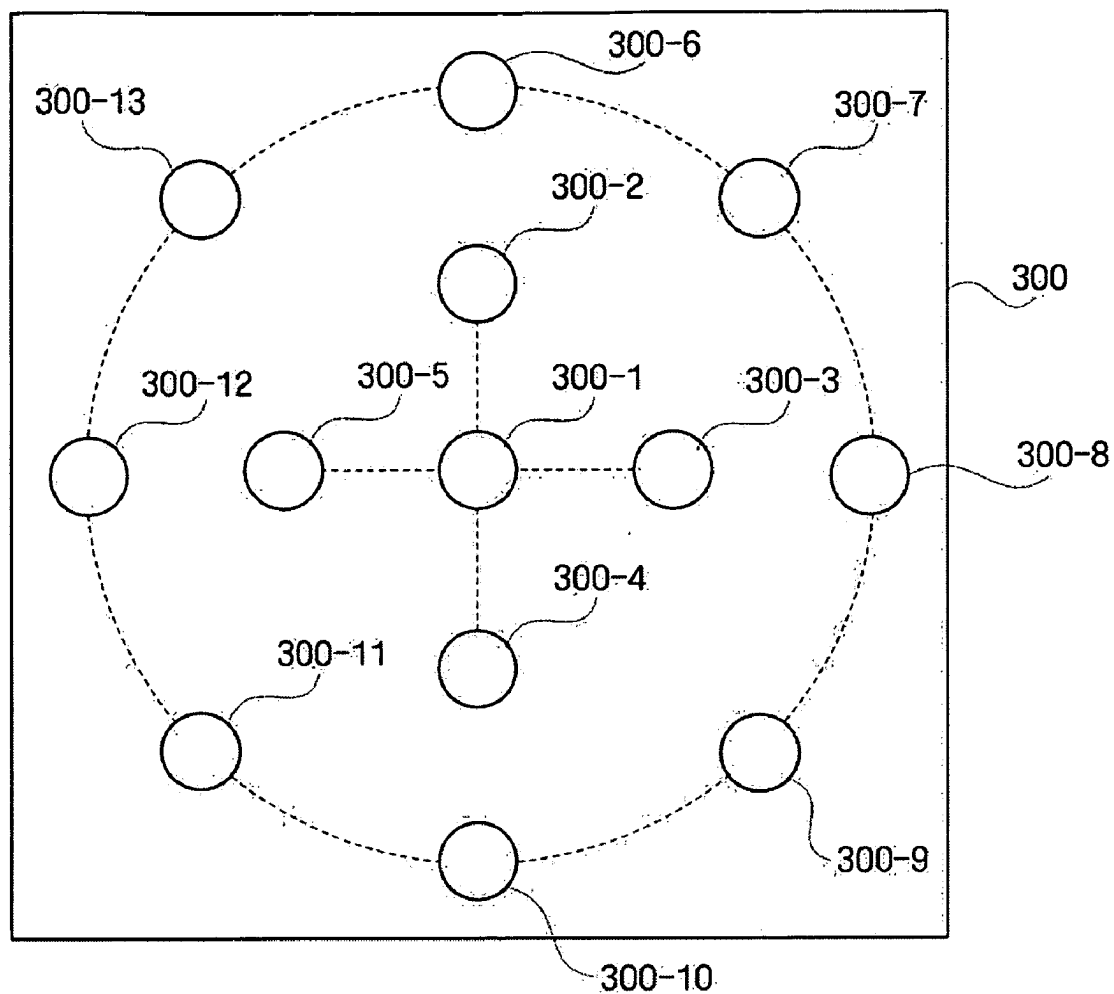
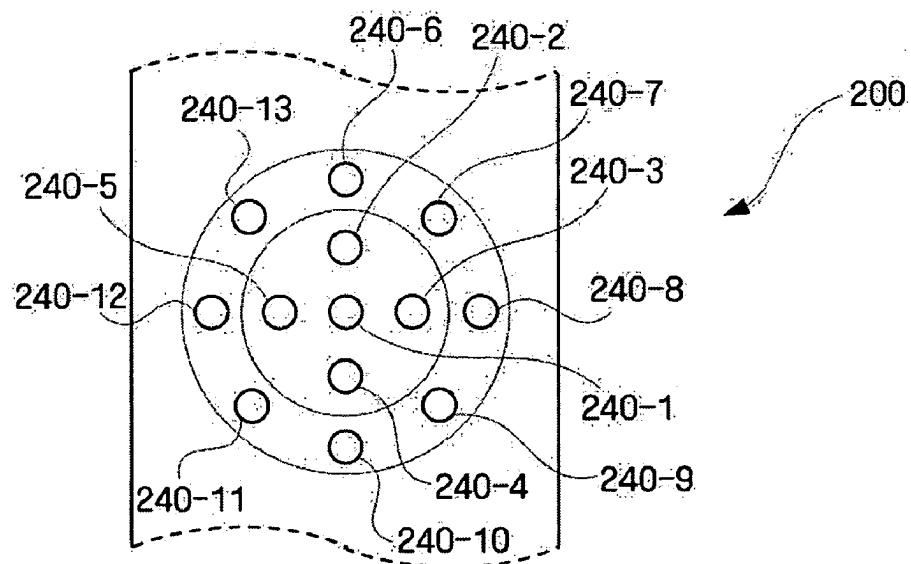


FIG. 9

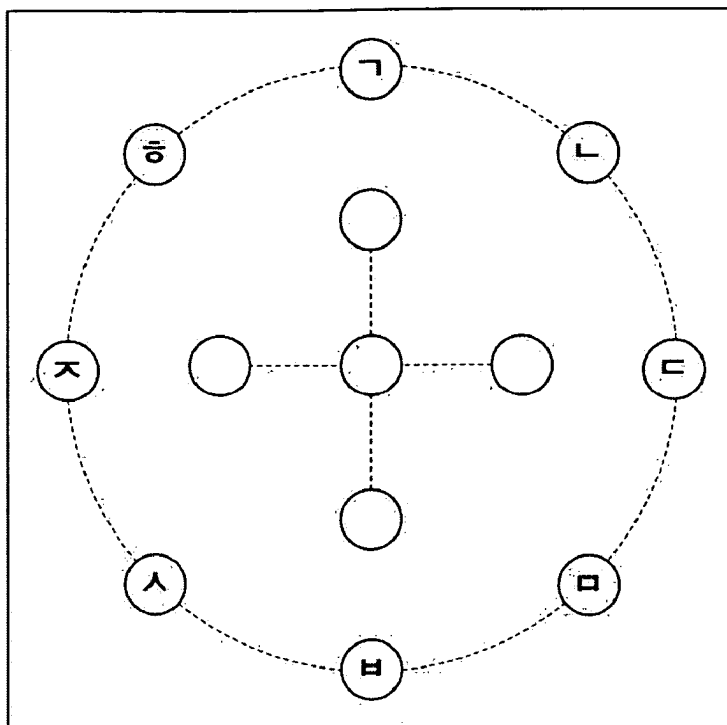


FIG. 10

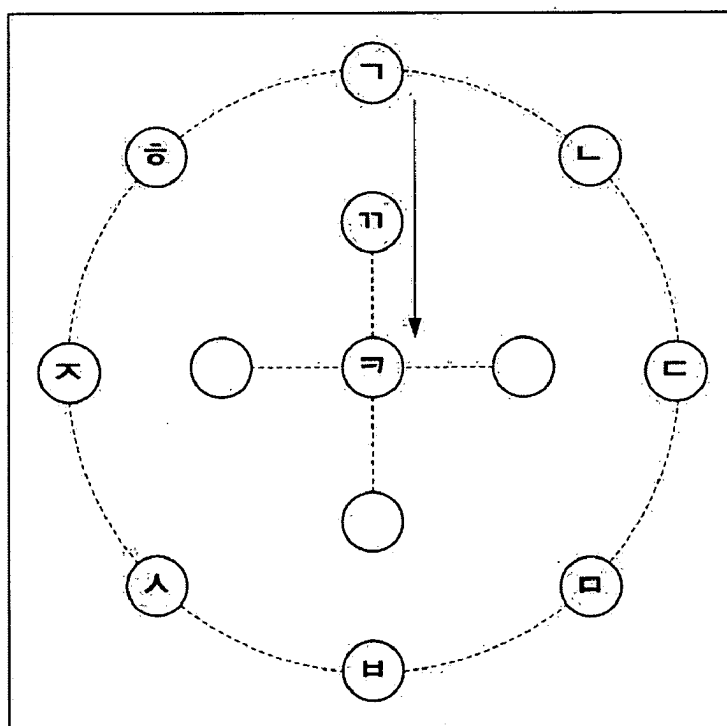


FIG. 11

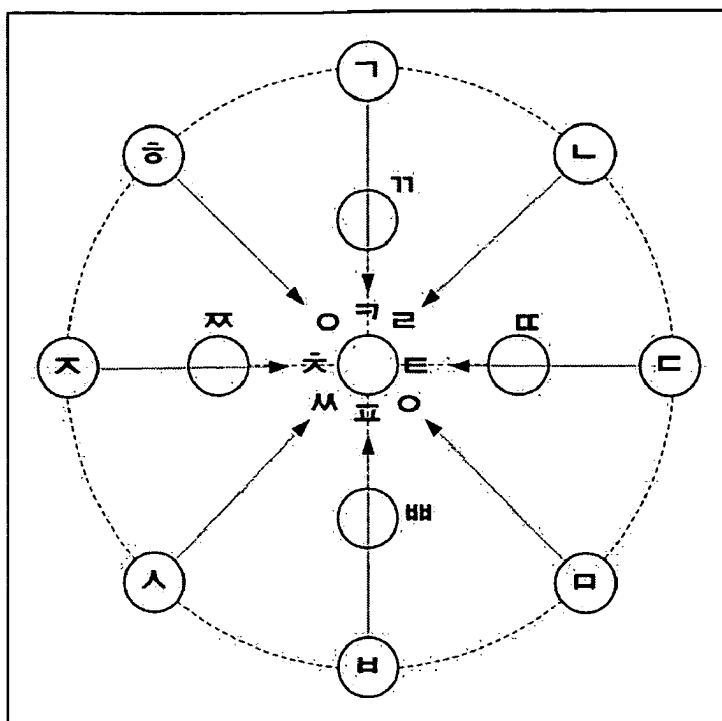


FIG. 12

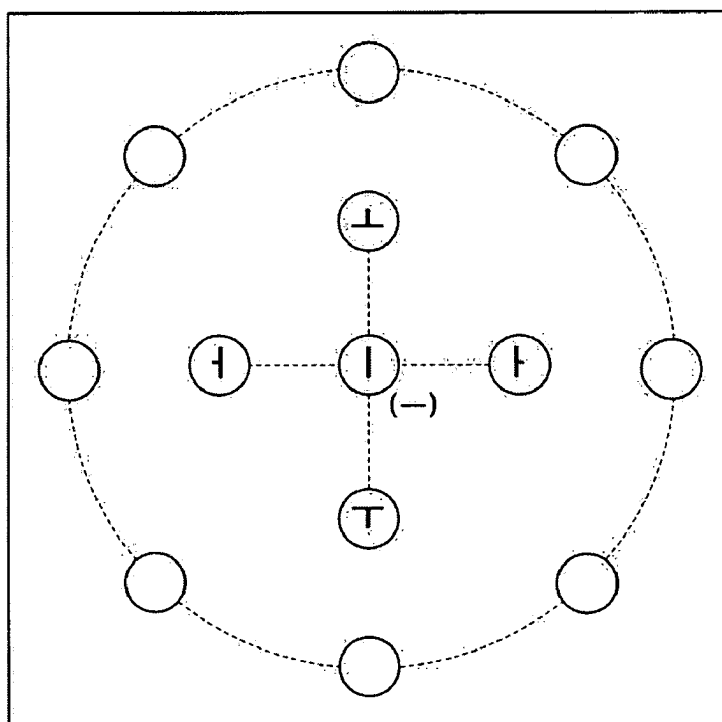


FIG. 13

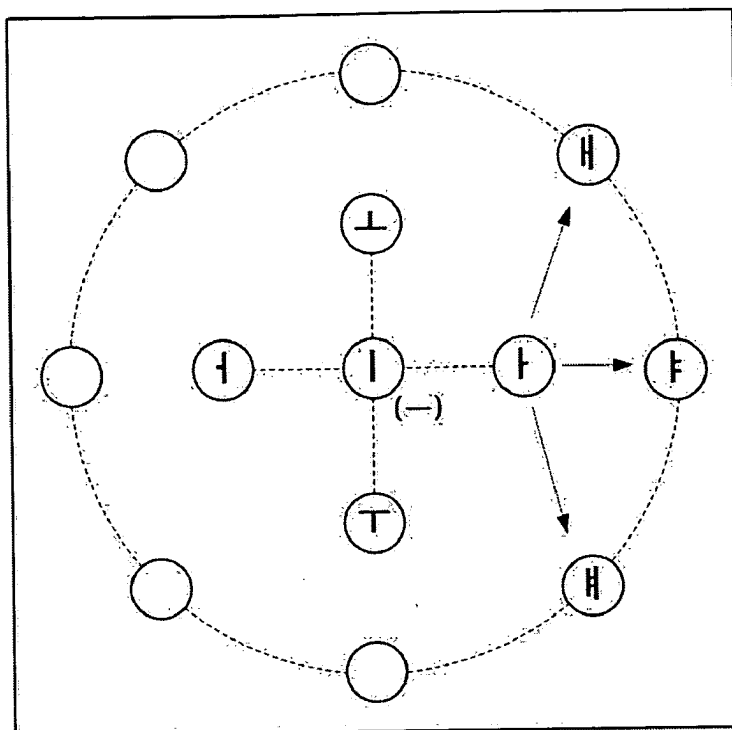


FIG. 14

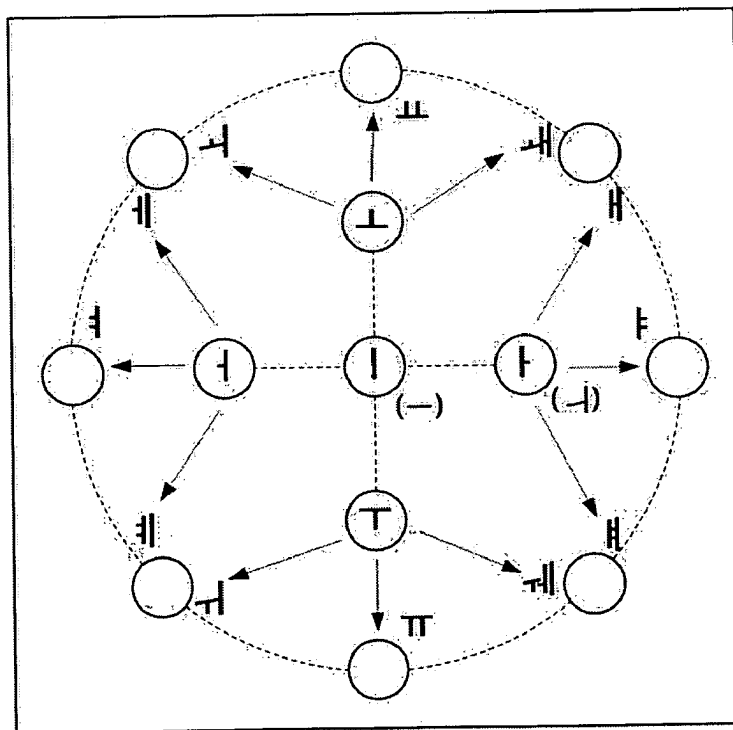


FIG. 15

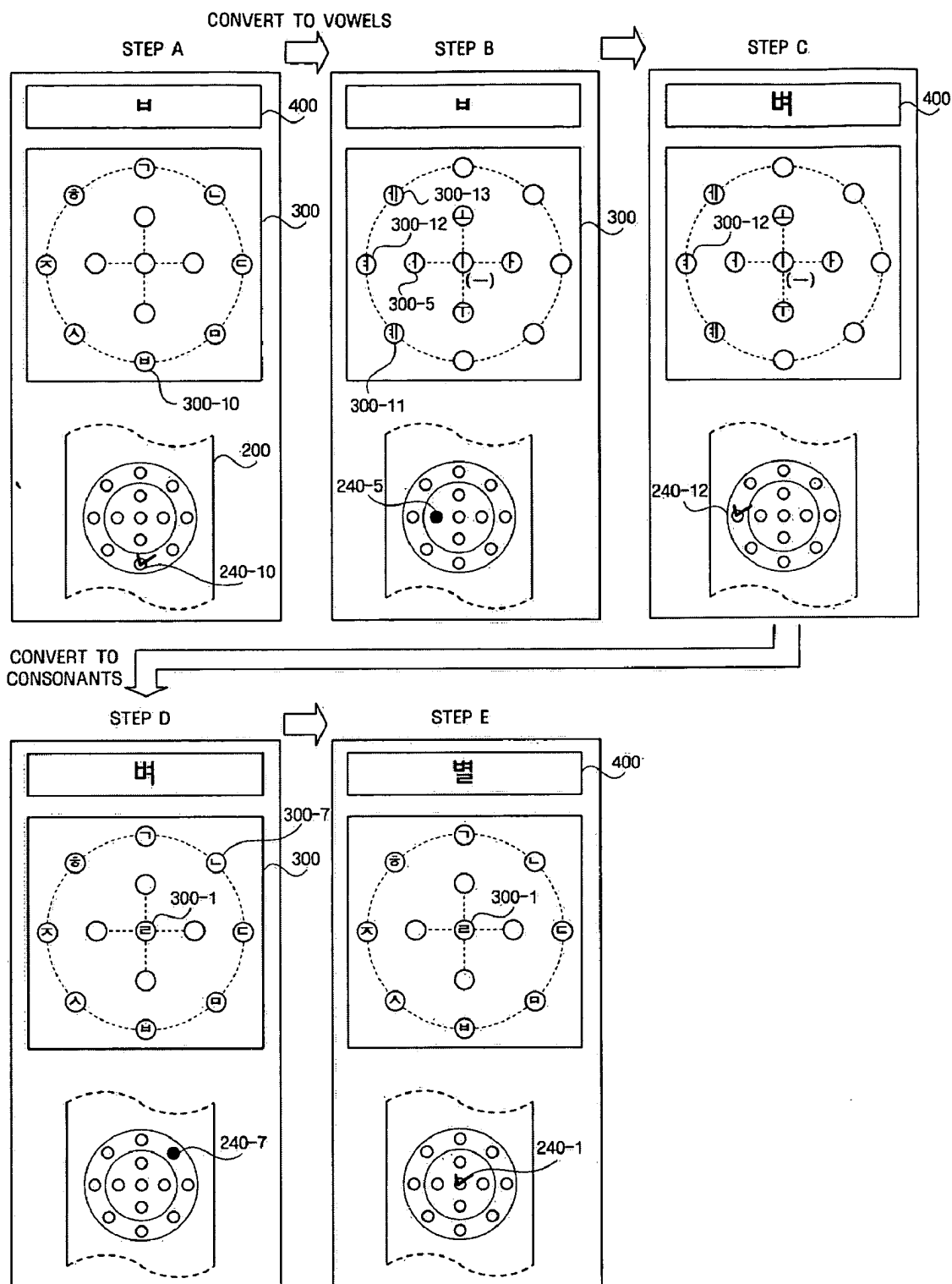


FIG. 16

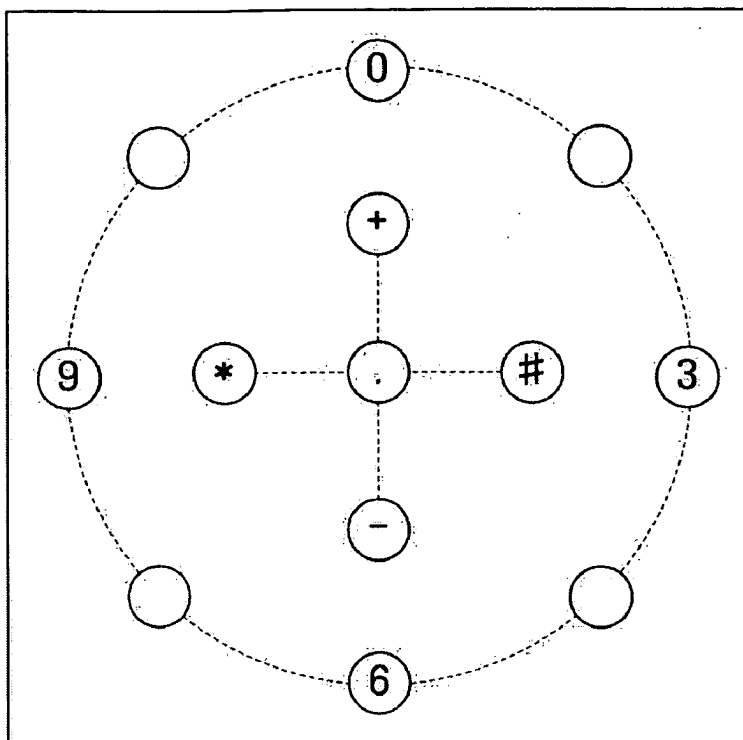


FIG. 17

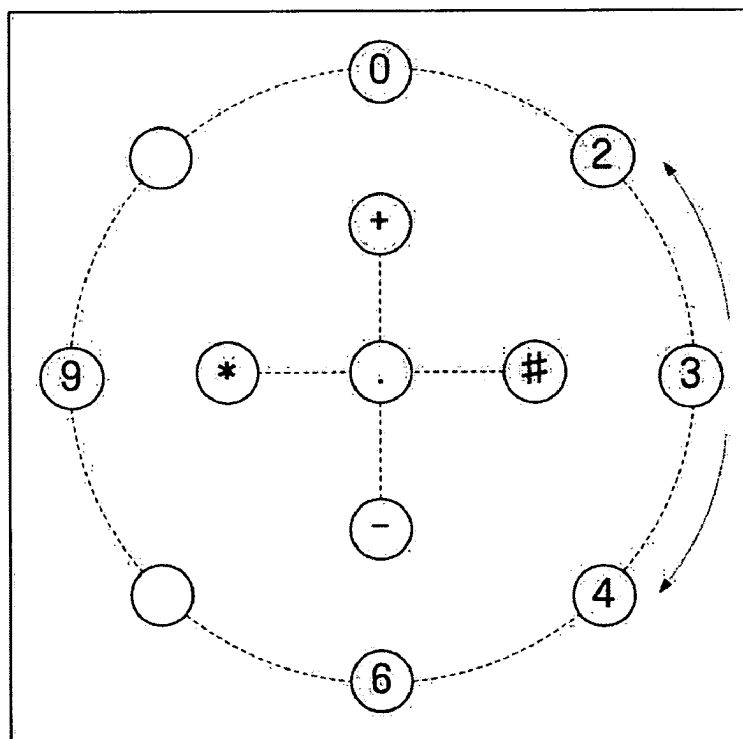


FIG. 18

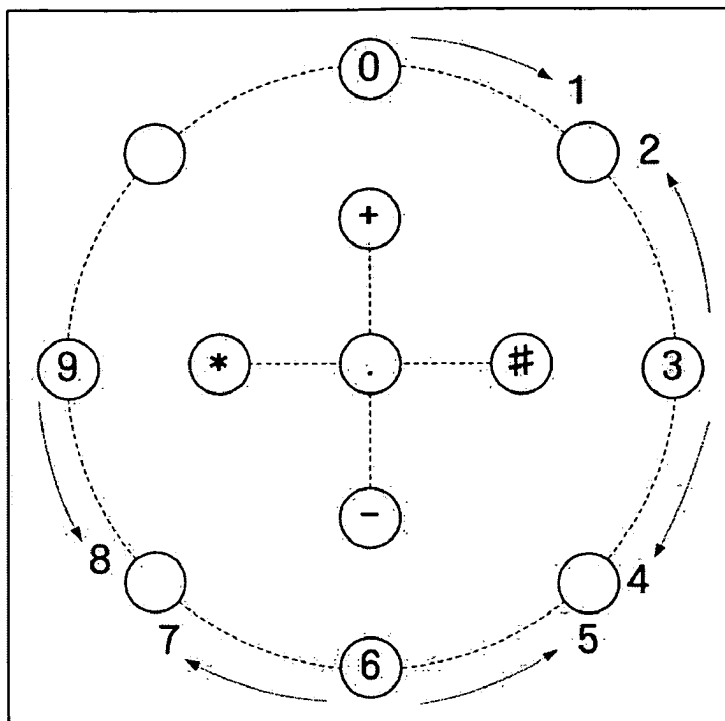


FIG. 19

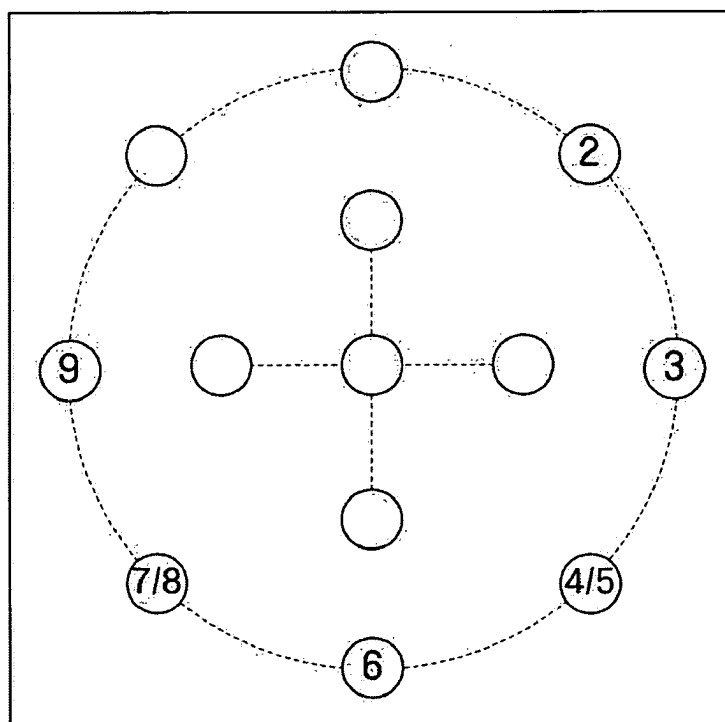
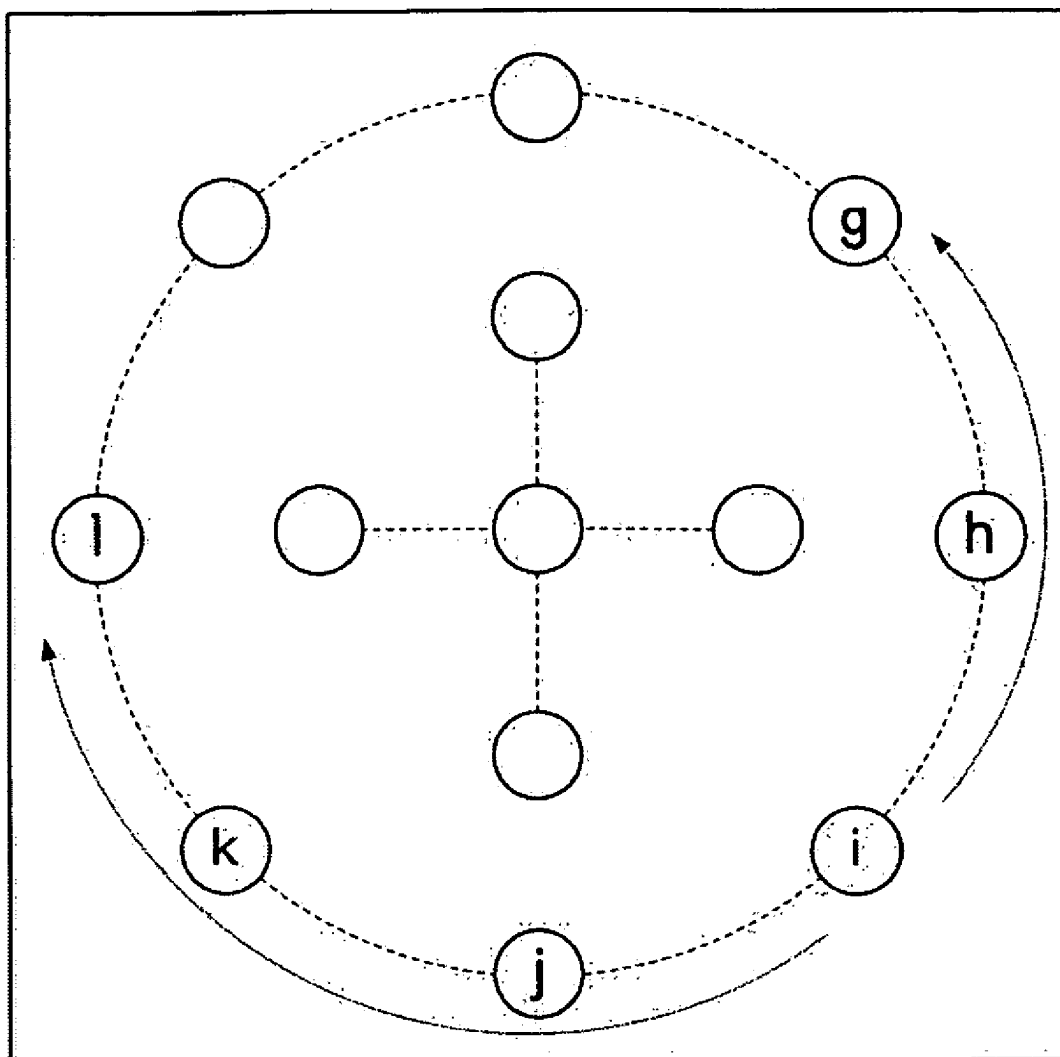


FIG. 20



CHARACTER-INPUT METHOD AND MEDIUM AND APPARATUS FOR THE SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 10-2005-0095087 filed on Oct. 10, 2005, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] Methods, mediums, and apparatuses consistent with the present invention relate to character-input. More particularly, the present invention relates to a character-input method, medium, and an apparatus for improving an intuitive attribute of a button operation.

[0004] 2. Description of the Related Art

[0005] As electronic technologies develop and various home appliances are provided with more functions, the number of buttons on remote controls increases and methods of using the remote controls become complicated. Accordingly, it takes considerable time for users to understand how to use a remote control, and most users use a remote control only to control basic functions of electronic devices (e.g., to adjust the volume or change the channel). In addition, even if a user understands how to control functions of electronic devices through the remote control, if the way of operating the remote control is inconvenient or complicated, the functions of the remote control will not be fully utilized.

[0006] Because such remote controls have been generally provided to remotely control electronic devices, there has not been a high demand for technologies for inputting characters through a remote control.

[0007] However, recently, as multimedia services become diversified and network communication technologies become developed, a demand for technologies for inputting characters to home appliances is increasing. Some examples include inputting a web page address in order to connect to the Internet through a digital TV and/or establishing a two-way service between a broadcasting station and a user in digital broadcasting. In order to satisfy such demands, if buttons for inputting characters are added to a remote control or a plurality of functions are added to one button, as mentioned above, the use of the remote control can become inconvenient or complicated, which is a problem. Therefore, there is a demand for a technology that allows a user to intuitively input characters and that does not restrict a user's sight when using a remote control.

[0008] In the conventional art, an input device has been developed in which each combination of direction buttons on a key pad and different modes represent alphanumeric characters of a unique group, by pushing the direction buttons of the key pad that can be pushed in a plurality of directions and by using the key pad to switch between a first mode and a second mode. This conventional art has reduced the number of buttons. However, there is a possibility that unwanted characters or words can be inputted due to the

complexity of the operations performed using the keypad, and the user cannot confirm characters or words being inputted, which is a problem.

SUMMARY OF THE INVENTION

[0009] Additional aspects, features, and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0010] In an aspect of the present invention, there is provided a method, medium, and an apparatus having a more intuitive button operation for inputting characters.

[0011] According to an aspect of the present invention, there is provided a character-input method, including providing a plurality of objects having a predetermined structure, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped. Here, the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

[0012] According to another aspect of the present invention, there is provided a device for providing a user-interface, including an object-providing module that provides a plurality of objects having a predetermined structure, a character-mapping module that maps characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, a character-input module that inputs characters mapped to objects identified as a second signal among objects to which the characters are mapped if the second signal is received from the user input device, and an output module that outputs a user-interface which includes the plurality of objects provided by the object-providing module, the representative character and the character mapped by the character-mapping module, and characters inputted by the character-input module. Here, representative character is mapped to one or more objects among the plurality of objects having a predetermined structure.

[0013] According to another aspect of the present invention, there is provided a character-input method including mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

[0014] According to another aspect of the present invention, there is provided at least one medium including computer readable instructions implementing methods of the present invention.

[0015] According to another aspect of the present invention, there is provided a user-interface-providing device including a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters; a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] These and/or other aspects, features, and advantages of the invention will become apparent and more readily appreciated from the following description of exemplary embodiments, taken in conjunction with the accompanying drawings of which:

[0017] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0018] FIG. 2 illustrates a button arrangement of a user input device and an object structure of the corresponding user-interface according to an exemplary embodiment of the present invention.

[0019] FIGS. 3A to 3D illustrate an example of a character-mapping in a user-interface according to an exemplary embodiment of the present invention.

[0020] FIGS. 4A to 4C illustrate an example of a character-mapping in a user-interface according to another exemplary embodiment of the present invention.

[0021] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0022] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0023] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0024] FIG. 8 illustrates a button arrangement of a user input device and a user-interface provided by a user-interface-providing device according to an exemplary embodiment of the present invention.

[0025] FIGS. 9 to 11 illustrate a state where consonants of Hangeul (the Korean alphabet) are mapped to an object of a user-interface.

[0026] FIGS. 12 to 14 illustrate a state where vowels of Hangeul are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0027] FIG. 15 illustrates a Hangeul input process according to an exemplary embodiment of the present invention.

[0028] FIGS. 16 to 18 illustrate a state where numbers and symbols are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0029] FIGS. 19 to 20 illustrate a state where letters of the English alphabet are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] Exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0031] Aspects, advantages, and features of the present invention and methods of accomplishing the same may be understood more readily by reference to the following detailed description of exemplary embodiments and the accompanying drawings. The present invention may, however, be embodied in many different forms and should not be construed as being limited to exemplary embodiments set forth herein. Rather, these exemplary embodiments are provided so that this disclosure will be thorough and complete and will fully convey the concept of the invention to those skilled in the art. Like reference numerals refer to like elements throughout the specification.

[0032] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0033] The illustrated character-input system includes a user input device 200 that can be operated by a user and a user-interface-providing device 100 that provides a user-interface for inputting characters as a user operates the user input device.

[0034] Here, the user input device 200 and the user-interface-providing device 100 are controlled by a remote control and signals outputted from the remote control, respectively, and can be implemented as a home appliance (e.g., a TV) including a predetermined display. However, the present invention is not limited to this, and the user-interface-providing device 100 can be implemented as a home appliance (e.g., a set-top box) that can provide a predetermined user-interface to a device including a display according to signals outputted from a remote control even though the user-interface-providing device 100 does not include a display. Furthermore, the device can be implemented as a character-input device such as a mobile phone, a personal digital assistant (PDA), or a notebook computer, by an integration of a user input device 200 and a user-interface-providing device 100.

[0035] The user input device 200 includes a plurality of buttons, and a touch and a push of each button by a user can be sensed. In other words, the user input device 200 can output two signals, which are different from each other, for the same button. Therefore, the user can retrieve or select a character, which the user wants to input, by touching or pushing a button included in the user input device 200.

[0036] The user-interface-providing device 100 provides a user-interface that guides a character-input of a user, and the user-interface includes a plurality of objects. Here, an arrangement of a plurality of objects corresponds to an arrangement of a plurality of buttons included in the user input device 200. For example, as illustrated in FIG. 2, the user input device 200 includes 5 buttons 20a to 20e. If the arrangement of the buttons 20a to 20e is of cross type, a user-interface 10 provided by a user-interface-providing

device **100** has the structure in which the 5 objects **10a** to **10e** are arranged in a cross type. In FIG. 2, each object **10a** to **10e** of a user-interface **10** respectively corresponds to buttons **20a** to **20e** included in the user input device.

[0037] The user-interface-providing device **100** classifies characters in predetermined groups according to predetermined conditions, and maps representative characters of each character group to a part or all the objects of the user-interface.

[0038] A character-input process according to the present invention can be roughly divided into a character-retrieving process and a character-selecting process. First, a user confirms objects, to which a representative character of a character group including a character wanted by a user is mapped in a user-interface, and touches a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a touch of a certain button of the user input device **200**, and maps characters included in a character group represented by a representative character mapped to an object corresponding to a touched button to one or more objects. Here, characters included in the character group can be mapped to an object to which an existing representative character was mapped, or can be mapped to an object to which the representative character was not mapped. Then, the user can confirm an object, to which a character which the user wants to input is mapped. This process is a character-retrieving process.

[0039] After confirming an object to which a character which the user wants to input is mapped, the user can push a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a push of a certain button from the user input device **200** and inputs a character mapped to an object corresponding to a pushed button to a predetermined character-input area. This is a character-selecting process.

[0040] In the above exemplary embodiment, in a character-retrieving process, a button of the user input process **200** was touched, and in a character selecting process, a button of the user input device **200** was pushed. However, this is merely exemplary. Hence, an exemplary embodiment, in which a character is retrieved by pushing a button of the user input device **200** and a character is selected by touching a button of the user input device **200** is also possible.

[0041] Hereinafter, an exemplary embodiment of a character-input process according to the above explanation is explained by referring to FIGS. 3A to 3D. In this example, a user input device **200** having the same button as illustrated in FIG. 2 is used. Therefore, reference numerals used in explaining FIGS. 3A to 3D are same as reference numerals used in FIG. 2, and FIGS. 3A to 3D illustrate only a user-interface **10** provided by the user-interface-providing device **100**. Also, in this example, the user-interface **10** guides the input of numbers 1 to 9.

[0042] First, the user-interface-providing device **100** saves 3 character groups that include 1 to 3, 4 to 6, and 7 to 9. If 2, 5, and 8 are used as representative characters of each group, the user input device **100** can provide the user-interface **10** as illustrated in FIG. 3A. FIG. 3A illustrates a case (example) where a representative character is mapped

to objects **10a**, **10c**, **10e** arranged in a vertical direction among 5 objects **10a** to **10e**. However, the representative character can also be mapped to another object.

[0043] If a user touches a first button **20a** of the user input device **200**, the user-interface-providing device **100** can map characters 1, 2, 3 included in the same character group to a representative character 2 mapped to a first object **10a** corresponding to a first button **20a**. In this example, the user-interface-providing device **100** can also map characters 1 and 3 to a second object **10b** and a fourth object **10d**, to which representative characters have not been mapped, as illustrated in FIG. 3B, and the character 2 can be kept mapped to the first object **10a**. However, depending on the exemplary embodiment, the user-interface-providing device **100** can map characters 1, 2, 3 to objects **10a**, **10c** and **10e**, to which a representative character was mapped.

[0044] Similarly, if a user touches a third button **20c** of a user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters 4, 5, 6 included in a character group represented by a representative character 5 mapped to a third object **10c** corresponding to a third button **20c**, as illustrated in FIG. 3C. Also, if a user touches a fifth button **20e** of the user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters 7, 8, 9 included in a character group represented by a representative character 8 mapped to a fifth object **10e** corresponding to a fifth button **20e**, as illustrated in FIG. 3D. In this way, a number, which the user wants to input, can be retrieved.

[0045] According to another embodiment of the present invention, if characters included in a character group represented by a representative character are mapped to objects, representative characters having been mapped to the predetermined object can improve the user-interface for retrieving characters by lowering visual effects or highlighting characters currently being retrieved. For example, when characters included in a character group represented by a representative character mapped to a button touched by a user as illustrated in FIGS. 4A to 4C, the representative characters can be shadowed.

[0046] Also, for example, if a user wants to input the number 3, after a button **20a** is touched that corresponds to an object **10a** to which the number 2, which is a representative character of a character group where the number 3 is included, is mapped among buttons included in the user input device **200**, when a user-interface as illustrated in FIG. 3B is displayed, a button **20d** corresponding to an object **10d** to which the number 3 is mapped can be pushed. At this time, the user-interface-providing device **100** can input the number 3 to a predetermined character-input area (not shown). If a character that a user wants to input is a representative character, the user can input the character without a retrieving process by pushing a button corresponding to an object to which the representative character is mapped.

[0047] Hereinafter, the user-interface-providing device **100** and the user input device **200** according to an exemplary embodiment of the present invention will be explained in more detail.

[0048] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0049] The illustrated user input device 200 includes a transmission module 210, a touch-sensing module 220, a push-sensing module 230, and a button module 240.

[0050] The button module 240 includes a plurality of buttons 240-1 to 240-N. The number and the arrangement of buttons can vary according to each exemplary embodiment. The button arrangement according to the exemplary embodiment of the present invention will be explained later by referring to FIG. 8. Meanwhile, the button module 240 can further include additional buttons in addition to the buttons having the arrangement corresponding to the arrangement of objects in the user-interface provided by the user-interface-providing device 100. The additional buttons can be used when the user-interface-providing device 200 requests execution of certain functions.

[0051] The touch-sensing module 220 senses a touch of a user on each button included in the button module 240. The touch-sensing module can be implemented through various forms of touch sensors. For example, a technology sensing a touch of a user in a touch pad or a touch screen can be applied to implement the touch-sensing module 220. According to an exemplary embodiment, the touch-sensing module 220 can include a plurality of touch sensors, and each touch sensor is installed on the surface of a button and can sense a touch by the user.

[0052] The push-sensing module 230 senses a push of a user on each button included in the button module 240. The push-sensing module can be implemented through various forms of pressure sensors. For example, a structure of a key pad used for inputting keys in a keyboard a mobile phone, a personal digital assistant, etc. can be applied to implement the push-sensing module 230. According to an exemplary embodiment, the push-sensing module 230 can include a plurality of pressure sensors, and each sensor is installed on the surface of a button and can sense a pressure if the user pushes a button with more than a certain amount of pressure.

[0053] Further, in another example, the push-sensing module 230 and the touch-sensing module 220 can also be implemented as an integrated module. In this case, the integrated module of the push-sensing module 230 and the touch-sensing module 220 can recognize a case when the amount of pressure applied to the button by a user is less than a predetermined critical value as a touch, and can recognize a case when the amount of pressure applied to the button by the user is a predetermined critical value or more.

[0054] The transmission module 210 outputs a predetermined signal corresponding to a push or a touch of a button if the push-sensing module 230 or the touch-sensing module 220 senses the push or the touch of the button. The transmission module 210 can save a signal corresponding to a touch and a push for each button in advance for the output, and based on the signal, a signal corresponding to the result sensed by the push-sensing module 230 and the touch-sensing module 220 can be outputted.

[0055] If the user input device 200 is, e.g., a remote control which is separated from the user-interface-providing device 100, a signal outputted by the transmission module 210 can be a wireless signal such as infrared rays, radio frequency (RF) signals, and others. However if the user input device 200 is connected via a wire to the user-interface-providing device 100 or exists as a single charac-

ter-input device by a mutual integration, the signal outputted by the transmission module 210 can be an electrical signal that can be outputted through a predetermined wire medium.

[0056] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0057] The illustrated user-interface-providing device 100 includes a receiving module 110, an object-providing module 120, a storage module 130, a character-mapping module 140, a character-inputting module 150, an output module 160, and a control module 170.

[0058] The receiving module 110 receives a signal outputted from the user input device 200. The receiving module 110 can use a method corresponding to a signal transmission method used by the transmission module 210 of the user input device 200.

[0059] The object-providing module 120 provides a plurality of objects included in a user-interface. In the present invention, an object can be implemented not only as a two-dimensional figure such as a circle, a quadrangle and others but also as a figure of various forms such as a three-dimensional icon. The arrangement of objects provided by the object-providing module 120 corresponds to the arrangement of buttons 240-1 to 240-N included in the user input device 200. An exemplary embodiment of the arrangement of objects provided by the object-providing module 120 will be explained later by referring to FIG. 8.

[0060] The storage module 130 stores one or more character groups. Each character group includes one or more characters, and a representative character of each character group is selected for each character group. In the present invention, a character may include one or more consonants and vowels of Hangeul (the Korean alphabet), the English alphabets, numbers, symbols and marks indicating other languages. A character group and a representative character can be set by the manufacturer when the user-interface-providing device 100 is manufactured. Also, after the production of the user-interface-providing device 100, a character group and a representative character can be saved or updated through software. A character constituting a character group saved by the storage module 130 or a representative character of the character group can be selected in various ways. The character group and the representative character of each character group according to an exemplary embodiment of the present invention will be explained later with reference to FIG. 8 and Table 1 to Table 4.

[0061] The character-mapping module 140 maps a representative character of each character group saved in the storage module 130 to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, which representative character will be mapped to which object will be implemented in various ways according to exemplary embodiments. If a signal corresponding to a touch for a certain button from the user input device 200 is received, the character-mapping module 140 can map characters included in the character group represented by the representative character mapped to the object corresponding to the touched button to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, for the mapping of characters included in the character group, objects to which representative charac-

ters have been mapped can be used, or objects to which representative characters have not been mapped can be used. The representative character and the mapping of the character according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 9 to 19.

[0062] The character-input module 150 inputs characters mapped to the object corresponding to the pushed button when a signal corresponding to the push of a certain button is received from the user input device 200. For the input, the character-input module 150 can provide a predetermined character-input area, and characters within the character-input area can be inputted.

[0063] The output module 160 displays a plurality of objects provided by the object-providing module 120, a character mapped to an object by the character-mapping module 140, and a user-interface that includes a character-input area provided by the character-input module 150. At this time, characters mapped to the object can be directly displayed on the object as illustrated in FIG. 3, or they can be displayed in an area adjacent to the object. In order to display the user-interface, the output module 160 can be implemented by a display such as a cathode ray tube (CRT) display, a liquid crystal display (LCD), a thin film transistor (TFT) display, an organic electroluminescent (EL) display, and others. The output module 160 can also provide a user-interface to a predetermined display device existing separately from the user-interface-providing device 100.

[0064] The control module 170 controls operation of each module 110 to 160 constituting the user-interface-providing device 100. Also, the control module analyzes a signal received from the user input device 200 by the receiving module 110. Therefore, the control module can determine which button was operated by a user among buttons included in the user input device 200 and whether the operation method is a touch or a push.

[0065] A "module" in FIGS. 5 and 6 can refer to a software element or a hardware element such as a Field Programmable Gate Array (FPGA) or Application Specific Integrated Circuit (ASIC). The modules can reside in an addressable storage media or can reproduce one or more processors. Modules include software elements, object-oriented software elements, class elements, task elements, processes, functions, attributes, procedures, sub-routines, segments of program codes, drivers, firmware, microcode, circuits, data, databases, data structures, tables, arrays, and variables. The functions provided in the elements and modules can be combined into fewer elements and modules, or can be divided into additional elements and modules.

[0066] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0067] First, an object-oriented module provides a plurality of objects having a predetermined arrangement (S110). Here the arrangement of the plurality of objects preferably has the arrangements that of the plurality of buttons included in the user input device 200.

[0068] Then, the control module determines the type of a character to be mapped to an object provided by the object-providing module 120 among marks indicating consonants of Hangeul, vowels of Hangeul, numbers, symbols, the English alphabet, and other languages (S120). Here, the

determination of the type of character can be executed in various cases such as a case a signal mapped to a function button (not shown) included in the user input device 200 is received from the user input device 200, a case a user selects a certain character type by using the user input device 200 if a type of a character is presented through a predetermined menu screen provided in advance, and other cases.

[0069] Here, the character-mapping module 140 retrieves character groups consisting of characters of the type decided by the control module 170, and maps representative characters of the retrieved character group to one or more objects among a plurality of objects provided by the object-providing module 120 (S130).

[0070] Then, the output module 160 displays a user-interface that includes objects provided by the object-providing module 120 and characters mapped by the character-mapping module 140 (S140). Here, the representative character can be displayed on the object or can be displayed in an area adjacent to the object in parallel with the object. At the same time, the output module 160 can display a predetermined character-input area. The user retrieves and selects a character that he wants to input by operating the user input device 200 while confirming the user-interface.

[0071] If the receiving module 110 receives a predetermined signal from the user input device 200 (S150), the control module 170 determines whether the received signal is a first signal (S160). Here, the first signal is a signal signifying a character-retrieving request and a signal which is outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 of the user input device 200 senses a touch or a push of a user on a predetermined button included in the button module 240.

[0072] If the received signal is the first signal, the character-mapping module 140 retrieves a character group represented by a representative character mapped to an object identified through the first signal, and maps characters included in the retrieved character group to one or more objects among objects provided by the object-providing module 120 (S170). At this time, characters included in the retrieved character group can be mapped to an object to which a representative object was mapped in step S130 or can be mapped to an object to which the representative character was not mapped.

[0073] Then, the output module 160 displays a user-interface S180 including an object to which a character is mapped. Here, each character can be displayed on the object or can be displayed on an area adjacent to the object in parallel with the object. Also, the output module 160 can be displayed so that characters mapped in step S170 can be more highlighted than characters mapped in step S130 by regulating the color tone, size, brightness and others.

[0074] As a result of step S160, if the received signal is not the first signal but the second signal, the character-input module 150 inputs a predetermined character mapped to an object identified as the second signal (S190). Here, the second signal is a signal signifying a character-selecting request and a signal outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 senses a touch or a push by the user on a predetermined button included in the button module 240. As

an exemplary embodiment, if the touch-sensing module 220 of the user input device 200 senses a touch by a user on a predetermined button included in the button module 240, the first signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the second signal can be outputted. As another exemplary embodiment, if the touch-sensing module 220 senses a touch of a user on a predetermined button included in the button module 240, the second signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the first signal can be outputted.

[0075] In addition, a character-inputted in step S190 can be a representative character mapped in step S130, or a character included in a character group represented by a predetermined representative group mapped in step S170.

[0076] Depending on the exemplary embodiment, steps S140 and S180 in FIG. 7 can be steps where the output module 160 outputs a user-interface to a predetermined display device.

[0077] Hereinafter, a user-interface and the character-input method according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 8 to 19. However, the explanation below is an exemplary embodiment, and does not limit the present invention.

[0078] FIG. 8 illustrates a button arrangement of a user input device 200 and a user-interface 300 provided by a user-interface-providing device 100 according to an exemplary embodiment of the present invention.

[0079] As illustrated, the button arrangement of the user input device 200 is arranged in a way that 5 buttons 240-1 to 240-5 are of cross-form, and 8 buttons 240-6 to 240-13 arranged at regular intervals on a circumference containing buttons 240-1 to 240-5 arranged in cross-form. Further, 5 objects 300-1 to 300-5 are arranged in cross form on a user-interface 300, and 8 objects 300-6 to 300-13 are arranged at regular intervals on a circumference containing objects 300-1 to 300-5 arranged in cross form. Four objects 300-6, 300-8, 300-10, 300-12 among 8 objects 300-6 to 300-13 are preferably positioned on an extended line of a cross form formed by 5 objects 300-1 to 300-5 arranged inside the circumference.

[0080] A predetermined character can be inputted through the user input device 200 and the user-interface 300, and hereinafter, an exemplary embodiment for inputting Hangeul consonants and vowels, numbers, symbols and English letters will be explained. Also, cases where a character is retrieved when a user touches a button included in the user input device 200, and a character to be inputted is selected when the user pushes the button, will be explained. However, this is merely exemplary, and it is possible that when the user pushes the button included on the user input device 200, a character is retrieved, and when the user touches the button, the character is selected. For reference, identification marks for objects are omitted in FIGS. 9 to 14 and FIGS. 15 to 19, but the identification mark of each object mentioned in the below explanation can be understood by referring to FIG. 8.

Consonants of Hangeul

[0081] Consonants of Hangeul can be roughly divided into Pyung sounds (e.g., ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅇ, ㅈ, ㅊ; ㅊ is

actually a Hu sound, but is classified as Pyung sound here.), Gyung sounds (e.g., ㅋ, ㆁ, ㆅ, ㆆ, ㆏) and Gyuk sounds (ㅊ, ㅊ, ㅊ, ㅊ). A character group on Korean characters saved in a user-interface-providing device 100 according to an embodiment of the present invention and representative characters of each character group are described in Table 1.

TABLE 1

Groups of Korean Consonants		
Group	Consonant	Representative character
First group	ㄱ, ㅋ, ㆁ	ㄱ
Second group	ㄴ, ㄷ, ㄹ	ㄴ
Third group	ㅁ, ㅂ, ㅅ	ㅁ
Fourth group	ㅈ, ㅊ, ㅊ	ㅈ
Fifth group	ㅊ, ㅊ	ㅊ
Sixth group	ㄴ, ㄷ	ㄴ
Seventh group	ㅎ, ㅇ	ㅎ
Eighth group	ㅁ, ㅇ	ㅁ

[0082] As shown in Table 1, in the present embodiment, first, consonants are classified to constitute character groups by mutually-connected consonants among Pyung sounds, Gyung sounds and Gyuk sounds, and representative characters among such character groups (the first group to the fifth group) are selected as Pyung sounds (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ).

[0083] Further, Pyung sounds (ㄴ, ㄷ, ㄹ, ㅇ, ㅎ) having no connected Gyung sound or Gyuk sound can be classified to constitute character groups by predetermined numbers, and in the present embodiment, as described in Table 1, "ㄴ" and "ㄷ", "ㅎ" and "ㅇ", and "ㅁ" and "ㅇ" are classified as each character group. Here, "ㅇ" belongs to two character groups (the seventh group and the eighth group), but only in the embodiment, so "ㅇ" can be removed from one character group. In character groups (the sixth group to the eighth group) consisting of Pyung sounds having no connected Gyung sound or Gyuk sound, representative characters can be randomly selected. In the present embodiment, "ㄴ", "ㅎ" and "ㅁ" are selected as representative characters.

[0084] A user-interface-providing device 100 saving character groups described in Table 1 and representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on a user-interface 300, as illustrated in FIG. 8. Preferably, a representative character of each character group is respectively mapped to 8 objects 300-6 to 300-13 arranged on the circumference. More preferably, representative characters (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ) of character groups (the first group to the fourth group) including all of Pyung sounds, Gyung sounds, and Gyuk sounds are mapped to objects 300-6, 300-8, 300-10, 300-12 located on a cross-type extended line formed by the arrangement of 5 objects 300-1 to 300-5 arranged within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference, and the mapping is illustrated in FIG. 9. And remaining representative characters (ㄴ, ㄷ, ㄹ, ㅎ) can be randomly mapped to remaining objects 300-7, 300-9, 300-11, 300-13 among 8 objects 300-6 to 300-13 arranged on the circumference.

[0085] Through the user-interface, the user can confirm representative characters for Hangeul consonants, and consonants included in character groups represented by each representative character can be retrieved by touching buttons corresponding to objects to which each representative character is mapped among buttons 240-1 to 240-13 included in the user input device 200. At this time, consonants included in character groups represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 5 objects 300-1 to 300-5 arranged in cross-type. Preferably, if each object 300-6 to 300-13 on the circumference and the object 300-1 arranged in the center are connected, consonants included in each character group can be arranged through an object existing on the connection line.

[0086] For example, in the state where a user-interface is provided as illustrated in FIG. 9, if a user touches the sixth button 240-6 of the user input device 200, the user-interface-providing device 100 can map consonants (ㄱ, ㅋ, ㆁ) included in the first group represented by "ㄱ" to the sixth object 300-6, the second object 300-2 and the first object 300-1. At this time, "ㄱ" a representative character, is mapped to the object 300-6 which was previously mapped, and remaining characters "ㅋ" and "ㆁ" can be mapped to the second object 300-2 and the first object 300-1, and the mapping is illustrated in FIG. 10.

[0087] The user can retrieve remaining consonants in a similar way, and consonants which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped are illustrated together in FIG. 11. As illustrated, the mapping state of consonants on 5 objects 300-1 to 300-5 arranged in a cross-type can be changed according to whether objects to which a certain representative character is mapped are activated by a button touch by a user.

[0088] Meanwhile, a user, who retrieved a desired consonant, can input the desired consonant by pushing a button corresponding to an object to which the retrieved consonant is mapped. For example, in the state where the user-interface 300 is provided as illustrated in FIG. 10, if the user pushes the first button 240-1 of the user input device 200, "ㄱ", a character mapped to the first object 300-1 corresponding to the first button 240-1 is input.

Vowels of Hangeul

[0089] Vowels of Hangeul can be formed by combinations of "ㅣ", "ㅡ" and "ㅏ". Character groups on vowels of Hangeul saved by the user-interface-providing device 100 and representative characters of each character group according to an embodiment of the present invention are described in Table 2.

TABLE 2

Groups of Korean Vowels		
Group	Vowels	Representative character
First group	ㅏ, ㅑ, ㅓ, ㅕ	ㅏ
Second group	ㅗ, ㅛ, ㅜ, ㅠ	ㅗ
Third group	ㅗ, ㅛ, ㅜ, ㅠ	ㅗ

TABLE 2-continued

Groups of Korean Vowels		
Group	Vowels	Representative character
Fourth group	ㅓ, ㅕ, ㅗ, ㅛ	ㅓ
Fifth group	ㅗ, ㅡ	ㅗ

[0090] Character groups in Table 2 have a predetermined regularity, and vowels are grouped according to directions where "•" is added to "ㅣ" or "ㅡ". For example, in Table 2, the first group consists of vowels having a shape where "•" is added to the upper side of "ㅡ", and the third group consists of vowels having a shape where "•" is added to the lower side of "ㅡ". Also, in Table 2, the second group consists of vowels having a shape where "•" is added to the right side of "ㅣ", and the fourth group consists of vowels having a shape where "•" is added to the left side of "ㅣ". The fifth group includes "ㅣ" and "ㅡ" which are the basis for such groupings.

[0091] In Table 2, selected representative characters of the first to fourth group are "ㅏ", "ㅑ", "ㅓ", and "ㅕ" having a shape where "•" is added to "ㅣ" or "ㅡ", which are reference characters. Also, in case of the fifth group, "ㅗ" is selected as a representative character. The vowel "ㅜ" can be included in a random group among the first to fifth group, but in the present embodiment, the vowel is included in the second group (not illustrated in Table 2).

[0092] Character groups, as illustrated in Table 2, and the user-interface-providing device 100 saving representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300, as illustrated in FIG. 8. Preferably, representative characters of each character group of vowels of Hangeul can be mapped to 5 objects 300-1 to 300-5 arranged in a cross type within the circumference. More preferably, among 5 objects 300-1 to 300-5 arranged in a cross type, a representative character "ㅏ" is mapped, and representative characters "ㅑ", "ㅓ", "ㅕ", and "ㅗ" can be mapped to objects 300-2 to 300-5 of the direction corresponding to the direction where "•" is added to vowels "ㅣ" or "ㅡ" based on the object 300-1 to which "ㅏ" is mapped, and this mapping is shown in FIG. 12.

[0093] Through the user-interface, the user can confirm representative characters on Hangeul vowels, and vowels included in character groups represented by each representative character can be retrieved among buttons 240-1 to 240-13 included in the user input device 200. At this time, vowels represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 8 objects 300-6 to 300-13 arranged on the circumference. Preferably, characters included in each character group can be mapped to 3 objects from the closest object to the furthest object from the object to which the representative character was mapped among 8 objects 300-6 to 300-13 arranged on the circumference.

[0094] For example, in the state where the user-interface is provided as illustrated in FIG. 12, if the user touches the

third button **240-3** of the user input device **200**, the user-interface-providing device **100** can map vowels (ㅏ, ㅓ, ㅗ, ㅜ) included in the second group represented by the representative character "ㅏ" mapped to the third object **300-3** corresponding to the third button to the third object **300-3**, the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**. At this time, the representative object "ㅏ" is mapped to the existing mapped object **300-3**, and remaining objects "ㅓ", "ㅗ", and "ㅜ" can be mapped to the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**, and this mapping is illustrated in FIG. 13.

[0095] The user can retrieve remaining vowels in a similar way, and vowels, which can be mapped to each object by touching buttons corresponding to objects to which the representative character is mapped, are illustrated together in FIG. 14. As illustrated, according to whether the object to which a certain character is mapped is activated by the button touch of a user, the mapping state of vowels on 8 objects **300-6** to **300-13** can be changed.

[0096] Meanwhile, "ㄹ" can be mapped together with other vowels to a random object. In the present embodiment, because the vowel "ㄹ" is included in the second group as explained with reference to Table 2, "ㄹ" can be mapped to the same object along with one among vowels "ㅏ", "ㅓ", "ㅗ", "ㅜ". For example, the vowel "ㄹ" can be mapped to the third object **300-3** along with the vowel "ㅏ".

[0097] The user who retrieved desired vowels, can input the desired vowels by pushing buttons corresponding to objects to which retrieved vowels are mapped. For example, in the state where the user-interface **300** is provided as illustrated in FIG. 13, if the user pushes the eighth button **240-8** of the user input device **200**, the character "ㅏ" mapped to the eighth object **300-8** corresponding to the eighth button **300-8** is inputted. Also, in the case where two vowels are mapped to one object, additionally-mapped vowels can be inputted by pushing buttons corresponding to the object two times consecutively. For example, in FIG. 12, the vowel "ㅡ" along with "ㅣ" are mapped to the first object **300-1**, and if the user pushes the first button **240-1** corresponding to the first object **300-1** one time, the vowel "ㅣ" is inputted, and if the first button **240-1** is pushed two times, the vowel "ㅡ" can be inputted. In a similar way, the user can input the vowel "ㄹ" mapped to the same object as the vowel "ㅏ".

[0098] Consonants and vowels can be inputted according to the above-described method, and the process of inputting completed words is shown in FIG. 15. FIG. 15 illustrates a process that inputs a word "뽕", and the character-input area **400**, the guide area **300** on which a plurality of objects are displayed, and the user input device **200** including a plurality of buttons are illustrated. The character-input area **400** and the guide area **300** can be displayed to a user as one user-interface. Meanwhile, in the illustrated example, the button filled with black color among buttons of the user input device **200** indicates a button touched by a user, and a button having a mark ✓ indicates a button pushed by a user. The character group of consonants and vowels used in inputting characters, and representative characters are

shown in Tables 1 and 2, and processes of retrieving and selecting characters have been explained by referring to FIGS. 9 to 14.

[0099] First, the user confirms representative characters through the guide area **300** to which consonants of Hangeul are mapped (a). Because "ㅁ" is mapped to the tenth object **300-10**, the user can push the tenth button **240-10** corresponding to the tenth object **300-10** without passing through a separate character-retrieving process, and as a result, the consonant "ㅁ" is inputted in the character-input area **400**.

[0100] Then, the guide area to which vowels of Hangeul are mapped can be provided. The process where the guide area, to which consonants of Hangeul are mapped, is changed into a guide area, to which vowels of Hangeul are mapped, can be implemented by various embodiments such as a case where a user operates predetermined function buttons included in the user input device **200**, a case where the user operates a button corresponding to objects to which representative characters of the character group on consonants have not been mapped, and other cases.

[0101] If the guide area **300** to which vowels of Hangeul are mapped is provided, the user confirms the fifth object **300-5**, to which the representative character "ㅏ" is mapped (b), and the fifth button **240-5** corresponding to the guide fifth object is touched. At this time, "ㅏ", "ㅓ" and "ㅗ", "ㅜ" and "ㅏ", "ㅓ" and "ㅗ" included in the character group represented by the representative character "ㅏ" are respectively mapped to the eleventh object **300-11** to the thirteenth object **300-13** in the guide area **300**.

[0102] If the user pushes the twelfth button **240-12** corresponding to the twelfth object **300-12** to which the vowel "ㅏ" is mapped (c), the vowel "ㅏ" is inputted to the character-input area **400**.

[0103] Then, the guide area **300**, to which consonants of Hangeul are mapped, is provided. The process where the guide area, to which vowels of Hangeul are mapped, is changed into the guide area to which consonants of Hangeul are mapped can be implemented by various embodiments such as the case where a user operates a predetermined function button included in the user input device **200**, a case where the user operates a button corresponding to the object to which representative characters of the character group on vowels have not been mapped, and a case where vowels are inputted to the character-input area **400**.

[0104] The user confirms the seventh object **300-7**, to which the representative character "ㅁ" is mapped, and touches the seventh button **240-7** corresponding to the seventh object **300-7** (d). At this time, the consonant "ㅁ" included in the character group represented by the representative character "ㅁ" is mapped to the first object **300-1** in the guide area **300**.

[0105] If the user pushes the first button **240-1** corresponding to the first object **300-1** to which the consonant "ㅁ" is mapped (e), the vowel "ㅁ" is inputted to the character-input area **400**.

Numbers and Symbols

[0106] Character groups of numbers saved by the user-interface-providing device **100** and representative characters

of each character group according to an embodiment of the present invention are described in Table 3.

TABLE 3

Groups of Numbers		
Group	Number	Representative character
First group	0, 1	0
Second group	2, 3, 4	3
Third group	5, 6, 7	6
Fourth group	8, 9	9

[0107] The user-interface-providing device 100 saving character groups and representative characters of each character group as illustrated in Table 3 maps representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300 as illustrated in FIG. 8. Preferably, the representative characters 0, 3, 6, 9 of each character group can be mapped to 4 objects 300-6, 300-8, 300-10, 300-12 on the cross-type extended line formed by the arrangement of objects 300-1 to 300-5 within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference. This mapping is described in FIG. 16.

[0108] As illustrated in FIG. 16, objects 300-6, 300-8, 300-10, 300-12, to which each representative character is mapped, correspond to the 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock directions, and because the mapped representative characters are also "0", "3", "6" and "9", the user can recognize the user-interface, whereby the user can retrieve numbers more easily.

[0109] The user can retrieve numbers included in the character group represented by each representative character by touching buttons corresponding to objects to which each representative character is mapped among buttons included in user input device 200. Here, numbers included in the character group represented by the representative character can be mapped so that the numbers can be increased in the clockwise direction through objects located at the left/right sides of objects corresponding to buttons touched by the user among the objects 300-6 to 300-13 arranged on the circumference.

[0110] For example, in the state the user-interface is provided as illustrated in FIG. 16, if the user touches the eighth button 240-8 of the user input device 200, the user-interface-providing device 100 can map numbers 2, 3, and 4 included in the first group represented by the representative character "3" mapped to the eighth object 300-8 corresponding to the eighth button 240-8 to the seventh object 300-7 and the ninth object 300-9, respectively. In other words, the representative "3" is mapped to the object 300-8 which has been mapped, and the remaining numbers "2" and "4" can be mapped to the seventh object 300-7 and the ninth object 300-9. This mapping is illustrated in FIG. 17.

[0111] The user can retrieve remaining numbers in a similar way, and the numbers, which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped, are described together in FIG. 18.

[0112] As illustrated, the mapping state of numbers on 8 objects 300-6 to 300-13 arranged on the circumference can

be changed according to whether objects mapped to a certain representative character are activated by the button touch of a user.

[0113] The user who retrieved desired numbers can input desired numbers by pushing buttons corresponding to objects to which retrieved numbers are mapped. For example, in the state where the user-interface is provided as illustrated in FIG. 17, if the user pushes the seventh button 240-7 of the user input device 200, "2", the number mapped to the seventh object 300-7 corresponding to the seventh button 240-7, is inputted.

[0114] Also, numbers representing 10 units, 100 units and others can be inputted by applying the above-mentioned number input method. For example, if there is an operation (a touch or a push) by a user on the button corresponding to a certain object among objects to which representative characters have not been mapped, numbers on the user-interface illustrated in FIGS. 16 to 18 can be changed to 10 units, 100 units, and others.

[0115] Predetermined symbols (㉠, ㉡, ㉢, ㉣) are mapped to 5 objects 300-1 to 300-5 arranged in a cross type in FIG. 16, and the user can input wanted symbols by pushing the button corresponding to each object. However, this mapping is for illustration, and more symbols can be retrieved and selected through the form that representative characters of each character group on symbols are mapped to predetermined objects.

English Letters

[0116] Character groups on alphabets saved by the user-interface-providing device 100 and representative characters of each character group according to an exemplary embodiment of the present invention are shown in Table 4.

TABLE 4

Groups of English Letters		
Group	Letter	Representative Character
First group	a, b, c	2
Second group	d, e, f	3
Third group	g, h, i	4
Fourth group	j, k, l	5
Fifth group	m, n, o	6
Sixth group	p, q, r, s	7
Seventh group	t, u, v	8
Eighth group	w, x, y, z	9

[0117] As shown in Table 4, in the present embodiment, numbers are used as representative characters of the letter group. The representative characters correspond to mapping information between letters and numbers commonly used in well-known several character-input devices. For example, a plurality of alphabets are mapped to each number button included in a mobile phone, a personal digital assistant (PDA), or a notebook computer and the relationship between each representative character and letters included in each character group accords with the mapping.

[0118] The character groups, as illustrated in Table 4 and the user-interface-providing device 100 saving representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300, as illustrated in FIG. 8.

Preferably, representative characters of each character group can be mapped to 8 objects **300-6** to **300-13** arranged on the circumference. More preferably, representative characters of each character group can be mapped as illustrated in FIG. **19** so that the user-interface is in the form of a clock.

[0119] According to the illustration of FIG. **19**, “3”, “6” and “9” are mapped to the eighth object **300-8**, the tenth object **300-10**, and the twelfth object **300-12**, respectively, remaining representative characters **2**, **4**, **5**, **7**, **8** can be mapped so that numbers can increase in the clockwise direction through remaining objects on the circumference. Here, representative characters “4” and “5”, and representative characters “7” and “8” can be mapped to the same objects **300-9** and **300-11**, respectively.

[0120] Here, letters included in the character group represented by the representative character can be mapped to objects located on the left/right sides of objects corresponding to buttons touched by the user. For example, if the user touches the ninth button **240-9**, letters g, h, i, j, k, and l included in the character group represented by representative characters “4” and “5” mapped to the ninth object **300-9** corresponding to the ninth button **240-9** can be mapped to objects located at the left/right sides of the ninth object **300-9** among objects **300-6** to **300-13** arranged on the circumference. This mapping is illustrated in FIG. **20**. The user can retrieve remaining letters in a similar way. The user-interface in the state where representative characters are mapped can be displayed as illustrated in FIG. **19** by operating separate function buttons (not illustrated) included in the user input device **200** or by operation a certain button among 5 buttons **240-1** to **240-5** arranged in a cross form within the circumference.

[0121] Further, the user, who retrieved desired letters, can input desired letters by pushing buttons corresponding to objects to which retrieved letters are mapped. For example, if the user pushes the seventh button **240-7** of the user input device **200** in the state the user-interface is provided as illustrated in FIG. **20**, the letter “g” mapped to the seventh object **300-7** corresponding to the seventh button **240-7** is inputted.

[0122] In addition to the above-described exemplary embodiments, exemplary embodiments of the present invention can also be implemented by executing computer readable code/instructions in/on a medium/media, e.g., a computer readable medium/media. The medium/media can correspond to any medium/media permitting the storing and/or transmission of the computer readable code/instructions. The medium/media may also include, alone or in combination with the computer readable code/instructions, data files, data structures, and the like. Examples of code/instructions include both machine code, such as produced by a compiler, and files containing higher level code that may be executed by a computing device and the like using an interpreter.

[0123] The computer readable code/instructions can be recorded/transferred in/on a medium/media in a variety of ways, with examples of the medium/media including magnetic storage media (e.g., floppy disks, hard disks, magnetic tapes, etc.), optical media (e.g., CD-ROMs, or DVDs), magneto-optical media (e.g., floptical disks), hardware storage devices (e.g., read only memory media, random access memory media, flash memories, etc.) and storage/transmis-

sion media such as carrier waves transmitting signals, which may include computer readable code/instructions, data files, data structures, etc. Examples of storage/transmission media may include wired and/or wireless transmission media. For example, wired storage/transmission media may include optical wires/lines, waveguides, and metallic wires/lines, etc. including a carrier wave transmitting signals specifying instructions, data structures, data files, etc. The medium/media may also be a distributed network, so that the computer readable code/instructions is stored/transferred and executed in a distributed fashion. The medium/media may also be the Internet. The computer readable code/instructions may be executed by one or more processors. In addition, the above hardware devices may be configured to act as one or more software modules in order to perform the operations of the above-described exemplary embodiments.

[0124] According to exemplary embodiments of character-input method and medium and the device using the same of the present invention, characters can be easily inputted, not restricting a user’s sight by improving the user interface.

[0125] Although a few exemplary embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these exemplary embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

1. A character-input method comprising:

providing a plurality of objects having a predetermined arrangement according to a character-input request;

mapping characters included in a character group represented by a representative character mapped to an object identified by a first signal among objects to which at least one representative character is mapped when the first signal is received from a user input device; and

inputting characters mapped to an object identified as a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped when the second signal is received from the user input device,

wherein the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

2. The method of claim 1, wherein the arrangement of the plurality of objects corresponds to the arrangement of the plurality of buttons included in the user input device.

3. The method of claim 2, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted, and if the other is sensed, the second signal is outputted.

4. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the push is sensed.

5. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position

corresponding to the button at which the touch is sensed among the plurality of buttons.

6. The method of claim 1, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

7. The method of claim 1, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

8. The method of claim 7, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

9. A user-interface-providing device comprising:

an object-providing module that provides the plurality of objects having a predetermined arrangement;

a character-mapping module that maps characters, which are included in the character group represented by representative characters mapped to objects identified as the first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when a first signal is received from a user input device;

a character-input module that inputs characters mapped to objects identified as the second signal among objects to which the characters are mapped when a second signal is received; and

an output module that outputs a user-interface including the plurality of objects provided by the object-providing module, the representative characters and the characters mapped by the character-mapping module, and characters inputted by the character-inputting module,

wherein the representative character is mapped to one or more objects among the plurality of objects having a predetermined arrangement.

10. The device of claim 9, wherein the arrangement of the plurality of objects is of the structure corresponding to the arrangement of the plurality of buttons included in the user-interface-inputting device.

11. The device of claim 10, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted and if the remaining other is sensed, the second signal is outputted.

12. The device of claim 11, wherein an object identified as the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified by the second signal is arranged at the position corresponding to the button at which the push is sensed among the plurality of buttons.

13. The device of claim 11, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the touch is sensed among the plurality of buttons.

14. The device of claim 9, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

15. The device of claim 9, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, and 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

16. The device of claim 15, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

17. At least one medium comprising computer readable instructions implementing the method of claim 1.

18. A character-input method comprising:

mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and

inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

19. At least one medium comprising computer readable instructions implementing the method of claim 18.

20. A user-interface-providing device comprising:

a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters;

a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

* * * * *



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G09G 5/00 (2006.01)
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1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005 (US)(57) **ABSTRACT**

A character-input method is provided. The character-input method includes providing a plurality of objects having a predetermined arrangement, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped.

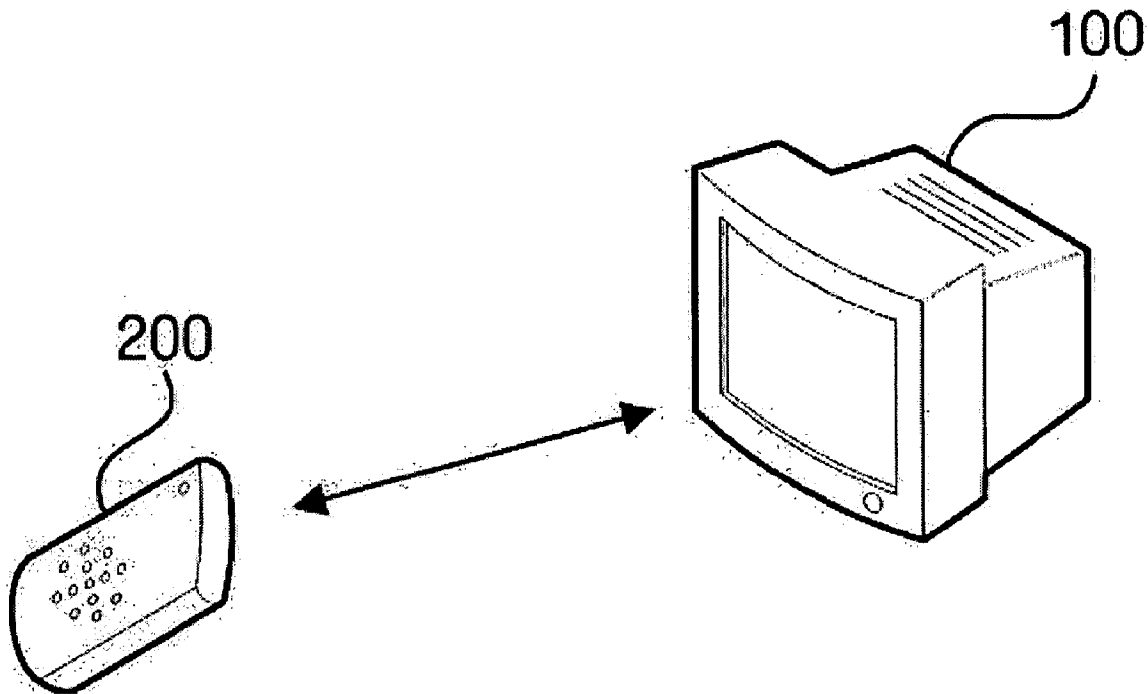
(73) Assignee: **SAMSUNG ELECTRONICS CO.,
LTD.**, Suwon-si (KR)(21) Appl. No.: **11/513,214**(22) Filed: **Aug. 31, 2006**

FIG. 1

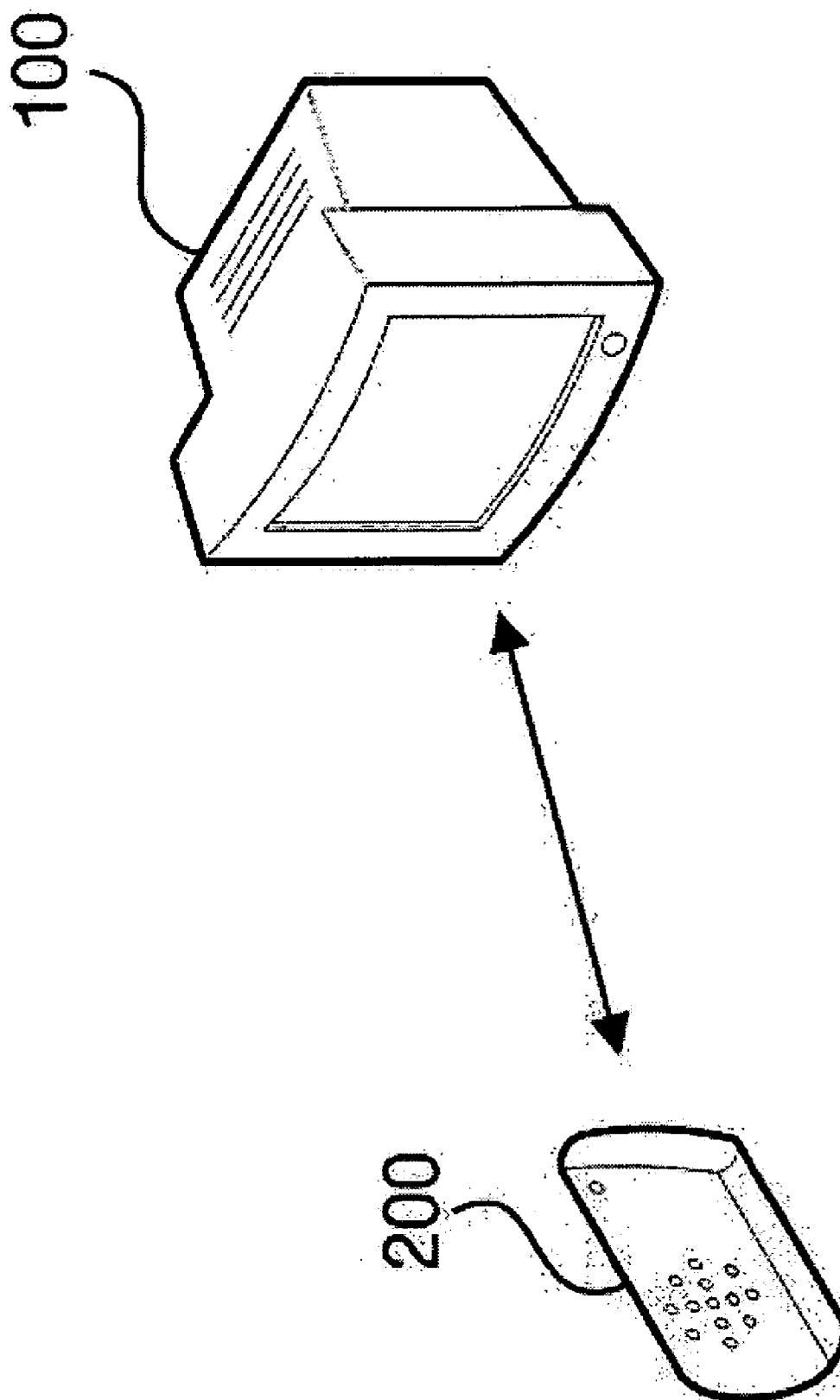


FIG. 2

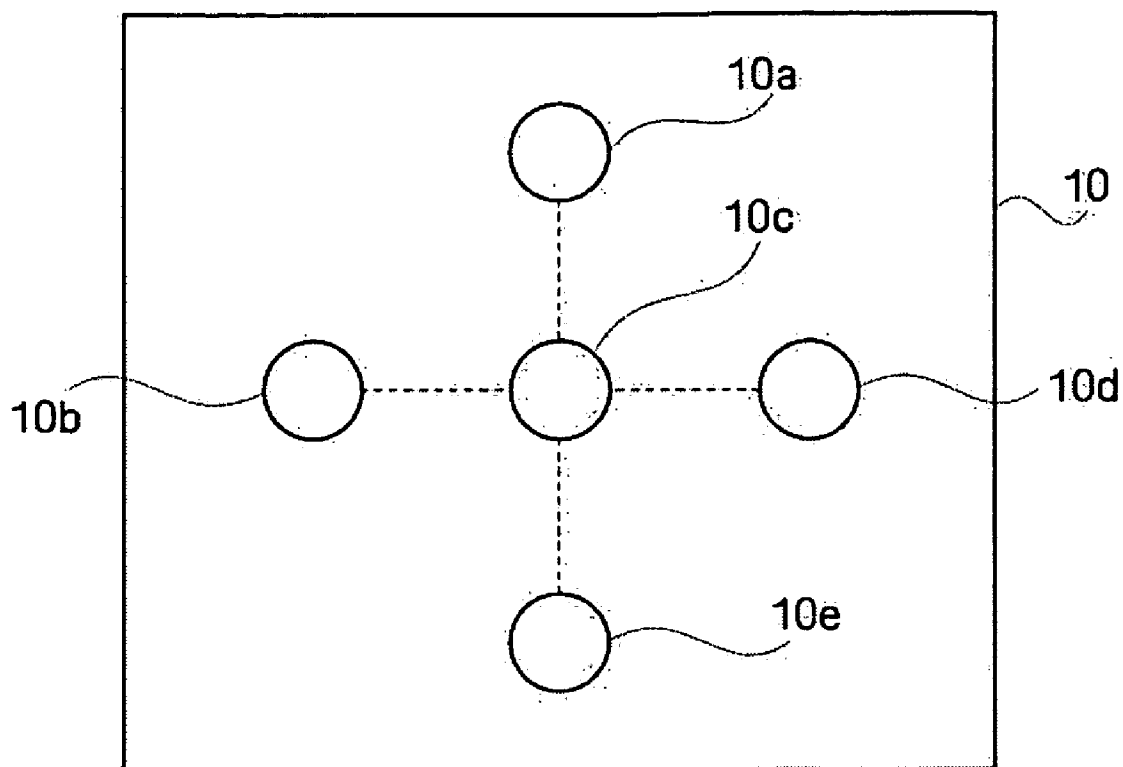
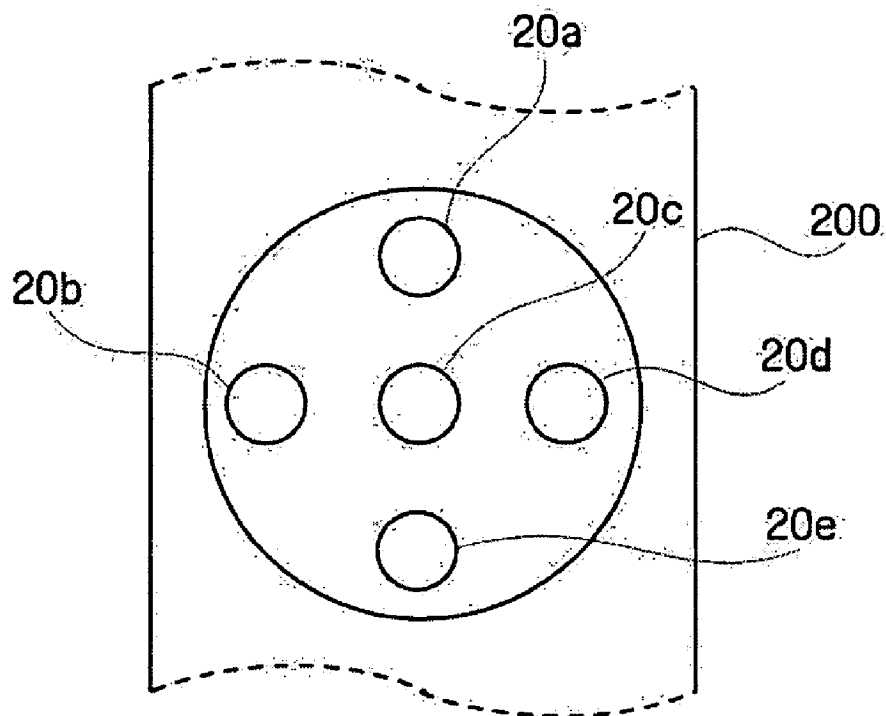


FIG. 3A

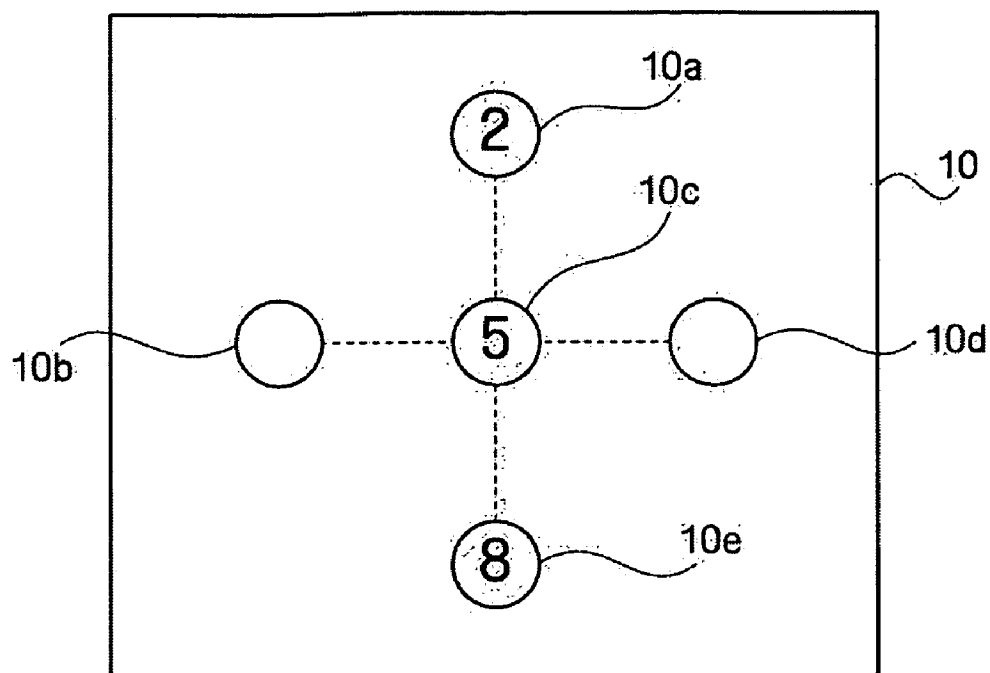


FIG. 3B

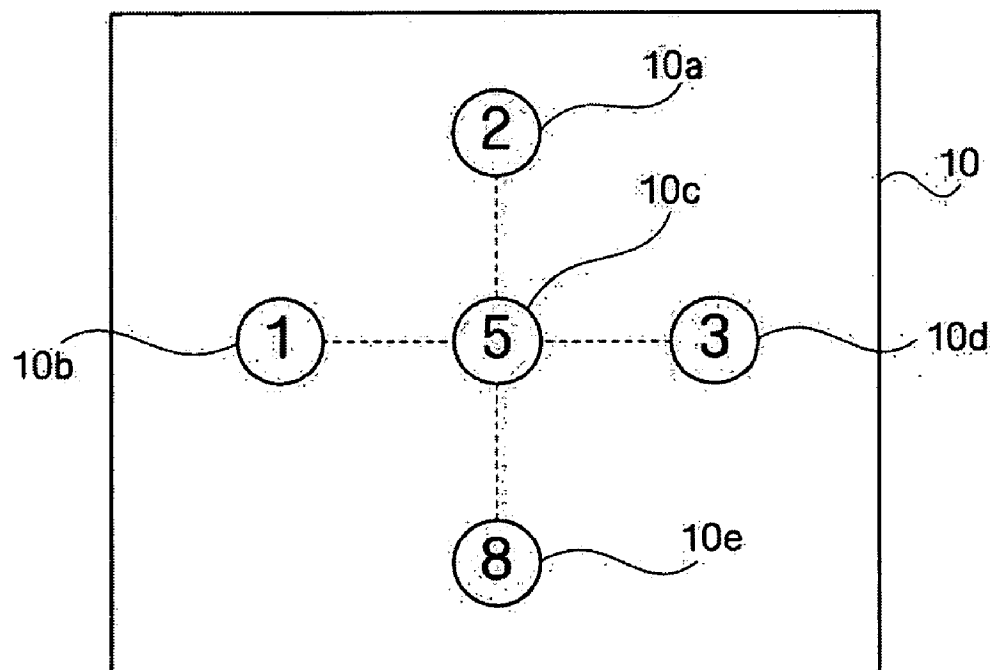


FIG. 3C

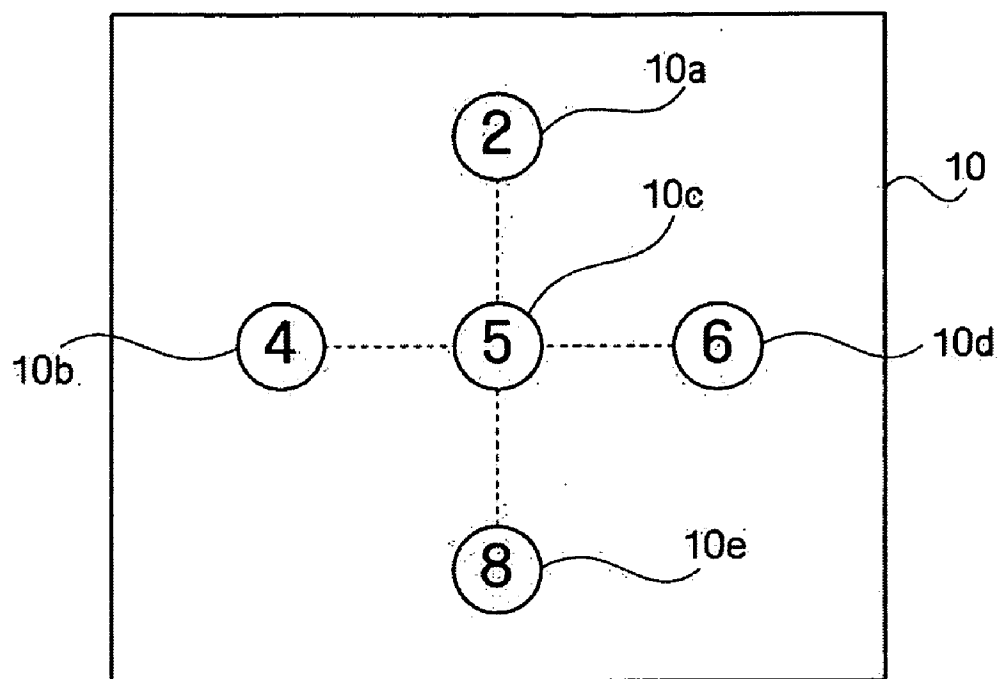


FIG. 3D

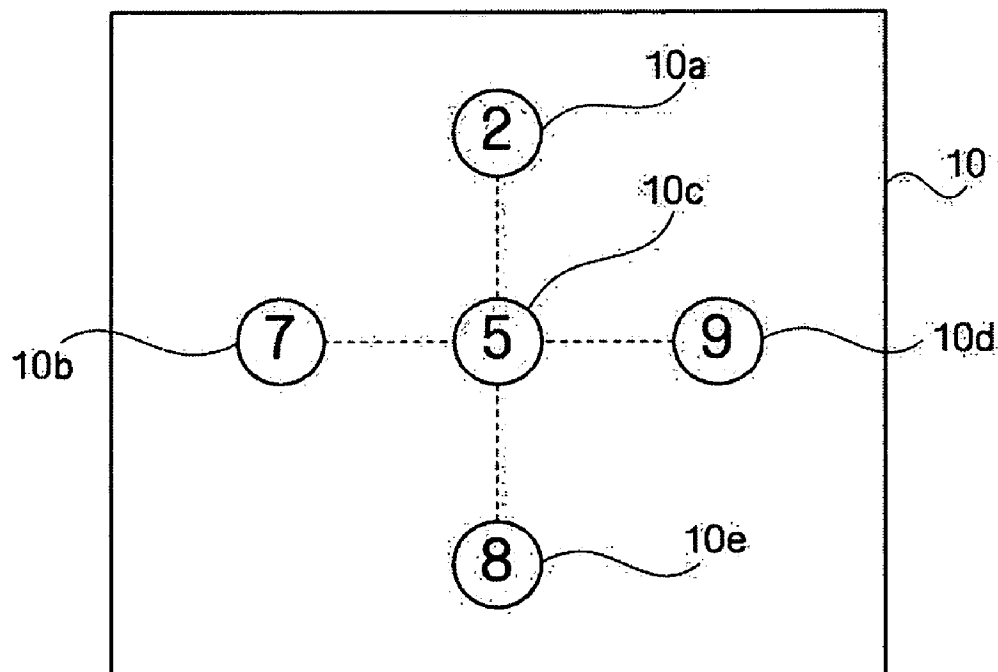


FIG. 4A

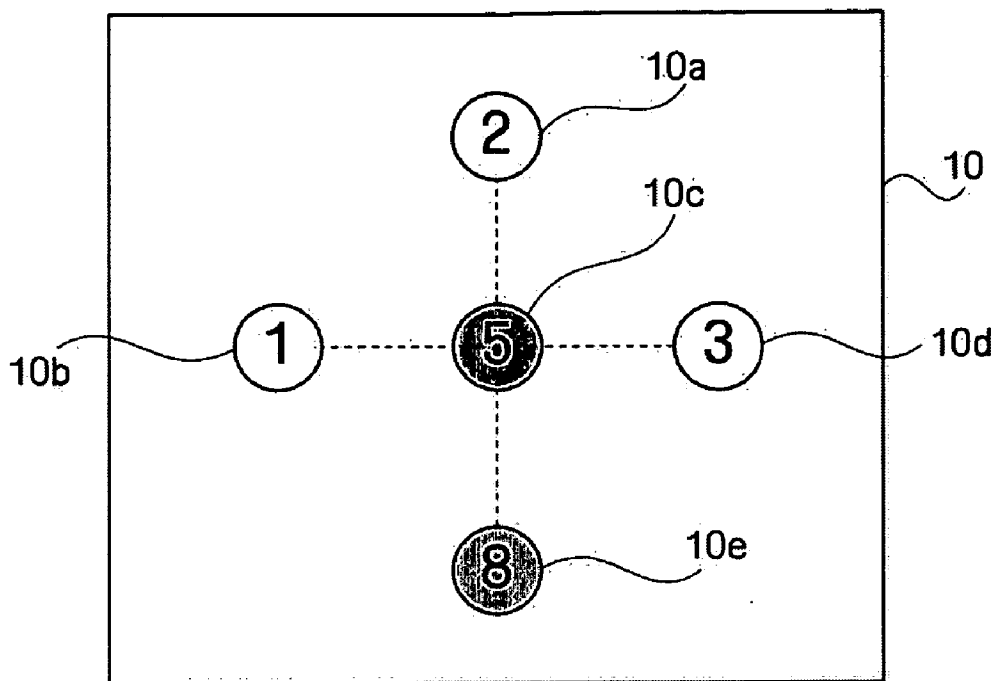


FIG. 4B

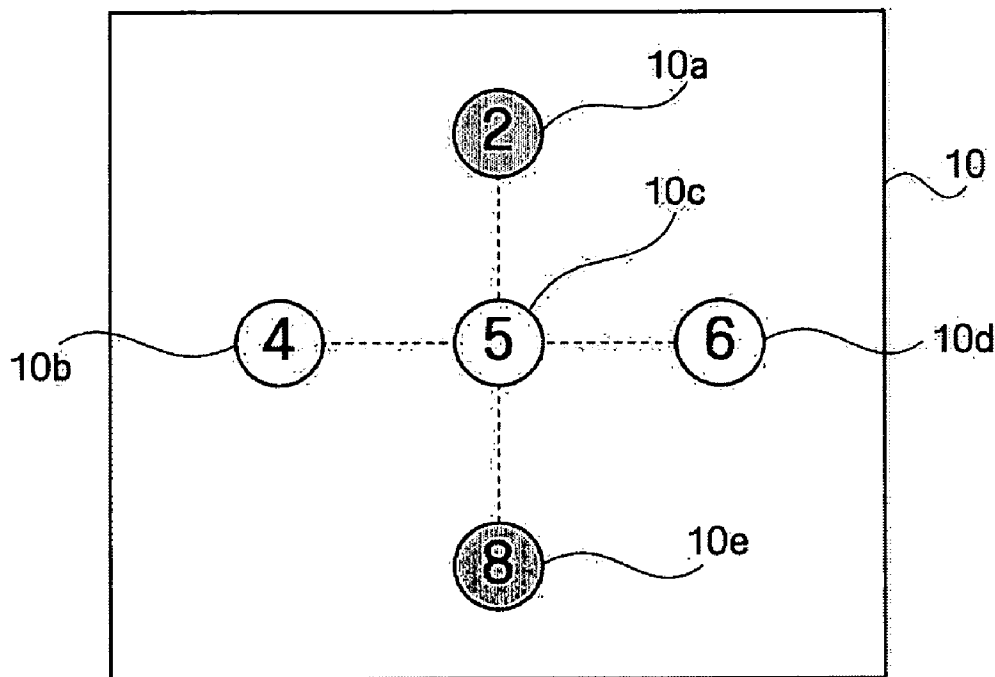


FIG. 4C

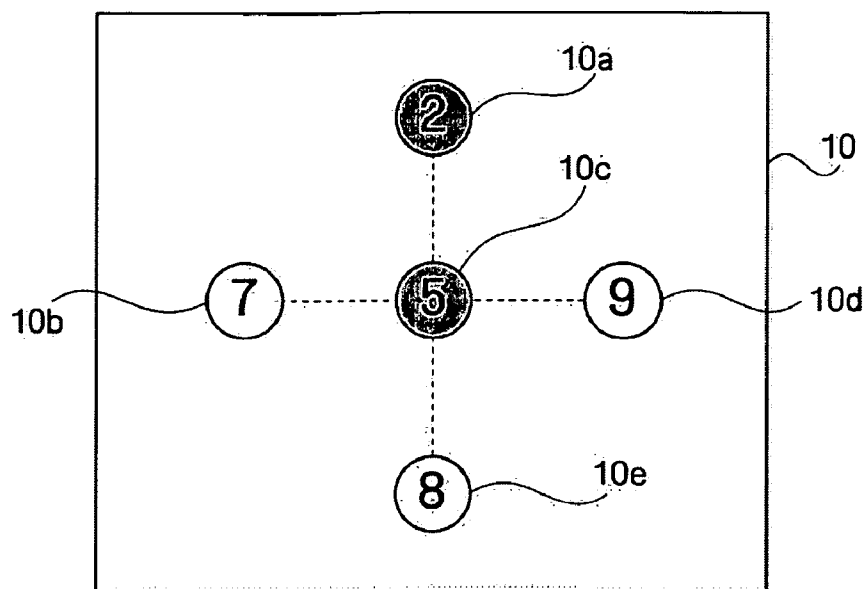


FIG. 5

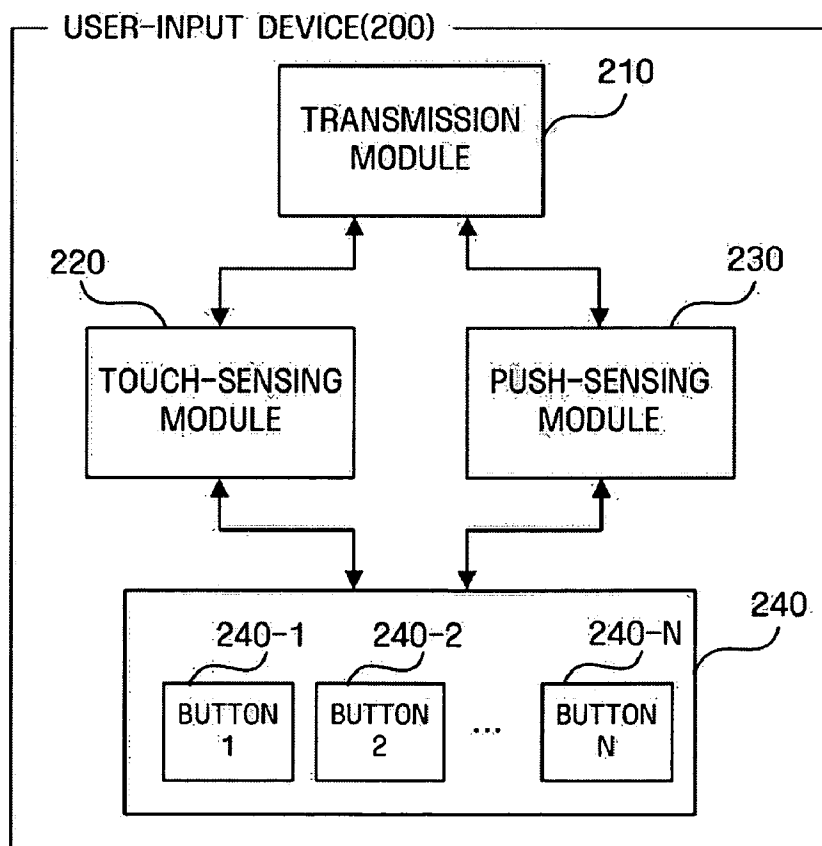


FIG. 6

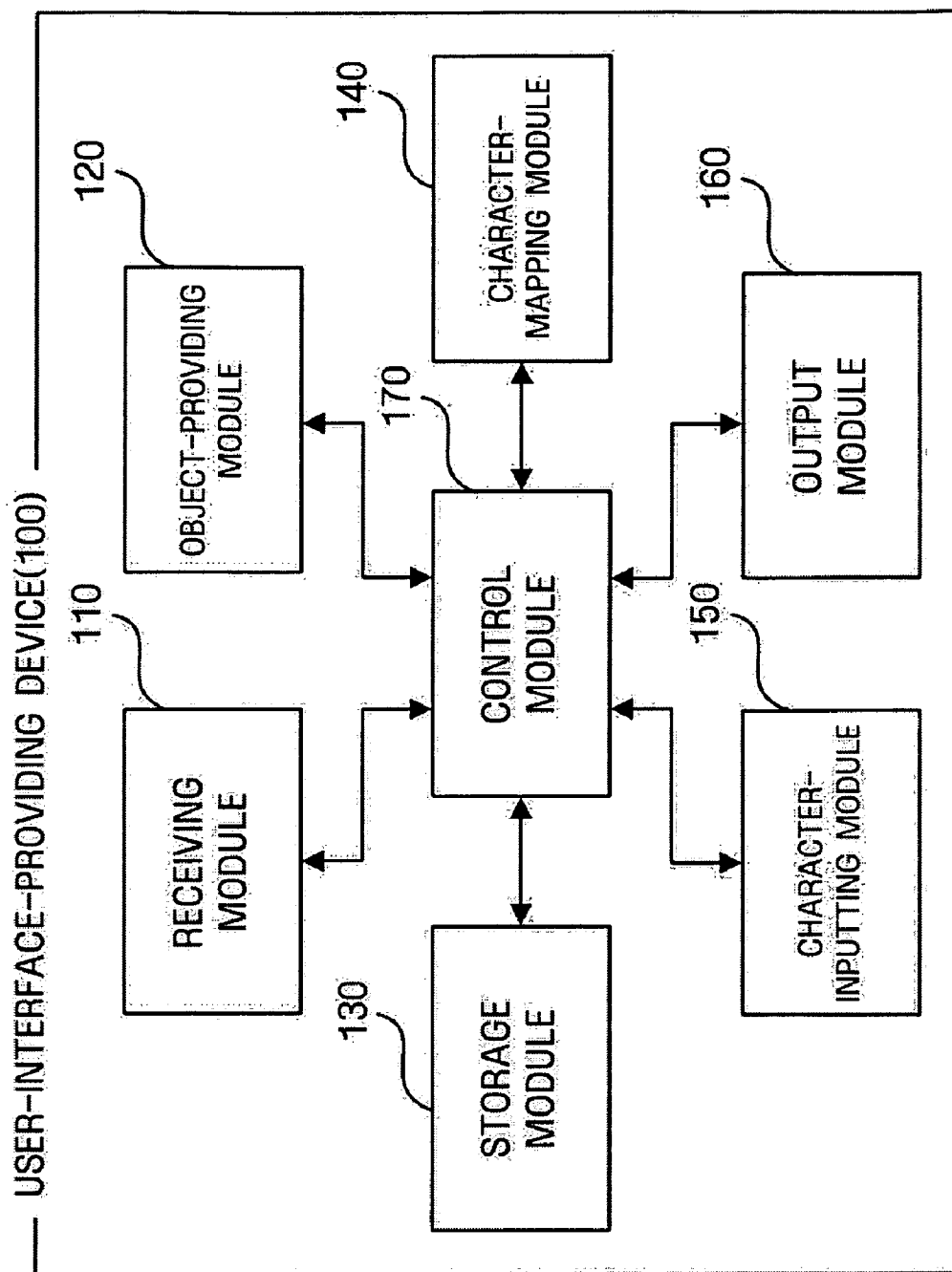


FIG. 7

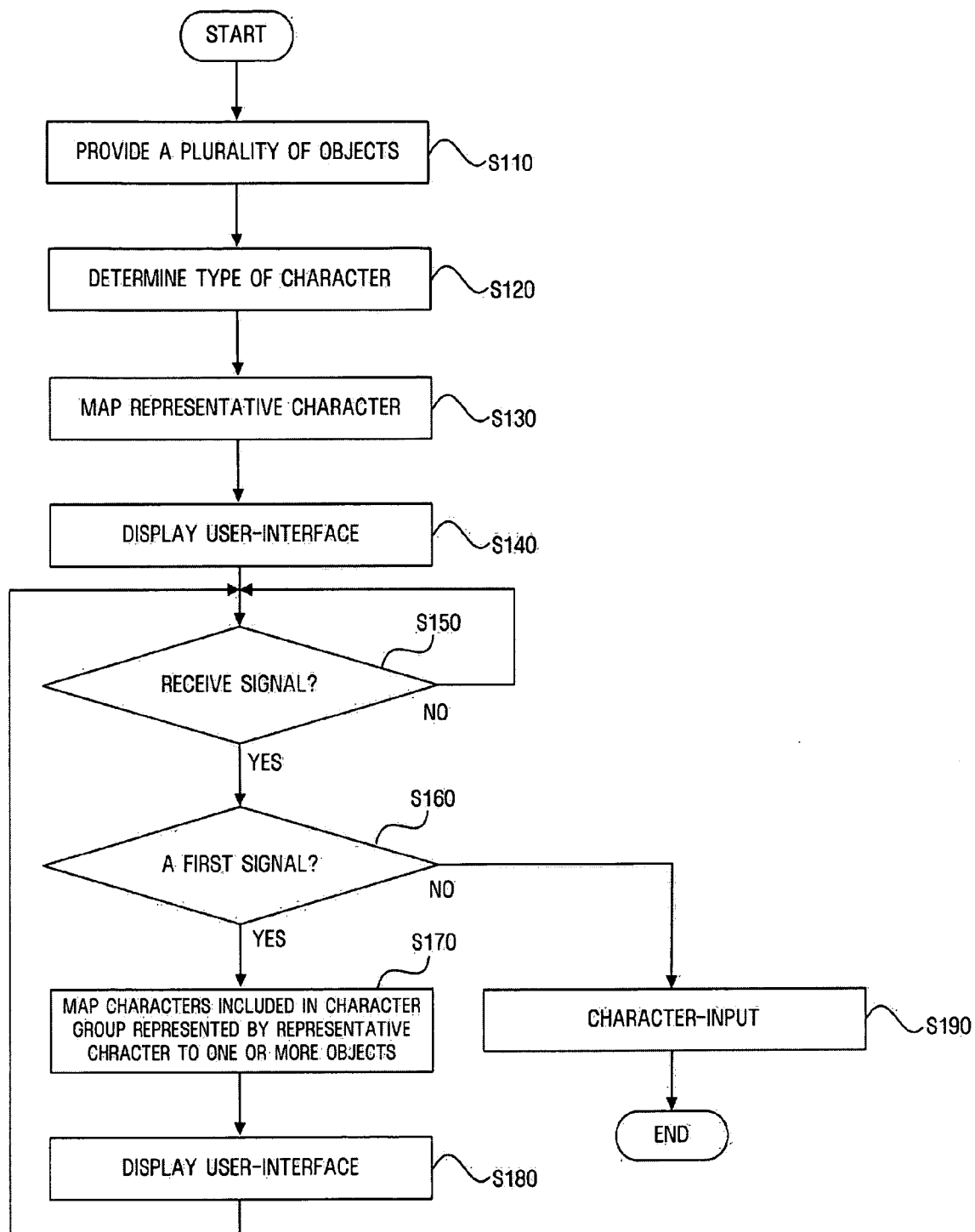


FIG. 8

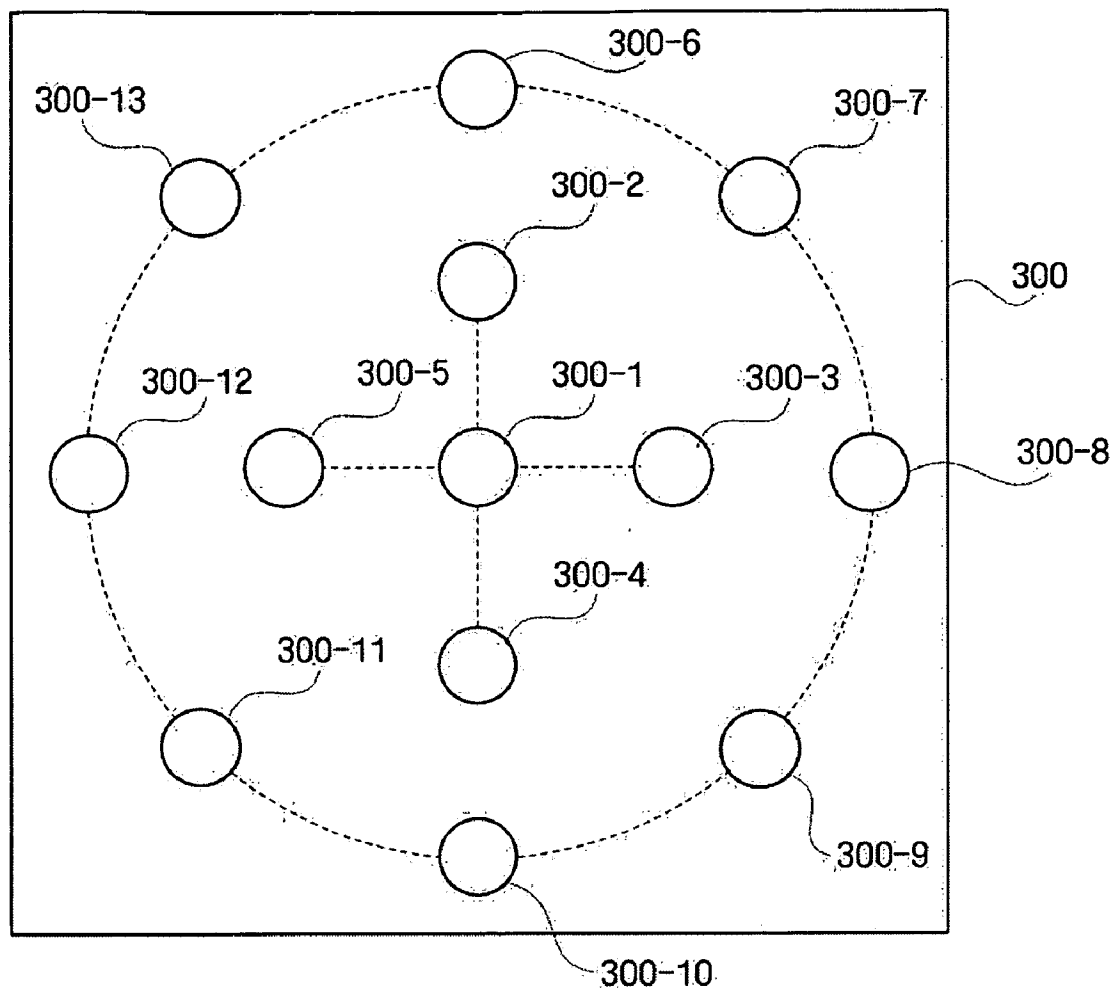
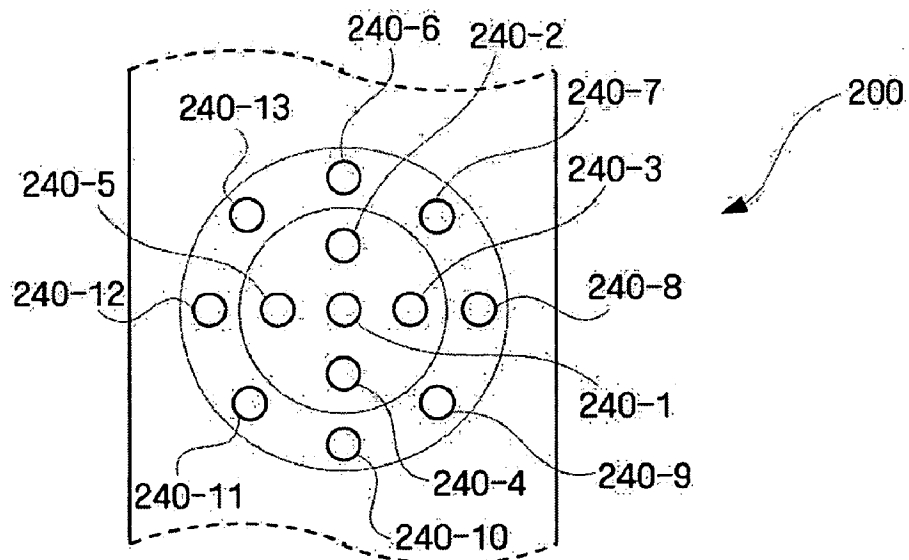


FIG. 9

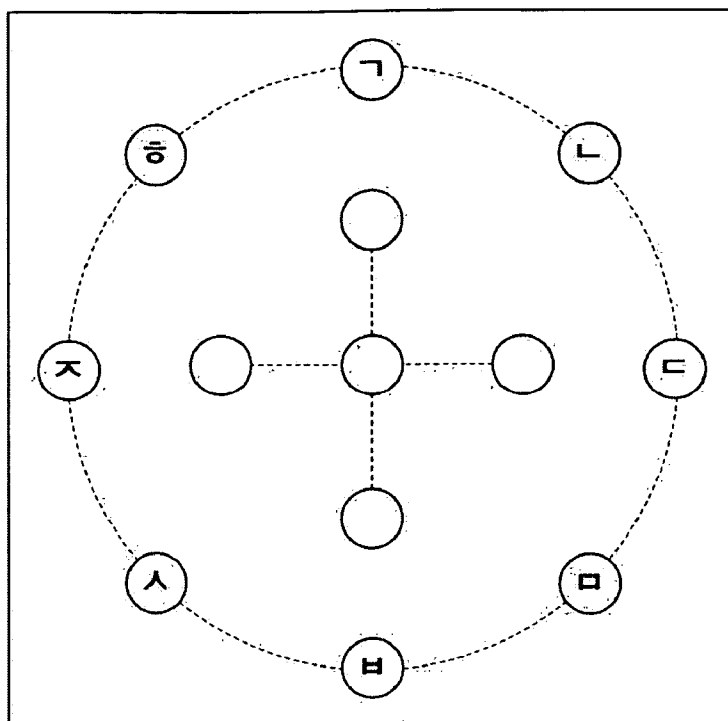


FIG. 10

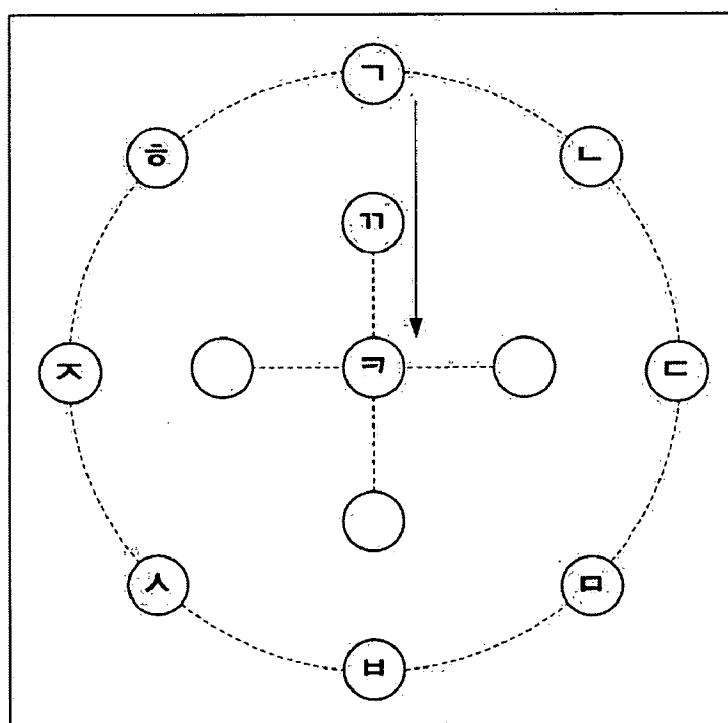


FIG. 11

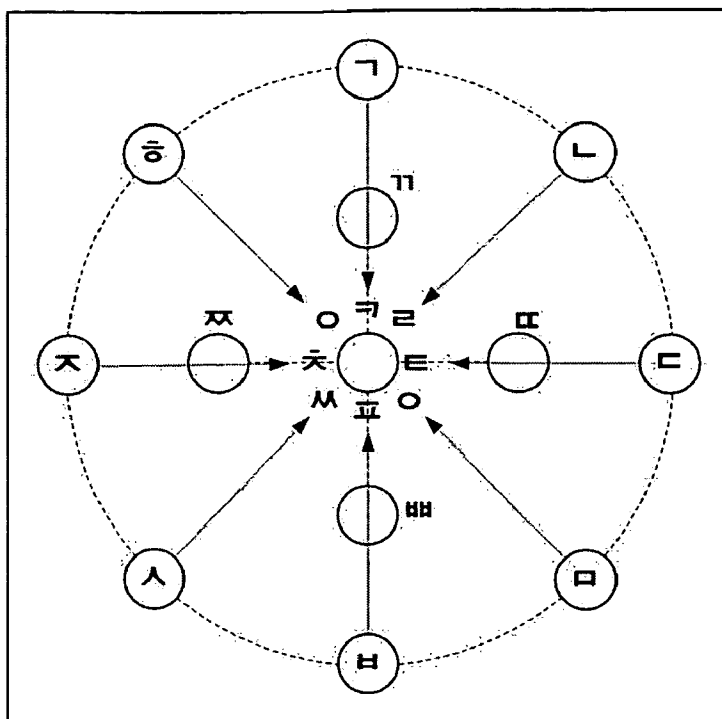


FIG. 12

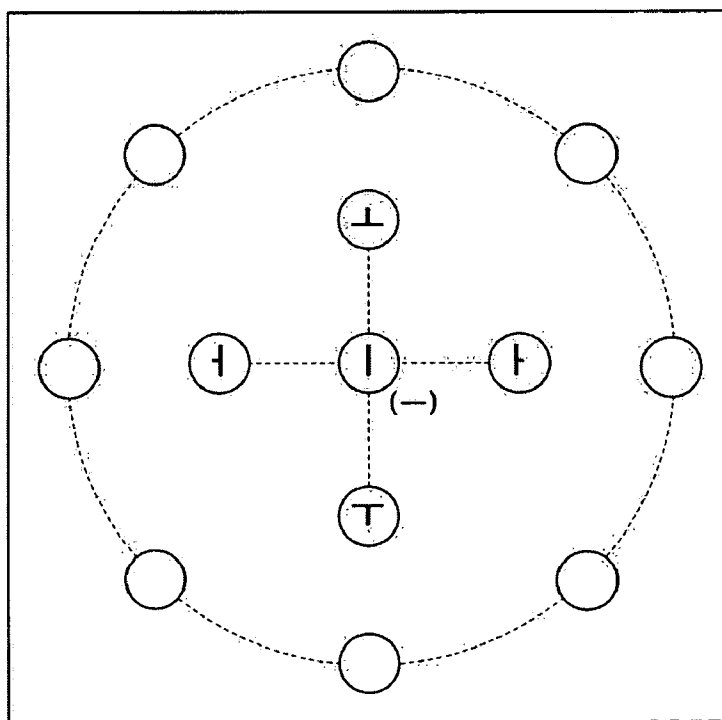


FIG. 13

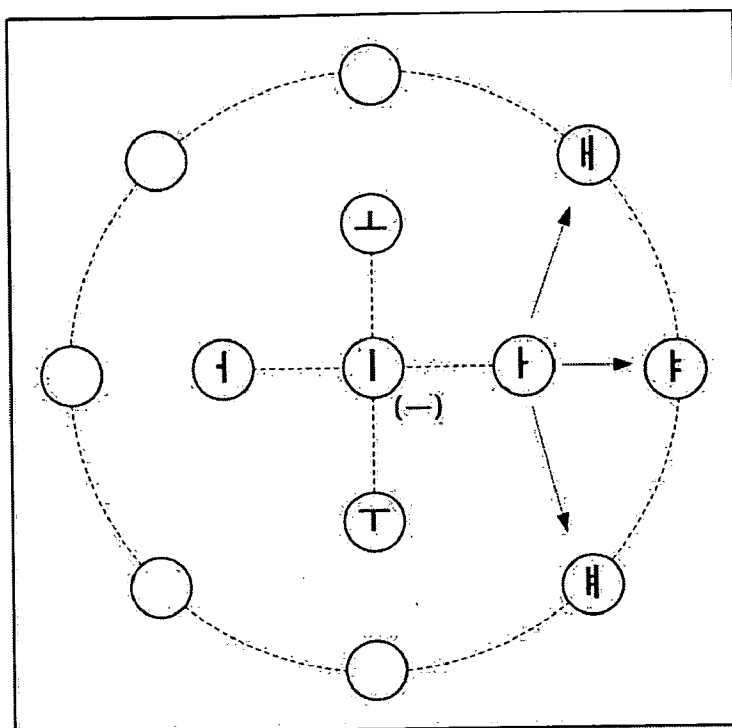


FIG. 14

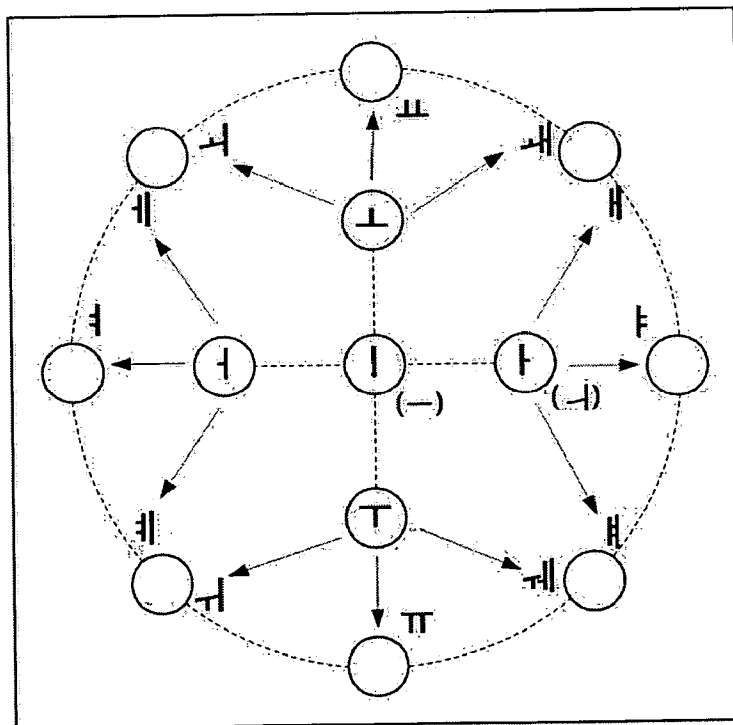


FIG. 15

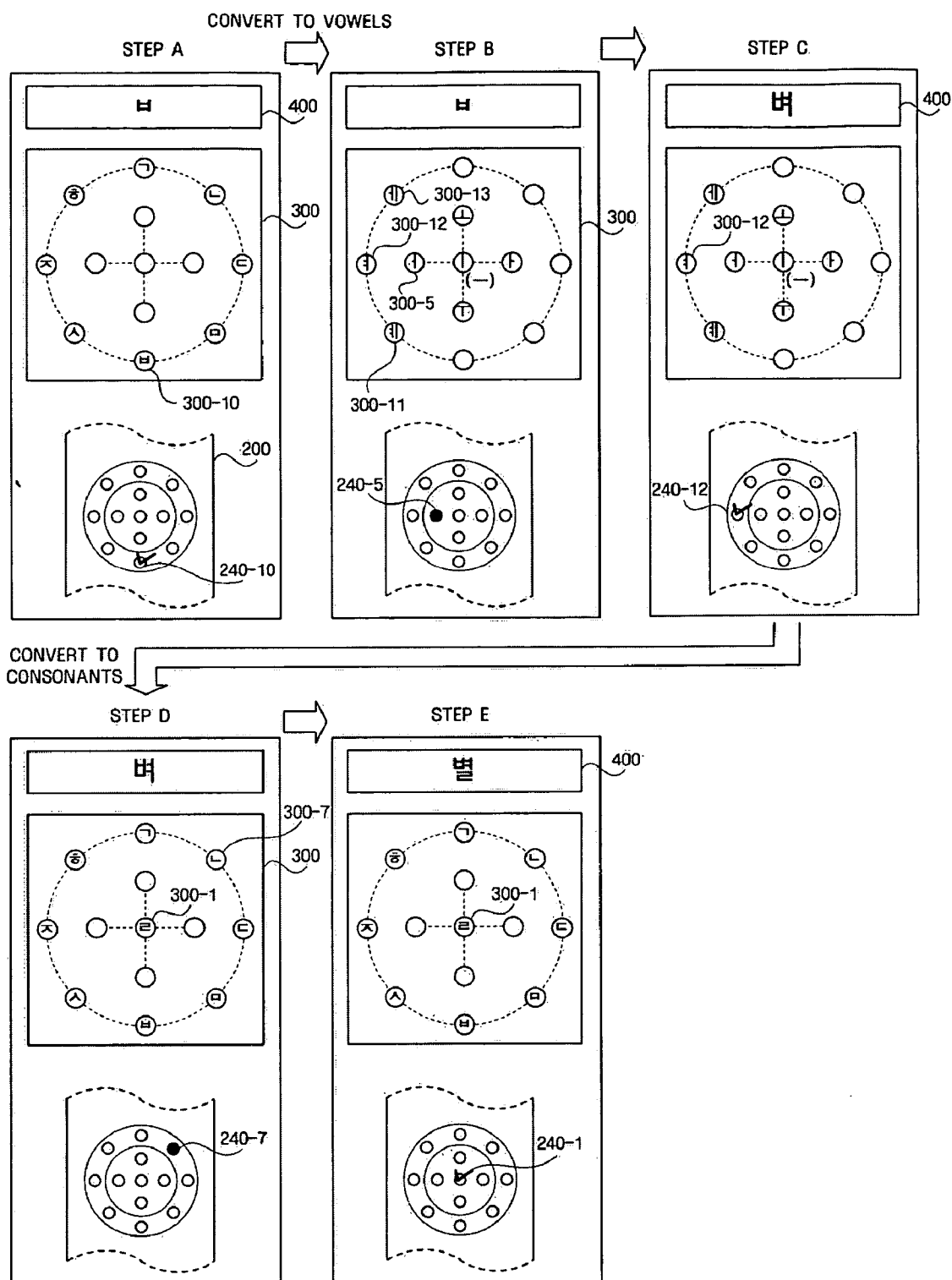


FIG. 16

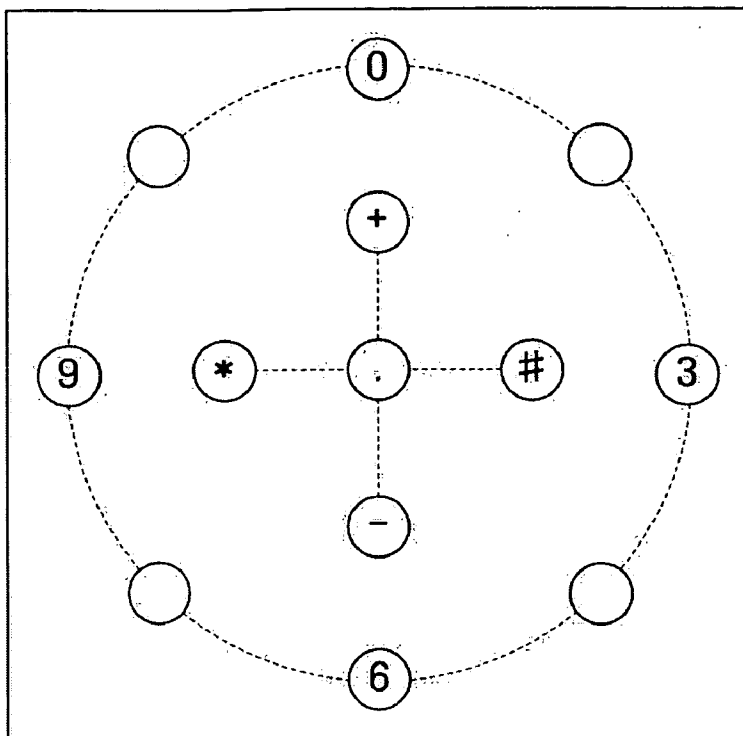


FIG. 17

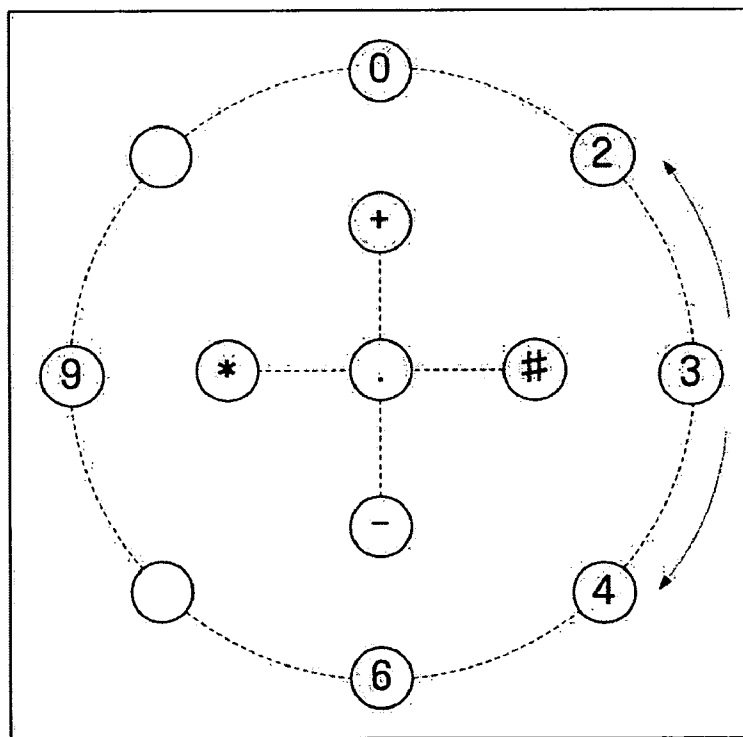


FIG. 18

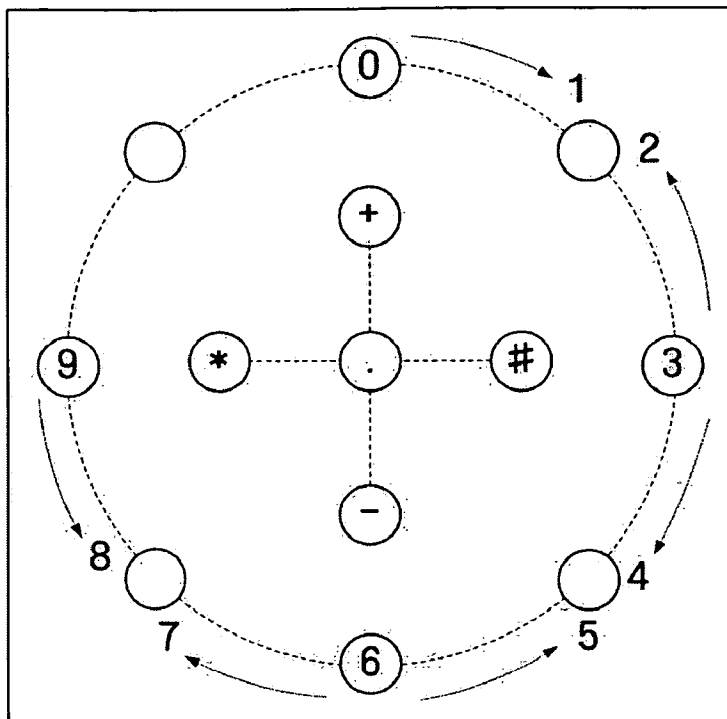


FIG. 19

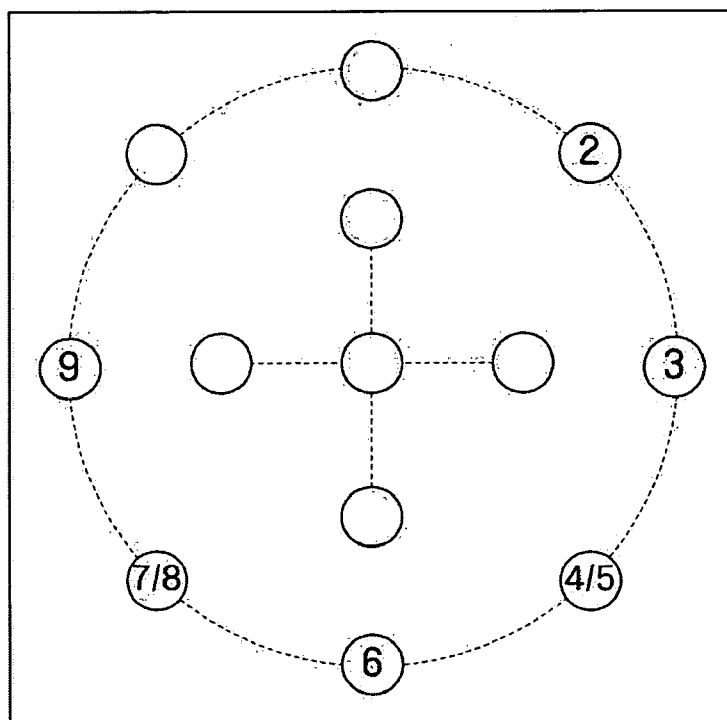
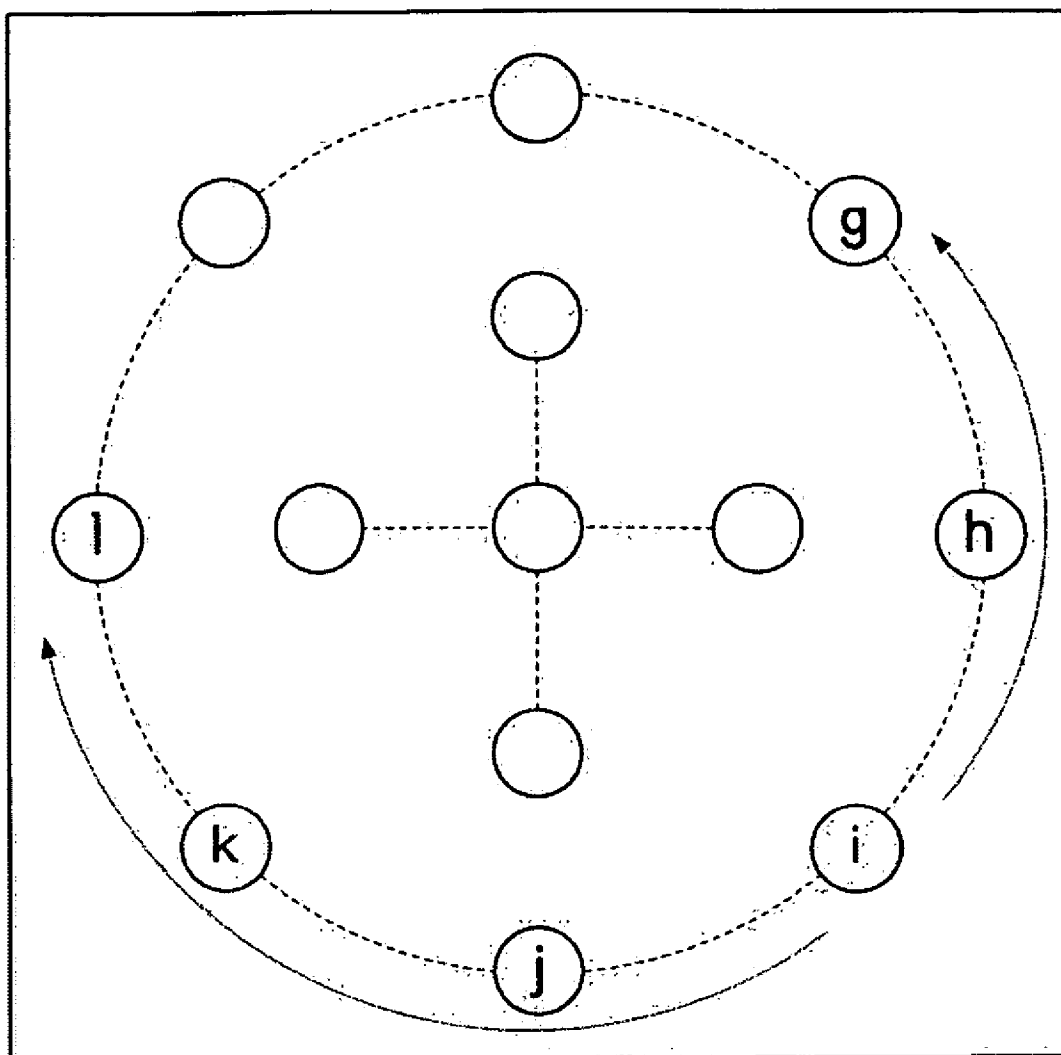


FIG. 20



CHARACTER-INPUT METHOD AND MEDIUM AND APPARATUS FOR THE SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 10-2005-0095087 filed on Oct. 10, 2005, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] Methods, mediums, and apparatuses consistent with the present invention relate to character-input. More particularly, the present invention relates to a character-input method, medium, and an apparatus for improving an intuitive attribute of a button operation.

[0004] 2. Description of the Related Art

[0005] As electronic technologies develop and various home appliances are provided with more functions, the number of buttons on remote controls increases and methods of using the remote controls become complicated. Accordingly, it takes considerable time for users to understand how to use a remote control, and most users use a remote control only to control basic functions of electronic devices (e.g., to adjust the volume or change the channel). In addition, even if a user understands how to control functions of electronic devices through the remote control, if the way of operating the remote control is inconvenient or complicated, the functions of the remote control will not be fully utilized.

[0006] Because such remote controls have been generally provided to remotely control electronic devices, there has not been a high demand for technologies for inputting characters through a remote control.

[0007] However, recently, as multimedia services become diversified and network communication technologies become developed, a demand for technologies for inputting characters to home appliances is increasing. Some examples include inputting a web page address in order to connect to the Internet through a digital TV and/or establishing a two-way service between a broadcasting station and a user in digital broadcasting. In order to satisfy such demands, if buttons for inputting characters are added to a remote control or a plurality of functions are added to one button, as mentioned above, the use of the remote control can become inconvenient or complicated, which is a problem. Therefore, there is a demand for a technology that allows a user to intuitively input characters and that does not restrict a user's sight when using a remote control.

[0008] In the conventional art, an input device has been developed in which each combination of direction buttons on a key pad and different modes represent alphanumeric characters of a unique group, by pushing the direction buttons of the key pad that can be pushed in a plurality of directions and by using the key pad to switch between a first mode and a second mode. This conventional art has reduced the number of buttons. However, there is a possibility that unwanted characters or words can be inputted due to the

complexity of the operations performed using the keypad, and the user cannot confirm characters or words being inputted, which is a problem.

SUMMARY OF THE INVENTION

[0009] Additional aspects, features, and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0010] In an aspect of the present invention, there is provided a method, medium, and an apparatus having a more intuitive button operation for inputting characters.

[0011] According to an aspect of the present invention, there is provided a character-input method, including providing a plurality of objects having a predetermined structure, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped. Here, the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

[0012] According to another aspect of the present invention, there is provided a device for providing a user-interface, including an object-providing module that provides a plurality of objects having a predetermined structure, a character-mapping module that maps characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, a character-input module that inputs characters mapped to objects identified as a second signal among objects to which the characters are mapped if the second signal is received from the user input device, and an output module that outputs a user-interface which includes the plurality of objects provided by the object-providing module, the representative character and the character mapped by the character-mapping module, and characters inputted by the character-input module. Here, representative character is mapped to one or more objects among the plurality of objects having a predetermined structure.

[0013] According to another aspect of the present invention, there is provided a character-input method including mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

[0014] According to another aspect of the present invention, there is provided at least one medium including computer readable instructions implementing methods of the present invention.

[0015] According to another aspect of the present invention, there is provided a user-interface-providing device including a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters; a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] These and/or other aspects, features, and advantages of the invention will become apparent and more readily appreciated from the following description of exemplary embodiments, taken in conjunction with the accompanying drawings of which:

[0017] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0018] FIG. 2 illustrates a button arrangement of a user input device and an object structure of the corresponding user-interface according to an exemplary embodiment of the present invention.

[0019] FIGS. 3A to 3D illustrate an example of a character-mapping in a user-interface according to an exemplary embodiment of the present invention.

[0020] FIGS. 4A to 4C illustrate an example of a character-mapping in a user-interface according to another exemplary embodiment of the present invention.

[0021] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0022] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0023] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0024] FIG. 8 illustrates a button arrangement of a user input device and a user-interface provided by a user-interface-providing device according to an exemplary embodiment of the present invention.

[0025] FIGS. 9 to 11 illustrate a state where consonants of Hangeul (the Korean alphabet) are mapped to an object of a user-interface.

[0026] FIGS. 12 to 14 illustrate a state where vowels of Hangeul are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0027] FIG. 15 illustrates a Hangeul input process according to an exemplary embodiment of the present invention.

[0028] FIGS. 16 to 18 illustrate a state where numbers and symbols are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0029] FIGS. 19 to 20 illustrate a state where letters of the English alphabet are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] Exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0031] Aspects, advantages, and features of the present invention and methods of accomplishing the same may be understood more readily by reference to the following detailed description of exemplary embodiments and the accompanying drawings. The present invention may, however, be embodied in many different forms and should not be construed as being limited to exemplary embodiments set forth herein. Rather, these exemplary embodiments are provided so that this disclosure will be thorough and complete and will fully convey the concept of the invention to those skilled in the art. Like reference numerals refer to like elements throughout the specification.

[0032] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0033] The illustrated character-input system includes a user input device 200 that can be operated by a user and a user-interface-providing device 100 that provides a user-interface for inputting characters as a user operates the user input device.

[0034] Here, the user input device 200 and the user-interface-providing device 100 are controlled by a remote control and signals outputted from the remote control, respectively, and can be implemented as a home appliance (e.g., a TV) including a predetermined display. However, the present invention is not limited to this, and the user-interface-providing device 100 can be implemented as a home appliance (e.g., a set-top box) that can provide a predetermined user-interface to a device including a display according to signals outputted from a remote control even though the user-interface-providing device 100 does not include a display. Furthermore, the device can be implemented as a character-input device such as a mobile phone, a personal digital assistant (PDA), or a notebook computer, by an integration of a user input device 200 and a user-interface-providing device 100.

[0035] The user input device 200 includes a plurality of buttons, and a touch and a push of each button by a user can be sensed. In other words, the user input device 200 can output two signals, which are different from each other, for the same button. Therefore, the user can retrieve or select a character, which the user wants to input, by touching or pushing a button included in the user input device 200.

[0036] The user-interface-providing device 100 provides a user-interface that guides a character-input of a user, and the user-interface includes a plurality of objects. Here, an arrangement of a plurality of objects corresponds to an arrangement of a plurality of buttons included in the user input device 200. For example, as illustrated in FIG. 2, the user input device 200 includes 5 buttons 20a to 20e. If the arrangement of the buttons 20a to 20e is of cross type, a user-interface 10 provided by a user-interface-providing

device **100** has the structure in which the 5 objects **10a** to **10e** are arranged in a cross type. In FIG. 2, each object **10a** to **10e** of a user-interface **10** respectively corresponds to buttons **20a** to **20e** included in the user input device.

[0037] The user-interface-providing device **100** classifies characters in predetermined groups according to predetermined conditions, and maps representative characters of each character group to a part or all the objects of the user-interface.

[0038] A character-input process according to the present invention can be roughly divided into a character-retrieving process and a character-selecting process. First, a user confirms objects, to which a representative character of a character group including a character wanted by a user is mapped in a user-interface, and touches a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a touch of a certain button of the user input device **200**, and maps characters included in a character group represented by a representative character mapped to an object corresponding to a touched button to one or more objects. Here, characters included in the character group can be mapped to an object to which an existing representative character was mapped, or can be mapped to an object to which the representative character was not mapped. Then, the user can confirm an object, to which a character which the user wants to input is mapped. This process is a character-retrieving process.

[0039] After confirming an object to which a character which the user wants to input is mapped, the user can push a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a push of a certain button from the user input device **200** and inputs a character mapped to an object corresponding to a pushed button to a predetermined character-input area. This is a character-selecting process.

[0040] In the above exemplary embodiment, in a character-retrieving process, a button of the user input process **200** was touched, and in a character selecting process, a button of the user input device **200** was pushed. However, this is merely exemplary. Hence, an exemplary embodiment, in which a character is retrieved by pushing a button of the user input device **200** and a character is selected by touching a button of the user input device **200** is also possible.

[0041] Hereinafter, an exemplary embodiment of a character-input process according to the above explanation is explained by referring to FIGS. 3A to 3D. In this example, a user input device **200** having the same button as illustrated in FIG. 2 is used. Therefore, reference numerals used in explaining FIGS. 3A to 3D are same as reference numerals used in FIG. 2, and FIGS. 3A to 3D illustrate only a user-interface **10** provided by the user-interface-providing device **100**. Also, in this example, the user-interface **10** guides the input of numbers **1** to **9**.

[0042] First, the user-interface-providing device **100** saves 3 character groups that include **1** to **3**, **4** to **6**, and **7** to **9**. If **2**, **5**, and **8** are used as representative characters of each group, the user input device **100** can provide the user-interface **10** as illustrated in FIG. 3A. FIG. 3A illustrates a case (example) where a representative character is mapped

to objects **10a**, **10c**, **10e** arranged in a vertical direction among 5 objects **10a** to **10e**. However, the representative character can also be mapped to another object.

[0043] If a user touches a first button **20a** of the user input device **200**, the user-interface-providing device **100** can map characters **1**, **2**, **3** included in the same character group to a representative character **2** mapped to a first object **10a** corresponding to a first button **20a**. In this example, the user-interface-providing device **100** can also map characters **1** and **3** to a second object **10b** and a fourth object **10d**, to which representative characters have not been mapped, as illustrated in FIG. 3B, and the character **2** can be kept mapped to the first object **10a**. However, depending on the exemplary embodiment, the user-interface-providing device **100** can map characters **1**, **2**, **3** to objects **10a**, **10c** and **10e**, to which a representative character was mapped.

[0044] Similarly, if a user touches a third button **20c** of a user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters **4**, **5**, **6** included in a character group represented by a representative character **5** mapped to a third object **10c** corresponding to a third button **20c**, as illustrated in FIG. 3C. Also, if a user touches a fifth button **20e** of the user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters **7**, **8**, **9** included in a character group represented by a representative character **8** mapped to a fifth object **10e** corresponding to a fifth button **20e**, as illustrated in FIG. 3D. In this way, a number, which the user wants to input, can be retrieved.

[0045] According to another embodiment of the present invention, if characters included in a character group represented by a representative character are mapped to objects, representative characters having been mapped to the predetermined object can improve the user-interface for retrieving characters by lowering visual effects or highlighting characters currently being retrieved. For example, when characters included in a character group represented by a representative character mapped to a button touched by a user as illustrated in FIGS. 4A to 4C, the representative characters can be shadowed.

[0046] Also, for example, if a user wants to input the number **3**, after a button **20a** is touched that corresponds to an object **10a** to which the number **2**, which is a representative character of a character group where the number **3** is included, is mapped among buttons included in the user input device **200**, when a user-interface as illustrated in FIG. 3B is displayed, a button **20d** corresponding to an object **10d** to which the number **3** is mapped can be pushed. At this time, the user-interface-providing device **100** can input the number **3** to a predetermined character-input area (not shown). If a character that a user wants to input is a representative character, the user can input the character without a retrieving process by pushing a button corresponding to an object to which the representative character is mapped.

[0047] Hereinafter, the user-interface-providing device **100** and the user input device **200** according to an exemplary embodiment of the present invention will be explained in more detail.

[0048] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0049] The illustrated user input device 200 includes a transmission module 210, a touch-sensing module 220, a push-sensing module 230, and a button module 240.

[0050] The button module 240 includes a plurality of buttons 240-1 to 240-N. The number and the arrangement of buttons can vary according to each exemplary embodiment. The button arrangement according to the exemplary embodiment of the present invention will be explained later by referring to FIG. 8. Meanwhile, the button module 240 can further include additional buttons in addition to the buttons having the arrangement corresponding to the arrangement of objects in the user-interface provided by the user-interface-providing device 100. The additional buttons can be used when the user-interface-providing device 200 requests execution of certain functions.

[0051] The touch-sensing module 220 senses a touch of a user on each button included in the button module 240. The touch-sensing module can be implemented through various forms of touch sensors. For example, a technology sensing a touch of a user in a touch pad or a touch screen can be applied to implement the touch-sensing module 220. According to an exemplary embodiment, the touch-sensing module 220 can include a plurality of touch sensors, and each touch sensor is installed on the surface of a button and can sense a touch by the user.

[0052] The push-sensing module 230 senses a push of a user on each button included in the button module 240. The push-sensing module can be implemented through various forms of pressure sensors. For example, a structure of a key pad used for inputting keys in a keyboard a mobile phone, a personal digital assistant, etc. can be applied to implement the push-sensing module 230. According to an exemplary embodiment, the push-sensing module 230 can include a plurality of pressure sensors, and each sensor is installed on the surface of a button and can sense a pressure if the user pushes a button with more than a certain amount of pressure.

[0053] Further, in another example, the push-sensing module 230 and the touch-sensing module 220 can also be implemented as an integrated module. In this case, the integrated module of the push-sensing module 230 and the touch-sensing module 220 can recognize a case when the amount of pressure applied to the button by a user is less than a predetermined critical value as a touch, and can recognize a case when the amount of pressure applied to the button by the user is a predetermined critical value or more.

[0054] The transmission module 210 outputs a predetermined signal corresponding to a push or a touch of a button if the push-sensing module 230 or the touch-sensing module 220 senses the push or the touch of the button. The transmission module 210 can save a signal corresponding to a touch and a push for each button in advance for the output, and based on the signal, a signal corresponding to the result sensed by the push-sensing module 230 and the touch-sensing module 220 can be outputted.

[0055] If the user input device 200 is, e.g., a remote control which is separated from the user-interface-providing device 100, a signal outputted by the transmission module 210 can be a wireless signal such as infrared rays, radio frequency (RF) signals, and others. However if the user input device 200 is connected via a wire to the user-interface-providing device 100 or exists as a single charac-

ter-input device by a mutual integration, the signal outputted by the transmission module 210 can be an electrical signal that can be outputted through a predetermined wire medium.

[0056] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0057] The illustrated user-interface-providing device 100 includes a receiving module 110, an object-providing module 120, a storage module 130, a character-mapping module 140, a character-inputting module 150, an output module 160, and a control module 170.

[0058] The receiving module 110 receives a signal outputted from the user input device 200. The receiving module 110 can use a method corresponding to a signal transmission method used by the transmission module 210 of the user input device 200.

[0059] The object-providing module 120 provides a plurality of objects included in a user-interface. In the present invention, an object can be implemented not only as a two-dimensional figure such as a circle, a quadrangle and others but also as a figure of various forms such as a three-dimensional icon. The arrangement of objects provided by the object-providing module 120 corresponds to the arrangement of buttons 240-1 to 240-N included in the user input device 200. An exemplary embodiment of the arrangement of objects provided by the object-providing module 120 will be explained later by referring to FIG. 8.

[0060] The storage module 130 stores one or more character groups. Each character group includes one or more characters, and a representative character of each character group is selected for each character group. In the present invention, a character may include one or more consonants and vowels of Hangeul (the Korean alphabet), the English alphabets, numbers, symbols and marks indicating other languages. A character group and a representative character can be set by the manufacturer when the user-interface-providing device 100 is manufactured. Also, after the production of the user-interface-providing device 100, a character group and a representative character can be saved or updated through software. A character constituting a character group saved by the storage module 130 or a representative character of the character group can be selected in various ways. The character group and the representative character of each character group according to an exemplary embodiment of the present invention will be explained later with reference to FIG. 8 and Table 1 to Table 4.

[0061] The character-mapping module 140 maps a representative character of each character group saved in the storage module 130 to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, which representative character will be mapped to which object will be implemented in various ways according to exemplary embodiments. If a signal corresponding to a touch for a certain button from the user input device 200 is received, the character-mapping module 140 can map characters included in the character group represented by the representative character mapped to the object corresponding to the touched button to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, for the mapping of characters included in the character group, objects to which representative charac-

ters have been mapped can be used, or objects to which representative characters have not been mapped can be used. The representative character and the mapping of the character according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 9 to 19.

[0062] The character-input module 150 inputs characters mapped to the object corresponding to the pushed button when a signal corresponding to the push of a certain button is received from the user input device 200. For the input, the character-input module 150 can provide a predetermined character-input area, and characters within the character-input area can be inputted.

[0063] The output module 160 displays a plurality of objects provided by the object-providing module 120, a character mapped to an object by the character-mapping module 140, and a user-interface that includes a character-input area provided by the character-input module 150. At this time, characters mapped to the object can be directly displayed on the object as illustrated in FIG. 3, or they can be displayed in an area adjacent to the object. In order to display the user-interface, the output module 160 can be implemented by a display such as a cathode ray tube (CRT) display, a liquid crystal display (LCD), a thin film transistor (TFT) display, an organic electroluminescent (EL) display, and others. The output module 160 can also provide a user-interface to a predetermined display device existing separately from the user-interface-providing device 100.

[0064] The control module 170 controls operation of each module 110 to 160 constituting the user-interface-providing device 100. Also, the control module analyzes a signal received from the user input device 200 by the receiving module 110. Therefore, the control module can determine which button was operated by a user among buttons included in the user input device 200 and whether the operation method is a touch or a push.

[0065] A "module" in FIGS. 5 and 6 can refer to a software element or a hardware element such as a Field Programmable Gate Array (FPGA) or Application Specific Integrated Circuit (ASIC). The modules can reside in an addressable storage media or can reproduce one or more processors. Modules include software elements, object-oriented software elements, class elements, task elements, processes, functions, attributes, procedures, sub-routines, segments of program codes, drivers, firmware, microcode, circuits, data, databases, data structures, tables, arrays, and variables. The functions provided in the elements and modules can be combined into fewer elements and modules, or can be divided into additional elements and modules.

[0066] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0067] First, an object-oriented module provides a plurality of objects having a predetermined arrangement (S110). Here the arrangement of the plurality of objects preferably has the arrangements that of the plurality of buttons included in the user input device 200.

[0068] Then, the control module determines the type of a character to be mapped to an object provided by the object-providing module 120 among marks indicating consonants of Hangeul, vowels of Hangeul, numbers, symbols, the English alphabet, and other languages (S120). Here, the

determination of the type of character can be executed in various cases such as a case a signal mapped to a function button (not shown) included in the user input device 200 is received from the user input device 200, a case a user selects a certain character type by using the user input device 200 if a type of a character is presented through a predetermined menu screen provided in advance, and other cases.

[0069] Here, the character-mapping module 140 retrieves character groups consisting of characters of the type decided by the control module 170, and maps representative characters of the retrieved character group to one or more objects among a plurality of objects provided by the object-providing module 120 (S130).

[0070] Then, the output module 160 displays a user-interface that includes objects provided by the object-providing module 120 and characters mapped by the character-mapping module 140 (S140). Here, the representative character can be displayed on the object or can be displayed in an area adjacent to the object in parallel with the object. At the same time, the output module 160 can display a predetermined character-input area. The user retrieves and selects a character that he wants to input by operating the user input device 200 while confirming the user-interface.

[0071] If the receiving module 110 receives a predetermined signal from the user input device 200 (S150), the control module 170 determines whether the received signal is a first signal (S160). Here, the first signal is a signal signifying a character-retrieving request and a signal which is outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 of the user input device 200 senses a touch or a push of a user on a predetermined button included in the button module 240.

[0072] If the received signal is the first signal, the character-mapping module 140 retrieves a character group represented by a representative character mapped to an object identified through the first signal, and maps characters included in the retrieved character group to one or more objects among objects provided by the object-providing module 120 (S170). At this time, characters included in the retrieved character group can be mapped to an object to which a representative object was mapped in step S130 or can be mapped to an object to which the representative character was not mapped.

[0073] Then, the output module 160 displays a user-interface S180 including an object to which a character is mapped. Here, each character can be displayed on the object or can be displayed on an area adjacent to the object in parallel with the object. Also, the output module 160 can be displayed so that characters mapped in step S170 can be more highlighted than characters mapped in step S130 by regulating the color tone, size, brightness and others.

[0074] As a result of step S160, if the received signal is not the first signal but the second signal, the character-input module 150 inputs a predetermined character mapped to an object identified as the second signal (S190). Here, the second signal is a signal signifying a character-selecting request and a signal outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 senses a touch or a push by the user on a predetermined button included in the button module 240. As

an exemplary embodiment, if the touch-sensing module 220 of the user input device 200 senses a touch by a user on a predetermined button included in the button module 240, the first signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the second signal can be outputted. As another exemplary embodiment, if the touch-sensing module 220 senses a touch of a user on a predetermined button included in the button module 240, the second signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the first signal can be outputted.

[0075] In addition, a character-inputted in step S190 can be a representative character mapped in step S130, or a character included in a character group represented by a predetermined representative group mapped in step S170.

[0076] Depending on the exemplary embodiment, steps S140 and S180 in FIG. 7 can be steps where the output module 160 outputs a user-interface to a predetermined display device.

[0077] Hereinafter, a user-interface and the character-input method according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 8 to 19. However, the explanation below is an exemplary embodiment, and does not limit the present invention.

[0078] FIG. 8 illustrates a button arrangement of a user input device 200 and a user-interface 300 provided by a user-interface-providing device 100 according to an exemplary embodiment of the present invention.

[0079] As illustrated, the button arrangement of the user input device 200 is arranged in a way that 5 buttons 240-1 to 240-5 are of cross-form, and 8 buttons 240-6 to 240-13 arranged at regular intervals on a circumference containing buttons 240-1 to 240-5 arranged in cross-form. Further, 5 objects 300-1 to 300-5 are arranged in cross form on a user-interface 300, and 8 objects 300-6 to 300-13 are arranged at regular intervals on a circumference containing objects 300-1 to 300-5 arranged in cross form. Four objects 300-6, 300-8, 300-10, 300-12 among 8 objects 300-6 to 300-13 are preferably positioned on an extended line of a cross form formed by 5 objects 300-1 to 300-5 arranged inside the circumference.

[0080] A predetermined character can be inputted through the user input device 200 and the user-interface 300, and hereinafter, an exemplary embodiment for inputting Hangeul consonants and vowels, numbers, symbols and English letters will be explained. Also, cases where a character is retrieved when a user touches a button included in the user input device 200, and a character to be inputted is selected when the user pushes the button, will be explained. However, this is merely exemplary, and it is possible that when the user pushes the button included on the user input device 200, a character is retrieved, and when the user touches the button, the character is selected. For reference, identification marks for objects are omitted in FIGS. 9 to 14 and FIGS. 15 to 19, but the identification mark of each object mentioned in the below explanation can be understood by referring to FIG. 8.

Consonants of Hangeul

[0081] Consonants of Hangeul can be roughly divided into Pyung sounds (e.g., ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅇ, ㅈ, ㅊ; ㅎ is

actually a Hu sound, but is classified as Pyung sound here.), Gyung sounds (e.g., ㅋ, ㆁ, ㆅ, ㆆ, ㆉ) and Gyuk sounds (ㅊ, ㅌ, ㅍ, ㅑ, ㅓ). A character group on Korean characters saved in a user-interface-providing device 100 according to an embodiment of the present invention and representative characters of each character group are described in Table 1.

TABLE 1

Groups of Korean Consonants		
Group	Consonant	Representative character
First group	ㄱ, ㅋ, ㆁ	ㄱ
Second group	ㄴ, ㄷ, ㄹ	ㄴ
Third group	ㅁ, ㅂ, ㅅ	ㅁ
Fourth group	ㅈ, ㅊ, ㅌ	ㅈ
Fifth group	ㅊ, ㅌ	ㅊ
Sixth group	ㄴ, ㄷ	ㄴ
Seventh group	ㅎ, ㅇ	ㅎ
Eighth group	ㅁ, ㅇ	ㅁ

[0082] As shown in Table 1, in the present embodiment, first, consonants are classified to constitute character groups by mutually-connected consonants among Pyung sounds, Gyung sounds and Gyuk sounds, and representative characters among such character groups (the first group to the fifth group) are selected as Pyung sounds (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅈ, ㅊ).

[0083] Further, Pyung sounds (ㄴ, ㄷ, ㄹ, ㅇ, ㅎ) having no connected Gyung sound or Gyuk sound can be classified to constitute character groups by predetermined numbers, and in the present embodiment, as described in Table 1, "ㄴ" and "ㄷ", "ㅎ" and "ㅇ", and "ㅁ" and "ㅇ" are classified as each character group. Here, "ㅇ" belongs to two character groups (the seventh group and the eighth group), but only in the embodiment, so "ㅇ" can be removed from one character group. In character groups (the sixth group to the eighth group) consisting of Pyung sounds having no connected Gyung sound or Gyuk sound, representative characters can be randomly selected. In the present embodiment, "ㄴ", "ㅎ" and "ㅁ" are selected as representative characters.

[0084] A user-interface-providing device 100 saving character groups described in Table 1 and representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on a user-interface 300, as illustrated in FIG. 8. Preferably, a representative character of each character group is respectively mapped to 8 objects 300-6 to 300-13 arranged on the circumference. More preferably, representative characters (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ) of character groups (the first group to the fourth group) including all of Pyung sounds, Gyung sounds, and Gyuk sounds are mapped to objects 300-6, 300-8, 300-10, 300-12 located on a cross-type extended line formed by the arrangement of 5 objects 300-1 to 300-5 arranged within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference, and the mapping is illustrated in FIG. 9. And remaining representative characters (ㄴ, ㅁ, ㅈ, ㅊ) can be randomly mapped to remaining objects 300-7, 300-9, 300-11, 300-13 among 8 objects 300-6 to 300-13 arranged on the circumference.

[0085] Through the user-interface, the user can confirm representative characters for Hangeul consonants, and consonants included in character groups represented by each representative character can be retrieved by touching buttons corresponding to objects to which each representative character is mapped among buttons **240-1** to **240-13** included in the user input device **200**. At this time, consonants included in character groups represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 5 objects **300-1** to **300-5** arranged in cross-type. Preferably, if each object **300-6** to **300-13** on the circumference and the object **300-1** arranged in the center are connected, consonants included in each character group can be arranged through an object existing on the connection line.

[0086] For example, in the state where a user-interface is provided as illustrated in FIG. 9, if a user touches the sixth button **240-6** of the user input device **200**, the user-interface-providing device **100** can map consonants (ㄱ, ㅋ, ㆁ) included in the first group represented by "ㄱ" to the sixth object **300-6**, the second object **300-2** and the first object **300-1**. At this time, "ㄱ" a representative character, is mapped to the object **300-6** which was previously mapped, and remaining characters "ㅋ" and "ㆁ" can be mapped to the second object **300-2** and the first object **300-1**, and the mapping is illustrated in FIG. 10.

[0087] The user can retrieve remaining consonants in a similar way, and consonants which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped are illustrated together in FIG. 11. As illustrated, the mapping state of consonants on 5 objects **300-1** to **300-5** arranged in a cross-type can be changed according to whether objects to which a certain representative character is mapped are activated by a button touch by a user.

[0088] Meanwhile, a user, who retrieved a desired consonant, can input the desired consonant by pushing a button corresponding to an object to which the retrieved consonant is mapped. For example, in the state where the user-interface **300** is provided as illustrated in FIG. 10, if the user pushes the first button **240-1** of the user input device **200**, "ㄱ", a character mapped to the first object **300-1** corresponding to the first button **240-1** is input.

Vowels of Hangeul

[0089] Vowels of Hangeul can be formed by combinations of "ㅣ", "ㅡ" and "ㅏ". Character groups on vowels of Hangeul saved by the user-interface-providing device **100** and representative characters of each character group according to an embodiment of the present invention are described in Table 2.

TABLE 2

Groups of Korean Vowels		
Group	Vowels	Representative character
First group	ㅏ, ㅑ, ㅓ, ㅕ	ㅏ
Second group	ㅗ, ㅛ, ㅜ, ㅠ	ㅗ
Third group	ㅜ, ㅠ, ㅡ, ㅟ	ㅜ

TABLE 2-continued

Groups of Korean Vowels		
Group	Vowels	Representative character
Fourth group	ㅣ, ㅓ, ㅕ, ㅗ	ㅣ
Fifth group	ㅣ, ㅡ	ㅣ

[0090] Character groups in Table 2 have a predetermined regularity, and vowels are grouped according to directions where "ㅏ" is added to "ㅣ" or "ㅡ". For example, in Table 2, the first group consists of vowels having a shape where "ㅏ" is added to the upper side of "ㅡ", and the third group consists of vowels having a shape where "ㅏ" is added to the lower side of "ㅡ". Also, in Table 2, the second group consists of vowels having a shape where "ㅏ" is added to the right side of "ㅣ", and the fourth group consists of vowels having a shape where "ㅏ" is added to the left side of "ㅣ". The fifth group includes "ㅣ" and "ㅡ" which are the basis for such groupings.

[0091] In Table 2, selected representative characters of the first to fourth group are "ㅏ", "ㅑ", "ㅓ", and "ㅕ" having a shape where "ㅏ" is added to "ㅣ" or "ㅡ", which are reference characters. Also, in case of the fifth group, "ㅣ" is selected as a representative character. The vowel "ㅟ" can be included in a random group among the first to fifth group, but in the present embodiment, the vowel is included in the second group (not illustrated in Table 2).

[0092] Character groups, as illustrated in Table 2, and the user-interface-providing device **100** saving representative characters of each character group map representative characters to predetermined objects among 13 objects **300-1** to **300-13** on the user-interface **300**, as illustrated in FIG. 8. Preferably, representative characters of each character group of vowels of Hangeul can be mapped to 5 objects **300-1** to **300-5** arranged in a cross type within the circumference. More preferably, among 5 objects **300-1** to **300-5** arranged in a cross type, a representative character "ㅣ" is mapped, and representative characters "ㅏ", "ㅑ", "ㅓ", and "ㅕ" can be mapped to objects **300-2** to **300-5** of the direction corresponding to the direction where "ㅏ" is added to vowels "ㅣ" or "ㅡ" based on the object **300-1** to which "ㅣ" is mapped, and this mapping is shown in FIG. 12.

[0093] Through the user-interface, the user can confirm representative characters on Hangeul vowels, and vowels included in character groups represented by each representative character can be retrieved among buttons **240-1** to **240-13** included in the user input device **200**. At this time, vowels represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 8 objects **300-6** to **300-13** arranged on the circumference. Preferably, characters included in each character group can be mapped to 3 objects from the closest object to the furthest object from the object to which the representative character was mapped among 8 objects **300-6** to **300-13** arranged on the circumference.

[0094] For example, in the state where the user-interface is provided as illustrated in FIG. 12, if the user touches the

third button **240-3** of the user input device **200**, the user-interface-providing device **100** can map vowels (ㅏ, ㅓ, ㅗ, ㅜ) included in the second group represented by the representative character "ㅏ" mapped to the third object **300-3** corresponding to the third button to the third object **300-3**, the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**. At this time, the representative object "ㅏ" is mapped to the existing mapped object **300-3**, and remaining objects "ㅓ", "ㅗ", and "ㅜ" can be mapped to the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**, and this mapping is illustrated in FIG. 13.

[0095] The user can retrieve remaining vowels in a similar way, and vowels, which can be mapped to each object by touching buttons corresponding to objects to which the representative character is mapped, are illustrated together in FIG. 14. As illustrated, according to whether the object to which a certain character is mapped is activated by the button touch of a user, the mapping state of vowels on 8 objects **300-6** to **300-13** can be changed.

[0096] Meanwhile, "ㄹ" can be mapped together with other vowels to a random object. In the present embodiment, because the vowel "ㄹ" is included in the second group as explained with reference to Table 2, "ㄹ" can be mapped to the same object along with one among vowels "ㅏ", "ㅓ", "ㅗ", "ㅜ". For example, the vowel "ㄹ" can be mapped to the third object **300-3** along with the vowel "ㅏ".

[0097] The user who retrieved desired vowels, can input the desired vowels by pushing buttons corresponding to objects to which retrieved vowels are mapped. For example, in the state where the user-interface **300** is provided as illustrated in FIG. 13, if the user pushes the eighth button **240-8** of the user input device **200**, the character "ㅏ" mapped to the eighth object **300-8** corresponding to the eighth button **300-8** is inputted. Also, in the case where two vowels are mapped to one object, additionally-mapped vowels can be inputted by pushing buttons corresponding to the object two times consecutively. For example, in FIG. 12, the vowel "ㅡ" along with "ㅣ" are mapped to the first object **300-1**, and if the user pushes the first button **240-1** corresponding to the first object **300-1** one time, the vowel "ㅣ" is inputted, and if the first button **240-1** is pushed two times, the vowel "ㅡ" can be inputted. In a similar way, the user can input the vowel "ㄹ" mapped to the same object as the vowel "ㅏ".

[0098] Consonants and vowels can be inputted according to the above-described method, and the process of inputting completed words is shown in FIG. 15. FIG. 15 illustrates a process that inputs a word "빨" and the character-input area **400**, the guide area **300** on which a plurality of objects are displayed, and the user input device **200** including a plurality of buttons are illustrated. The character-input area **400** and the guide area **300** can be displayed to a user as one user-interface. Meanwhile, in the illustrated example, the button filled with black color among buttons of the user input device **200** indicates a button touched by a user, and a button having a mark ✓ indicates a button pushed by a user. The character group of consonants and vowels used in inputting characters, and representative characters are

shown in Tables 1 and 2, and processes of retrieving and selecting characters have been explained by referring to FIGS. 9 to 14.

[0099] First, the user confirms representative characters through the guide area **300** to which consonants of Hangeul are mapped (a). Because "ㅓ" is mapped to the tenth object **300-10**, the user can push the tenth button **240-10** corresponding to the tenth object **300-10** without passing through a separate character-retrieving process, and as a result, the consonant "ㅓ" is inputted in the character-input area **400**.

[0100] Then, the guide area to which vowels of Hangeul are mapped can be provided. The process where the guide area, to which consonants of Hangeul are mapped, is changed into a guide area, to which vowels of Hangeul are mapped, can be implemented by various embodiments such as a case where a user operates predetermined function buttons included in the user input device **200**, a case where the user operates a button corresponding to objects to which representative characters of the character group on consonants have not been mapped, and other cases.

[0101] If the guide area **300** to which vowels of Hangeul are mapped is provided, the user confirms the fifth object **300-5**, to which the representative character "ㅏ" is mapped (b), and the fifth button **240-5** corresponding to the guide fifth object is touched. At this time, "ㅏ", "ㅓ" and "ㅗ", "ㅜ" and "ㅑ", "ㅕ" and "ㅓ" included in the character group represented by the representative character "ㅏ" are respectively mapped to the eleventh object **300-11** to the thirteenth object **300-13** in the guide area **300**.

[0102] If the user pushes the twelfth button **240-12** corresponding to the twelfth object **300-12** to which the vowel "ㅏ" is mapped (c), the vowel "ㅏ" is inputted to the character-input area **400**.

[0103] Then, the guide area **300**, to which consonants of Hangeul are mapped, is provided. The process where the guide area, to which vowels of Hangeul are mapped, is changed into the guide area to which consonants of Hangeul are mapped can be implemented by various embodiments such as the case where a user operates a predetermined function button included in the user input device **200**, a case where the user operates a button corresponding to the object to which representative characters of the character group on vowels have not been mapped, and a case where vowels are inputted to the character-input area **400**.

[0104] The user confirms the seventh object **300-7**, to which the representative character "ㅏ" is mapped, and touches the seventh button **240-7** corresponding to the seventh object **300-7** (d). At this time, the consonant "ㅓ" included in the character group represented by the representative character "ㅏ" is mapped to the first object **300-1** in the guide area **300**.

[0105] If the user pushes the first button **240-1** corresponding to the first object **300-1** to which the consonant "ㅓ" is mapped (e), the vowel "ㅓ" is inputted to the character-input area **400**.

Numbers and Symbols

[0106] Character groups of numbers saved by the user-interface-providing device **100** and representative characters

of each character group according to an embodiment of the present invention are described in Table 3.

TABLE 3

Groups of Numbers		
Group	Number	Representative character
First group	0, 1	0
Second group	2, 3, 4	3
Third group	5, 6, 7	6
Fourth group	8, 9	9

[0107] The user-interface-providing device 100 saving character groups and representative characters of each character group as illustrated in Table 3 maps representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300 as illustrated in FIG. 8. Preferably, the representative characters 0, 3, 6, 9 of each character group can be mapped to 4 objects 300-6, 300-8, 300-10, 300-12 on the cross-type extended line formed by the arrangement of objects 300-1 to 300-5 within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference. This mapping is described in FIG. 16.

[0108] As illustrated in FIG. 16, objects 300-6, 300-8, 300-10, 300-12, to which each representative character is mapped, correspond to the 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock directions, and because the mapped representative characters are also "0", "3", "6" and "9", the user can recognize the user-interface, whereby the user can retrieve numbers more easily.

[0109] The user can retrieve numbers included in the character group represented by each representative character by touching buttons corresponding to objects to which each representative character is mapped among buttons included in user input device 200. Here, numbers included in the character group represented by the representative character can be mapped so that the numbers can be increased in the clockwise direction through objects located at the left/right sides of objects corresponding to buttons touched by the user among the objects 300-6 to 300-13 arranged on the circumference.

[0110] For example, in the state the user-interface is provided as illustrated in FIG. 16, if the user touches the eighth button 240-8 of the user input device 200, the user-interface-providing device 100 can map numbers 2, 3, and 4 included in the first group represented by the representative character "3" mapped to the eighth object 300-8 corresponding to the eighth button 240-8 to the seventh object 300-7 and the ninth object 300-9, respectively. In other words, the representative "3" is mapped to the object 300-8 which has been mapped, and the remaining numbers "2" and "4" can be mapped to the seventh object 300-7 and the ninth object 300-9. This mapping is illustrated in FIG. 17.

[0111] The user can retrieve remaining numbers in a similar way, and the numbers, which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped, are described together in FIG. 18.

[0112] As illustrated, the mapping state of numbers on 8 objects 300-6 to 300-13 arranged on the circumference can

be changed according to whether objects mapped to a certain representative character are activated by the button touch of a user.

[0113] The user who retrieved desired numbers can input desired numbers by pushing buttons corresponding to objects to which retrieved numbers are mapped. For example, in the state where the user-interface is provided as illustrated in FIG. 17, if the user pushes the seventh button 240-7 of the user input device 200, "2", the number mapped to the seventh object 300-7 corresponding to the seventh button 240-7, is inputted.

[0114] Also, numbers representing 10 units, 100 units and others can be inputted by applying the above-mentioned number input method. For example, if there is an operation (a touch or a push) by a user on the button corresponding to a certain object among objects to which representative characters have not been mapped, numbers on the user-interface illustrated in FIGS. 16 to 18 can be changed to 10 units, 100 units, and others.

[0115] Predetermined symbols (□, +, #, ~, ·) are mapped to 5 objects 300-1 to 300-5 arranged in a cross type in FIG. 16, and the user can input wanted symbols by pushing the button corresponding to each object. However, this mapping is for illustration, and more symbols can be retrieved and selected through the form that representative characters of each character group on symbols are mapped to predetermined objects.

English Letters

[0116] Character groups on alphabets saved by the user-interface-providing device 100 and representative characters of each character group according to an exemplary embodiment of the present invention are shown in Table 4.

TABLE 4

Groups of English Letters		
Group	Letter	Representative Character
First group	a, b, c	2
Second group	d, e, f	3
Third group	g, h, i	4
Fourth group	j, k, l	5
Fifth group	m, n, o	6
Sixth group	p, q, r, s	7
Seventh group	t, u, v	8
Eighth group	w, x, y, z	9

[0117] As shown in Table 4, in the present embodiment, numbers are used as representative characters of the letter group. The representative characters correspond to mapping information between letters and numbers commonly used in well-known several character-input devices. For example, a plurality of alphabets are mapped to each number button included in a mobile phone, a personal digital assistant (PDA), or a notebook computer and the relationship between each representative character and letters included in each character group accords with the mapping.

[0118] The character groups, as illustrated in Table 4 and the user-interface-providing device 100 saving representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300, as illustrated in FIG. 8.

Preferably, representative characters of each character group can be mapped to 8 objects **300-6** to **300-13** arranged on the circumference. More preferably, representative characters of each character group can be mapped as illustrated in FIG. **19** so that the user-interface is in the form of a clock.

[0119] According to the illustration of FIG. **19**, “3”, “6” and “9” are mapped to the eighth object **300-8**, the tenth object **300-10**, and the twelfth object **300-12**, respectively, remaining representative characters **2, 4, 5, 7, 8** can be mapped so that numbers can increase in the clockwise direction through remaining objects on the circumference. Here, representative characters “4” and “5”, and representative characters “7” and “8” can be mapped to the same objects **300-9** and **300-11**, respectively.

[0120] Here, letters included in the character group represented by the representative character can be mapped to objects located on the left/right sides of objects corresponding to buttons touched by the user. For example, if the user touches the ninth button **240-9**, letters g, h, i, j, k, and l included in the character group represented by representative characters “4” and “5” mapped to the ninth object **300-9** corresponding to the ninth button **240-9** can be mapped to objects located at the left/right sides of the ninth object **300-9** among objects **300-6** to **300-13** arranged on the circumference. This mapping is illustrated in FIG. **20**. The user can retrieve remaining letters in a similar way. The user-interface in the state where representative characters are mapped can be displayed as illustrated in FIG. **19** by operating separate function buttons (not illustrated) included in the user input device **200** or by operation a certain button among 5 buttons **240-1** to **240-5** arranged in a cross form within the circumference.

[0121] Further, the user, who retrieved desired letters, can input desired letters by pushing buttons corresponding to objects to which retrieved letters are mapped. For example, if the user pushes the seventh button **240-7** of the user input device **200** in the state the user-interface is provided as illustrated in FIG. **20**, the letter “g” mapped to the seventh object **300-7** corresponding to the seventh button **240-7** is inputted.

[0122] In addition to the above-described exemplary embodiments, exemplary embodiments of the present invention can also be implemented by executing computer readable code/instructions in/on a medium/media, e.g., a computer readable medium/media. The medium/media can correspond to any medium/media permitting the storing and/or transmission of the computer readable code/instructions. The medium/media may also include, alone or in combination with the computer readable code/instructions, data files, data structures, and the like. Examples of code/instructions include both machine code, such as produced by a compiler, and files containing higher level code that may be executed by a computing device and the like using an interpreter.

[0123] The computer readable code/instructions can be recorded/transferred in/on a medium/media in a variety of ways, with examples of the medium/media including magnetic storage media (e.g., floppy disks, hard disks, magnetic tapes, etc.), optical media (e.g., CD-ROMs, or DVDs), magneto-optical media (e.g., floptical disks), hardware storage devices (e.g., read only memory media, random access memory media, flash memories, etc.) and storage/transmis-

sion media such as carrier waves transmitting signals, which may include computer readable code/instructions, data files, data structures, etc. Examples of storage/transmission media may include wired and/or wireless transmission media. For example, wired storage/transmission media may include optical wires/lines, waveguides, and metallic wires/lines, etc. including a carrier wave transmitting signals specifying instructions, data structures, data files, etc. The medium/media may also be a distributed network, so that the computer readable code/instructions is stored/transferred and executed in a distributed fashion. The medium/media may also be the Internet. The computer readable code/instructions may be executed by one or more processors. In addition, the above hardware devices may be configured to act as one or more software modules in order to perform the operations of the above-described exemplary embodiments.

[0124] According to exemplary embodiments of character-input method and medium and the device using the same of the present invention, characters can be easily inputted, not restricting a user’s sight by improving the user interface.

[0125] Although a few exemplary embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these exemplary embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

1. A character-input method comprising:

providing a plurality of objects having a predetermined arrangement according to a character-input request;

mapping characters included in a character group represented by a representative character mapped to an object identified by a first signal among objects to which at least one representative character is mapped when the first signal is received from a user input device; and

inputting characters mapped to an object identified as a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped when the second signal is received from the user input device,

wherein the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

2. The method of claim 1, wherein the arrangement of the plurality of objects corresponds to the arrangement of the plurality of buttons included in the user input device.

3. The method of claim 2, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted, and if the other is sensed, the second signal is outputted.

4. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the push is sensed.

5. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position

corresponding to the button at which the touch is sensed among the plurality of buttons.

6. The method of claim 1, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

7. The method of claim 1, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

8. The method of claim 7, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

9. A user-interface-providing device comprising:

an object-providing module that provides the plurality of objects having a predetermined arrangement;

a character-mapping module that maps characters, which are included in the character group represented by representative characters mapped to objects identified as the first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when a first signal is received from a user input device;

a character-input module that inputs characters mapped to objects identified as the second signal among objects to which the characters are mapped when a second signal is received; and

an output module that outputs a user-interface including the plurality of objects provided by the object-providing module, the representative characters and the characters mapped by the character-mapping module, and characters inputted by the character-inputting module,

wherein the representative character is mapped to one or more objects among the plurality of objects having a predetermined arrangement.

10. The device of claim 9, wherein the arrangement of the plurality of objects is of the structure corresponding to the arrangement of the plurality of buttons included in the user-interface-inputting device.

11. The device of claim 10, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted and if the remaining other is sensed, the second signal is outputted.

12. The device of claim 11, wherein an object identified as the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified by the second signal is arranged at the position corresponding to the button at which the push is sensed among the plurality of buttons.

13. The device of claim 11, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the touch is sensed among the plurality of buttons.

14. The device of claim 9, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

15. The device of claim 9, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, and 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

16. The device of claim 15, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

17. At least one medium comprising computer readable instructions implementing the method of claim 1.

18. A character-input method comprising:

mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and

inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

19. At least one medium comprising computer readable instructions implementing the method of claim 18.

20. A user-interface-providing device comprising:

a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters;

a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

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(54) **VOICE DIALING METHOD AND APPARATUS FOR MOBILE PHONE**

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Primary Examiner — Fan Tsang

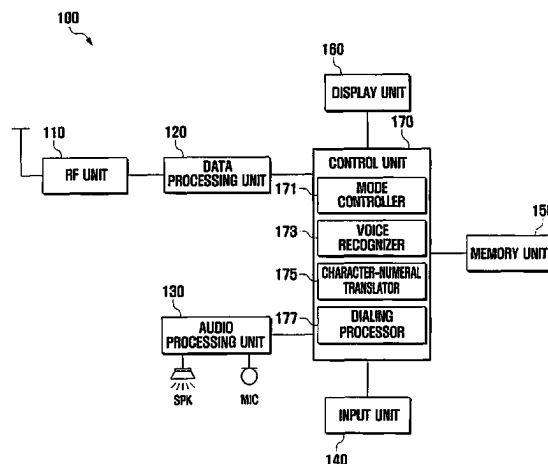
Assistant Examiner — Akelaw Teshale

(74) *Attorney, Agent, or Firm* — The Farrell Law Firm, P.C.

(57) **ABSTRACT**

A voice dialing method and apparatus for simplifying voice dial is provided. The voice dialing method includes receiving a speech in a voice recognition mode, extracting characters from the speech, translating the characters into corresponding numerals, and dialing a phone number on the basis of the numerals.

11 Claims, 3 Drawing Sheets



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FIG. 1

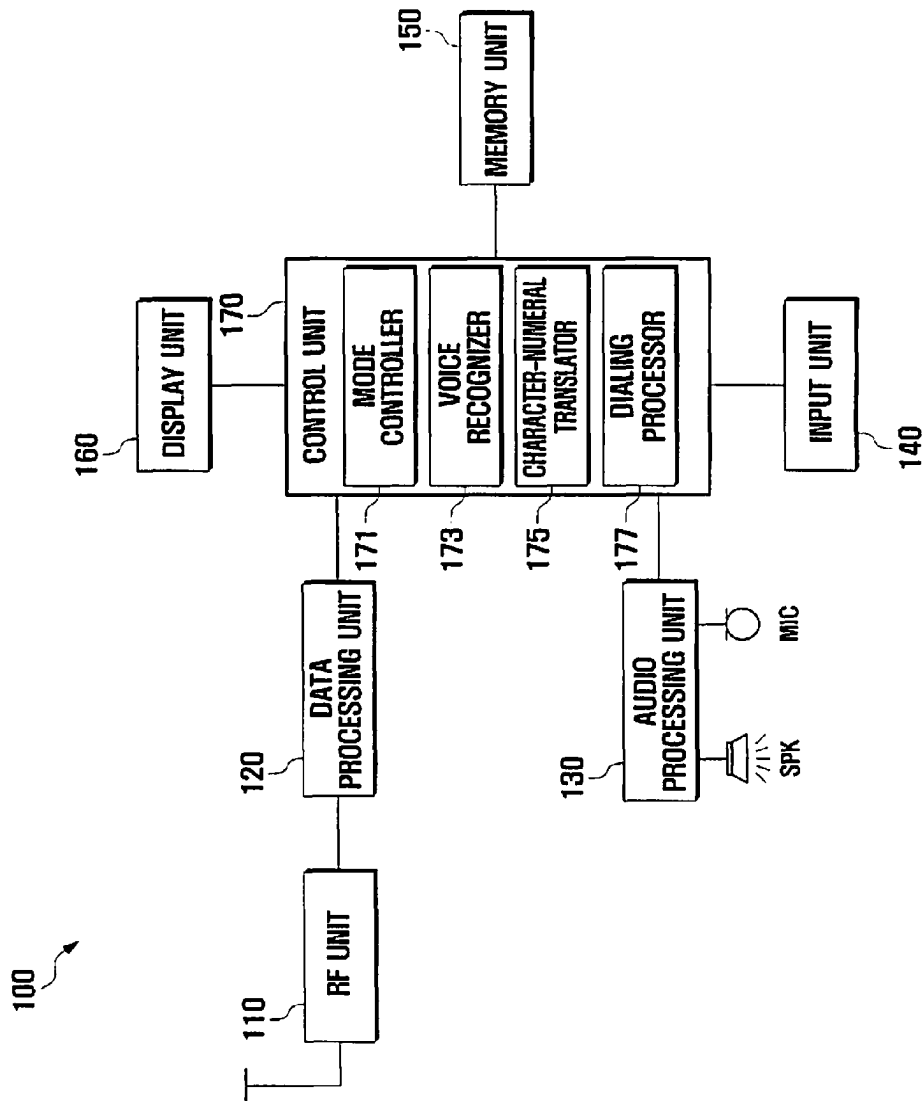


FIG. 2

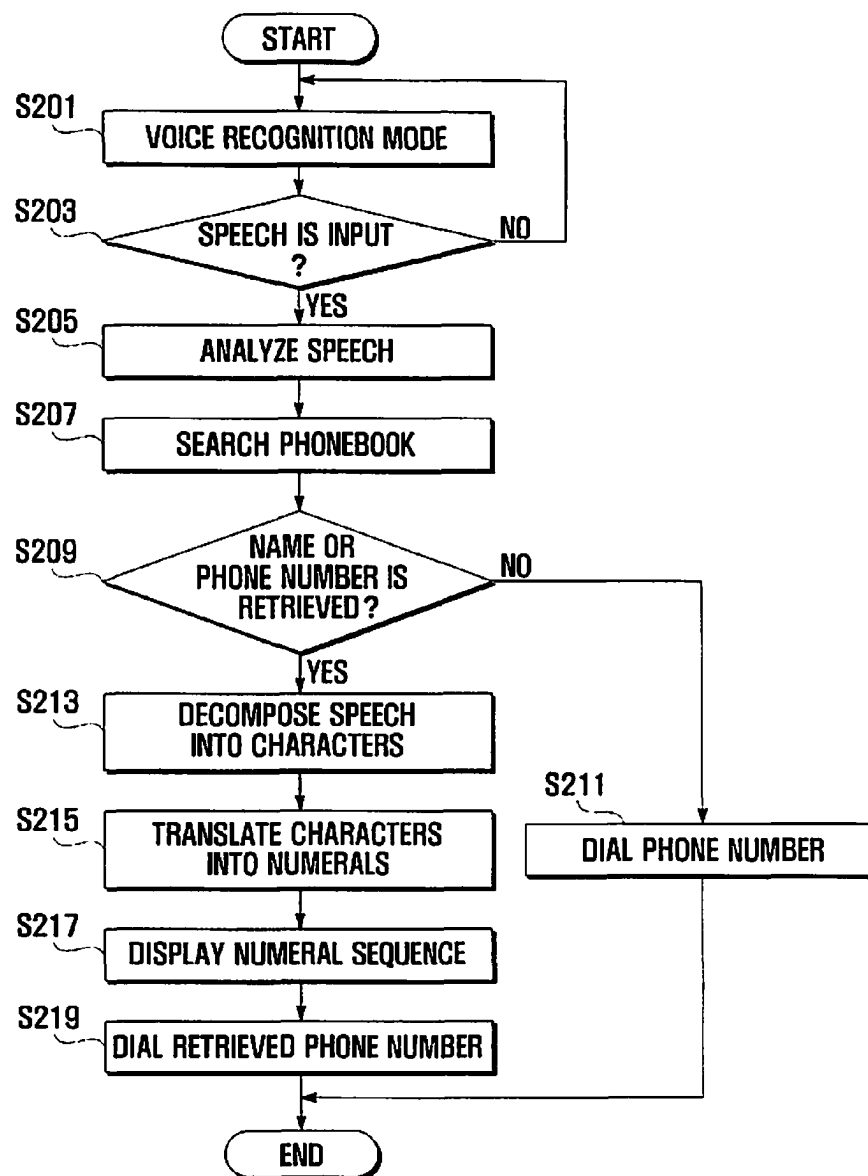
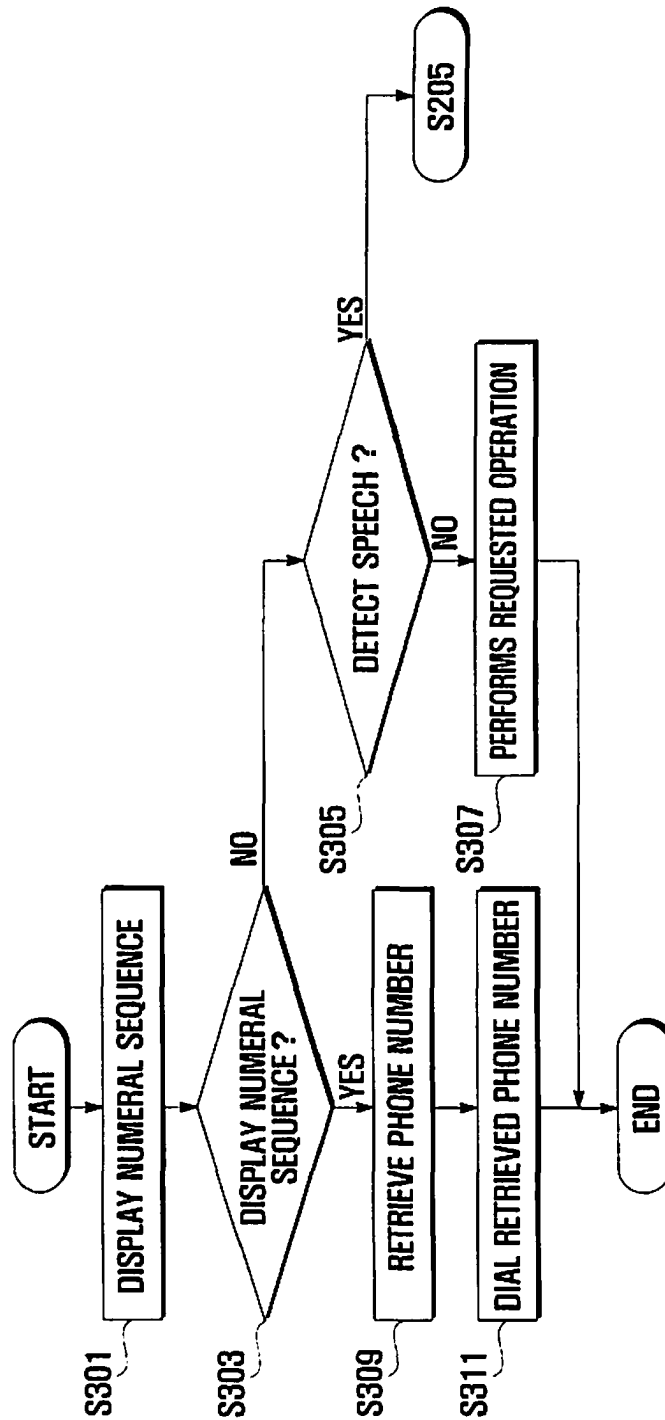


FIG. 3



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VOICE DIALING METHOD AND APPARATUS FOR MOBILE PHONE

PRIORITY

This application claims priority to an application entitled "VOICE DIALING METHOD AND APPARATUS FOR MOBILE PHONE" filed in the Korean Intellectual Property Office on Mar. 30, 2007 and assigned Serial No. 2007-0031398, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a mobile phone and, in particular, to a voice dialing method and apparatus for a mobile phone that allows a user to conveniently voice dial with a number.

2. Description of the Related Art

With the advance of mobile and computing technologies, mobile phones are becoming very powerful and dominant devices for mobile computing. Lately, the mobile phones have evolved into mobile multifunction terminals with the incorporation of various multimedia functions such as messaging functions including Short Message Service (SMS) and Multimedia Messaging Service (MMS), visual communication, Internet access functions, etc.

A variety of convenient functions have also been adapted to the mobile phones for satisfying the user requirements. Among them the voice recognition-based dialing is one of the useful functions, with which the mobile phone retrieves a phone number within a phonebook using the voice recognition technology.

Voice recognition is the technology by which words or phrases spoken by humans are converted into electrical signals. These electrical signals are transformed into coding patterns to which meaning has been assigned. The voice dialing is achieved by retrieving the phone number corresponding to the meaning of the electrical signal from the phonebook and automatically dialing the retrieved phone number.

Conventional voice dialing functions insuch a manner that the mobile phone retrieves a phone number registered with features of a speech recorded by the user.

Typically, the voice dialing can be implemented with a name dial function and digit dial function.

The name dial function retrieves from the phonebook a phone number matched with a name or nick name and dials the retrieved phone number. Similarly, the digit dial function recognizes the audio input digits and dials the corresponding phone number.

However, the conventional name dial technique requires the user to remember the name or nickname registered to the phonebook in order to place a call. The user may be inconvenienced when the registered name or nickname does not readily come across.

The conventional name dial technique is useful only when the user remembers all digits of a phone number to place a call. Likewise, the conventional digit dial technique takes relatively long time to receive input speech and recognize the digits from the speech and is required to maintain a storage-consuming voice-phone number mapping table.

SUMMARY OF THE INVENTION

The present invention solves the above problems. The present invention provides an improved voice dialing method

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and apparatus that are capable of dialing a retrieved phone number on the basis of simplified speech input.

The present invention also provides a voice dialing method and apparatus that are capable of improving user convenience by recognizing a phone number from a word or phrase in voice speech.

The present invention also provides a voice dialing method and apparatus that are capable of improving recognition accuracy by separating a received speech into independent phonemes and converting the phonemes into digits constituting a phone number.

In accordance with an aspect of the present invention, a voice dialing method for a mobile phone includes receiving a speech in a voice recognition mode; extracting characters from the speech; translating the characters into corresponding numerals; and dialing a phone number on the basis of the numerals.

In accordance with another aspect of the present invention, a voice dialing method for a mobile phone includes receiving a speech in a voice recognition mode; searching the phonebook for a word or phone number corresponding to the input audio; extracting characters from the audio if the word or phone number is not retrieved; translating the characters into corresponding numerals; and dialing a phone number on the basis of the numerals.

In accordance with another aspect of the present invention, a voice recognition-enabled mobile phone includes an audio processing unit for processing a speech input through a microphone; a memory unit for storing a phonebook, a mapping table listing characters matched with numerals, and a voice dialing application; and a control unit for translating the speech into a sequence of numerals with reference to the mapping table and dialing a phone number on the basis of the sequence of numerals.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram illustrating a mobile phone adopting a voice dialing method according to the present invention;

FIG. 2 is a flowchart of a voice dialing method according to the present invention; and

FIG. 3 is a flowchart of the dialing procedure of FIG. 2 in more detail.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Preferred embodiments of the present invention are described in detail with reference to the accompanying drawings. The same reference numbers are used throughout the drawings to refer to the same or like parts. Detailed descriptions of well-known functions and structures incorporated herein may be omitted to avoid obscuring the subject matter of the present invention.

Certain terms are used in the following description for convenience and reference only and are not thus limited. In the following detailed descriptions, only the preferred embodiments of the invention have been shown and described by way of illustration of the best mode of carrying out the invention as contemplated by the inventors. As will be realized, the invention is capable of modification in various obvious respects, all without departing from the spirit of the

invention. Accordingly, the drawings and descriptions are to be regarded as illustrative in nature and not restrictive.

The present invention provides an improved voice dialing method. In the following embodiments, the voice dialing method is implemented with a voice recognition technology with which decomposes a user's speech into sound components mapped to the Arabic numerals that constitute a phone number.

For example, the voice dialing is performed by analyzing the combination of each sound of the alphabet characters corresponding to the numerals of the digits constituting a phone number rather than by recognizing the name or phone number itself.

In addition to the known name and digit dialing modes, the voice dialing method of the present invention provides a character dialing mode in which the voice recognition module of the mobile phone analyzes an input audio and recognizes the characters extracted from the audio as numerals so as to call the matched phone number including the sequence of numerals. That is, the voice dialing method of the present invention supports a character dialing mode.

Accordingly, the mobile phone adopting the voice dialing method according to an embodiment of the present invention is equipped with a voice recognition engine that is capable of decomposing the user speech into characters and converts the characters into corresponding numerals.

Assuming that a user speaks a word "help", the mobile phone searches for a phone number mapped to the word "help" in the name dialing mode in its phonebook, at first. If the word "help" is not retrieved in the phonebook, the mobile phone decomposes the input audio into characters H, E, L, and P and matches the string of the characters to predetermined numerals. If the characters H, E, L, and P are matched with the numerals 4, 3, 5, and 7, respectively, the mobile phone recognizes the sequence of 4357 as a target phone number.

The digital dialing and character dialing concepts are comparatively described hereinafter with reference to Tables 1 and 2.

TABLE 1

Input audio	Number
"ZERO"	"0"
"ONE"	"1"
.	.
.	.
"EIGHT"	"8"
"NINE"	"9"
.	.
.	.
"TWELVE"	"12"
.	.
.	.
"THOUSAND"	"1000"
"DOUBLE (N)"	"(NN)"
"TRIPLE (N)"	"(NNN)"
.	.
.	.
.	.

Table 1 is an exemplary digit mapping table for use in the digit dial mode. As shown in Table 1, the numerals and numeral sequences are mapped to representative words such that each numeral or numeral sequence can be input by voice. For example, a target phone number 555-4567 can be dialed

by sequentially speaking "five, five, five, four, five, six, seven" or speaking "triple five, four, five, six, seven."

In the name dial mode, speaking a name or a word registered in the phone book can perform dialing. For example, if the home phone number "555-4567" is registered with the word "my home" in the phonebook, dialing home can be achieved by speaking "my home."

As described above, the user should remember the name or word corresponding to the target phone number registered to the phonebook in the name dial mode or should remember all digits of the phone number in the digit dial mode.

Unlike the name dial mode and digit dial mode, in the character dial mode, speaking a catchy word or character sequence can perform dialing.

Accordingly, in order to dial a phone number it is only required to remember the catchy word whose characters correspond to the sequence of digits of the phone number. Since the catchy word is made up by combining the characters placed on the keys together with the alphabet characters, it is possible to easily dial the phone number without registering a name or nickname in the phonebook.

Typically, the keypad of the mobile phone is provided with a plurality of alphanumeric keys each having a numeral with at least one character.

TABLE 2

Character	Numerals
"A"	"1"
"B", "C"	"2"
"D", "E", "F"	"3"
"G", "H", "I"	"4"
"J", "K", "L"	"5"
"M", "N", "O"	"6"
"P", "Q", "R", "S"	"7"
"T", "U", "V"	"8"
"W", "X", "Y"	"9"
"Z"	"0"

Table 2 is an exemplary character-numeral table for use in the character dial mode of the voice dialing method according to an exemplary embodiment of the present invention. The key arrangement is configured in the manufacturing phase of the mobile phone. Accordingly, there is no need to generate the character-numeral mapping table intentionally. However, the present invention is not limited to the fixed character-numeral table. For example, the user can reconfigure the key arrangement. Although the keys are provided with the English alphabets in table 2, it is obvious that the other characters can be assigned with corresponding numerals depending on language.

Referring to Table 2, dialing a phone number is made by speaking a catchy word composed by combining the characters placed on the keys with the partial or entire numerals of the phone number. For example, if the target phone number includes a sequence of numerals "4357", the user can dial the phone number by speaking the catchy word "HELP" of which H for 4, E for 3, L for 5, and P for 7.

That is, if the user speaks the word "HELP", the mobile phone recognizes and decomposes the word into independent characters H, E, L, and P and converts the character sequence "HELP" into a numeral sequence "4357." Sequentially, the mobile phone retrieves a phone number including the numeral sequence "4357" and places a call to the retrieved phone number in response to a user command.

Although the voice dialing method has been explained with the mobile phone in the above description, the voice dialing method of the present invention featuring the character dial-

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ing mode can be applied to various voice recognition application fields. For example, the character recognition feature of the voice dialing method can be applied to a file searching application for retrieving files of which the title is composed of numeral sequence corresponding to a character sequence extracted from a user speech. Particularly, the character recognition technique can be useful for searching for a multimedia file such as MP3 file.

Although the voice dialing method is explained with a mobile phone, the present invention is not limited thereto.

The mobile phone can be any of a Wideband Code Division Multiple Access (WCDMA) terminal; multimedia player including Portable Multimedia Player (PMP), MP3 player, and digital broadcast receiver; Personal Digital Assistant (PDA), Smartphone, and their equivalents.

Referring to FIG. 1, the mobile phone includes a radio frequency (RF) unit 110, a data processing unit 120, an audio processing unit 130, an input unit 140, a memory unit 150, a display unit 160, and a control unit 170. Control unit 170 includes a mode controller 171, a voice recognizer 173, a character translator 175, and a dialing processor 177.

RF unit 110 is responsible for radio communication of mobile phone 100. RF unit 110 establishes a radio channel with a radio access network, i.e. a base station, for voice and data communications. RF unit 110 includes an RF transmitter for up-converting and amplifying transmission signals and an RF receiver for low noise-amplifying and down-converting reception signals.

Data processing unit 120 is responsible for processing voice data received from audio processing unit 130, alphanumeric data input through input unit 140, and radio data received and to be transmitted through RF unit 110. Data processing unit 120 may include a modem and a codec. The codec includes at least one of audio, video, and data CODECs.

Audio processing unit 130 is responsible for processing audio data output by data processing unit 120 to be output through a speaker (SPK) in the form of audible sound and processing the audio signal input through a microphone (MIC) to be output to data processing unit 120.

Input unit 140 allows inputting alphanumeric data and function execution commands and transfers the input sequence to control unit 170. Input unit 140 is configured to distinguishably receive a voice dial mode activation/deactivation signal. Input unit 140 can be implemented with at least one of a normal keypad, a QWERTY keypad, and touchpad depending on the mobile phone. Input unit 140 may be provided with navigation keys, volume key, and various hot keys.

Memory unit 150 stores application programs for executing various functions of the mobile phone and user data generated while operating the application programs or input by the user. The user data includes phonebook data, picture and audio files such as MP3 files. Particularly, the memory unit stores a voice recognition application for recognizing an input speech, and voice dialing application for placing a call with the recognized speech, a speech decomposition application for determining characters constituting the recognized speech, and a character-numeral translation application for translating a sequence of characters into a sequence of numerals. Memory unit 150 is provided with mapping tables such as Tables 1 and 2 for providing various voice dial modes. Memory unit 150 may be provided with at least one buffer for temporarily storing the user data generated during the operations of the applications.

Display unit 160 is responsible for displaying the application data played during the operations and user data generated in response to the user input. Particularly, display unit 160 is configured to display the numeral sequence matched with the

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character sequence obtained by decomposing the input speech. Display unit 160 can be implemented with a Liquid Crystal Display (LCD). If the LCD is provided with a touch-screen function, display unit 160 can be a part of input unit 140.

Control unit 170 controls general operations of mobile phone 100 and signaling between the internal elements. That is, control unit 170 controls the cooperative signal flows among data processing unit 120, audio processing unit 130, input unit 140, memory unit 150, and display unit 160. Control unit 170 can incorporate data processing unit 120.

Control unit 170 controls the activation/deactivation of the voice dial modes. Control unit 170 analyzes an input speech (word or character catchy word) and obtains a character sequence from the speech and converts the character sequence into a numeral sequence. The control unit retrieves a phone number including the numeral sequence. If a phone number is retrieved, control unit 170 places a call to the phone number in response to a user command.

In order to facilitate the voice dialing control, control unit 170 is provided with the mode controller, voice recognizer 173, character translator 175, and dialing processor 177.

Mode controller 171 configures the mobile phone with voice dial modes according to the user request or preset settings.

Voice recognizer 173 recognizes a speech input when the voice recognition mode is activated. The speech may be any of a word, a word sequence, a name, a nickname, and numeral sequence. Voice recognizer 173 is configured to recognize the respective alphabet characters of audio input.

Character translator 175 composes a sequence of numerals that are mapped to characters recognized by voice recognizer 173.

Dialing processor 177 places a call on the basis of the numeral sequence. Dialing processor 177 determines one of the name dial, digit dial, and character dial mode on the basis of the output of character translator 175. In the character dial mode, dialing processor 177 retrieves the phone number including the numeral sequence and then places a call to the retrieved phone number.

Although the voice dialing method has been described with a mobile phone 100 having the configuration of FIG. 1, the configuration of the mobile phone is not limited thereto. For example, the mobile phone can be provided with at least one of a camera module, a Bluetooth® module, and a digital broadcast receiver. Also, the mobile phone can be configured without any of internal elements depending on the type of communication system.

The operations of the above-structured mobile phone are described in association with the voice dialing method hereinafter in more detail.

Referring to FIG. 2, while the mobile phone operates in the voice recognition mode in step S201, the mobile phone monitors the input through the microphone (MIC) in step S203. The speech can be a word or a sequence of words representing a name or nickname, or a sequence of numerals.

If a speech is detected, the mobile phone analyzes the speech in step S205 and search for the word or numeral sequence corresponding to the input speech in the phone book in step S207. The mobile phone determines whether the word or numeral sequence is retrieved in the phonebook in step S209.

If the word or numeral sequence is retrieved in the phonebook, the mobile phone dials the phone number mapped to the word or corresponding to the numeral sequence in step S211.

If the word or numeral sequence is not retrieved, the mobile phone decomposes the speech into characters in step S213

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and composes a sequence of numerals corresponding to the characters in step S215. Next, the mobile phone displays the numeral sequence on the display screen in step S217. If the sequence is confirmed as a user-intended numeral sequence, the mobile phone retrieves the phone number having the numeral sequence and dials the retrieved phone number in response to a user command in step S219.

Referring to FIG. 3, while the reference numeral is displayed on the display screen in step S301, the mobile phone determines if a key input for confirming the numeral sequence is a user intended sequence in step S303.

The key input is received in response to a popup message asking conformation on the numeral sequence. The mobile terminal determines, on the basis of the key input by the user, whether the numeral sequence is the intended one.

If it is determined that the numeral sequence is not the user-intended sequence, the mobile phone requests audio input of word or numeral sequence again and determines whether a speech is detected in step S305. If a speech is detected, the mobile phone performs step S205 of FIG. 2 again.

If it is determined a speech is not detected, the mobile phone performs a predetermined operation or other requested operation in step S307. For example, the mobile terminal may exit the voice dial mode or reanalyzes the previously input speech and retrieves another phone number.

Returning to step S303, if it is determined that the numeral sequence is the user-intended numeral sequence, the mobile phone retrieves a phone number including the numeral sequence from the phonebook in step S309. The mobile terminal loads the retrieved phone number and displays the phone number on the display screen. Consequentially, the mobile phone performs dialing the phone number in step S311.

Although not described in detail above, the phone number can be dialed directly via audio. In this case, the process for retrieving the phone number can be skipped.

In the above description, the voice dialing is described mainly with the spoken a word or phrase. However, voice dialing can be performed by sequentially speaking independent characters corresponding to the numerals.

Although the voice dialing method is explained with the 4 digit numeral sequence, the number of digits can be increased or decreased.

For example, the numeral sequence "17753" can be input by speaking the word "APPLE" for dialing a phone number including "17753." Also, the numeral sequence "663" can be input by speaking the word "ONE" for dialing a phone number including "663."

As described above, the voice dialing method and apparatus of the present invention are advantageous to dialing a phone number retrieved on the basis of simplified speech input. The phone number is retrieved from a phonebook by a sequence of numerals corresponding to a sequence of characters that are spoken independently or as a word, resulting in improved user convenience.

Also, the voice dialing method and apparatus of the present invention is advantageous since there is no need to remember the entire phone number or relatively long name or nickname for dialing the phone number.

Since a phone number is retrieved by speaking a word composed in combination of characters or speaking independent characters provided with numerals on the respective keys, the voice dialing can be made with a catchy word or a sequence of characters, resulting in improved user convenience.

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Although exemplary embodiments of the present invention have been described in detail hereinabove, it should be clearly understood by those skilled in the present art that many variations and/or modifications of the basic inventive concepts herein taught may still fall within the spirit and scope of the present invention, as further defined by the appended claims.

What is claimed is:

1. A voice dialing method for a mobile phone comprising: receiving a speech in a voice recognition mode; decomposing a plurality of characters from the speech; translating each decomposed character of the plurality of characters into a corresponding numeral; displaying the corresponding numerals; retrieving, if the numerals are a user-intended numeral sequence, at least one of phone numbers corresponding to the numeral sequence from a phonebook; displaying the at least one of the retrieved phone numbers; and dialing a specific phone number selected from the displayed at least one of the retrieved phone numbers.
2. The voice dialing method of claim 1, wherein the speech is a word or a sequence of words spoken by a user.
3. A voice dialing method for a mobile phone, comprising: receiving a speech in a voice recognition mode; searching for a word or a numeral sequence corresponding to the speech in a phonebook; dialing, if the word or the numeral sequence is searched from the phonebook, a phone number corresponding to the word or the numeral sequence; decomposing, if the word or the numeral sequence is not searched from the phonebook, a plurality of characters from the speech; extracting a numeral corresponding to each character of the decomposed plurality of characters; displaying the extracted numerals; retrieving, if the extracted numerals are a user-intended sequence, at least one of phone numbers corresponding to the extracted numerals from the phonebook; displaying the at least one of the retrieved phone numbers; and dialing a specific phone number selected from the displayed at least one of the retrieved phone numbers.
4. The voice dialing method of claim 3, wherein the speech is a word or a sequence of words spoken by a user.
5. A voice recognition-enabled mobile phone comprising: an audio processing unit for processing a speech input through a microphone; a memory unit for storing a phonebook, a mapping table listing characters matched with numerals, and a voice dialing application; and a control unit for decomposing a plurality of characters from the speech, translating each character of the plurality of decomposed characters into a corresponding numeral with reference to the mapping table, displaying the corresponding numerals, retrieving at least one of phone numbers corresponding to the corresponding numerals from a phonebook when the numerals are a user-intended numeral sequence, displaying the at least one of the retrieved phone numbers, and dialing a specific phone number selected from the displayed at least one of the retrieved phone numbers.
6. The voice recognition-enabled mobile phone of claim 5, wherein the control unit comprises: a mode controller for selectively activating and deactivating voice dial modes according to a user request or preset configuration;

a voice recognizer for recognizing the speech and decomposing the speech into characters; and
a character translator for translating a sequence of the characters into a sequence of numerals.

7. The voice recognition-enabled mobile phone of claim 6, 5
wherein the control unit further comprises a dialing processor for retrieving the at least one of the phone numbers on the basis of the sequence of numerals.

8. The voice recognition-enabled mobile phone of claim 7, 10
wherein the dialing processor retrieves the at least one of the phone numbers including the sequence of numerals and dials the specific phone number in response to a user request.

9. The voice recognition-enabled mobile phone of claim 5, 15
wherein the voice dialing application comprises:

a voice recognition module for recognizing the speech; 15
a voice dialing module for placing a call with the recognized speech;
a speech decomposition module for decomposing the speech into characters; and
a character-numeral translation module for translating the 20
characters into corresponding numerals.

10. The voice recognition-enabled mobile phone of claim 5, 25
further comprising a display unit for displaying the translated numerals.

11. The voice recognition-enabled mobile phone of claim 5, 25
further comprising a radio frequency unit for transmitting a call request signal to a radio access network in accordance with dialing the specific phone number.

* * * * *



US 20070080949A1

(19) **United States**(12) **Patent Application Publication****Chung et al.**(10) **Pub. No.: US 2007/0080949 A1**(43) **Pub. Date: Apr. 12, 2007**(54) **CHARACTER-INPUT METHOD AND
MEDIUM AND APPARATUS FOR THE SAME**(30) **Foreign Application Priority Data**

Oct. 10, 2005 (KR) 10-2005-0095087

(75) Inventors: **Ji-hye Chung**, Seoul (KR); **Yeun-bae
Kim**, Seongnam-si (KR); **Hyun-jin
Kim**, Gwangju-si (KR); **Tae-suh Park**,
Yongin-si (KR)**Publication Classification**(51) **Int. Cl.**
G09G 5/00 (2006.01)(52) **U.S. Cl.** **345/169**

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LTD.**, Suwon-si (KR)(21) Appl. No.: **11/513,214**(22) Filed: **Aug. 31, 2006**(57) **ABSTRACT**

A character-input method is provided. The character-input method includes providing a plurality of objects having a predetermined arrangement, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped.

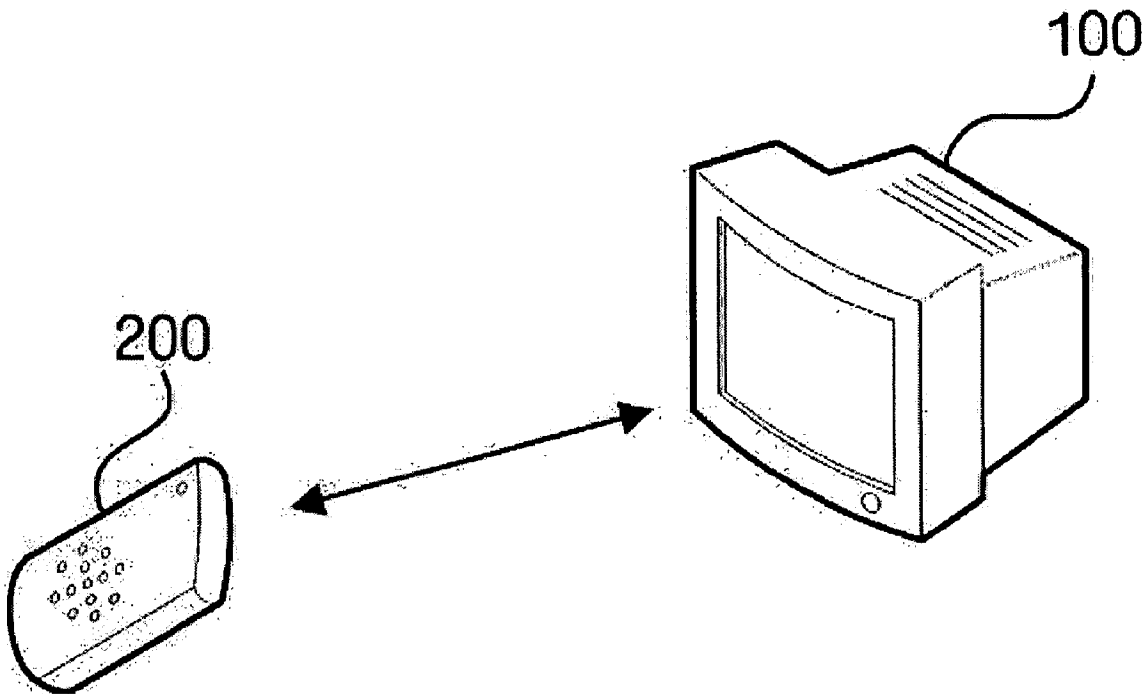


FIG. 1

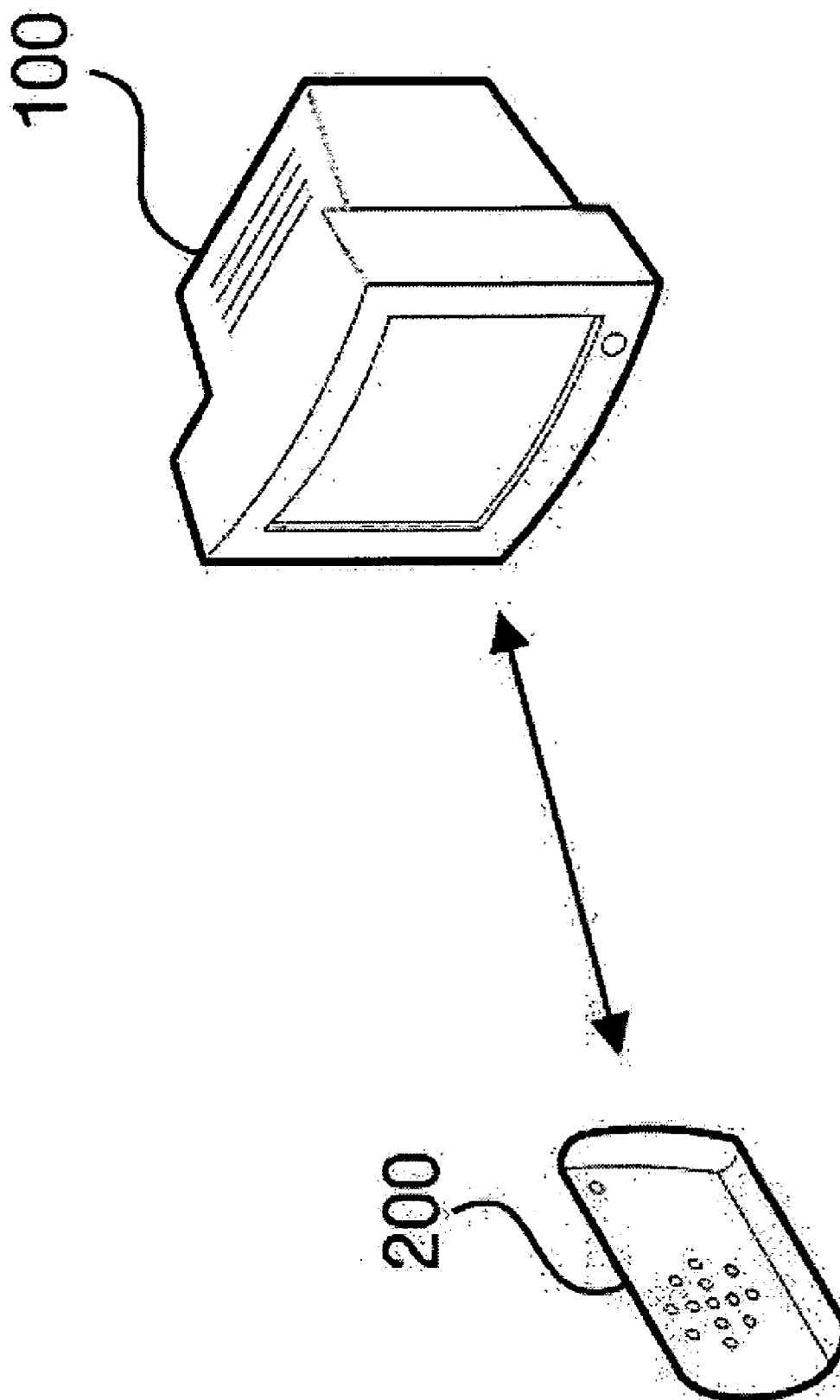


FIG. 2

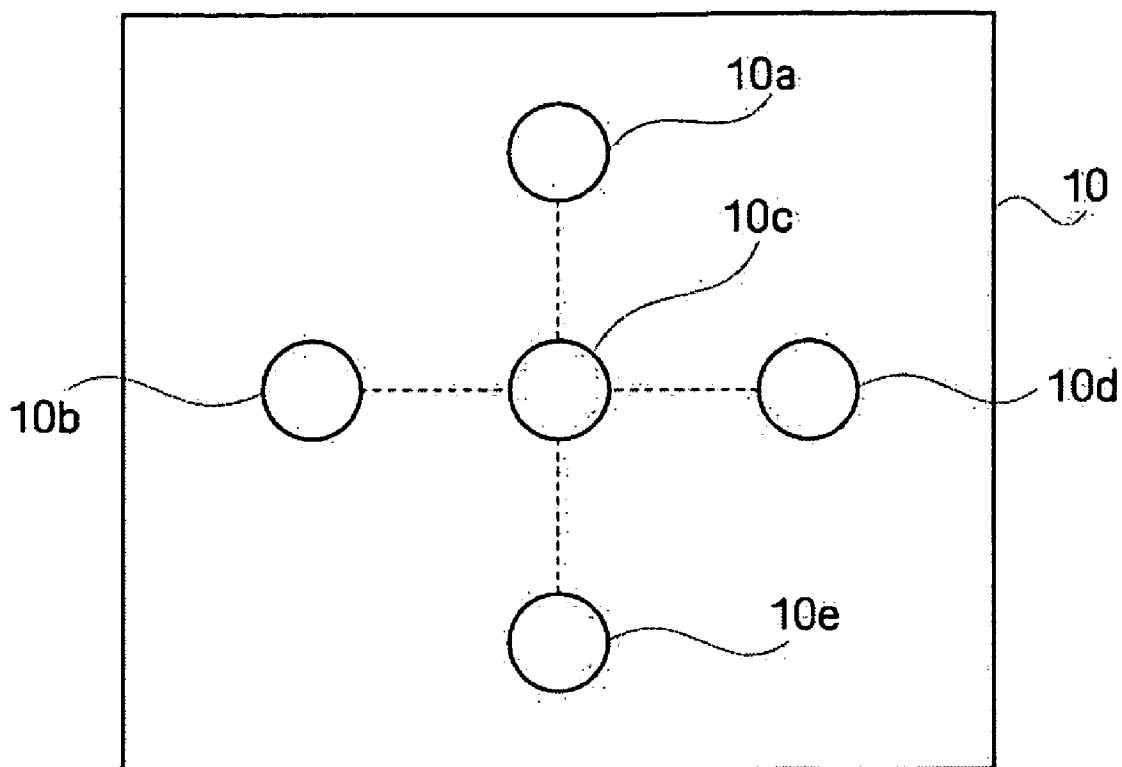
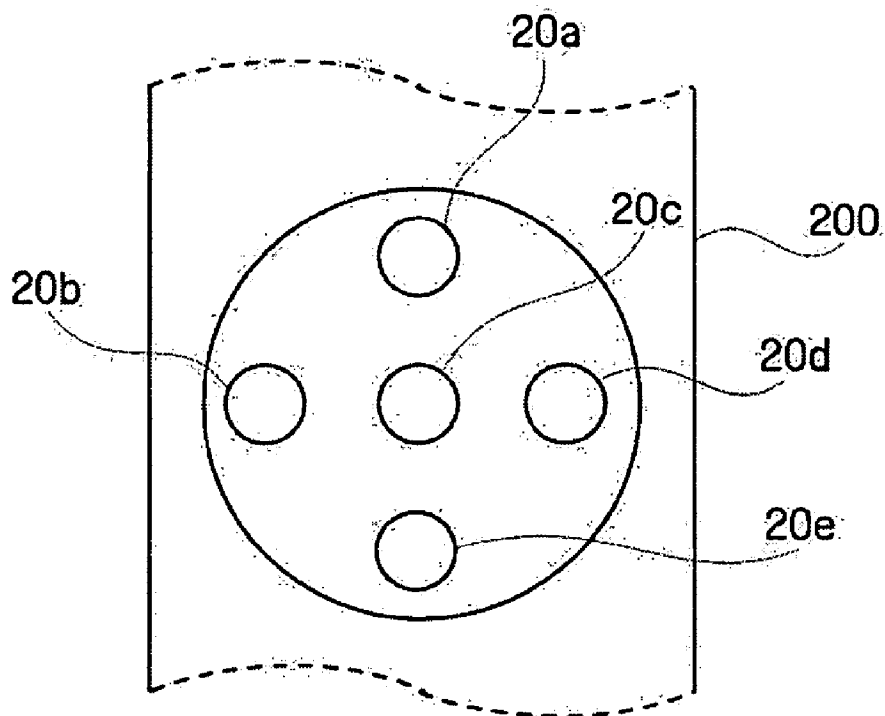


FIG. 3A

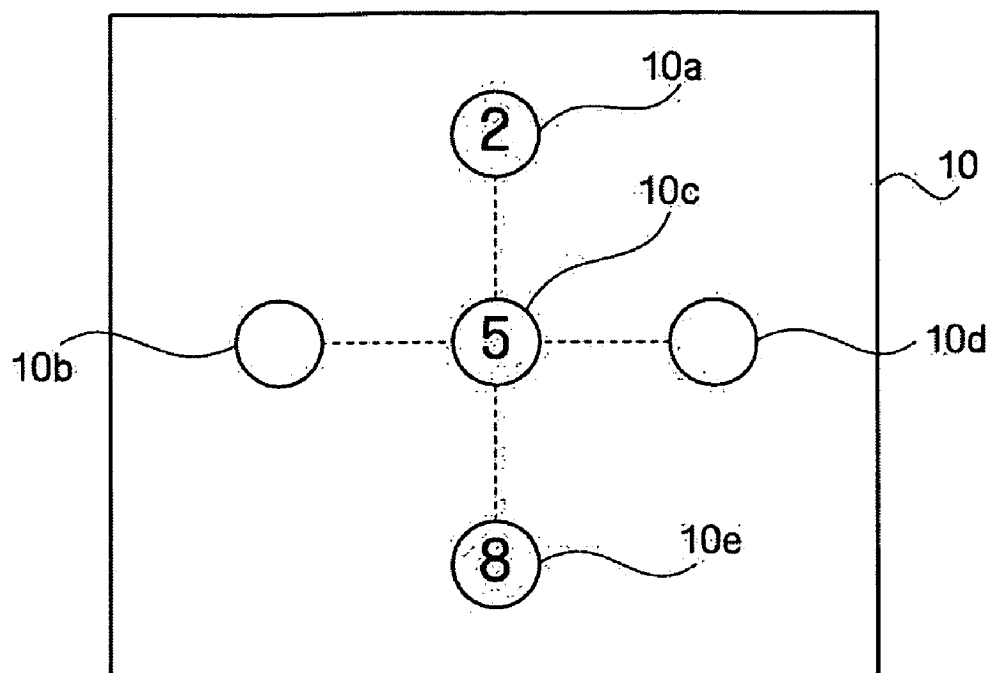


FIG. 3B

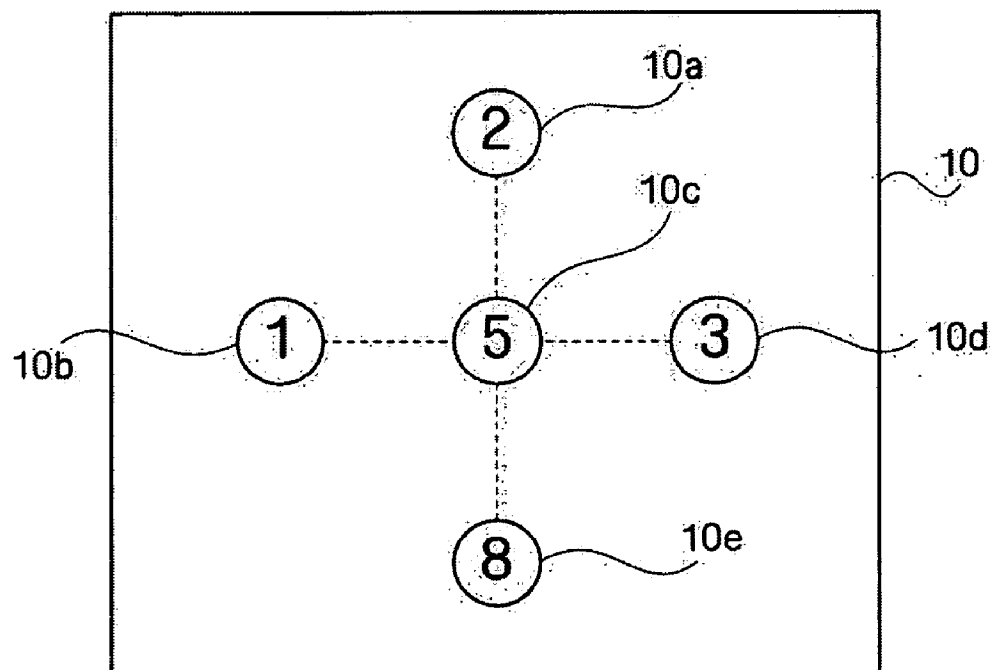


FIG. 3C

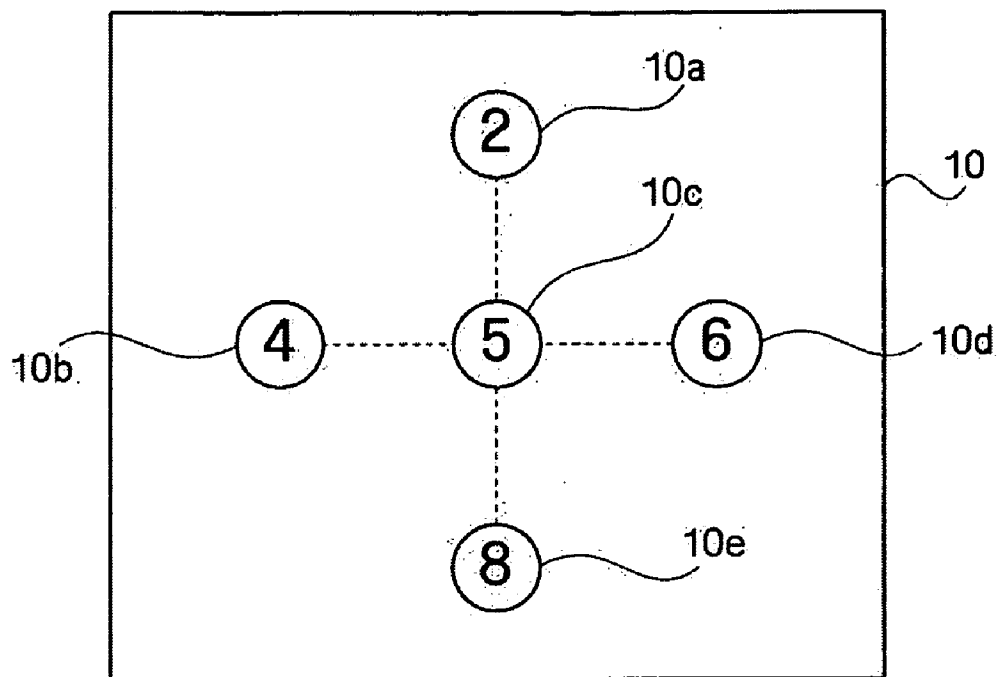


FIG. 3D

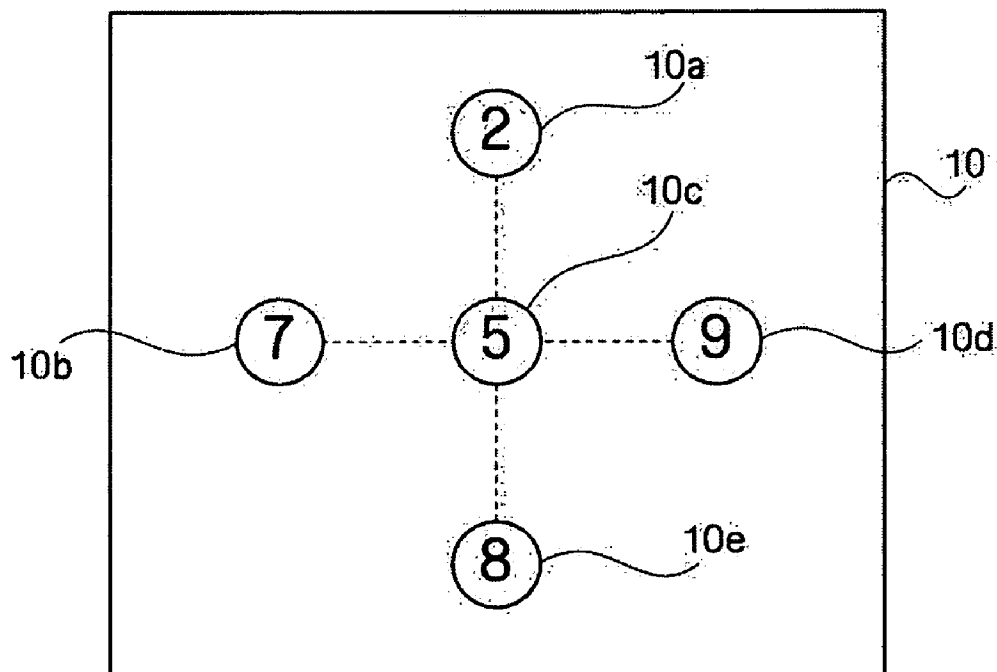


FIG. 4A

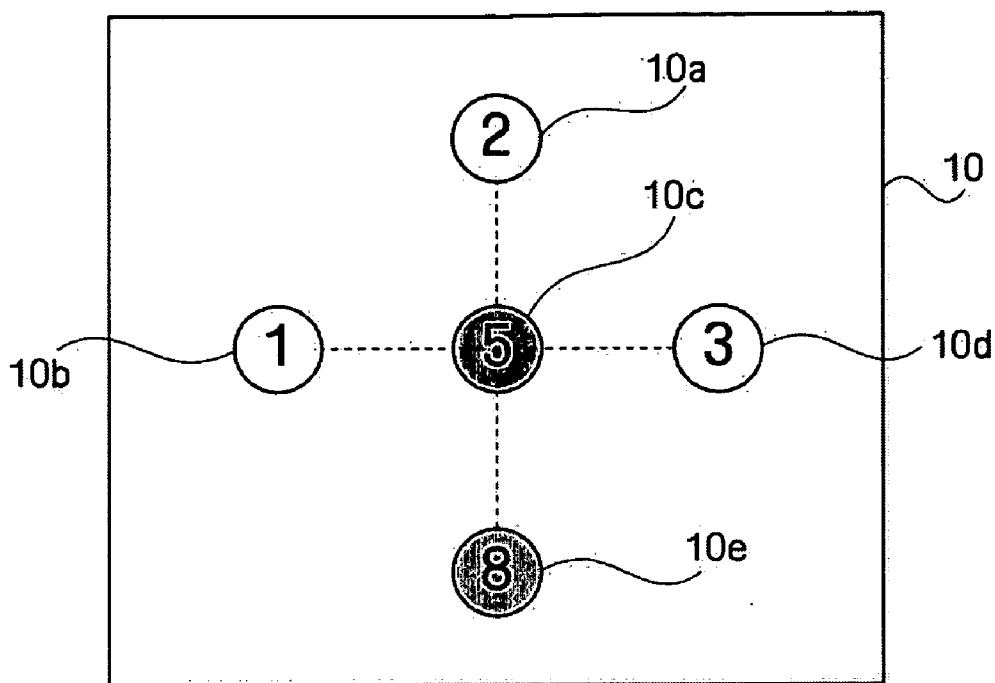


FIG. 4B

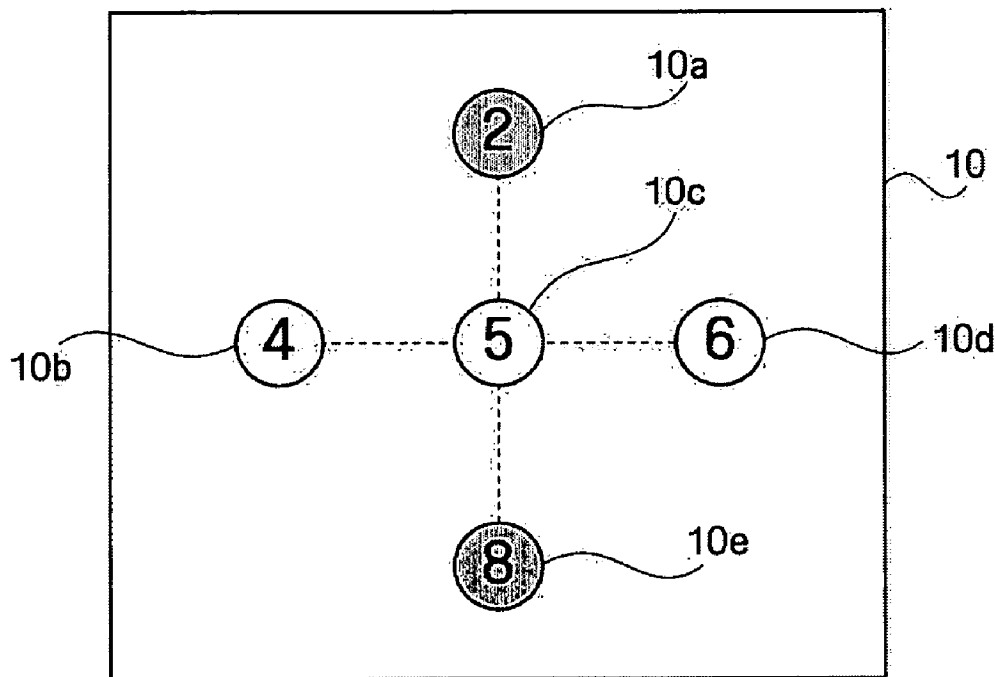


FIG. 4C

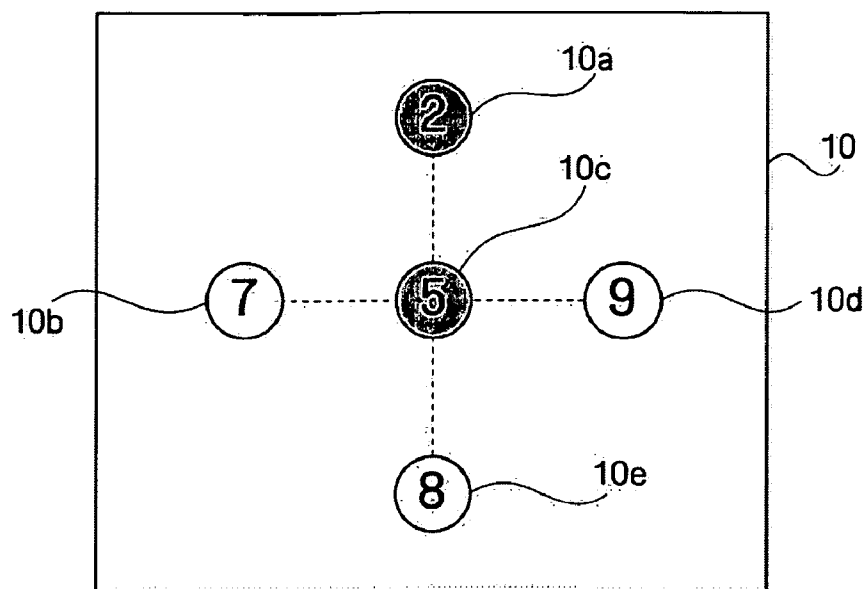


FIG. 5

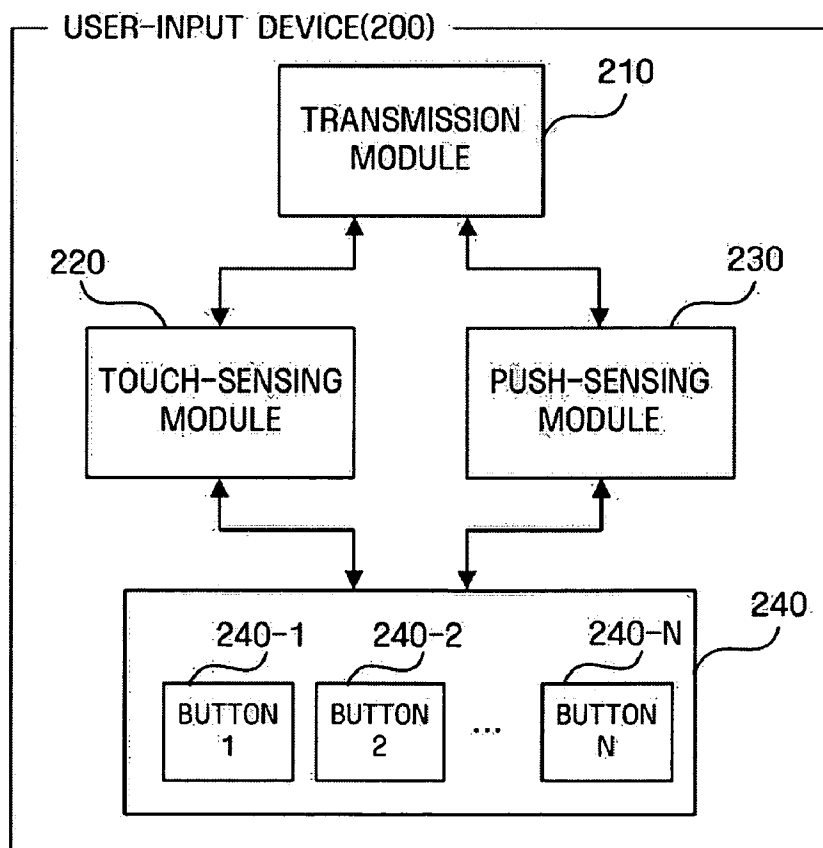


FIG. 6

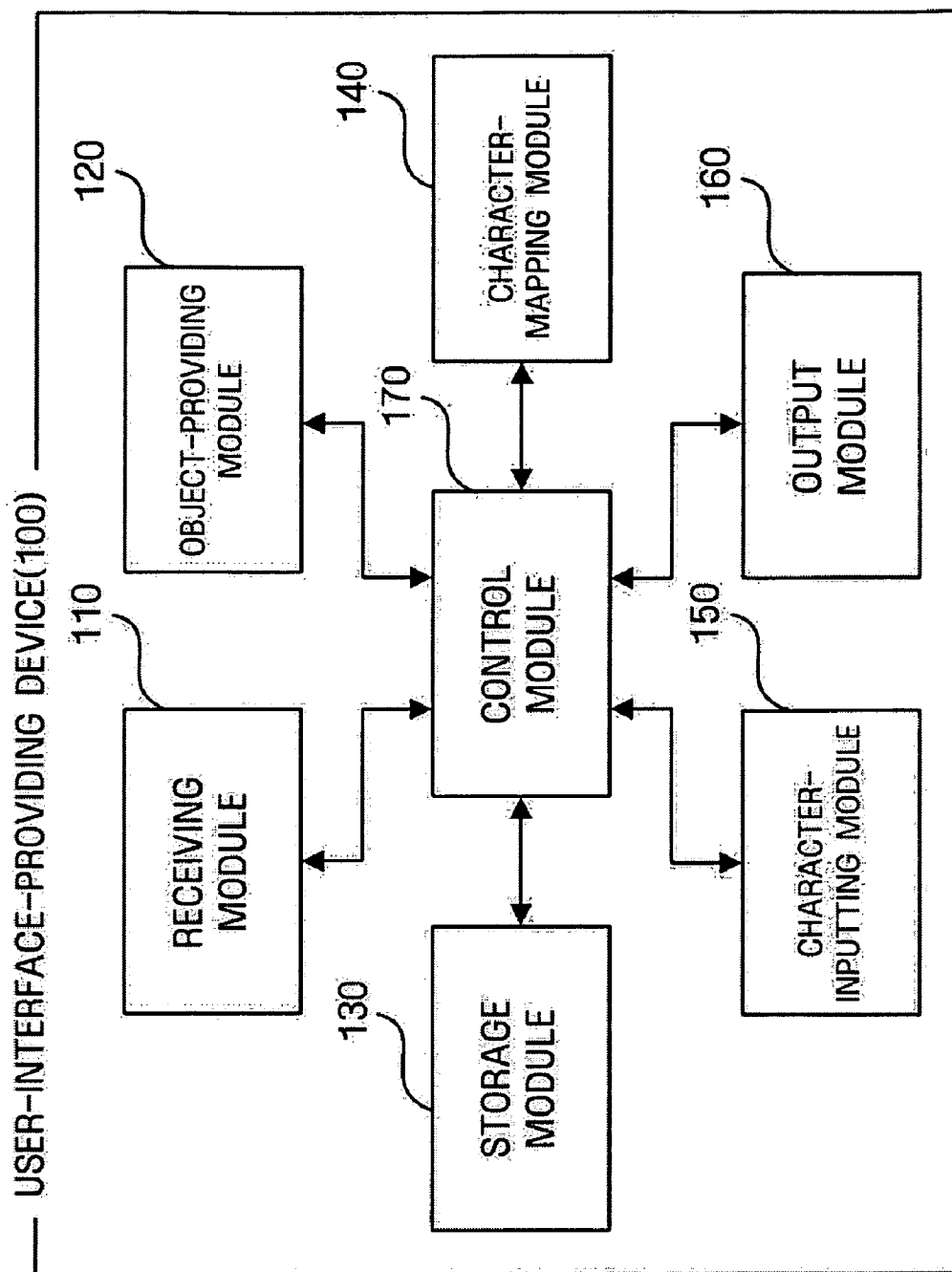


FIG. 7

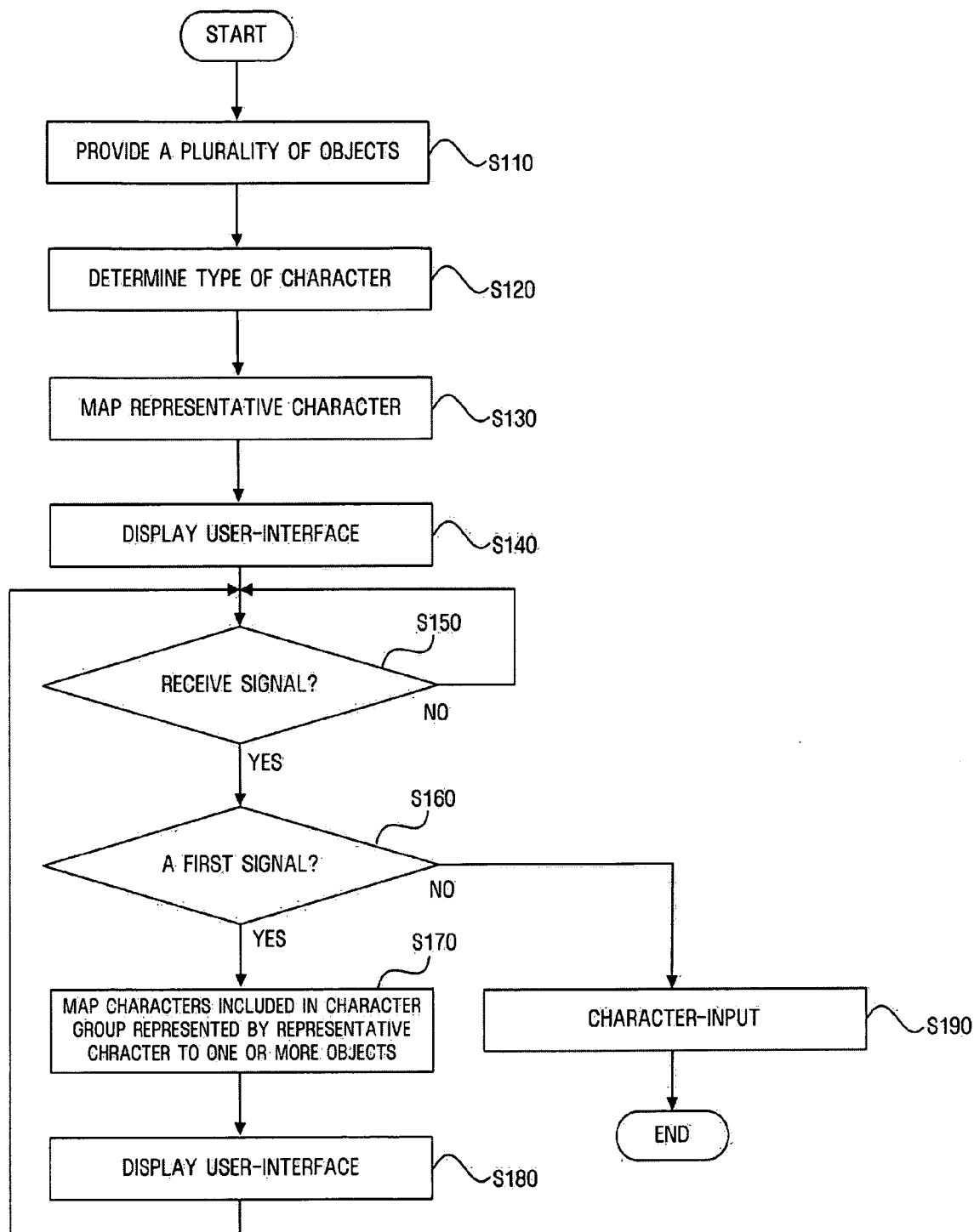


FIG. 8

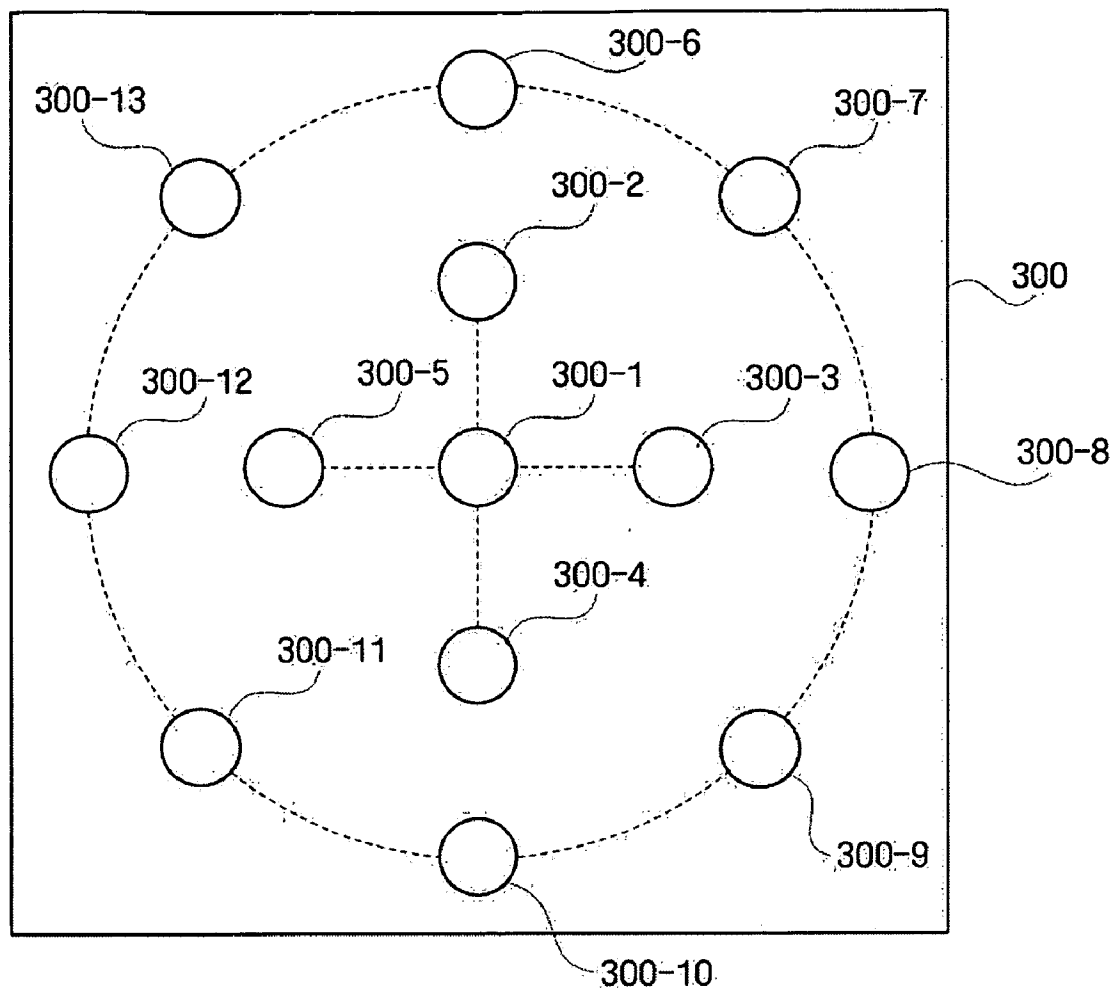
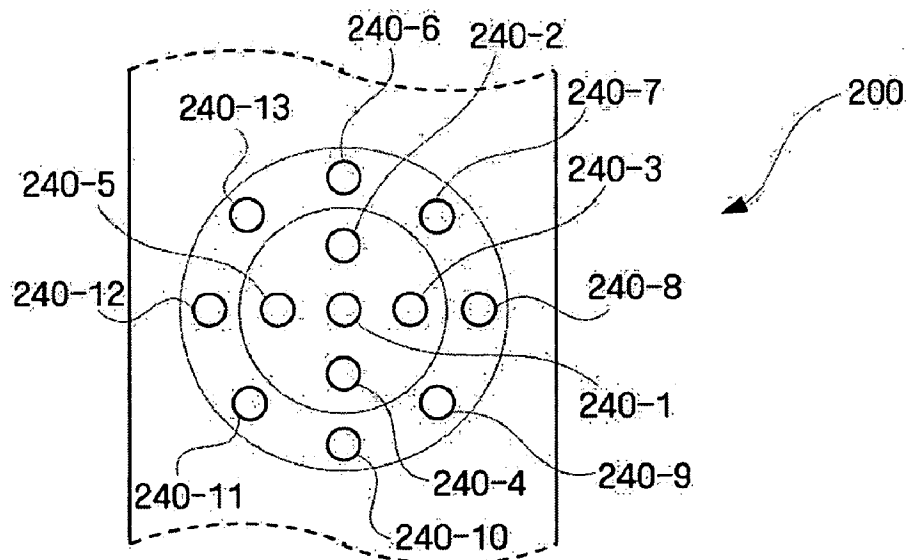


FIG. 9

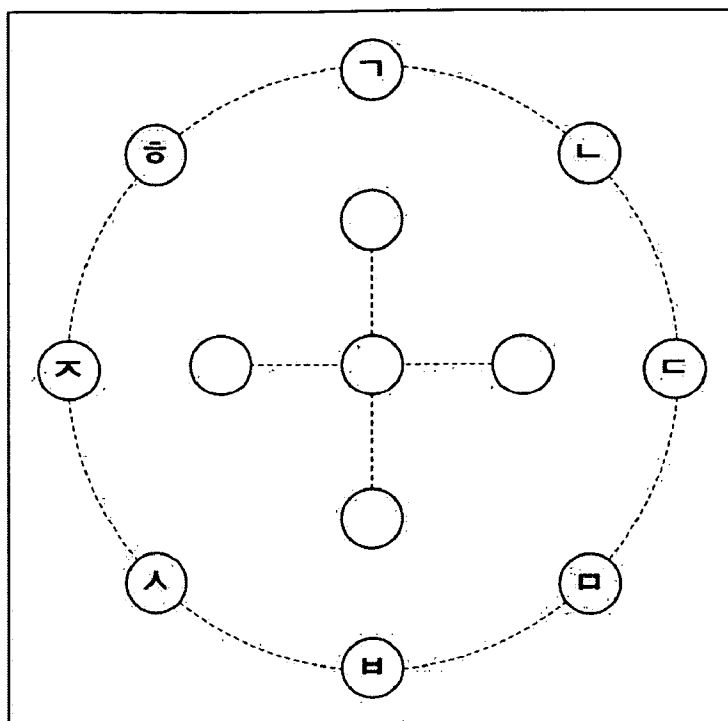


FIG. 10

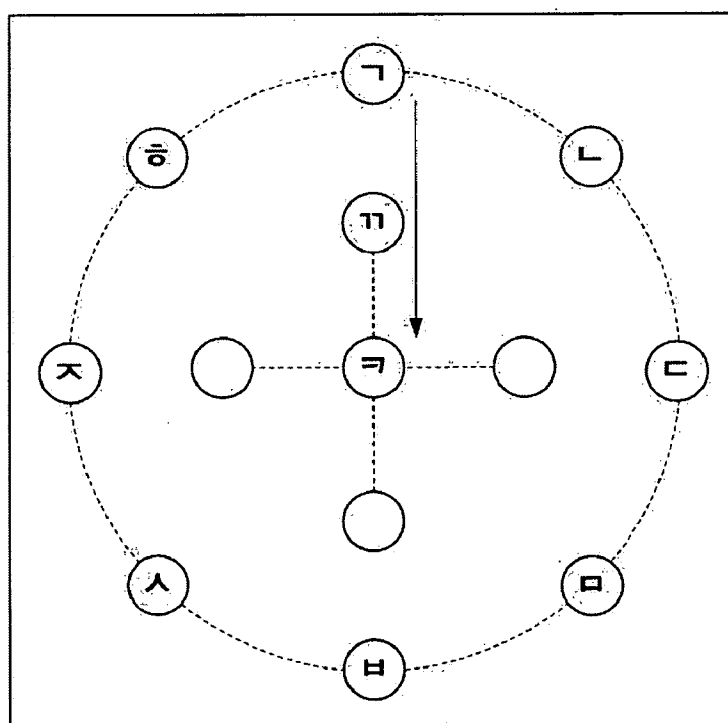


FIG. 11

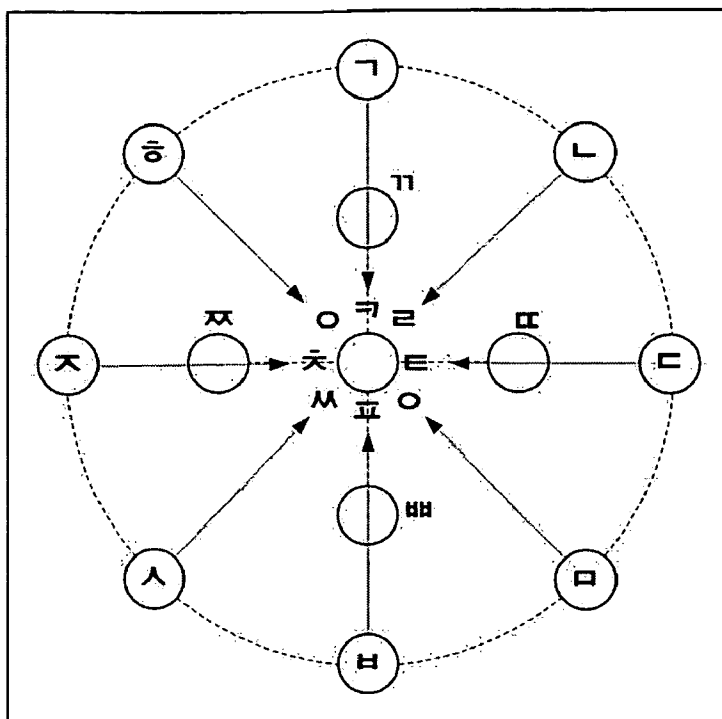


FIG. 12

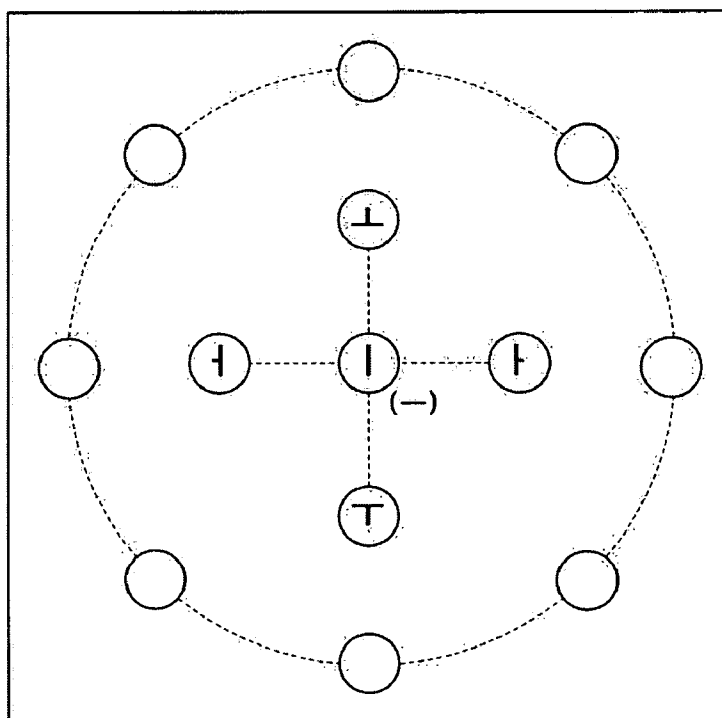


FIG. 13

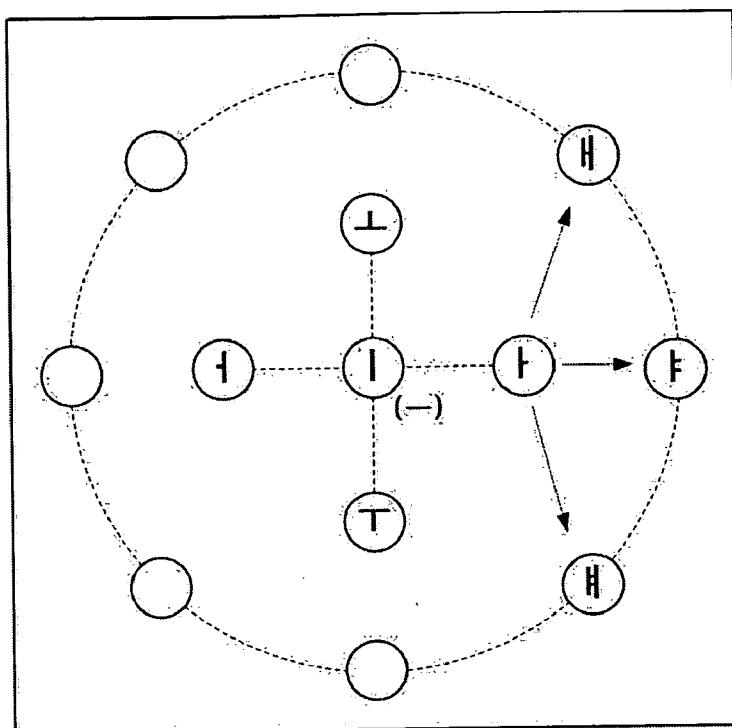


FIG. 14

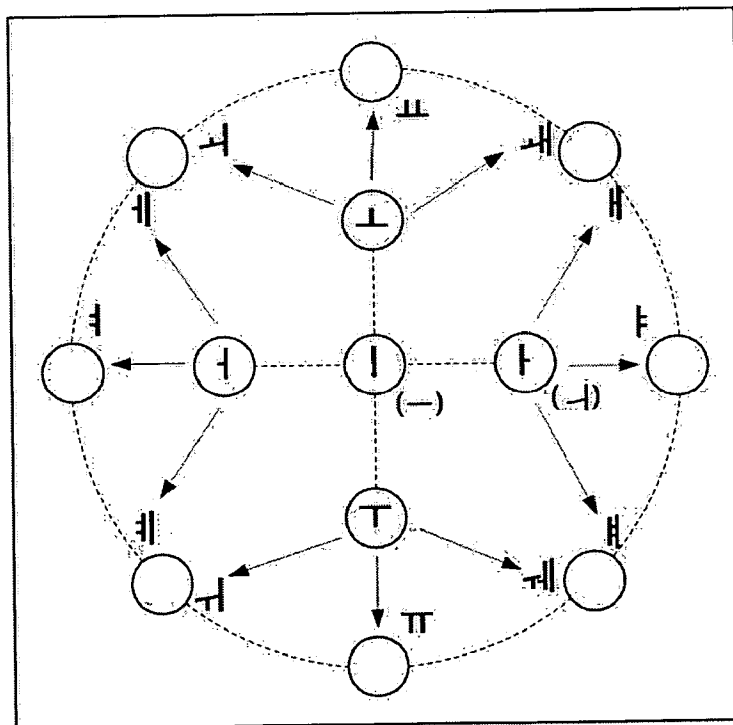


FIG. 15

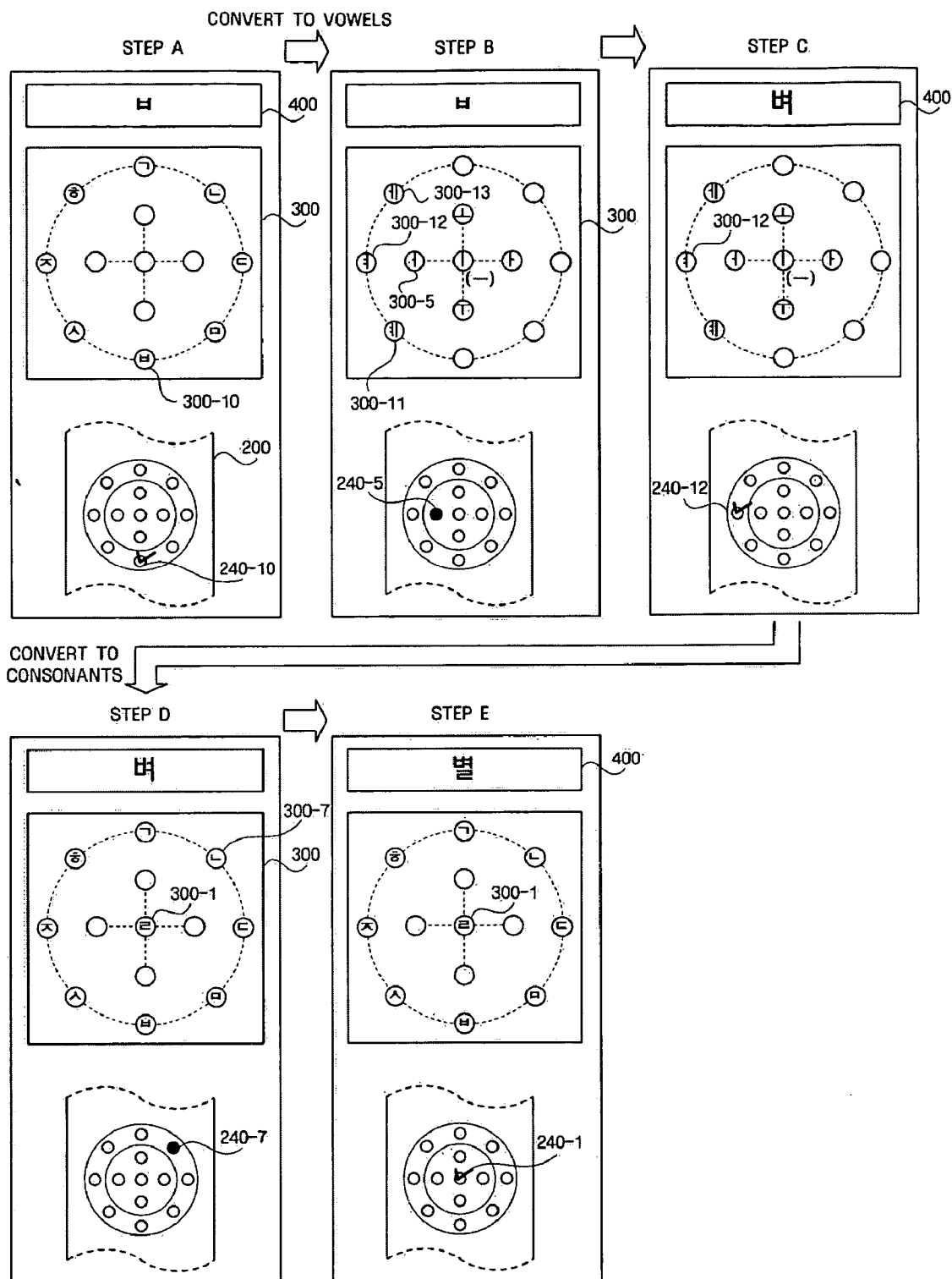


FIG. 16

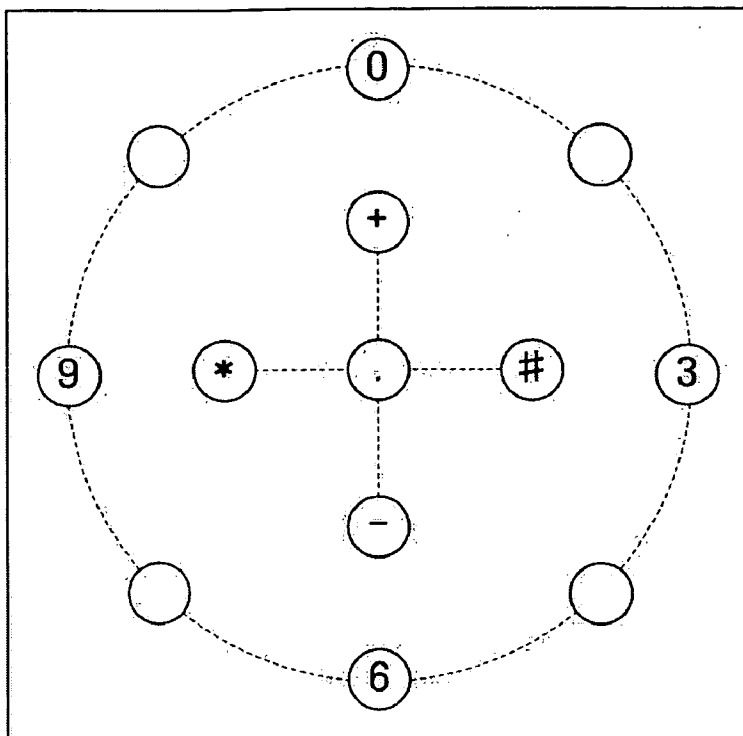


FIG. 17

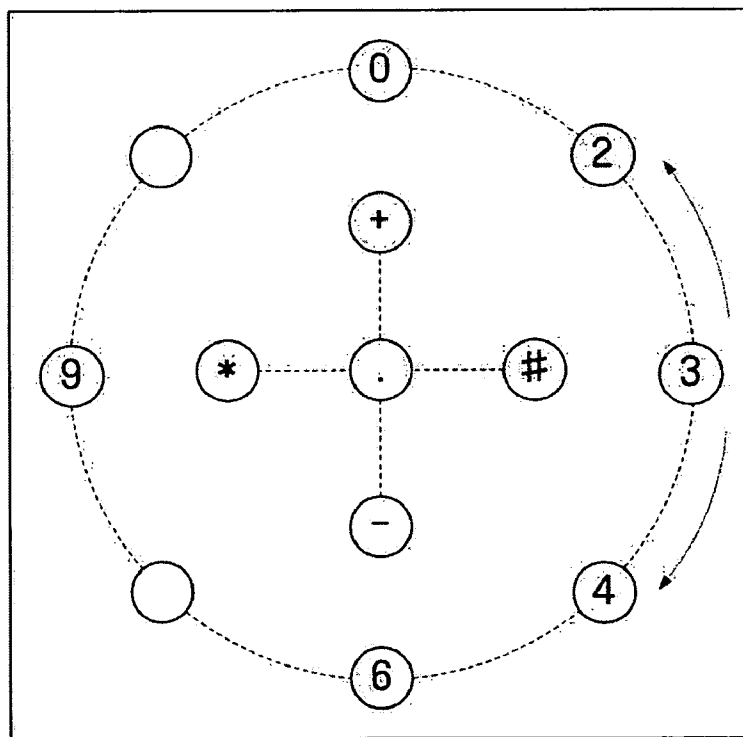


FIG. 18

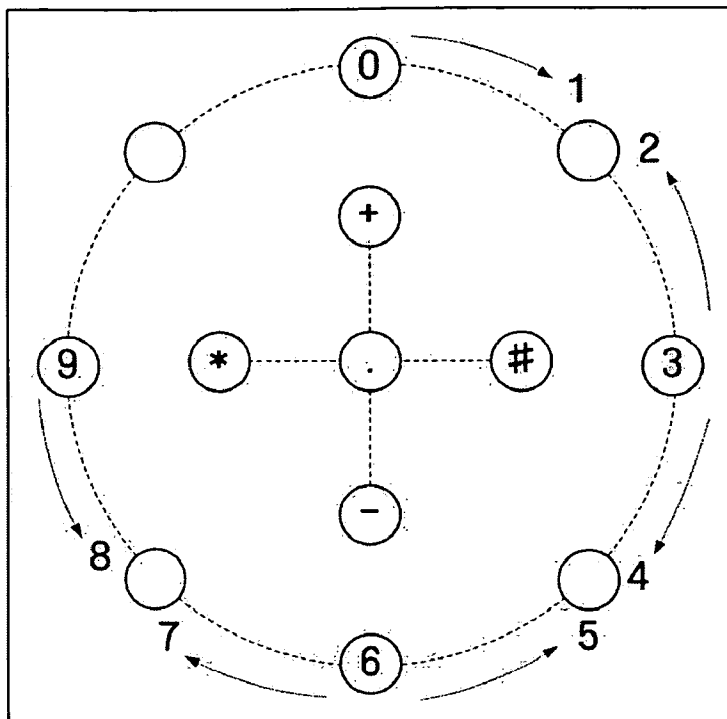


FIG. 19

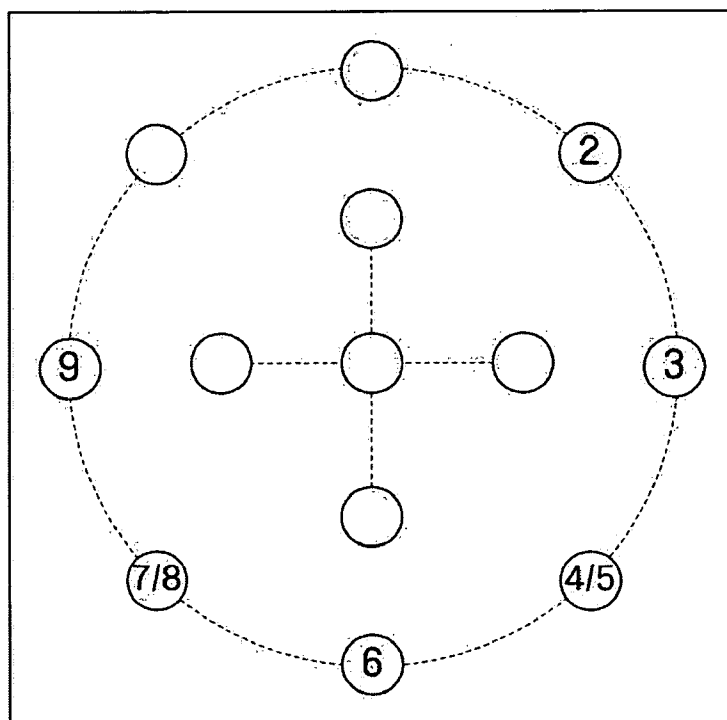
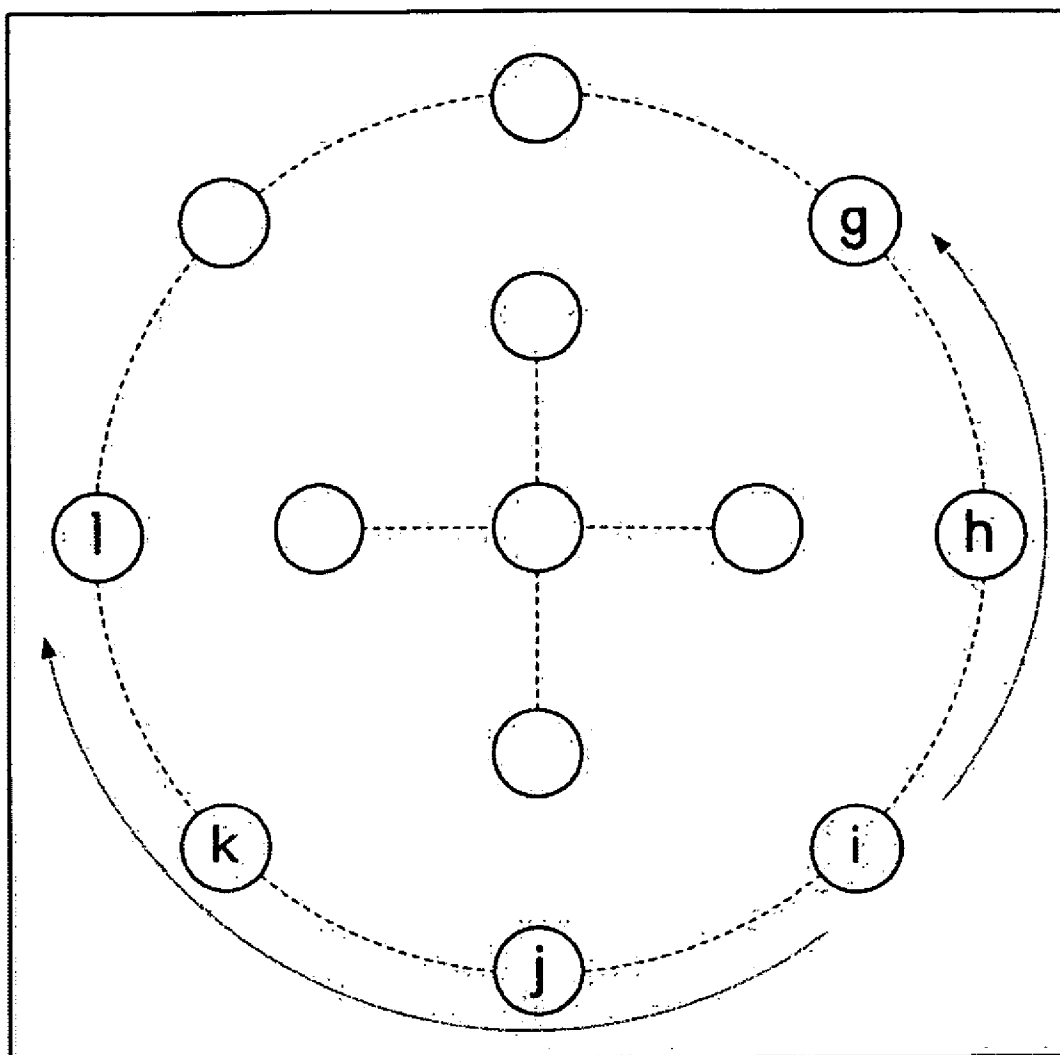


FIG. 20



CHARACTER-INPUT METHOD AND MEDIUM AND APPARATUS FOR THE SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 10-2005-0095087 filed on Oct. 10, 2005, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] Methods, mediums, and apparatuses consistent with the present invention relate to character-input. More particularly, the present invention relates to a character-input method, medium, and an apparatus for improving an intuitive attribute of a button operation.

[0004] 2. Description of the Related Art

[0005] As electronic technologies develop and various home appliances are provided with more functions, the number of buttons on remote controls increases and methods of using the remote controls become complicated. Accordingly, it takes considerable time for users to understand how to use a remote control, and most users use a remote control only to control basic functions of electronic devices (e.g., to adjust the volume or change the channel). In addition, even if a user understands how to control functions of electronic devices through the remote control, if the way of operating the remote control is inconvenient or complicated, the functions of the remote control will not be fully utilized.

[0006] Because such remote controls have been generally provided to remotely control electronic devices, there has not been a high demand for technologies for inputting characters through a remote control.

[0007] However, recently, as multimedia services become diversified and network communication technologies become developed, a demand for technologies for inputting characters to home appliances is increasing. Some examples include inputting a web page address in order to connect to the Internet through a digital TV and/or establishing a two-way service between a broadcasting station and a user in digital broadcasting. In order to satisfy such demands, if buttons for inputting characters are added to a remote control or a plurality of functions are added to one button, as mentioned above, the use of the remote control can become inconvenient or complicated, which is a problem. Therefore, there is a demand for a technology that allows a user to intuitively input characters and that does not restrict a user's sight when using a remote control.

[0008] In the conventional art, an input device has been developed in which each combination of direction buttons on a key pad and different modes represent alphanumeric characters of a unique group, by pushing the direction buttons of the key pad that can be pushed in a plurality of directions and by using the key pad to switch between a first mode and a second mode. This conventional art has reduced the number of buttons. However, there is a possibility that unwanted characters or words can be inputted due to the

complexity of the operations performed using the keypad, and the user cannot confirm characters or words being inputted, which is a problem.

SUMMARY OF THE INVENTION

[0009] Additional aspects, features, and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0010] In an aspect of the present invention, there is provided a method, medium, and an apparatus having a more intuitive button operation for inputting characters.

[0011] According to an aspect of the present invention, there is provided a character-input method, including providing a plurality of objects having a predetermined structure, mapping characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, and inputting characters mapped to an object identified as the second signal among objects to which the characters are mapped. Here, the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

[0012] According to another aspect of the present invention, there is provided a device for providing a user-interface, including an object-providing module that provides a plurality of objects having a predetermined structure, a character-mapping module that maps characters included in a character group represented by a representative character mapped to an object identified as a first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when the first signal is received from a user input device, a character-input module that inputs characters mapped to objects identified as a second signal among objects to which the characters are mapped if the second signal is received from the user input device, and an output module that outputs a user-interface which includes the plurality of objects provided by the object-providing module, the representative character and the character mapped by the character-mapping module, and characters inputted by the character-input module. Here, representative character is mapped to one or more objects among the plurality of objects having a predetermined structure.

[0013] According to another aspect of the present invention, there is provided a character-input method including mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

[0014] According to another aspect of the present invention, there is provided at least one medium including computer readable instructions implementing methods of the present invention.

[0015] According to another aspect of the present invention, there is provided a user-interface-providing device including a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters; a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] These and/or other aspects, features, and advantages of the invention will become apparent and more readily appreciated from the following description of exemplary embodiments, taken in conjunction with the accompanying drawings of which:

[0017] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0018] FIG. 2 illustrates a button arrangement of a user input device and an object structure of the corresponding user-interface according to an exemplary embodiment of the present invention.

[0019] FIGS. 3A to 3D illustrate an example of a character-mapping in a user-interface according to an exemplary embodiment of the present invention.

[0020] FIGS. 4A to 4C illustrate an example of a character-mapping in a user-interface according to another exemplary embodiment of the present invention.

[0021] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0022] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0023] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0024] FIG. 8 illustrates a button arrangement of a user input device and a user-interface provided by a user-interface-providing device according to an exemplary embodiment of the present invention.

[0025] FIGS. 9 to 11 illustrate a state where consonants of Hangeul (the Korean alphabet) are mapped to an object of a user-interface.

[0026] FIGS. 12 to 14 illustrate a state where vowels of Hangeul are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0027] FIG. 15 illustrates a Hangeul input process according to an exemplary embodiment of the present invention.

[0028] FIGS. 16 to 18 illustrate a state where numbers and symbols are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

[0029] FIGS. 19 to 20 illustrate a state where letters of the English alphabet are mapped to an object of a user-interface according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] Exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0031] Aspects, advantages, and features of the present invention and methods of accomplishing the same may be understood more readily by reference to the following detailed description of exemplary embodiments and the accompanying drawings. The present invention may, however, be embodied in many different forms and should not be construed as being limited to exemplary embodiments set forth herein. Rather, these exemplary embodiments are provided so that this disclosure will be thorough and complete and will fully convey the concept of the invention to those skilled in the art. Like reference numerals refer to like elements throughout the specification.

[0032] FIG. 1 illustrates a character-input system according to an exemplary embodiment of the present invention.

[0033] The illustrated character-input system includes a user input device 200 that can be operated by a user and a user-interface-providing device 100 that provides a user-interface for inputting characters as a user operates the user input device.

[0034] Here, the user input device 200 and the user-interface-providing device 100 are controlled by a remote control and signals outputted from the remote control, respectively, and can be implemented as a home appliance (e.g., a TV) including a predetermined display. However, the present invention is not limited to this, and the user-interface-providing device 100 can be implemented as a home appliance (e.g., a set-top box) that can provide a predetermined user-interface to a device including a display according to signals outputted from a remote control even though the user-interface-providing device 100 does not include a display. Furthermore, the device can be implemented as a character-input device such as a mobile phone, a personal digital assistant (PDA), or a notebook computer, by an integration of a user input device 200 and a user-interface-providing device 100.

[0035] The user input device 200 includes a plurality of buttons, and a touch and a push of each button by a user can be sensed. In other words, the user input device 200 can output two signals, which are different from each other, for the same button. Therefore, the user can retrieve or select a character, which the user wants to input, by touching or pushing a button included in the user input device 200.

[0036] The user-interface-providing device 100 provides a user-interface that guides a character-input of a user, and the user-interface includes a plurality of objects. Here, an arrangement of a plurality of objects corresponds to an arrangement of a plurality of buttons included in the user input device 200. For example, as illustrated in FIG. 2, the user input device 200 includes 5 buttons 20a to 20e. If the arrangement of the buttons 20a to 20e is of cross type, a user-interface 10 provided by a user-interface-providing

device **100** has the structure in which the 5 objects **10a** to **10e** are arranged in a cross type. In FIG. 2, each object **10a** to **10e** of a user-interface **10** respectively corresponds to buttons **20a** to **20e** included in the user input device.

[0037] The user-interface-providing device **100** classifies characters in predetermined groups according to predetermined conditions, and maps representative characters of each character group to a part or all the objects of the user-interface.

[0038] A character-input process according to the present invention can be roughly divided into a character-retrieving process and a character-selecting process. First, a user confirms objects, to which a representative character of a character group including a character wanted by a user is mapped in a user-interface, and touches a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a touch of a certain button of the user input device **200**, and maps characters included in a character group represented by a representative character mapped to an object corresponding to a touched button to one or more objects. Here, characters included in the character group can be mapped to an object to which an existing representative character was mapped, or can be mapped to an object to which the representative character was not mapped. Then, the user can confirm an object, to which a character which the user wants to input is mapped. This process is a character-retrieving process.

[0039] After confirming an object to which a character which the user wants to input is mapped, the user can push a button corresponding to a confirmed object among buttons of the user input device **200**. At this time, the user-interface-providing device **100** receives a signal signifying a push of a certain button from the user input device **200** and inputs a character mapped to an object corresponding to a pushed button to a predetermined character-input area. This is a character-selecting process.

[0040] In the above exemplary embodiment, in a character-retrieving process, a button of the user input process **200** was touched, and in a character selecting process, a button of the user input device **200** was pushed. However, this is merely exemplary. Hence, an exemplary embodiment, in which a character is retrieved by pushing a button of the user input device **200** and a character is selected by touching a button of the user input device **200** is also possible.

[0041] Hereinafter, an exemplary embodiment of a character-input process according to the above explanation is explained by referring to FIGS. 3A to 3D. In this example, a user input device **200** having the same button as illustrated in FIG. 2 is used. Therefore, reference numerals used in explaining FIGS. 3A to 3D are same as reference numerals used in FIG. 2, and FIGS. 3A to 3D illustrate only a user-interface **10** provided by the user-interface-providing device **100**. Also, in this example, the user-interface **10** guides the input of numbers **1** to **9**.

[0042] First, the user-interface-providing device **100** saves 3 character groups that include **1** to **3**, **4** to **6**, and **7** to **9**. If **2**, **5**, and **8** are used as representative characters of each group, the user input device **100** can provide the user-interface **10** as illustrated in FIG. 3A. FIG. 3A illustrates a case (example) where a representative character is mapped

to objects **10a**, **10c**, **10e** arranged in a vertical direction among 5 objects **10a** to **10e**. However, the representative character can also be mapped to another object.

[0043] If a user touches a first button **20a** of the user input device **200**, the user-interface-providing device **100** can map characters **1**, **2**, **3** included in the same character group to a representative character **2** mapped to a first object **10a** corresponding to a first button **20a**. In this example, the user-interface-providing device **100** can also map characters **1** and **3** to a second object **10b** and a fourth object **10d**, to which representative characters have not been mapped, as illustrated in FIG. 3B, and the character **2** can be kept mapped to the first object **10a**. However, depending on the exemplary embodiment, the user-interface-providing device **100** can map characters **1**, **2**, **3** to objects **10a**, **10c** and **10e**, to which a representative character was mapped.

[0044] Similarly, if a user touches a third button **20c** of a user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters **4**, **5**, **6** included in a character group represented by a representative character **5** mapped to a third object **10c** corresponding to a third button **20c**, as illustrated in FIG. 3C. Also, if a user touches a fifth button **20e** of the user input device **200**, the user-interface-providing device **100** can provide a user-interface **10** that displays characters **7**, **8**, **9** included in a character group represented by a representative character **8** mapped to a fifth object **10e** corresponding to a fifth button **20e**, as illustrated in FIG. 3D. In this way, a number, which the user wants to input, can be retrieved.

[0045] According to another embodiment of the present invention, if characters included in a character group represented by a representative character are mapped to objects, representative characters having been mapped to the predetermined object can improve the user-interface for retrieving characters by lowering visual effects or highlighting characters currently being retrieved. For example, when characters included in a character group represented by a representative character mapped to a button touched by a user as illustrated in FIGS. 4A to 4C, the representative characters can be shadowed.

[0046] Also, for example, if a user wants to input the number **3**, after a button **20a** is touched that corresponds to an object **10a** to which the number **2**, which is a representative character of a character group where the number **3** is included, is mapped among buttons included in the user input device **200**, when a user-interface as illustrated in FIG. 3B is displayed, a button **20d** corresponding to an object **10d** to which the number **3** is mapped can be pushed. At this time, the user-interface-providing device **100** can input the number **3** to a predetermined character-input area (not shown). If a character that a user wants to input is a representative character, the user can input the character without a retrieving process by pushing a button corresponding to an object to which the representative character is mapped.

[0047] Hereinafter, the user-interface-providing device **100** and the user input device **200** according to an exemplary embodiment of the present invention will be explained in more detail.

[0048] FIG. 5 is a block diagram illustrating a user input device according to an exemplary embodiment of the present invention.

[0049] The illustrated user input device 200 includes a transmission module 210, a touch-sensing module 220, a push-sensing module 230, and a button module 240.

[0050] The button module 240 includes a plurality of buttons 240-1 to 240-N. The number and the arrangement of buttons can vary according to each exemplary embodiment. The button arrangement according to the exemplary embodiment of the present invention will be explained later by referring to FIG. 8. Meanwhile, the button module 240 can further include additional buttons in addition to the buttons having the arrangement corresponding to the arrangement of objects in the user-interface provided by the user-interface-providing device 100. The additional buttons can be used when the user-interface-providing device 200 requests execution of certain functions.

[0051] The touch-sensing module 220 senses a touch of a user on each button included in the button module 240. The touch-sensing module can be implemented through various forms of touch sensors. For example, a technology sensing a touch of a user in a touch pad or a touch screen can be applied to implement the touch-sensing module 220. According to an exemplary embodiment, the touch-sensing module 220 can include a plurality of touch sensors, and each touch sensor is installed on the surface of a button and can sense a touch by the user.

[0052] The push-sensing module 230 senses a push of a user on each button included in the button module 240. The push-sensing module can be implemented through various forms of pressure sensors. For example, a structure of a key pad used for inputting keys in a keyboard a mobile phone, a personal digital assistant, etc. can be applied to implement the push-sensing module 230. According to an exemplary embodiment, the push-sensing module 230 can include a plurality of pressure sensors, and each sensor is installed on the surface of a button and can sense a pressure if the user pushes a button with more than a certain amount of pressure.

[0053] Further, in another example, the push-sensing module 230 and the touch-sensing module 220 can also be implemented as an integrated module. In this case, the integrated module of the push-sensing module 230 and the touch-sensing module 220 can recognize a case when the amount of pressure applied to the button by a user is less than a predetermined critical value as a touch, and can recognize a case when the amount of pressure applied to the button by the user is a predetermined critical value or more.

[0054] The transmission module 210 outputs a predetermined signal corresponding to a push or a touch of a button if the push-sensing module 230 or the touch-sensing module 220 senses the push or the touch of the button. The transmission module 210 can save a signal corresponding to a touch and a push for each button in advance for the output, and based on the signal, a signal corresponding to the result sensed by the push-sensing module 230 and the touch-sensing module 220 can be outputted.

[0055] If the user input device 200 is, e.g., a remote control which is separated from the user-interface-providing device 100, a signal outputted by the transmission module 210 can be a wireless signal such as infrared rays, radio frequency (RF) signals, and others. However if the user input device 200 is connected via a wire to the user-interface-providing device 100 or exists as a single charac-

ter-input device by a mutual integration, the signal outputted by the transmission module 210 can be an electrical signal that can be outputted through a predetermined wire medium.

[0056] FIG. 6 is a block diagram illustrating a user-interface-providing device according to an exemplary embodiment of the present invention.

[0057] The illustrated user-interface-providing device 100 includes a receiving module 110, an object-providing module 120, a storage module 130, a character-mapping module 140, a character-inputting module 150, an output module 160, and a control module 170.

[0058] The receiving module 110 receives a signal outputted from the user input device 200. The receiving module 110 can use a method corresponding to a signal transmission method used by the transmission module 210 of the user input device 200.

[0059] The object-providing module 120 provides a plurality of objects included in a user-interface. In the present invention, an object can be implemented not only as a two-dimensional figure such as a circle, a quadrangle and others but also as a figure of various forms such as a three-dimensional icon. The arrangement of objects provided by the object-providing module 120 corresponds to the arrangement of buttons 240-1 to 240-N included in the user input device 200. An exemplary embodiment of the arrangement of objects provided by the object-providing module 120 will be explained later by referring to FIG. 8.

[0060] The storage module 130 stores one or more character groups. Each character group includes one or more characters, and a representative character of each character group is selected for each character group. In the present invention, a character may include one or more consonants and vowels of Hangeul (the Korean alphabet), the English alphabets, numbers, symbols and marks indicating other languages. A character group and a representative character can be set by the manufacturer when the user-interface-providing device 100 is manufactured. Also, after the production of the user-interface-providing device 100, a character group and a representative character can be saved or updated through software. A character constituting a character group saved by the storage module 130 or a representative character of the character group can be selected in various ways. The character group and the representative character of each character group according to an exemplary embodiment of the present invention will be explained later with reference to FIG. 8 and Table 1 to Table 4.

[0061] The character-mapping module 140 maps a representative character of each character group saved in the storage module 130 to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, which representative character will be mapped to which object will be implemented in various ways according to exemplary embodiments. If a signal corresponding to a touch for a certain button from the user input device 200 is received, the character-mapping module 140 can map characters included in the character group represented by the representative character mapped to the object corresponding to the touched button to one or more objects among a plurality of objects provided by the object-providing module 120. At this time, for the mapping of characters included in the character group, objects to which representative charac-

ters have been mapped can be used, or objects to which representative characters have not been mapped can be used. The representative character and the mapping of the character according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 9 to 19.

[0062] The character-input module 150 inputs characters mapped to the object corresponding to the pushed button when a signal corresponding to the push of a certain button is received from the user input device 200. For the input, the character-input module 150 can provide a predetermined character-input area, and characters within the character-input area can be inputted.

[0063] The output module 160 displays a plurality of objects provided by the object-providing module 120, a character mapped to an object by the character-mapping module 140, and a user-interface that includes a character-input area provided by the character-input module 150. At this time, characters mapped to the object can be directly displayed on the object as illustrated in FIG. 3, or they can be displayed in an area adjacent to the object. In order to display the user-interface, the output module 160 can be implemented by a display such as a cathode ray tube (CRT) display, a liquid crystal display (LCD), a thin film transistor (TFT) display, an organic electroluminescent (EL) display, and others. The output module 160 can also provide a user-interface to a predetermined display device existing separately from the user-interface-providing device 100.

[0064] The control module 170 controls operation of each module 110 to 160 constituting the user-interface-providing device 100. Also, the control module analyzes a signal received from the user input device 200 by the receiving module 110. Therefore, the control module can determine which button was operated by a user among buttons included in the user input device 200 and whether the operation method is a touch or a push.

[0065] A "module" in FIGS. 5 and 6 can refer to a software element or a hardware element such as a Field Programmable Gate Array (FPGA) or Application Specific Integrated Circuit (ASIC). The modules can reside in an addressable storage media or can reproduce one or more processors. Modules include software elements, object-oriented software elements, class elements, task elements, processes, functions, attributes, procedures, sub-routines, segments of program codes, drivers, firmware, microcode, circuits, data, databases, data structures, tables, arrays, and variables. The functions provided in the elements and modules can be combined into fewer elements and modules, or can be divided into additional elements and modules.

[0066] FIG. 7 is a flow chart illustrating a character-input method according to an exemplary embodiment of the present invention.

[0067] First, an object-oriented module provides a plurality of objects having a predetermined arrangement (S110). Here the arrangement of the plurality of objects preferably has the arrangements that of the plurality of buttons included in the user input device 200.

[0068] Then, the control module determines the type of a character to be mapped to an object provided by the object-providing module 120 among marks indicating consonants of Hangeul, vowels of Hangeul, numbers, symbols, the English alphabet, and other languages (S120). Here, the

determination of the type of character can be executed in various cases such as a case a signal mapped to a function button (not shown) included in the user input device 200 is received from the user input device 200, a case a user selects a certain character type by using the user input device 200 if a type of a character is presented through a predetermined menu screen provided in advance, and other cases.

[0069] Here, the character-mapping module 140 retrieves character groups consisting of characters of the type decided by the control module 170, and maps representative characters of the retrieved character group to one or more objects among a plurality of objects provided by the object-providing module 120 (S130).

[0070] Then, the output module 160 displays a user-interface that includes objects provided by the object-providing module 120 and characters mapped by the character-mapping module 140 (S140). Here, the representative character can be displayed on the object or can be displayed in an area adjacent to the object in parallel with the object. At the same time, the output module 160 can display a predetermined character-input area. The user retrieves and selects a character that he wants to input by operating the user input device 200 while confirming the user-interface.

[0071] If the receiving module 110 receives a predetermined signal from the user input device 200 (S150), the control module 170 determines whether the received signal is a first signal (S160). Here, the first signal is a signal signifying a character-retrieving request and a signal which is outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 of the user input device 200 senses a touch or a push of a user on a predetermined button included in the button module 240.

[0072] If the received signal is the first signal, the character-mapping module 140 retrieves a character group represented by a representative character mapped to an object identified through the first signal, and maps characters included in the retrieved character group to one or more objects among objects provided by the object-providing module 120 (S170). At this time, characters included in the retrieved character group can be mapped to an object to which a representative object was mapped in step S130 or can be mapped to an object to which the representative character was not mapped.

[0073] Then, the output module 160 displays a user-interface S180 including an object to which a character is mapped. Here, each character can be displayed on the object or can be displayed on an area adjacent to the object in parallel with the object. Also, the output module 160 can be displayed so that characters mapped in step S170 can be more highlighted than characters mapped in step S130 by regulating the color tone, size, brightness and others.

[0074] As a result of step S160, if the received signal is not the first signal but the second signal, the character-input module 150 inputs a predetermined character mapped to an object identified as the second signal (S190). Here, the second signal is a signal signifying a character-selecting request and a signal outputted by the transmission module 210 when the touch-sensing module 220 or the push-sensing module 230 senses a touch or a push by the user on a predetermined button included in the button module 240. As

an exemplary embodiment, if the touch-sensing module 220 of the user input device 200 senses a touch by a user on a predetermined button included in the button module 240, the first signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the second signal can be outputted. As another exemplary embodiment, if the touch-sensing module 220 senses a touch of a user on a predetermined button included in the button module 240, the second signal is outputted, and if the push-sensing module 230 senses a push on a predetermined button included in the button module 240, the first signal can be outputted.

[0075] In addition, a character-inputted in step S190 can be a representative character mapped in step S130, or a character included in a character group represented by a predetermined representative group mapped in step S170.

[0076] Depending on the exemplary embodiment, steps S140 and S180 in FIG. 7 can be steps where the output module 160 outputs a user-interface to a predetermined display device.

[0077] Hereinafter, a user-interface and the character-input method according to an exemplary embodiment of the present invention will be explained by referring to FIGS. 8 to 19. However, the explanation below is an exemplary embodiment, and does not limit the present invention.

[0078] FIG. 8 illustrates a button arrangement of a user input device 200 and a user-interface 300 provided by a user-interface-providing device 100 according to an exemplary embodiment of the present invention.

[0079] As illustrated, the button arrangement of the user input device 200 is arranged in a way that 5 buttons 240-1 to 240-5 are of cross-form, and 8 buttons 240-6 to 240-13 arranged at regular intervals on a circumference containing buttons 240-1 to 240-5 arranged in cross-form. Further, 5 objects 300-1 to 300-5 are arranged in cross form on a user-interface 300, and 8 objects 300-6 to 300-13 are arranged at regular intervals on a circumference containing objects 300-1 to 300-5 arranged in cross form. Four objects 300-6, 300-8, 300-10, 300-12 among 8 objects 300-6 to 300-13 are preferably positioned on an extended line of a cross form formed by 5 objects 300-1 to 300-5 arranged inside the circumference.

[0080] A predetermined character can be inputted through the user input device 200 and the user-interface 300, and hereinafter, an exemplary embodiment for inputting Hangeul consonants and vowels, numbers, symbols and English letters will be explained. Also, cases where a character is retrieved when a user touches a button included in the user input device 200, and a character to be inputted is selected when the user pushes the button, will be explained. However, this is merely exemplary, and it is possible that when the user pushes the button included on the user input device 200, a character is retrieved, and when the user touches the button, the character is selected. For reference, identification marks for objects are omitted in FIGS. 9 to 14 and FIGS. 15 to 19, but the identification mark of each object mentioned in the below explanation can be understood by referring to FIG. 8.

Consonants of Hangeul

[0081] Consonants of Hangeul can be roughly divided into Pyung sounds (e.g., ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅇ, ㅈ, ㅊ; ㅎ is

actually a Hu sound, but is classified as Pyung sound here.), Gyung sounds (e.g., ㅋ, ㆁ, ㆅ, ㆆ, ㆉ) and Gyuk sounds (ㅊ, ㅌ, ㅍ, ㅑ, ㅓ). A character group on Korean characters saved in a user-interface-providing device 100 according to an embodiment of the present invention and representative characters of each character group are described in Table 1.

TABLE 1

Groups of Korean Consonants		
Group	Consonant	Representative character
First group	ㄱ, ㅋ, ㆁ	ㄱ
Second group	ㄴ, ㄷ, ㄹ	ㄴ
Third group	ㅁ, ㅂ, ㅅ	ㅁ
Fourth group	ㅈ, ㅊ, ㅌ	ㅈ
Fifth group	ㅊ, ㅌ, ㅍ	ㅊ
Sixth group	ㄴ, ㄷ, ㄹ	ㄴ
Seventh group	ㅎ, ㅇ	ㅎ
Eighth group	ㅁ, ㅇ	ㅁ

[0082] As shown in Table 1, in the present embodiment, first, consonants are classified to constitute character groups by mutually-connected consonants among Pyung sounds, Gyung sounds and Gyuk sounds, and representative characters among such character groups (the first group to the fifth group) are selected as Pyung sounds (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅈ, ㅊ, ㅌ).

[0083] Further, Pyung sounds (ㄴ, ㄷ, ㄹ, ㅇ, ㅎ) having no connected Gyung sound or Gyuk sound can be classified to constitute character groups by predetermined numbers, and in the present embodiment, as described in Table 1, "ㄴ" and "ㄷ", "ㅎ" and "ㅇ", and "ㅁ" and "ㅇ" are classified as each character group. Here, "ㅇ" belongs to two character groups (the seventh group and the eighth group), but only in the embodiment, so "ㅇ" can be removed from one character group. In character groups (the sixth group to the eighth group) consisting of Pyung sounds having no connected Gyung sound or Gyuk sound, representative characters can be randomly selected. In the present embodiment, "ㄴ", "ㅎ" and "ㅁ" are selected as representative characters.

[0084] A user-interface-providing device 100 saving character groups described in Table 1 and representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on a user-interface 300, as illustrated in FIG. 8. Preferably, a representative character of each character group is respectively mapped to 8 objects 300-6 to 300-13 arranged on the circumference. More preferably, representative characters (ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ) of character groups (the first group to the fourth group) including all of Pyung sounds, Gyung sounds, and Gyuk sounds are mapped to objects 300-6, 300-8, 300-10, 300-12 located on a cross-type extended line formed by the arrangement of 5 objects 300-1 to 300-5 arranged within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference, and the mapping is illustrated in FIG. 9. And remaining representative characters (ㄴ, ㅁ, ㅈ, ㅊ) can be randomly mapped to remaining objects 300-7, 300-9, 300-11, 300-13 among 8 objects 300-6 to 300-13 arranged on the circumference.

[0085] Through the user-interface, the user can confirm representative characters for Hangeul consonants, and consonants included in character groups represented by each representative character can be retrieved by touching buttons corresponding to objects to which each representative character is mapped among buttons **240-1** to **240-13** included in the user input device **200**. At this time, consonants included in character groups represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 5 objects **300-1** to **300-5** arranged in cross-type. Preferably, if each object **300-6** to **300-13** on the circumference and the object **300-1** arranged in the center are connected, consonants included in each character group can be arranged through an object existing on the connection line.

[0086] For example, in the state where a user-interface is provided as illustrated in FIG. 9, if a user touches the sixth button **240-6** of the user input device **200**, the user-interface-providing device **100** can map consonants (ㄱ, ㅋ, ㆁ) included in the first group represented by "ㄱ" to the sixth object **300-6**, the second object **300-2** and the first object **300-1**. At this time, "ㄱ" a representative character, is mapped to the object **300-6** which was previously mapped, and remaining characters "ㅋ" and "ㆁ" can be mapped to the second object **300-2** and the first object **300-1**, and the mapping is illustrated in FIG. 10.

[0087] The user can retrieve remaining consonants in a similar way, and consonants which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped are illustrated together in FIG. 11. As illustrated, the mapping state of consonants on 5 objects **300-1** to **300-5** arranged in a cross-type can be changed according to whether objects to which a certain representative character is mapped are activated by a button touch by a user.

[0088] Meanwhile, a user, who retrieved a desired consonant, can input the desired consonant by pushing a button corresponding to an object to which the retrieved consonant is mapped. For example, in the state where the user-interface **300** is provided as illustrated in FIG. 10, if the user pushes the first button **240-1** of the user input device **200**, "ㄱ", a character mapped to the first object **300-1** corresponding to the first button **240-1** is input.

Vowels of Hangeul

[0089] Vowels of Hangeul can be formed by combinations of "ㅣ", "ㅡ" and "ㅏ". Character groups on vowels of Hangeul saved by the user-interface-providing device **100** and representative characters of each character group according to an embodiment of the present invention are described in Table 2.

TABLE 2

Groups of Korean Vowels		
Group	Vowels	Representative character
First group	ㅏ, ㅑ, ㅓ, ㅕ	ㅏ
Second group	ㅗ, ㅛ, ㅜ, ㅠ	ㅗ
Third group	ㅜ, ㅠ, ㅡ, ㅟ	ㅜ

TABLE 2-continued

Groups of Korean Vowels		
Group	Vowels	Representative character
Fourth group	ㅣ, ㅓ, ㅕ, ㅗ	ㅣ
Fifth group	ㅣ, ㅡ	ㅣ

[0090] Character groups in Table 2 have a predetermined regularity, and vowels are grouped according to directions where "•" is added to "ㅣ" or "ㅡ". For example, in Table 2, the first group consists of vowels having a shape where "•" is added to the upper side of "ㅡ", and the third group consists of vowels having a shape where "•" is added to the lower side of "ㅡ". Also, in Table 2, the second group consists of vowels having a shape where "•" is added to the right side of "ㅣ", and the fourth group consists of vowels having a shape where "•" is added to the left side of "ㅣ". The fifth group includes "ㅣ" and "ㅡ" which are the basis for such groupings.

[0091] In Table 2, selected representative characters of the first to fourth group are "ㅏ", "ㅑ", "ㅓ", and "ㅕ" having a shape where "•" is added to "ㅣ" or "ㅡ", which are reference characters. Also, in case of the fifth group, "ㅣ" is selected as a representative character. The vowel "ㅟ" can be included in a random group among the first to fifth group, but in the present embodiment, the vowel is included in the second group (not illustrated in Table 2).

[0092] Character groups, as illustrated in Table 2, and the user-interface-providing device **100** saving representative characters of each character group map representative characters to predetermined objects among 13 objects **300-1** to **300-13** on the user-interface **300**, as illustrated in FIG. 8. Preferably, representative characters of each character group of vowels of Hangeul can be mapped to 5 objects **300-1** to **300-5** arranged in a cross type within the circumference. More preferably, among 5 objects **300-1** to **300-5** arranged in a cross type, a representative character "ㅣ" is mapped, and representative characters "ㅏ", "ㅑ", "ㅓ", and "ㅕ" can be mapped to objects **300-2** to **300-5** of the direction corresponding to the direction where "•" is added to vowels "ㅣ" or "ㅡ" based on the object **300-1** to which "ㅣ" is mapped, and this mapping is shown in FIG. 12.

[0093] Through the user-interface, the user can confirm representative characters on Hangeul vowels, and vowels included in character groups represented by each representative character can be retrieved among buttons **240-1** to **240-13** included in the user input device **200**. At this time, vowels represented by representative characters mapped to objects corresponding to buttons touched by a user can be mapped to 8 objects **300-6** to **300-13** arranged on the circumference. Preferably, characters included in each character group can be mapped to 3 objects from the closest object to the furthest object from the object to which the representative character was mapped among 8 objects **300-6** to **300-13** arranged on the circumference.

[0094] For example, in the state where the user-interface is provided as illustrated in FIG. 12, if the user touches the

third button **240-3** of the user input device **200**, the user-interface-providing device **100** can map vowels (ㅏ, ㅓ, ㅗ, ㅜ) included in the second group represented by the representative character "ㅏ" mapped to the third object **300-3** corresponding to the third button to the third object **300-3**, the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**. At this time, the representative object "ㅏ" is mapped to the existing mapped object **300-3**, and remaining objects "ㅓ", "ㅗ", and "ㅜ" can be mapped to the seventh object **300-7**, the eighth object **300-8**, and the ninth object **300-9**, and this mapping is illustrated in FIG. 13.

[0095] The user can retrieve remaining vowels in a similar way, and vowels, which can be mapped to each object by touching buttons corresponding to objects to which the representative character is mapped, are illustrated together in FIG. 14. As illustrated, according to whether the object to which a certain character is mapped is activated by the button touch of a user, the mapping state of vowels on 8 objects **300-6** to **300-13** can be changed.

[0096] Meanwhile, "ㅡ" can be mapped together with other vowels to a random object. In the present embodiment, because the vowel "ㅡ" is included in the second group as explained with reference to Table 2, "ㅡ" can be mapped to the same object along with one among vowels "ㅏ", "ㅓ", "ㅗ", and "ㅜ". For example, the vowel "ㅡ" can be mapped to the third object **300-3** along with the vowel "ㅏ".

[0097] The user who retrieved desired vowels, can input the desired vowels by pushing buttons corresponding to objects to which retrieved vowels are mapped. For example, in the state where the user-interface **300** is provided as illustrated in FIG. 13, if the user pushes the eighth button **240-8** of the user input device **200**, the character "ㅏ" mapped to the eighth object **300-8** corresponding to the eighth button **300-8** is inputted. Also, in the case where two vowels are mapped to one object, additionally-mapped vowels can be inputted by pushing buttons corresponding to the object two times consecutively. For example, in FIG. 12, the vowel "ㅡ" along with "ㅏ" are mapped to the first object **300-1**, and if the user pushes the first button **240-1** corresponding to the first object **300-1** one time, the vowel "ㅏ" is inputted, and if the first button **240-1** is pushed two times, the vowel "ㅡ" can be inputted. In a similar way, the user can input the vowel "ㅡ" mapped to the same object as the vowel "ㅏ".

[0098] Consonants and vowels can be inputted according to the above-described method, and the process of inputting completed words is shown in FIG. 15. FIG. 15 illustrates a process that inputs a word "빨" and the character-input area **400**, the guide area **300** on which a plurality of objects are displayed, and the user input device **200** including a plurality of buttons are illustrated. The character-input area **400** and the guide area **300** can be displayed to a user as one user-interface. Meanwhile, in the illustrated example, the button filled with black color among buttons of the user input device **200** indicates a button touched by a user, and a button having a mark ✓ indicates a button pushed by a user. The character group of consonants and vowels used in inputting characters, and representative characters are

shown in Tables 1 and 2, and processes of retrieving and selecting characters have been explained by referring to FIGS. 9 to 14.

[0099] First, the user confirms representative characters through the guide area **300** to which consonants of Hangeul are mapped (a). Because "ㅁ" is mapped to the tenth object **300-10**, the user can push the tenth button **240-10** corresponding to the tenth object **300-10** without passing through a separate character-retrieving process, and as a result, the consonant "ㅁ" is inputted in the character-input area **400**.

[0100] Then, the guide area to which vowels of Hangeul are mapped can be provided. The process where the guide area, to which consonants of Hangeul are mapped, is changed into a guide area, to which vowels of Hangeul are mapped, can be implemented by various embodiments such as a case where a user operates predetermined function buttons included in the user input device **200**, a case where the user operates a button corresponding to objects to which representative characters of the character group on consonants have not been mapped, and other cases.

[0101] If the guide area **300** to which vowels of Hangeul are mapped is provided, the user confirms the fifth object **300-5**, to which the representative character "ㅏ" is mapped (b), and the fifth button **240-5** corresponding to the guide fifth object is touched. At this time, "ㅏ", "ㅓ" and "ㅗ", "ㅏ" and "ㅓ", "ㅓ" and "ㅗ" included in the character group represented by the representative character "ㅏ" are respectively mapped to the eleventh object **300-11** to the thirteenth object **300-13** in the guide area **300**.

[0102] If the user pushes the twelfth button **240-12** corresponding to the twelfth object **300-12** to which the vowel "ㅏ" is mapped (c), the vowel "ㅏ" is inputted to the character-input area **400**.

[0103] Then, the guide area **300**, to which consonants of Hangeul are mapped, is provided. The process where the guide area, to which vowels of Hangeul are mapped, is changed into the guide area to which consonants of Hangeul are mapped can be implemented by various embodiments such as the case where a user operates a predetermined function button included in the user input device **200**, a case where the user operates a button corresponding to the object to which representative characters of the character group on vowels have not been mapped, and a case where vowels are inputted to the character-input area **400**.

[0104] The user confirms the seventh object **300-7**, to which the representative character "ㅁ" is mapped, and touches the seventh button **240-7** corresponding to the seventh object **300-7** (d). At this time, the consonant "ㅁ" included in the character group represented by the representative character "ㅁ" is mapped to the first object **300-1** in the guide area **300**.

[0105] If the user pushes the first button **240-1** corresponding to the first object **300-1** to which the consonant "ㅁ" is mapped (e), the vowel "ㅁ" is inputted to the character-input area **400**.

Numbers and Symbols

[0106] Character groups of numbers saved by the user-interface-providing device **100** and representative characters

of each character group according to an embodiment of the present invention are described in Table 3.

TABLE 3

Groups of Numbers		
Group	Number	Representative character
First group	0, 1	0
Second group	2, 3, 4	3
Third group	5, 6, 7	6
Fourth group	8, 9	9

[0107] The user-interface-providing device 100 saving character groups and representative characters of each character group as illustrated in Table 3 maps representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300 as illustrated in FIG. 8. Preferably, the representative characters 0, 3, 6, 9 of each character group can be mapped to 4 objects 300-6, 300-8, 300-10, 300-12 on the cross-type extended line formed by the arrangement of objects 300-1 to 300-5 within the circumference among 8 objects 300-6 to 300-13 arranged on the circumference. This mapping is described in FIG. 16.

[0108] As illustrated in FIG. 16, objects 300-6, 300-8, 300-10, 300-12, to which each representative character is mapped, correspond to the 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock directions, and because the mapped representative characters are also "0", "3", "6" and "9", the user can recognize the user-interface, whereby the user can retrieve numbers more easily.

[0109] The user can retrieve numbers included in the character group represented by each representative character by touching buttons corresponding to objects to which each representative character is mapped among buttons included in user input device 200. Here, numbers included in the character group represented by the representative character can be mapped so that the numbers can be increased in the clockwise direction through objects located at the left/right sides of objects corresponding to buttons touched by the user among the objects 300-6 to 300-13 arranged on the circumference.

[0110] For example, in the state the user-interface is provided as illustrated in FIG. 16, if the user touches the eighth button 240-8 of the user input device 200, the user-interface-providing device 100 can map numbers 2, 3, and 4 included in the first group represented by the representative character "3" mapped to the eighth object 300-8 corresponding to the eighth button 240-8 to the seventh object 300-7 and the ninth object 300-9, respectively. In other words, the representative "3" is mapped to the object 300-8 which has been mapped, and the remaining numbers "2" and "4" can be mapped to the seventh object 300-7 and the ninth object 300-9. This mapping is illustrated in FIG. 17.

[0111] The user can retrieve remaining numbers in a similar way, and the numbers, which can be mapped to each object by touching buttons corresponding to objects to which representative characters are mapped, are described together in FIG. 18.

[0112] As illustrated, the mapping state of numbers on 8 objects 300-6 to 300-13 arranged on the circumference can

be changed according to whether objects mapped to a certain representative character are activated by the button touch of a user.

[0113] The user who retrieved desired numbers can input desired numbers by pushing buttons corresponding to objects to which retrieved numbers are mapped. For example, in the state where the user-interface is provided as illustrated in FIG. 17, if the user pushes the seventh button 240-7 of the user input device 200, "2", the number mapped to the seventh object 300-7 corresponding to the seventh button 240-7, is inputted.

[0114] Also, numbers representing 10 units, 100 units and others can be inputted by applying the above-mentioned number input method. For example, if there is an operation (a touch or a push) by a user on the button corresponding to a certain object among objects to which representative characters have not been mapped, numbers on the user-interface illustrated in FIGS. 16 to 18 can be changed to 10 units, 100 units, and others.

[0115] Predetermined symbols (□, +, #, ., *) are mapped to 5 objects 300-1 to 300-5 arranged in a cross type in FIG. 16, and the user can input wanted symbols by pushing the button corresponding to each object. However, this mapping is for illustration, and more symbols can be retrieved and selected through the form that representative characters of each character group on symbols are mapped to predetermined objects.

English Letters

[0116] Character groups on alphabets saved by the user-interface-providing device 100 and representative characters of each character group according to an exemplary embodiment of the present invention are shown in Table 4.

TABLE 4

Groups of English Letters		
Group	Letter	Representative Character
First group	a, b, c	2
Second group	d, e, f	3
Third group	g, h, i	4
Fourth group	j, k, l	5
Fifth group	m, n, o	6
Sixth group	p, q, r, s	7
Seventh group	t, u, v	8
Eighth group	w, x, y, z	9

[0117] As shown in Table 4, in the present embodiment, numbers are used as representative characters of the letter group. The representative characters correspond to mapping information between letters and numbers commonly used in well-known several character-input devices. For example, a plurality of alphabets are mapped to each number button included in a mobile phone, a personal digital assistant (PDA), or a notebook computer and the relationship between each representative character and letters included in each character group accords with the mapping.

[0118] The character groups, as illustrated in Table 4 and the user-interface-providing device 100 saving representative characters of each character group map representative characters to predetermined objects among 13 objects 300-1 to 300-13 on the user-interface 300, as illustrated in FIG. 8.

Preferably, representative characters of each character group can be mapped to 8 objects **300-6** to **300-13** arranged on the circumference. More preferably, representative characters of each character group can be mapped as illustrated in FIG. **19** so that the user-interface is in the form of a clock.

[0119] According to the illustration of FIG. **19**, “3”, “6” and “9” are mapped to the eighth object **300-8**, the tenth object **300-10**, and the twelfth object **300-12**, respectively, remaining representative characters **2, 4, 5, 7, 8** can be mapped so that numbers can increase in the clockwise direction through remaining objects on the circumference. Here, representative characters “4” and “5”, and representative characters “7” and “8” can be mapped to the same objects **300-9** and **300-11**, respectively.

[0120] Here, letters included in the character group represented by the representative character can be mapped to objects located on the left/right sides of objects corresponding to buttons touched by the user. For example, if the user touches the ninth button **240-9**, letters g, h, i, j, k, and l included in the character group represented by representative characters “4” and “5” mapped to the ninth object **300-9** corresponding to the ninth button **240-9** can be mapped to objects located at the left/right sides of the ninth object **300-9** among objects **300-6** to **300-13** arranged on the circumference. This mapping is illustrated in FIG. **20**. The user can retrieve remaining letters in a similar way. The user-interface in the state where representative characters are mapped can be displayed as illustrated in FIG. **19** by operating separate function buttons (not illustrated) included in the user input device **200** or by operation a certain button among 5 buttons **240-1** to **240-5** arranged in a cross form within the circumference.

[0121] Further, the user, who retrieved desired letters, can input desired letters by pushing buttons corresponding to objects to which retrieved letters are mapped. For example, if the user pushes the seventh button **240-7** of the user input device **200** in the state the user-interface is provided as illustrated in FIG. **20**, the letter “g” mapped to the seventh object **300-7** corresponding to the seventh button **240-7** is inputted.

[0122] In addition to the above-described exemplary embodiments, exemplary embodiments of the present invention can also be implemented by executing computer readable code/instructions in/on a medium/media, e.g., a computer readable medium/media. The medium/media can correspond to any medium/media permitting the storing and/or transmission of the computer readable code/instructions. The medium/media may also include, alone or in combination with the computer readable code/instructions, data files, data structures, and the like. Examples of code/instructions include both machine code, such as produced by a compiler, and files containing higher level code that may be executed by a computing device and the like using an interpreter.

[0123] The computer readable code/instructions can be recorded/transferred in/on a medium/media in a variety of ways, with examples of the medium/media including magnetic storage media (e.g., floppy disks, hard disks, magnetic tapes, etc.), optical media (e.g., CD-ROMs, or DVDs), magneto-optical media (e.g., floptical disks), hardware storage devices (e.g., read only memory media, random access memory media, flash memories, etc.) and storage/transmis-

sion media such as carrier waves transmitting signals, which may include computer readable code/instructions, data files, data structures, etc. Examples of storage/transmission media may include wired and/or wireless transmission media. For example, wired storage/transmission media may include optical wires/lines, waveguides, and metallic wires/lines, etc. including a carrier wave transmitting signals specifying instructions, data structures, data files, etc. The medium/media may also be a distributed network, so that the computer readable code/instructions is stored/transferred and executed in a distributed fashion. The medium/media may also be the Internet. The computer readable code/instructions may be executed by one or more processors. In addition, the above hardware devices may be configured to act as one or more software modules in order to perform the operations of the above-described exemplary embodiments.

[0124] According to exemplary embodiments of character-input method and medium and the device using the same of the present invention, characters can be easily inputted, not restricting a user's sight by improving the user interface.

[0125] Although a few exemplary embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these exemplary embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

1. A character-input method comprising:

providing a plurality of objects having a predetermined arrangement according to a character-input request;

mapping characters included in a character group represented by a representative character mapped to an object identified by a first signal among objects to which at least one representative character is mapped when the first signal is received from a user input device; and

inputting characters mapped to an object identified as a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped when the second signal is received from the user input device,

wherein the representative character represents a predetermined character group, and is mapped to one or more objects among the plurality of objects.

2. The method of claim 1, wherein the arrangement of the plurality of objects corresponds to the arrangement of the plurality of buttons included in the user input device.

3. The method of claim 2, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted, and if the other is sensed, the second signal is outputted.

4. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the push is sensed.

5. The method of claim 3, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position

corresponding to the button at which the touch is sensed among the plurality of buttons.

6. The method of claim 1, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

7. The method of claim 1, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

8. The method of claim 7, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

9. A user-interface-providing device comprising:

an object-providing module that provides the plurality of objects having a predetermined arrangement;

a character-mapping module that maps characters, which are included in the character group represented by representative characters mapped to objects identified as the first signal among objects to which representative characters are mapped, to one or more objects among the plurality of objects when a first signal is received from a user input device;

a character-input module that inputs characters mapped to objects identified as the second signal among objects to which the characters are mapped when a second signal is received; and

an output module that outputs a user-interface including the plurality of objects provided by the object-providing module, the representative characters and the characters mapped by the character-mapping module, and characters inputted by the character-inputting module,

wherein the representative character is mapped to one or more objects among the plurality of objects having a predetermined arrangement.

10. The device of claim 9, wherein the arrangement of the plurality of objects is of the structure corresponding to the arrangement of the plurality of buttons included in the user-interface-inputting device.

11. The device of claim 10, wherein the user input device senses a touch and a push by a user on the plurality of buttons, and if any among the touch and the push is sensed, the first signal is outputted and if the remaining other is sensed, the second signal is outputted.

12. The device of claim 11, wherein an object identified as the first signal is arranged at the position corresponding to the button at which the touch is sensed, and an object identified by the second signal is arranged at the position corresponding to the button at which the push is sensed among the plurality of buttons.

13. The device of claim 11, wherein an object identified by the first signal is arranged at the position corresponding to the button at which the push is sensed, and an object identified as the second signal is arranged at the position corresponding to the button at which the touch is sensed among the plurality of buttons.

14. The device of claim 9, wherein the characters include at least one among consonants of Hangeul, vowels of Hangeul, English letters, numbers and symbols.

15. The device of claim 9, wherein the arrangement of the plurality of objects involves 5 objects arranged in a cross form, and 8 objects arranged at regular intervals on the circumference containing the 5 objects arranged in the cross form.

16. The device of claim 15, wherein 4 objects are positioned on the extended line of the cross form among 8 objects arranged at regular intervals on the circumference.

17. At least one medium comprising computer readable instructions implementing the method of claim 1.

18. A character-input method comprising:

mapping a representative character of a character group having a plurality of characters to an object identified by a first signal and mapping other characters of the character group to one or more objects, which have not been mapped to any representative characters; and

inputting characters mapped to object identified by a second signal among objects to which representative characters are mapped or objects to which characters included in the character group are mapped.

19. At least one medium comprising computer readable instructions implementing the method of claim 18.

20. A user-interface-providing device comprising:

a character-mapping module that maps a representative character of a character group having a plurality of characters to an object identified by a first signal and maps other characters of the character group to one or more objects, which have not been mapped to any representative characters;

a character-input module that inputs characters mapped to objects identified by a second signal among objects to which representative characters are mapped or objects to which the characters in the character group are mapped; and an output module that outputs a user-interface including objects to which representative characters are mapped and to which the characters in the character group are mapped.

* * * * *

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	Process and Apparatus for Selecting An Item From A Database			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1360	1360
Total in USD (\$)				1360

Electronic Acknowledgement Receipt

EFS ID:	41762459
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	27-JAN-2021
Filing Date:	13-JUL-2020
Time Stamp:	16:32:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 1360
RAM confirmation Number	E20211QG32476021
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	16927723RCE.pdf	1349897	no	3
			d0f00f70d92d0530b895f696aeba47b3aa7ef339		
Warnings:					
Information:					
2	Transmittal Letter	16927723IDS.pdf	139566	no	3
			fbf7b2f83dd3a19619d32c6719143b9d5c0be43e		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	16927723ListofRefs.pdf	161880	no	2
			59365d6272bc0386a853780e1707856bb09688df		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	Dasher.pdf	1002910	no	10
			7bd283788d1572ad6b22ee125f1e5e682185aaa6		
Warnings:					
Information:					
5	Non Patent Literature	Exhibit2025_ColinDixonDeclaration.pdf	1425629	no	19
			564cd83dd979450f51f7ad3aff2af8cd55557608		
Warnings:					
Information:					
6	Non Patent Literature	Exhibit2026_ColinDixon_nScreenMedianScreenMedia.pdf	409530	no	5
			b65e6ed2e89c9128949b3efaf18b4966b7a40653		
Warnings:					

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7	Non Patent Literature	Exhibit2027_CliftonForlines_PDFTran.pdf	1105403	no	290
			19880061a1214bbfed359ec1c850ab38ed18ed79		
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8	Non Patent Literature	Exhibit2032_Viegut_Declaration_Redacted.pdf	120130	no	15
			93008d2a34791589b802f9bc3d5b39b1cf9ff062		
Warnings:					
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9	Non Patent Literature	Exhibit2033_354ClaimChartUpdated_Redacted.pdf	15119534	no	29
			456ab6e987f83db5f610e19f41f37f7050c343fe		
Warnings:					
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10	Non Patent Literature	Exhibit2034_393ClaimChartUpdated_Redacted.pdf	17128287	no	32
			d1aa25dd13eddc87962dbe1e48a3b9ee324ac74e		
Warnings:					
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Information:					
11	Non Patent Literature	Exhibit2036_SamsungEManual.pdf	3622159	no	116
			c63cfebea7d1fbb3d34e7e52a6e6e1f2a2a1d321		
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12	Non Patent Literature	Exhibit2041_US20060276234A1.pdf	1354496	no	16
			5b1d92d2c2b53428f709a24502845e61ea07b585		
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13	Non Patent Literature	Exhibit2042_DostieReference_US20060276234A1.pdf	30154	no	1
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14	Non Patent Literature	Exhibit2043_US20120023433A1.pdf	705081	no	11
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15	Non Patent Literature	Exhibit2044_DostieReference_US20120023433A1.pdf	27529	no	1
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16	Non Patent Literature	Exhibit2045_US20070080949A1.pdf	2041039	no	28
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17	Non Patent Literature	Exhibit2046_KrohnReference_US20070080949A1.pdf	28973	no	1
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19	Non Patent Literature	Exhibit2048_PerlmanReference_US20070260452A1.pdf	54965	no	2
			0596013dc9f96ba25b0deb71c22e7baad6b9ee6c		
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20	Non Patent Literature	Exhibit2049_US8798237.pdf	818638	no	10
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Information:					
21	Non Patent Literature	Exhibit2050_PuReference_US8798237.pdf	33617	no	1
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22	Non Patent Literature	Exhibit2051_US20070080949A1.pdf	3208452	no	28
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23	Non Patent Literature	Exhibit2058_GoldbergDeclaration.pdf	111522	no	3
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32	Non Patent Literature	Exhibit2024_SecondExpertDeclaration_RBalakrishnan.pdf	1724869	no	154
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33	Non Patent Literature	Exhibit2035_Samsung_bdh8500Manual.pdf	1653600	no	114
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Warnings:					
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34	Non Patent Literature	Exhibit2052_Mail_LewisHudnell.pdf	159862	no	2
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Warnings:					
Information:					
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Warnings:					
Information:					
Total Files Size (in bytes):			61639970		
<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>					

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	16927723	Filing Date	2020-07-13	Docket Number (if applicable)	011844-0034-999	Art Unit	2173
First Named Inventor	Kevin W. Dinn			Examiner Name	Haoshian Shih		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
 Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
 The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
 Deposit Account No 503013

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
 Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Vishal V. Khatri/	Date (YYYY-MM-DD)	2021-01-27
Name	Vishal V. Khatri	Registration Number	51873

This collection of information is required by 37 CFR 1.114. 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.

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Shih, Haoshian
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP RCE

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of the cited references can be found in the file of the parent application (*U.S. Serial No. , filed*).
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in the International Search Report issued for the corresponding International application, and copies of the International Search Report and the cited references are attached for the Examiner's consideration.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in a communication from a foreign or international patent office in a counterpart foreign or international application(s), and copies of both the relevant communication and the cited references, where required, are attached for the Examiner's consideration.

CERTIFICATION

The undersigned certifies that, pursuant to 37 CFR §1.97(e)(1),

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign or international patent office in a counterpart foreign or international application not more than three months prior to the filing of this Statement.

RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☐ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☒ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☐ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The Examiner is further respectfully requested to return of a copy of the enclosed List of Cited References with the Examiner's initials in the left column.

The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: January 27, 2021

Attachment(s): List of Cited References and copies as required



UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

20583 7590 12/11/2020
Jones Day
250 Vesey Street
New York, NY 10281-1047

EXAMINER

SHIH, HAOSHIAN

ART UNIT

PAPER NUMBER

2173

DATE MAILED: 12/11/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: Process and Apparatus for Selecting An Item From A Database

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	03/11/2021

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450

By fax, send to: (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.

20583 7590 12/11/2020
Jones Day
 250 Vesey Street
 New York, NY 10281-1047

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

	(Typed or printed name)
	(Signature)
	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446

TITLE OF INVENTION: Process and Apparatus for Selecting An Item From A Database

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	03/11/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
SHIH, HAOSHIAN	2173	715-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(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 _____

3 _____

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	12/11/2020	EXAMINER	
Jones Day			SHIH, HAOSHIAN	
250 Vesey Street				
New York, NY 10281-1047				
			ART UNIT	PAPER NUMBER
			2173	
DATE MAILED: 12/11/2020				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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 30 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.

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.

Notice of Allowability	Application No. 16/927,723	Applicant(s) Dinn, Kevin W.	
	Examiner HAOSHIAN SHIH	Art Unit 2173	AIA (FITF) 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 11/19/2020.
☐ 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 27-39. 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)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>11/19/2020</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/HAOSHIAN SHIH/
Primary Examiner, Art Unit 2173

Notice of Pre-AIA or AIA Status

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

Information Disclosure Statement

The listing of references in the PCT international search report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the international search report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Item No. 103, 127, 152 has no date.

Allowable Subject Matter

2. Claims 27-39 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The current application is directed to process and apparatus for selecting an item from a database using a four way directional controller with an activation key in the middle of the four way controller.

The art of record does not expressly disclose select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers; and wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

These limitations, in specific combination as recited in independent claims, define patentability of the claims over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAOSHIAN SHIH whose telephone number is (571)270-1257. The examiner can normally be reached on M-F 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIEU VU can be reached on 5712724057. 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.

/Haoshian Shih/
Primary Examiner, Art Unit 2173

<i>Search Notes</i> 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC - Searched*		
Symbol	Date	Examiner
G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237	08/14/2020	HSS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST, internet, inventor	08/14/2020	HSS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F3	0481, 0237	12/04/2020	HSS
G06F16	26	12/04/2020	HSS
H04M1	2748	12/04/2020	HSS

--	--

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC						
Symbol					Type	Version
G06F	/	16	/	26	F	2019-01-01
G06F	/	3	/	0237	I	2013-01-01
H04M	/	1	/	2748	I	2020-01-01

CPC Combination Sets						
Symbol			Type	Set	Ranking	Version
	/		/			

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173	04 December 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner)	04 December 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 18E

Issue Classification 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1	-	10	-	19	2	28	11	37	-	46				
-	2	-	11	-	20	3	29	12	38	-	47				
-	3	-	12	-	21	4	30	13	39	-	48				
-	4	-	13	-	22	5	31	-	40	-	49				
-	5	-	14	-	23	6	32	-	41						
-	6	-	15	-	24	7	33	-	42						
-	7	-	16	-	25	8	34	-	43						
-	8	-	17	-	26	9	35	-	44						
-	9	-	18	1	27	10	36	-	45						

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 13	
/HAOSHIAN SHIH/ Primary Examiner, Art Unit 2173 (Primary Examiner) _____ (Date) _____		04 December 2020 (Date)	O.G. Print Claim(s) 1 O.G. Print Figure 18E

Bibliographic Data

Application No: 16/927,723

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /HAOSHIAN SHIH/

Examiner's Signature

Initials

Title:

Process and Apparatus for Selecting An Item From A Database

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/13/2020	715	2173	011844-0034-999
RULE			

APPLICANTS

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA

INVENTORS

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA

CONTINUING DATA

This application is a CON of 16806753 03/02/2020ABN

16806753 is a CON of 15615478 06/06/2017ABN

15615478 is a CON of 12448601 02/22/2010 PAT 9697264

12448601 is a 371 of PCT/AU2007/002010 12/28/2007

PCT/AU2007/002010 has PRO of 60960345 09/26/2007

PCT/AU2007/002010 has PRO of 60878083 01/03/2007

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

07/21/2020

STATE OR COUNTRY

AUSTRALIA

ADDRESS

Jones Day

250 Vesey Street

New York, NY 10281-1047

UNITED STATES

FILING FEE RECEIVED

\$6,160

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: November 19, 2020		Page 1 of 8		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	1	5,894,276	04-99	Altidor et al.				
	2	6,055,439	04-00	Helin et al.				
	3	5,633,912	05-97	Tsoi				
	4	5,724,069	03-98	Chen				
	5	5,754,655	05-98	Hughes et al.				
	6	5,398,023	03-95	Murray				
	7	2003/0073414	04-03	Capps				
	8	5,797,098	08-98	Schroeder et al.				
	9	6,047,196	04-00	Makela et al.				
	10	6,223,059	04-01	Heaestrup				
	11	2006/0031591	02-06	Hollstrom et al.				
	12	2006/0009861	01-06	Bonasia et al.				
	13	2004/0105714	06-04	Eo				
	14	2004/0192276	09-04	Wesby				
	15	6,792,287	09-04	Tuomela et al.				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
	16	2357220	06-01	Great Britain				
	17	1011027	09-00	Netherlands				
	18	10293640	11-98	Japan				
	19	2000267787	09-00	Japan				
	20	2751442	01-98	France				
	21	407240776	09-95	Japan				
	22	09-083402	07-95	Japan				
	23	789224	08-97	European				
	24	2002/39244	05-02	International				
	25	2003/077102	09-03	International				
OTHER RELEVANT NON-PATENT DOCUMENTS								
	26	European Search Report dated December 1, 2006 for PCT/AU2002/01114						
	27	International Search Report dated April 8, 2008 from International Application No. PCT/AU2008/000297						
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EAST Search History

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Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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L14	0	L10 and (directional same keyboard).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/12/04 21:31
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L19	15	L10 and (screen near2 keyboard)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/04 21:31
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L22	0	("2012/0246591").URPN.	USPAT	OR	OFF	2020/12/04 21:31
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L33	307	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/04 21:31
L34	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/04 21:31
L35	7	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/04 21:31
L39	156	((word text character) near4 complet\$5) same (("4" four) near3 (option selection choice))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/04 21:31
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EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	0	(navigat\$4 same key same arrangement same further same "up" same "down" same "left" same "right").clm.	USPAT	OR	ON	2020/12/04 21:05

L4	0	(navigat\$4 same key same arrangement same further same (pad controller)).clm.	USPAT	OR	ON	2020/12/04 21:05
L5	91	(navigat\$4 same key same (pad controller)).clm.	USPAT	OR	ON	2020/12/04 21:05
L6	3	(navigat\$4 same key same (further additional) same (pad controller)).clm.	USPAT	OR	ON	2020/12/04 21:06
L7	5	(navigat\$4 same part same identifier same activat\$4).clm.	USPAT	OR	ON	2020/12/04 21:07
L8	13,105	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	ON	2020/12/04 21:31
L36	13,105	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2020/12/04 21:31
L37	4	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2020/12/04 21:31
L38	9	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2020/12/04 21:31

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C:\Users\hshih\Documents\EAST\Workspaces\16927723.wsp

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		Applicant: Kevin W. Dinn	
		Application Serial No. 16/927,723	
		Filing Date: July 13, 2020	
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	20	2751442	01-98	France				
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*EXAMINER: Initial if citation 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.

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	46	2002149345	05-02	Japan				
	47	624965	11-94	European				
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	151	MacKenzie, "KSPC (Keystrokes per Character) as a Characteristic of Text Entry Techniques", 2002.
	152	Ward, et al, "Dasher – A Data Entry Interface Using Contiguous Gestures and Language Models",
	153	Moffat, "Implementing the PPM data compression scheme", IEEE, 1990.
	154	Ali K., Van Stam W., TiVo: Making Show Recommendations using A Distributed Collaborative Filtering Architecture, pages 394-401, KDD 2004, Seattle WA, 2004.
	155	Office Action dated 19 August 2016 for CA 2,711,400.
	156	International Search Report dated February 6, 2008 from corresponding International Application No. PCT/AU2007/002010.

Examiner:	Date Considered:
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***EXAMINER:** Initial if citation 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.

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: November 19, 2020		Page 7 of 8		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant	Class	SubClass		
	157	6,744,423	06/2004	Kraft et al.				
	158	20040163032	08/2004	Guo et al.				
	159	20060146028	07/2006	Chang et al.				
	160	20060265648	11/2006	Rainisto et al.				
	161	7,152,213	12/2006	Pu et al.				
	162	20020113825	/2002	Perlman et al.				
	163	6,593,913	07/2003	Krohn et al.				
	164	5,223,924	06/1993	Strubbe				
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	165	Petition for Inter Partes Review of U.S. Patent No. 9,697,264, IPR2020-00736, May 17, 2020						
	166	Patent Owner's Preliminary Response, IPR2020-00736, June 24, 2020						
	167	Patent Owner's Corrected Preliminary Response, IPR2020-00736, July 15, 2020						
	168	Samsung's Preliminary Reply, IPR2020-00736, July 22, 2020						
	169	Patent Owner's Preliminary Sur-Reply, IPR2020-00736, July 29, 2020						
	170	Decision Denying Institution of Inter Partes Review, IPR2020-00736, September 22, 2020						
	171	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00736, March 12, 2020						
	172	Petition for Inter Partes Review of U.S. Patent No. 9,436,354, IPR2020-00737, March 17, 2020						
	173	Patent Owner's Preliminary Response, IPR2020-00737, June 24, 2020						
	174	Patent Owner's Corrected Preliminary Response, IPR2020-00737, July 15, 2020						
	175	Samsung's Preliminary Reply, IPR2020-00737, July 22, 2020						
	176	Patent Owner's Preliminary Sur-Reply, IPR2020-00737, July 29, 2020						
	177	Decision Granting Institution of Inter Partes Review, IPR2020-00737, September 23, 2020						
	178	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00737, March 12, 2020						
	179	Patent Owner's Exhibit 2003, Declaration of Ravin Balakrishnan, Ph.D., IPR2020-00737, June 24, 2020						
	180	Declaration of Todd K. Viegut In Support of Patent Owner's Preliminary Response, IPR2020-00737, June 24, 2020						
	181	Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, March 17, 2020						
	182	Patent Owner's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, June 24, 2020						
	183	Patent Owner's Corrected Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00738, July 15, 2020						
Examiner:				Date Considered:				
*EXAMINER: Initial if citation 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.								

LIST OF CITED REFERENCES FOR INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Attorney Reference: 011844-0034-999				
				Applicant: Kevin W. Dinn				
				Application Serial No. 16/927,723				
				Filing Date: July 13, 2020				
Date: November 19, 2020		Page 8 of 8		Examiner: Shih, Haoshian		Group Art Unit: 2173		
U.S. PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Name of Patentee/Applicant		Class	SubClass	
FOREIGN PATENT DOCUMENTS								
Examiner's Initials*	Cite No.	Document Number	Date (MM-YY)	Country	English Translation		English Abstract	
					Attached	Not Available	Attached	Not Available
OTHER RELEVANT NON-PATENT DOCUMENTS								
	184	Samsung's Preliminary Reply, IPR2020-00738, July 22, 2020						
	185	Decision Granting Institution of Inter Partes Review, IPR2020-00738, September 23, 2020						
	186	Patent Owner's Request for Prehearing, IPR2020-00738, October 7, 2020						
	187	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00738, March 12, 2020						
	188	Patent Owner's Exhibit 2003, Declaration of Ravin BalaKrishnan, Ph. D., IPR2020-0738, June 24, 2020						
	189	Petition for Inter Partes Review of U.S. Patent No. 8,996,579, IPR2020-00739, March 17, 2020						
	190	Patent Owner's Preliminary Response, IPR2020-00739, June 24, 2020						
	191	Patent Owner's Corrected Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,370,393, IPR2020-00739, July 15, 2020						
	192	Patent Owner's Corrected Preliminary Response; IPR2020-00739, July 15, 2020						
	193	Samsung's Preliminary Reply, IPR2020-00739, July 22, 2020						
	194	Decision, Denying Institution of Inter Partes Review, IPR2020-00739, September 22, 2020						
	195	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00739, March 12, 2020						
	196	Patent Owner's Exhibit 2003, Declaration of Ravin Balakrishnan, Ph.D., IPR2020-00739, June 24, 2020						
	197	Petition for Inter Partes Review of U.S. Patent No. 8,676,852, IPR2020-00740, March 17, 2020						
	198	Patent Owner's Preliminary Response, IPR2020-00740, June 24, 2020						
	199	Patent Owner's Corrected Preliminary Response, IPR2020-00740, July 15, 2020						
	200	Samsung's Preliminary Reply, IPR2020-00740, July 22, 2020						
	201	Patent Owner's Preliminary Sur-Reply, IPR2020-00740, July 29, 2020						
	202	Decision Denying Institution of Inter Partes Review, IPR2020-00740, September 22, 2020						
	203	Petitioner's Exhibit 1003, Declaration of Clifton Forlines, Ph.D., IPR2020-00740, March 12, 2020						
	204	Patent Owner's Exhibit 2003, Declaration of Ravin Balkrishnan, Ph.D, IPR2020-00740, June 24, 2020						
Examiner:				Date Considered:				
*EXAMINER: Initial if citation 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.								

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	Process and Apparatus for Selecting An Item From A Database			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	260	260
Total in USD (\$)				260

Electronic Acknowledgement Receipt

EFS ID:	41175811
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	19-NOV-2020
Filing Date:	13-JUL-2020
Time Stamp:	18:26:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$260
RAM confirmation Number	E2020AII26243714
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	Transmittal.pdf	141818	no	2
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Warnings:					
Information:					
2		Amendment.pdf	174851	yes	8
			c7ef78e430ea2542cb7563a6e8c29553520123a6		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Applicant Arguments/Remarks Made in an Amendment		7	8	
	Claims		3	6	
	Specification		2	2	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
Warnings:					
Information:					
3	Transmittal Letter	IDS.pdf	145874	no	3
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5	Other Reference-Patent/App/Search documents	IPR202000736_14.pdf	909845	no	95
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35	Other Reference-Patent/App/Search documents	IPR202000737_2003.pdf	2050802	no	226
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Warnings:					
Information:					
Total Files Size (in bytes):			47018539		

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 & TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
 Applicant : Kevin Dinn
 Filed : July 13, 2020
 Tech Cntr/AU : 2173
 Examiner : Shih, Haoshian
 Entitled : PROCESS AND APPARATUS FOR SELECTING
 AN ITEM FROM A DATABASE
 Attorney Reference : 011844-0034-999
 Customer Number : 20583

MAIL STOP AMENDMENT

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

AMENDMENT/RESPONSE TRANSMITTAL

Transmitted herewith is an amendment/response for this application.

EXTENSION OF TIME

A petition for extension of time under 37 C.F.R. §1.136 is not believed necessary.

CLAIM FEES

The claim fees have been calculated as follows:

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE
Total	13	—	23	= 0 x \$	100.00 = \$ 0.00
Independent	1	—	3	= 0 x \$	480.00 = \$ 0.00
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM+ \$					860.00 = \$ 0.00
TOTAL ADDITIONAL CLAIM FEE DUE					\$ 0.00

ADDITIONAL FEES AND PAPERS

Applicants also submit herewith the following fees and/or papers:

Supplemental Information Disclosure Statement (Fee Code 1806) \$ 260.00

FEE PAYMENT

Authorization is given to charge the fees totaling **\$260.00 (Fee Code 1806)** as itemized herein, and to charge any deficiencies in the fees, and/or to further credit any overpayments, to Deposit Account No. 503-013 to maintain the pendency of this application.

Respectfully Submitted,

JONES DAY

Date: November 19, 2002

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

REMARKS

Claims 27-39 are pending. Claims 40-49 have been cancelled. Claims 27-49 are newly presented. No new matter has been added. Reconsideration and allowance of the present application based on the following remarks are respectfully requested

In the Specification

The specification was objected to for containing a minor typographical error. In view of the Examiner's suggestion, Applicant has amended the specification to correct the issue. Accordingly, Applicant respectfully requests withdrawal of this objection.

Claim Rejections Under 35 U.S.C. § 112

Claim 40 was rejected under 35 U.S.C. § 112. In view of the cancellation of claim 40, Applicant respectfully submits this rejection is moot.

Claim Rejections Under 35 U.S.C. § 103

Claims 40-49 were rejected under 35 U.S.C. § 103(a) over Lee (U.S. Patent No. 6,144,378) in view of Mansfield et al. (U.S. Publication No. 2008/0259022). Applicants respectfully traverse this rejection.

While Applicant disagrees with the Office's rejection of claims 40-49, in an effort to expedite prosecution, Applicant has cancelled claims 40-49. In view of the cancellation of these claims, Applicant respectfully submits this rejection is moot.

Allowable Subject Matter

Applicant appreciates the Examiner's indication that claims 27-39 are allowable. In view of the cancellation of claims 40-49 and the amendment to the specification herein, Applicant respectfully submits this application is in conditional for allowance.

Conclusion

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873
Direct No. (202) 879-3607

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Washington, D.C. 20001
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(202) 626-1700 Facsimile

Date: November 19, 2020

Amendments to the Claims:

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1-26. (Cancelled)

27. (Previously Presented) A system for selecting items associated with corresponding item identifiers from a plurality of items, the system comprising:

a television display;

a remote control device comprising a 4-way directional controller; and

a computer processor configured to:

generate, on the television display, a first display of an on-screen keyboard including one or more parts of an item identifier for selection;

enable the selection of the one or more parts by utilizing the 4-way directional controller;

in response to the selection of the one or more parts of item identifiers, generate a display of a further one or more parts of item identifiers for selection, wherein the further one or more parts of item identifiers are arranged on the display relative to one another and corresponding to an up, down, left and right position;

enable selection of the further one or more parts of item identifiers in order to add to the selected one or more parts to build a larger part or whole of a particular item identifier; and

select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers;

wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word; and

wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

28. (Previously Presented) The system of claim 27, wherein the processor is located within the television.

29. (Previously Presented) The system of claim 27, wherein the processor is further configured to enable navigation and selection of the one or more parts of item identifiers and the further one or more parts of item identifiers by way of the 4-way directional controller.

30. (Previously Presented) The system of claim 27, wherein the further one of more parts is selected for display based at least in part on a ranking scheme, and the highest ranked of the further one or more parts of item identifiers is positioned in one of the up, down, left and right positions.

31. (Previously Presented) The system of claim 30, wherein the highest ranked of the further one or more parts of item identifiers being positioned in one of the up, down, left and right positions is specifically positioned in a circular menu over the on-screen keyboard on the television display indicating the item identifiers to be selected by movements of the user in the directions left, right, up, and down using the 4-way directional controller.

32. (Previously Presented) The system of claim 28, wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory.

33. (Previously Presented) The system of claim 30, wherein the items are stored in a database and indexed based on the item identifiers and capable of being queried.

34. (Previously Presented) The system of claim 30, wherein the number of key presses of the remote control keypad to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.

35. (Previously Presented) The system of claim 27, wherein the computer processor is further configured to:

iterate the selection until the particular item identifier is completed, and
enable selection of the particular item identifier to select the item.

36. (Previously Presented) The system of claim 27, wherein the computer processor configured to generate the initial display further includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.

37. (Previously Presented) The system of claim 36, wherein the at least one predetermined criterion is selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.

38. (Previously Presented) The system of claim 27, wherein the computer processor configured to generate the initial display further includes displaying a plurality of parts of item identifiers.

39. (Previously Presented) The system of claim 27, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.

40-49. (Cancelled)

Amendments to the Specification:

Please amend paragraph [0016] of the specification as follows:

In accordance with an aspect, the present invention may provide a method of selecting database items from a database collection of items. The database items may be indexed or identified by a list of item ~~identifiers~~sequence identifiers or sequence of components. In an embodiment, the method may include: generating an initial display including one or more parts of item identifiers for selection, enabling selection of the one or more parts and in response to selection of the one or more parts, generating a display of a further one or more parts for selection, and enabling selection of the further one or more parts in order to add to the selected one or more parts to build a larger part or whole of an item identifier.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Shih, Haoshian
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE
Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP AMENDMENT

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

RESPONSE

Sir:

In response to the Office Action mailed August 19, 2020 for the above-identified application, the following is submitted herewith:

- Amendments to the Specification;
- Amendments to the Claims with a complete claim listing; and
- Remarks.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number : 16/927,723 Confirmation No.: 2446
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : 2173
Examiner : Shih, Haoshian
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE

Attorney Reference : 011844-0034-999
Customer Number : 20583

MAIL STOP AMENDMENT

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

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Sir:

Pursuant to 37 CFR §1.97 and 1.56, the attention of the U.S. Patent and Trademark Office is hereby directed to the following disclosures made herein, which include:

REFERENCES AND RELEVANCY

- ☒ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. Copies of the listed documents are attached, where required, as are any readily available full or partial English translations of any non-English language documents. **References 1-164 are either U.S. patents or publications or were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of those previously cited references can be found in the file of the parent application (U.S. Serial No. 12/488,601, filed February 22, 2010).**
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited for consideration in the parent application, and, pursuant to 37 CFR 1.98(d), copies of the cited references can be found in the file of the parent application (*U.S. Serial No. , filed*).
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in the International Search Report issued for the corresponding International application, and copies of the International Search Report and the cited references are attached for the Examiner's consideration.
- ☐ Applicant(s) wish(es) to make of record the documents listed on the attached List of Cited References. The references cited herein were cited in a communication from a foreign or international patent office in a counterpart foreign or international application(s), and copies of both the relevant communication and the cited references, where required, are attached for the Examiner's consideration.

CERTIFICATION

The undersigned certifies that, pursuant to 37 CFR §1.97(e)(1),

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign or international patent office in a counterpart foreign or international application not more than three months prior to the filing of this Statement.

RELATED CASES

- ☐ Identified in the attached Appendix are related applications directed to related technical subject matter. Copies of the related applications, where required, are attached for the Examiner's consideration. *The identification of the related U.S. patent applications is not to be construed as a waiver of secrecy for those applications, now or upon issuance of the present application as a patent.*

BASIS FOR CONSIDERATION

This Information Disclosure Statement is filed:

- ☐ within three months of the filing date of the application and/or before the mailing date of a first Official Action on the merits, and no fee is required [37 C.F.R. §1.97(b)].
- ☐ with the appropriate certification, and no fee is required [37 C.F.R. §1.97(e)(1)].
- ☒ after the mailing date of the first Official Action on the merits, but prior to the issuance of a Final Official Action or a Notice of Allowance, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(c)].
- ☐ after the mailing date of the Final Official Action or Notice of Allowance, but prior to the payment of the issue fee, the requisite certification under 37 CFR §1.97(e)(1) is made herein, and the requisite fee, if necessary, is authorized herein for payment [37 C.F.R. §1.97(d)].
- ☐ with a Request for Continued Examination (RCE), and no fee is required [37 C.F.R. §1.97(b)(4)].

FEE AUTHORIZATION

- ☒ Authorization is hereby given to charge any deficient fee(s) under 37 CFR §1.16 and §1.17 as necessary to ensure the consideration of this disclosure, or to credit any fee overpayments, to Deposit Account No. 503-013.
- ☒ Authorization is hereby given to charge the requisite fee of **\$260** (Fee Code 1806) for submission of this Information Disclosure Statement to Deposit Account No. 503-013.

It is respectfully requested that this information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The Examiner is further respectfully requested to return of a copy of the enclosed List of Cited References with the Examiner's initials in the left column.

The examination and allowance of this Application is respectfully requested.

Respectfully Submitted,

JONES DAY

By: /Vishal V. Khatri/
Vishal V. Khatri
Registration No. 51,873

Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
(202) 879-3939 Telephone
(202) 626-1700 Facsimile

Date: November 19, 2020

Attachment(s): List of Cited References and copies as required



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
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/927,723	07/13/2020	2173	2020	011844-0034-999	23	3

20583
Jones Day
250 Vesey Street
New York, NY 10281-1047

CONFIRMATION NO. 2446
CORRECTED FILING RECEIPT



Date Mailed: 10/29/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA;

Applicant(s)

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA;

Power of Attorney: The patent practitioners associated with Customer Number 20583

Domestic Priority data as claimed by applicant

This application is a CON of 16/806,753 03/02/2020
which is a CON of 15/615,478 06/06/2017 ABN
which is a CON of 12/448,601 02/22/2010 PAT 9697264
which is a 371 of PCT/AU2007/002010 12/28/2007
which claims benefit of 60/878,083 01/03/2007
and claims benefit of 60/960,345 09/26/2007

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/21/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/927,723**

Projected Publication Date: 10/29/2020

Non-Publication Request: No

Early Publication Request: No
Title

Process and Apparatus for Selecting An Item From A Database

Preliminary Class

715

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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 (1-866-999-4258).

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.

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).

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United States Patent and Trademark Office
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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
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999

20583
Jones Day
250 Vesey Street
New York, NY 10281-1047

CONFIRMATION NO. 2446
POA ACCEPTANCE LETTER



Date Mailed: 10/29/2020

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/26/2020.

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.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sstephanos/



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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999

CONFIRMATION NO. 2446

PUBLICATION NOTICE



OC000000121001356

20583
Jones Day
250 Vesey Street
New York, NY 10281-1047

Title:Process and Apparatus for Selecting An Item From A Database

Publication No.US-2020-0341999-A1

Publication Date:10/29/2020

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 Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, 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 <https://portal.uspto.gov/pair/PublicPair>. 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

CORRECTED ADS FORM

Application Number	16927723
Title of Invention	Process and Apparatus for Selecting An Item From A Database

Inventor Information

****If no data is shown, no data has been corrected****

	Data of Record	Updated Data
Order Number		
Name		

Residence Information

Residency		
City		
State		
Country of Residence		

Mailing Address of Inventor

Address 1		
Address 2		
City,State/Province, Postal Code		
Country		

Application Information

	Data of Record	Updated Data
Title of Invention	Process and Apparatus for Selecting An Item From A Database	
Attorney Docket Number	011844-0034-999	
Entity Type	Regular Undiscounted	

Domestic Benefit/National Stage Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121,365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S. C. 119(e) or 120, and 37 CFR 1.78(a).

	Data of Record	Updated Data
Prior Application Status	pending	
Application Number	16927723	
Continuity Type	CON	
Prior Application Number	16806753	
Filing Date (YYYY-MM-DD)	2020-03-02	
Patent Number		
Issue Date (YYYY-MM-DD)	0001-01-01	

		Data of Record	Updated Data
	Prior Application Status	abandoned	
	Application Number	16806753	
	Continuity Type	CON	
	Prior Application Number	15615478	
	Filing Date (YYYY-MM-DD)	2017-06-06	
	Patent Number		
	Issue Date (YYYY-MM-DD)	0001-01-01	

		Data of Record	Updated Data
	Prior Application Status	patented	
	Application Number	15615478	
	Continuity Type	CON	
	Prior Application Number	12448601	
	Filing Date (YYYY-MM-DD)	2010-02-22	
	Patent Number	9697264	
	Issue Date (YYYY-MM-DD)	2017-07-04	

		Data of Record	Updated Data
	Prior Application Status		<u>expired</u>
	Application Number		<u>12448601</u>
	Continuity Type		<u>NST</u>
	Prior Application Number		<u>PCTAU2007002010</u>
	Filing Date (YYYY-MM-DD)		<u>2017-12-28</u>
	Patent Number		
	Issue Date (YYYY-MM-DD)		

		Data of Record	Updated Data
	Prior Application Status		<u>expired</u>
	Application Number		<u>PCTAU2007002010</u>
	Continuity Type		<u>PRO</u>
	Prior Application Number		<u>60878083</u>
	Filing Date (YYYY-MM-DD)		<u>2007-01-03</u>
	Patent Number		
	Issue Date (YYYY-MM-DD)		

		Data of Record	Updated Data
	Prior Application Status		<u>expired</u>
	Application Number		<u>PCTAU2007002010</u>
	Continuity Type		<u>PRO</u>
	Prior Application Number		<u>60960345</u>
	Filing Date (YYYY-MM-DD)		<u>2007-09-26</u>
	Patent Number		
	Issue Date (YYYY-MM-DD)		

Foreign Priority Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

	Data of Record	Updated Data
Application Number		
Country		
Filing Date		
Access Code		

Applicant Information

****If no data is shown, no data has been corrected****

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

	Data of Record	Updated Data
Applicant Type	ASG	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is		
Name of the Deceased or Legally Incapacitated Inventor		
Applicant is an Organization	Yes	
Name		
Organization Name	Kannuu Pty Ltd.	
Address 1		<u>2 Glenlee Close</u>
Address 2		
City,State/Province,Postal Code	Mount-Kuring-Gai	<u>Mount-Kuring-Gai 2080</u>
Country	AU	
Phone Number		
Fax Number		

Email Address

Assignee Information including Non-Applicant Assignee Information

****If no data is shown, no data has been corrected****

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office

	Data of Record	Updated Data
Order		
Applicant is an Organization		
Name		
Organization Name		

Mailing Address

Address 1		
Address 2		
City,State/Province,Postal Code		
Country		
Phone Number		
Fax Number		
Email Address		

Signature

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Vishal V Khatri/	Registration Number	51873
First Name	Vishal	Last Name	Khatri

Electronic Patent Application Fee Transmittal

Application Number:	16927723			
Filing Date:	13-Jul-2020			
Title of Invention:	Process and Apparatus for Selecting An Item From A Database			
First Named Inventor/Applicant Name:				
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				140

Electronic Acknowledgement Receipt

EFS ID:	40947450
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	26-OCT-2020
Filing Date:	13-JUL-2020
Time Stamp:	16:03:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 140
RAM confirmation Number	E20200PG03393512
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet to update/ correct info	CorrectedADS.pdf	94948	no	7
			826af9814bb2bddde27e0011072204dfa74ba2bd9		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30578	no	2
			fb358b05bc045364b0b02af2cb285cd9240ec0		
Warnings:					
Information:					
Total Files Size (in bytes):			125526		
<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>					

PTO/AIA/80 (07-12)

Approved for use through 11/30/2014. OMB 0651-0036

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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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(c).

I hereby appoint:



Practitioners associated with Customer Number:

20583

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 assignments documents attached to this form in accordance with 37 CFR 3.73(c).

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



The address associated with Customer Number:

20583

OR

☐	Firm or Individual Name			
☐	Address			
☐	City	State	Zip	
☐	Country			
☐	Telephone	Email		

Assignee Name and Address: Kannu Pty Ltd
Level 18, WHK Horwath Center
120 Edward Street
Brisbane, Queensland 4001
Australia

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, 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	<i>Todd Viecut</i>	Date	1/18/13
Name	TODD VIECUT	Telephone	992 814 6062
Title	CEO		

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:	40947049
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	26-OCT-2020
Filing Date:	13-JUL-2020
Time Stamp:	15:46:06
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		16927723POA.PDF	185120	yes	4
			a75848ce573ccce43c8d0c3309d58f9e373d9076		

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Assignee showing of ownership per 37 CFR 3.73	2	4
	Power of Attorney	1	1
Warnings:			
Information:			
Total Files Size (in bytes):		185120	
<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>			

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.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Kannuu Pty Ltd.Application No./Patent No.: 16/927,723Filed/Issue Date: July 13, 2020Titled: Process and Apparatus for Selecting an Item From a DatabaseKannuu Pty Ltd., a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):1. ☒ The assignee of the entire right, title, and interest.2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):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 thereof is attached.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.

[Page 1 of 2]

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.**

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

STATEMENT UNDER 37 CFR 3.73(c)

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.

4. 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.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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6. 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(c)(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.

/Vishal V Khatri/

October 26, 2020

Signature

Date

Vishal V. Khatri

51,873

Printed or Typed Name

Title or Registration Number

[Page 2 of 2]

Please return signed/recorded to:
Jones Day
Intellectual Property Group
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113

Attorney Reference: 011844-0006-888
Client Reference:

ASSIGNMENT OF PROVISIONAL APPLICATION

WHEREAS, the undersigned hereby:

INSERT NAME(S) OF INVENTOR(S)	(1) DINN, Kevin M.	(2)
	(3)	☐ x box if continued on page 2

(collectively hereinafter "ASSIGNOR") has/have made an invention entitled:

TITLE OF INVENTION	IMPROVED PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE
-----------------------	--

for which a provisional application for Letters Patents of the United States of America:

- (A) ☐ was executed on even date herewith and will be filed in the U.S. Patent & Trademark Office; or
(B) ☒ was filed on September 26, 2007 as Application No. 60/960,345

AND WHEREAS,

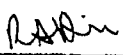
INSERT NAME(S) AND ADDRESS(ES) OF ASSIGNEE(S)	Kannuu Pty. Ltd. 2 Glenlee Close Mount Kuring-Gai, New South Wales, Australia
--	---

(hereinafter "ASSIGNEE"), desires to acquire an interest therein of the above-identified invention;

NOW, THEREFORE, in consideration of good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby sell, assign and transfer unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and interest to the said invention in the United States and all foreign countries, as described in the aforesaid provisional application, and to the said provisional application and all applications claiming priority thereto under 35 U.S.C. §119(e) and to all continuations, divisions, and renewals thereof, and all Patents of the United States which may be granted thereon and all reissues and extensions thereof; and all applications for industrial property protection, including, without limitation, all applications for patents, utility models, and designs which may hereafter be filed for said invention in any country or countries foreign to the United States, together with the right to file such applications for all forms of industrial property protection and the right to claim for the same the priority rights derived from said United States application under the Patent Laws of the United States, the International Convention for the Protection of Industrial Property, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable, and ASSIGNOR hereby authorizes and requests the Commissioner of Patents to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives;

AND ASSIGNOR hereby agrees, without further remuneration, to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed essential for ASSIGNEE's full protection and title in and to the invention hereby transferred; and additionally, the undersigned further authorize(s) Jones Day, 51 Louisiana Avenue, N.W., Washington, D.C. 20001, to insert hereon any further identification necessary or desirable for recordation of this document.

IN TESTIMONY WHEREOF, we hereunto set our respective signatures on the day and year set forth below.

	<u>INVENTOR SIGNATURES</u>	<u>DATE SIGNED</u>	<u>WITNESSES</u>
1)		<u>29 Oct 2007</u>	
Name:	<u>Kevin William DINN</u>		
2)			
Name:			
3)			
Name:			



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	08/19/2020		
Jones Day 250 Vesey Street New York, NY 10281-1047			EXAMINER SHIH, HAOSHIAN	
			ART UNIT	PAPER NUMBER
			2173	
			NOTIFICATION DATE	DELIVERY MODE
			08/19/2020	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

japarker@jonesday.com
ncgeorge@jonesday.com
wtokmakidis@jonesday.com

Office Action Summary

Application No.

16/927,723

Applicant(s)

Dinn, Kevin W.

Examiner

HAOSHIAN SHIH

Art Unit

2173

AIA (FITF) 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 MONTHS 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 07/13/2020.

☐ 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) 27-49 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☒ Claim(s) 26-39 is/are allowed.

7) ☒ Claim(s) 40-49 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 07/13/2020 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:

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)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

4) ☐ Other: ____.

Paper No(s)/Mail Date ____.

Notice of Pre-AIA or AIA Status

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

DETAILED ACTION

2. Claims 27-49 are pending in this application and have been examined in response to application filed on 07/13/2020.
3. Claims 1-26 are canceled.
4. This application is a CON of 16/806,753 03/02/2020 16/806,753 is a CON of 15/615,478 06/06/2017 ABN 15/615,478 is a CON of 12/448,601 02/22/2010 PAT 9697264.

Specification

The disclosure is objected to because of the following informalities:

The second sentence of paragraph 0016 contains a typographical error (“identifierssequence”) and does not make sense.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to

enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 40 is rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 40 recites: "orthographic symbols" There is no mention in the original specification of having "orthographic symbols". Thus, the limitation includes subject matter that was not described in the original specification.

If the examiner has overlooked the portion of the original specification that describes the feature of the present invention, then applicant should point it out (by page number and line number) in the response to this office action.

Applicant may obviate this rejection by canceling the claim.

Claim Rejections - 35 USC § 103

7. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

8. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject

matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 40-49 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,144,378) in view of Mansfield et al. (Mansfield, US 2008/0259022 A1).

10. As to INDEPENDENT claim 40, Lee discloses a system for selecting items, the system comprising: a television comprising a display (fig.3; a television is disclosed);

a remote control comprising an up, down, left, right directional controller with a selection key located in centrally relative to the up, down, left, and right keys (fig.3, fig.5; a remote with directional buttons is disclosed); and

a computer processor configured to: display in a first area of the display of the television, a first plurality of portions of item identifiers, ...and the first plurality of portions of item identifiers is displayed in a position corresponding to the up, down, left, right select directional controller of the remote control (fig.5, fig.7-fig.9; a circular menu with a D-pad remote controller is displayed);

enable selection of one of the first plurality of portions of the item identifiers by using the up, down, left, or right, select functionality of the directional controller of the remote control to navigate to the one of the first plurality of portions of the item identifiers with a single activation of the up, down, left, or right key prior to selection with the selection key (fig.5, fig.7-fig.9; keys are selectable using the D-pad);

enable selection of one of the second plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the directional controller of the remote control to navigate to the one of the second plurality of portions of the item identifiers with a single activation of the up, down, left, or right key prior to selection with the selection key (fig.5, fig.9; additional letters are selectable using a D-pad remote). Lee does not expressly disclose ...wherein the item identifiers correspond to the plurality of items in the database; display the

selected portion of the item identifier in a second area of the display of the television, wherein the second area of the display is separate from the first area of the display; display in response to the selection of the one of the first plurality of the portions of item identifiers and in the first area of the display, a second plurality of portions of the item identifiers, the second plurality of portions of the item identifiers comprising at least two portions of the item identifiers chosen for display based on the selection of the one of the plurality of portions of the item identifiers; combine the portion of the item identifier selected from the second plurality of portions of the item identifiers with the portion of the item identifier selected from the first plurality of portions of the item identifiers to create a larger portion of the item identifier; and display larger portion of the item identifier in the second area of the display of the television; wherein the first plurality of portions of item identifiers and the second plurality of portions of item identifiers are orthographic symbols representing at least a writing language; wherein the at least two portions of item identifiers chosen for display based on the selection of the one of the plurality of portions of item identifiers are chosen to minimize a number of actuations of the directional controller of the remote control that is otherwise necessary to input the item identifier; and wherein the second plurality of portions of item identifiers comprises four portions of item identifiers.

In the same field of endeavor, Mansfield discloses ... wherein the item identifiers correspond to the plurality of items in the database (fig.1, "146"; a usage sequence storage database is embedded);

display the selected portion of the item identifier in a second area of the display of the ..., wherein the second area of the display is separate from the first area of the display (fig.6B, "604", "606"; the entry area and the select area are separated);

display in response to the selection of the one of the first plurality of the portions of item identifiers and in the first area of the display, a second plurality of portions of the item identifiers, the second plurality of portions of the item identifiers comprising at least two portions of the item

identifiers chosen for display based on the selection of the one of the plurality of portions of the item identifiers (fig.6A, fig.6B; additional parts such as “calen” and “carto” are selectable);

combine the portion of the item identifier selected from the second plurality of portions of the item identifiers with the portion of the item identifier selected from the first plurality of portions of the item identifiers to create a larger portion of the item identifier; and display larger portion of the item identifier in the second area of the display ... (fig.6C, “604”; a larger portion of the parts is displayed);

wherein the first plurality of portions of item identifiers and the second plurality of portions of item identifiers are orthographic symbols representing at least a writing language ([0049]; common used characters sequences are deemed to be orthographic);

wherein the at least two portions of item identifiers chosen for display based on the selection of the one of the plurality of portions of item identifiers are chosen to minimize a number of actuations of the directional controller ... that is otherwise necessary to input the item identifier (fig.6B, fig.6C; portions of characters sequences are suggested and combined); and

wherein the second plurality of portions of item identifiers comprises four portions of item identifiers (fig.6B, “610”, “612”; multiple character sequences are suggested).

It would have been obvious to one of ordinary skill in the art, having the teaching of Lee and Mansfield before him prior to the invention was made, to modify the on screen data entry interface taught by Lee to include the partial information completion interface taught by Mansfield with the motivation being to enhance data entry speed and accuracy.

11. As to claim 41, the prior art as combined discloses wherein the enabling of the selection of one of the second plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the remote control is further enabled via a circular menu on the display indicating the item identifiers to be selected (Lee, fig.9; parts are displayed on a circular menu).

12. As to claim 42, the prior art as combined wherein the computer processor is further configured to select one of the further one or more parts of item identifiers in response to a single activation of a corresponding up, down, left, or right key on the directional controller of the remote control (Lee, col.5, l.28-35; parts are navigated using a D-pad remote).

13. As to claim 43, the prior art as combined wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory on the television (Mansfield, fig.3A; a character sequence tree is disclosed).

14. As to claim 44, the prior art as combined wherein the items are indexed based on the item identifiers and capable of being queried (Mansfield, fig.3B; items are indexed by weight).

15. As to claim 45, the prior art as combined wherein the number of key presses of the up, down, left, right directional controller of the remote control (Lee, fig.5) to select an item is fewer than the number of key presses required to select an item according to a system that requires and end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses (Mansfield, fig.6B; additional parts are suggested to the user based on previously selected parts).

16. As to claim 46, the prior art as combined wherein the selected two portions of item identifiers are chosen based on at least one predetermined criterion selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a

hierarchical classification of the pluralities of portions of the item identifiers (Mansfield, [0047]; item identifiers are weighted by their usage frequencies).

17. As to claim 47, the prior art as combined wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier (Lee, fig.5, fig.7-fig.9; a D-pad is usable to select keys on a circular menu).

18. As to INDEPENDENT claim 48, Lee discloses a system for selecting items associated with corresponding item identifiers, the system comprising: an output display of a television (fig.3, a television is disclosed);

a remote control device comprising a directional input device with an up, down, left, right functionality (fig.3, fig.5; a remote with directional buttons is disclosed); and

a computer processor contained within the television configured to: generate a first display on the output display (fig.8; an onscreen keyboard is disclosed),

the first display comprises: a part of an item identifier corresponding to a first set of items (fig.8; letters are displayed on the circular keyboard) and

a part of an item identifier corresponding to a second set of items (fig.8; letters are displayed on the circular keyboard);

enable selection of one of the two parts of the item identifiers (fig.9; a letter is selected);

generate, in response to the selection of the one of the two parts of item identifiers, a further display on the output display (fig.9; additional letters are selectable),

wherein the up, down, left, right, select functionality of the remote control keypad enables the selection of portions of item identifiers specifically positioned in a circular menu on the display (fig.5, fig.8; a D-pad is usable to select keys on a circular menu). Lee does not expressly disclose the further display comprises: an additional part of an item identifier

corresponding to a subset of the selected set of items and another additional part of an item identifier corresponding to another subset of the selected set of items; enable selection of one of the two additional parts of the item identifiers; combine the selected one of the two parts of the item identifiers with the selected one of the two additional parts of the item identifiers to create a larger part of the item identifiers; and display the larger part of the item identifiers on the output display, wherein the additional parts of the item identifiers are shorter than complete item identifiers.

In the same field of endeavor, Mansfield discloses the further display comprises: an additional part of an item identifier corresponding to a subset of the selected set of items and another additional part of an item identifier corresponding to another subset of the selected set of items; enable selection of one of the two additional parts of the item identifiers; combine the selected one of the two parts of the item identifiers with the selected one of the two additional parts of the item identifiers to create a larger part of the item identifiers; and display the larger part of the item identifiers on the output display, wherein the additional parts of the item identifiers are shorter than complete item identifiers (fig.6A, fig.6B; additional parts such as “calen” and “carto” are selectable).

It would have been obvious to one of ordinary skill in the art, having the teaching of Lee and Mansfield before him prior to the invention was made, to modify the on screen data entry interface taught by Lee to include the partial information completion interface taught by Mansfield with the motivation being to enhance data entry speed and accuracy.

19. As to claim 48, the prior art as combined discloses wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier (Lee, fig.5, fig.7-fig.9; a D-pad is usable to select keys on a circular menu).

Allowable Subject Matter

20. Claims 27-39 are allowed.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAOSHIAN SHIH whose telephone number is (571)270-1257. The examiner can normally be reached on M-F 8:00-5:00.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIEU VU can be reached on 5712724057. 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 <https://ppair-my.uspto.gov/pair/PrivatePair>. 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.

/HAOSHIAN SHIH/
Primary Examiner, Art Unit 2173

Notice of References Cited	Application/Control No. 16/927,723		Applicant(s)/Patent Under Reexamination Dinn, Kevin W.	
	Examiner HAOSHIAN SHIH		Art Unit 2173	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6144378-A	11-2000	Lee; Wai On	G06F3/0236	715/767
*	B	US-20080259022-A1	10-2008	Mansfield; Philip Andrew	G06F3/0237	345/156
*	C	US-6744423-B2	06-2004	Kraft; Christian	G06F3/0237	345/169
*	D	US-7487147-B2	02-2009	Bates; John P.	G06F3/0237	1/1
	E					
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	J					
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	L					
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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 16/927,723	Applicant(s)/Patent Under Reexamination Dinn, Kevin W.
	Examiner HAOSHIAN SHIH	Art Unit 2173

CPC - Searched*		
Symbol	Date	Examiner
G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237	08/14/2020	HSS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST, internet, inventor	08/14/2020	HSS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	((("20080259022") or ("20050043063"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/08/10 21:20
S2	19	kannuu.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/08/12 08:16
S3	4	S2 and (up same down same left same right).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/08/12 08:17
S4	3	((("20040163032") or ("20020151327") or ("5953541"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/08/12 08:25
S5	0	S2 and (screen near2 keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/08/12 08:39
S6	0	S2 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/08/12 08:40
S7	0	S2 and (directional same keyboard).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 08:40
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			FPRS; EPO; JPO			
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S10	15	S2 and (screen near3 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 08:42
S11	15	S2 and (screen near2 keyboard)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 08:42
S12	4	S2 and (screen near2 keyboard) and (directional near2 controller)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 08:42
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S14	0	("2012/0246591").URPN.	USPAT	OR	OFF	2020/08/12 08:44
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S20	23	("20050027524" "20050264584" "20070216659" "20080158201" "20080180283" "20090100333" "20100026650" "20110004849" "4531119" "4972496" "6002390" "6144378" "6353529" "6469719" "6744423" "6795579" "6967651" "7013258" "7149550" "7257528" "7681124" "7802184" "7886233").PN. OR ("9582082").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2020/08/12 09:26
S21	76	("6144378").URPN.	USPAT	OR	OFF	2020/08/12 09:33
S22	6	("7084858").URPN.	USPAT	OR	OFF	2020/08/12 13:43
S23	1	("20050043063").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2020/08/12 16:47
S24	67,019	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2020/08/12 17:15
S25	295	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 17:19
S26	4	((up near3 down near3 left near3 right) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 17:50
S27	6	((four "4") near2 way) near4 (remote controller))same ((word text character) near4 complet\$5)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 17:51

S31	153	((word text character) near4 complet\$5) same ("4" four) near3 (option selection choice))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/08/12 19:02
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S33	21	("2010/0153880").URPN.	USPAT	OR	OFF	2020/08/12 19:05

EAST Search History (Interference)

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S28	12,595	(G06F3/0481 G06F16/26 H04M1/2748 G06F3/0237).CPC.	USPAT	OR	OFF	2020/08/12 17:15
S29	3	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	OFF	2020/08/12 17:17
S30	8	((direction\$3 near3 (controller remote joystick dpad) same select\$3 same (item part identifier character word letter) same navigat\$4)).clm.	USPAT	OR	ON	2020/08/12 17:18

8/14/2020 9:19:51 PM

C:\Users\hshih\Documents\EAST\Workspaces\16927723.wsp

Bibliographic Data

Application No: 16/927,723

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /HAOSHIAN SHIH/

Examiner's Signature

Initials

Title:

Process and Apparatus for Selecting An Item From A Database

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/13/2020	715	2173	011844-0034-999
RULE			

APPLICANTS

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA

INVENTORS

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA

CONTINUING DATA

This application is a CON of 16806753 03/02/2020

16806753 is a CON of 15615478 06/06/2017ABN

15615478 is a CON of 12448601 02/22/2010 PAT 9697264

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

07/21/2020

STATE OR COUNTRY

AUSTRALIA

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/927,723	07/13/2020	Kevin W. Dinn	011844-0034-999	2446
20583	7590	07/24/2020	EXAMINER	
Jones Day 250 Vesey Street New York, NY 10281-1047			ART UNIT	
			PAPER NUMBER	
			2173	
			NOTIFICATION DATE	
			DELIVERY MODE	
			07/24/2020	
			ELECTRONIC	

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

japarker@jonesday.com
ncgeorge@jonesday.com
wtokmakidis@jonesday.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 16/927,723	Applicant(s) Dinn, Kevin W.	
	Examiner BRIAN W BROWN	Art Unit OPET	AIA (FITF) Status No

1. THE REQUEST FILED 13 July 2020 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☒ for an original nonprovisional application (Track I).

B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination.** The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims**, or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to BRIAN BROWN at (571)272-5338. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/BRIAN W BROWN/ Petitions Examiner, OPET	
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/927,723	07/13/2020	3655	2020	011844-0034-999	23	3

CONFIRMATION NO. 2446

FILING RECEIPT



0000000118644542

20583
Jones Day
250 Vesey Street
New York, NY 10281-1047

Date Mailed: 07/23/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Kevin W. Dinn, Mount Kuring-Gai, AUSTRALIA;

Applicant(s)

Kannuu Pty Ltd., Mount-Kuring-Gai, AUSTRALIA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 16/806,753 03/02/2020
which is a CON of 15/615,478 06/06/2017
which is a CON of 12/448,601 02/22/2010 PAT 9697264

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/21/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/927,723**

Projected Publication Date: 10/29/2020

Non-Publication Request: No

Early Publication Request: No

Title

Process and Apparatus for Selecting An Item From A Database

Preliminary Class

194

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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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 (1-866-999-4258).

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Title 35, United States Code, Section 184
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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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/927,723				
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	300			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	660			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760			
TOTAL CLAIMS (37 CFR 1.16(j))	23 minus 20 =	*			OR	x 100 =	300			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 460 =	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			
			TOTAL			TOTAL	2020			
* 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)		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(i))	*	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	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	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.										

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.

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No.	011844-0034-999
	First Named Inventor	Kevin W. Dinn
	Title	Improved Process and Apparatus...
	Priority Mail Express® 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
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<ol style="list-style-type: none"> 1. ☒ Fee Transmittal Form (PTO/SB/17 or equivalent) 2. ☐ Applicant asserts small entity status. See 37 CFR 1.27 3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent. 4. ☒ Specification [Total Pages <u>76</u>] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement) 5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>112</u>] 6. Inventor's Oath or Declaration [Total Pages <u>1</u>] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e)) <ol style="list-style-type: none"> a. ☐ Newly executed (original or copy) b. ☒ A copy from a prior application (37 CFR 1.63(d)) 7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent) 8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix) <div style="margin-left: 20px;"> ☐ Landscape Table on CD </div> 9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. – c. are required) <ol style="list-style-type: none"> a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: <ol style="list-style-type: none"> i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies 	ACCOMPANYING APPLICATION PAPERS <ol style="list-style-type: none"> 10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 11. ☐ 37 CFR 3.73(c) Statement ☐ Power of Attorney (when there is an assignee) 12. ☐ English Translation Document (if applicable) 13. ☐ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 14. ☒ Preliminary Amendment 15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized) 16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 17. ☐ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 18. ☒ Other: CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (AIA/24) _____ _____ _____
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***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
 (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS					
☒ The address associated with Customer Number: <u>20583</u> OR ☐ Correspondence address below					
Name					
Address					
City	State			Zip Code	
Country	Telephone	(202) 879-5481		Email	
Signature	/Vishal V. Khatri/			Date	July 13, 2020
Name (Print/Type)	Vishal V. Khatri			Registration No. (Attorney/Agent)	51,873

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.**

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FEE TRANSMITTAL		Complete if known	
		Application Number	(unassigned)
		Filing Date	July 13, 2020
☐ Applicant asserts small entity status. See 37 CFR 1.27.		First Named Inventor	Kevin W. Dinn
☐ 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.		Examiner Name	(unassigned)
		Art Unit	(unassigned)
TOTAL AMOUNT OF PAYMENT	(\$ 6560.00)	Practitioner Docket No.	011844-0034-999

METHOD OF PAYMENT (check all that apply)
☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 503-013 Deposit Account Name: Jones Day

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**
☒ Charge any additional fee(s) or underpayment of fee(s) ☐ Credit any overpayment of fee(s) under 37 CFR 1.16 and 1.17

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.

FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)**

Application Type	FILING FEES			SEARCH FEES			EXAMINATION FEES			Fees Paid (\$)
	U (\$)	S (\$)	M (\$)	U (\$)	S (\$)	M (\$)	U (\$)	S (\$)	M (\$)	
Utility	300	150*	75	660	330	165	760	380	190	1720.00
Design	200	100	50	160	80	40	600	300	150	
Plant	200	100	50	420	210	105	620	310	155	
Reissue	300	150	75	660	330	165	2,200	1,100	550	
Provisional	280	140	70	0	0	0	0	0	0	

* The \$150 small entity status filing fee for a utility application is further reduced to \$75 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	Undiscounted Fee (\$)	Small Entity Fee (\$)	Micro Entity Fee (\$)
Each claim over 20 (including Reissues)	100	50	25
Each independent claim over 3 (including Reissues)	460	230	115
Multiple dependent claims	820	410	205
Total Claims			
23 - 20 or HP = 3 x 100.00 = 300.00			
HP = highest number of total claims paid for, if greater than 20.			
Indep. Claims			
3 - 3 or HP = 0 x 460.00 = 0.00			
HP = highest number of independent claims paid for, if greater than 3.			
		Multiple Dependent Claims	
		Fee (\$)	Fee Paid (\$)
		820.00	0.00

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$400 (\$200 for small entity) (\$100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
112 - 100 = 12 / 50 = 1 (round up to a whole number) x 400.00 = 400.00				

4. OTHER FEE(S)

Non-English specification, \$130 fee (no small or micro entity discount)	0.00
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, \$400 fee (\$200 small or micro entity)	0.00
Other (e.g., late filing surcharge): Fee for Request for Prioritized (Track One) Examination (Fee Code 1817) \$4,000; Processing Fee (Fee Code 1830) \$140	\$4,140

SUBMITTED BY

Signature	/Vishal V. Khatri/	Registration No. (Attorney/Agent) 51,873	Telephone (202) 879-5481
Name (Print/Type)	Vishal V. Khatri	Date July 13, 2020	

This collection of information is required by 37 CFR 1.136. 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 30 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 Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	Improved Process and Apparatus for Selecting An Item From A Database			
First Named Inventor/Applicant Name:	Kevin W. Dinn			
Filer:	Vishal Vincent Khatri/Kristi Hutchison			
Attorney Docket Number:	011844-0034-999			
Filed as Large Entity				
Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
REQUEST FOR PRIORITIZED EXAMINATION	1817	1	4000	4000
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	3	100	300
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				6160

Electronic Acknowledgement Receipt

EFS ID:	39986570
Application Number:	16927723
International Application Number:	
Confirmation Number:	2446
Title of Invention:	Improved Process and Apparatus for Selecting An Item From A Database
First Named Inventor/Applicant Name:	Kevin W. Dinn
Customer Number:	20583
Filer:	Vishal Vincent Khatri/Kristi Hutchison
Filer Authorized By:	Vishal Vincent Khatri
Attorney Docket Number:	011844-0034-999
Receipt Date:	13-JUL-2020
Filing Date:	
Time Stamp:	18:25:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$6160
RAM confirmation Number	E20207CI26062885
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	TrackOne Request	0118440034999TrackOne.pdf	114011	no	2
			a421eaa15be2f430402f7aa3c43a88c7487b6364		
Warnings:					
Information:					
2	Oath or Declaration filed	0118440034999Declaration.pdf	91415	no	1
			9da8b5985738e97bd8a45222c8f94b4e8021ebbb8		
Warnings:					
Information:					
3		0118440034999Appln.pdf	520799	yes	76
			d80ce866c0b6a2a1acb5c56a1d9dff57aaf9bbeb		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	72	
	Claims		73	75	
	Abstract		76	76	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	0118440034999Drwgs.pdf	1580130	no	36
			88773507ebcd9dc5e8ab4c14148ff8cae849644e		
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					

5	Application Data Sheet	0118440034999ADS.pdf	1256502	no	9
			9b784e2a88b6c6fc01e07267be9ad8ad125b95b2		
Warnings:					
Information:					
6		0118440034999PrelimAmend.pdf	151533	yes	9
			0a93e1222a8890c6a41a19a8abe012ce9d3e0439		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	8	
	Applicant Arguments/Remarks Made in an Amendment		9	9	
Warnings:					
Information:					
7	Transmittal of New Application	0118440034999Transmittal.pdf	362231	no	2
			221098d1e37fe4b66fb9cbaf01a1f2a5a5b351f3		
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	42180	no	2
			26226cf3a741c218838524a0878d265ddb6ac777		
Warnings:					
Information:					
Total Files Size (in bytes):			4118801		

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.

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Kevin W. Dinn	Nonprovisional Application Number (if known):	(unassigned)
Title of Invention:	Process and Apparatus for Selecting an Item From A Database		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently \$0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.
2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.
3. The applicable box is checked below:

I. ☒ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

- i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
---OR---
(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
- ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, or the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

- i. A request for continued examination has been filed with, or prior to, this form.
- ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
- iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
- iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
- v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature	/Vishal V. Khatri/	Date	July 13, 2020
Name (Print/Typed)	Vishal V. Khatri	Practitioner Registration Number	51,873

Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*

☐ *Total of _____ forms are submitted.

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.

**DECLARATION BY INVENTOR UNDER
37 C.F.R. §1.63 FOR PATENT UTILITY APPLICATION**
for use with Application Data Sheet (PTO/AIA/14) – Equivalent to PTO/AIA/01

*Title of
Invention*

Process and Apparatus for Selecting an Item From A Database

As the below named inventor, I hereby declare that:

This Declaration is directed to:

- ☐ the attached application, or
☒ United States Application or PCT International Application No. 16/806,753
filed on March 2, 2020

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. §1.56.

I hereby acknowledge that any willful false statement made in this Declaration is punishable under 18 U.S.C. §1001 by fine or imprisonment of not more than five (5) years, or both, and that any willful false statement may further jeopardize the validity of this application or any patent issued thereon.

Legal Name of Inventor

Inventor: Kevin W. Dinn Date: 10 June 2020

Signature: 

Attorney Reference: 011844-0031-999

Client Reference:

IMPROVED PROCESS AND APPARATUS FOR SELECTING AN ITEM FROM A DATABASE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a Continuation of U.S. Application No. 16/806,753, filed March 2, 2020, which is a Continuation of U.S. Application No. 15/615,478, filed June 6, 2017, which is a Continuation of U.S. Application No. 12/448,601, filed February 22, 2010, now U.S. Patent No. 9,697,264, which is a National Stage application of International Application No. PCT/AU2007/002010, filed December 28, 2007, which designates the United States and was published in English, and which claims the benefit of U.S. Provisional Application No. 60/878,083 filed January 3, 2007, and U.S. Provisional Application No. 60/960,345 filed September 26, 2007. Each of these applications is incorporated herein by reference in its entirety. This Application is also related to U.S. Provisional Application No. 60/905,295 filed March 7, 2007, International Application No. PCT/AU2006/001151, filed on August 11, 2006, Australian provisional application AU2005904378 filed August 12, 2005, U.S. Application No. 10/495,585 filed on August 20, 2002, PCT/AU02/01114 filed August 20, 2002, and Australian provisional application PS-1072, filed March 13, 2002. Each of these applications is also incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention relates to an improved process and apparatus for selecting an item from a database, and more particularly, but not exclusively, to a method and apparatus for rapidly selecting items from a list of items identified by an informational field.

2. Description of Related Art

[0003] There are many applications on computing devices which require selection from a list where the item identifier for the list is text based. Such applications include selecting a contact from an address book, selecting a record from a database, selecting a word from a dictionary, etc. In these applications, the user has to enter enough information to narrow a search of the list down to a single entry or a subset of entries for selection. This selection process requires entering several of the initial letters of the search term resulting in a smaller subset of the list and then scrolling through the subset to manually point out the desired items.

[0004] The process is cumbersome and requires the user to be able to enter any letter in their language's alphabet as well as possibly numbers and other symbols. This is particularly onerous on devices with limited interfaces such as mobile phones, personal digital assistants (PDAs), remote controls, games consoles, etc.

[0005] On hand held devices with a keypad such as mobile phones (see, FIGURE 1), the entry of alphabetic characters as well as numbers and symbols is achieved by repeatedly pressing the 12 number keys (0 to 9 and "*" and "#"). This method is complicated and unnatural. It requires accurate presses of generally very small buttons and results in accidental pressing of adjacent buttons. This conventional system also requires the user to be able to read and discern very small labels on the buttons, requires constant shift of gaze between buttons and the screen to track the input, and only allows the entry of one character at a time.

[0006] Other handheld devices, such as a PDA, accept input through a touch screen (see, FIGURE 2). These devices allow entry of search terms through generally two methods - an on-screen keyboard and handwriting recognition.

[0007] The on-screen keyboard method involves presenting an image of a keyboard on the screen. The buttons on the on-screen keyboard are often too small to be selected using fingers so a stylus is required. Additionally, the process is slow, and selection of individual characters is prone to errors. There are additional disadvantages to the on-screen keyboard method. For example, in the on-screen keyboard method, access to numbers and additional symbols usually requires at least two presses as they require the keyboard to go into another mode to allow access to them, small key images are hard to see for those with any impairment of vision and hard to select for those with limited dexterity, characters are only entered one at a time, and the process generally requires two hands.

[0008] Handwriting recognition systems are disadvantageous because of the high error rate in recognising characters, the need for a stylus for input, the time required to enter each letter, the constant cycle of entry and checking the entry and correction of misinterpretation of entries, characters are only entered one at a time, and the process generally requires two hands.

[0009] Even using a full keyboard to specify the characters to select is disadvantageous because it is still necessary to enter one character at a time; it is still necessary to enter enough characters to generate a manageable subset list and then select from it or it is necessary to enter sufficient characters each time to uniquely identify the entry which may require all of the entry to be specified; except for adept touch typists there is still a

need to constantly move one's gaze between the keyboard and the screen.

[0010] In addition to the text based systems described above, selection from a list may also be done through a directional control input or some similar method.

[0011] Devices that do not have additional keys or input mechanisms for text input, are often limited to one or more directional input mechanisms such as a joystick or selection wheel plus, in some instances, a number of other buttons dedicated to certain functions. Devices in this category include such things as games consoles, handheld games systems, music players, and video players. Other devices, such as mobile phones, combine text input and/or other directional means to make selections.

[0012] In order to select an item using these systems the user has to use the directional control in conjunction with an on-screen representation of the list to navigate through the list of available items. This process becomes increasingly slow and complex in proportion to the size of the list.

[0013] Refining the list using character entry to enter a filter string is particularly difficult for devices with no additional controls for text entry as text entry is often achieved through selecting each character by navigating around an onscreen list of characters.

[0014] Accordingly, there is a need for an improved method of selecting items from a list.

SUMMARY OF THE INVENTION

[0015] In accordance with an aspect, the present invention may provide a method of selecting items from a collection of items. The items may be identified by a sequence of components. In an embodiment, the method may include: generating an initial display including one or more parts of item identifiers for selection, enabling selection of the one or more parts and in response to selection of the one or more parts, generating a display of a further one or more parts for selection, and enabling selection of the further one or more parts in order to add to the selected one or more parts to build a larger part or whole of an item identifier.

[0016] In accordance with an aspect, the present invention may provide a method of selecting database items from a database collection of items. The database items may be indexed identified by a list of item identifierssequence of components. In an embodiment, the method may include: generating an initial display including one or more parts of item identifiers for selection, enabling selection of the one or more parts and in response to selection of the one or more parts, generating a display of a further one or more parts for

selection, and enabling selection of the further one or more parts in order to add to the selected one or more parts to build a larger part or whole of an item identifier.

[0017] In accordance with an aspect, the present invention may provide a method of selecting items from a collection of items. The items may be identified by a sequence of components. In an embodiment, the method may include: generating an initial display including one or more parts of item identifiers for selection, enabling selection of the one or more parts and in response to selection of the one or more parts, generating a display of a further one or more parts for selection, and enabling selection of the further one or more parts in order to add to the selected one or more parts to build a larger part or whole of an item identifier.

[0018] In accordance with another aspect, the method may include: means for generating an initial display including one or more parts of item identifiers for selection, means for enabling selection of the one or more parts and in response to selection of the one or more parts, means for generating a display of a further one or more parts for selection, and enabling selection of the further one or more parts in order to add to the selected one or more parts to build a larger part or whole of an item identifier

[0019] In embodiments, the invention includes a method of selecting an item from a list indexed by a text based field. The invention may allow for selection from the list by presenting one or more string sections, (the item identifier parts in this embodiment), containing one or more characters (the components in this embodiment), at a time in a list for the user to select from.

[0020] In embodiments, the invention includes a method of selecting an item from a list indexed by a text based field. The invention may allow for selection from the list by presenting one or more word sections, (the item identifier parts in this embodiment), containing one or more characters, at a time in a list for the user to select from.

[0021] In embodiments, the word or string sections presented are based on some knowledge of the text indices in the list and the likelihood of the string or word sections to be the ones the user wants to enter.

[0022] In embodiments, where the list of expected string or word sections does not contain the desired entry the user is given an option to list “more” string or word sections and is presented with a new list which indicates the next most likely set of string or word sections.

[0023] In embodiments, when a string or word section is selected, a new list of string or word sections is presented to form a continuation of the text selection based on the string or word sections selected so far being the start of the desired selection.

[0024] In embodiments, once all the string or word sections have been selected and concatenated, the item in the list is identified and any associated action, such as, for example, presenting a telephone book contact's contact details, is carried out.

[0025] In embodiments, the string or word sections are presented as labels on the screen to be selected by various methods depending on the type of device.

[0026] In embodiments, where the device is a PC, the string or word sections would be selected by mouse presses or mapping to keyboard keys.

[0027] In embodiments, where the device has a touch screen, such as, for example, on a PDA or Tablet PC, the string or word sections would be selected by pointing at the labels with either a finger or stylus.

[0028] In embodiments, for example, where the device has a small screen and a joystick such as a mobile telephone or watch sized device, the string or word sections may be selectable from a menu which indicates which string or word section is selected for corresponding movements of the joystick.

[0029] In embodiments, for example, where the device has function keys with the ability to associate an on-screen label with a button press the string or word sections may be presented for selection as labels with corresponding function keys.

[0030] In accordance with another aspect, the present invention may provide a method of selecting items from a collection of items. The items may be indexed by a list of item identifiers. In embodiments, the method may include: enabling a display of one or more parts of item identifiers for selection, the item identifiers being generated on a display being chosen for generation in accordance with predetermined criteria.

[0031] In accordance with another aspect, the present invention may provide a method of selecting items from a collection of items. The items may be indexed by a list of item identifiers. In embodiments, the method may include: enabling a display of one or more parts of item identifiers for selection, the item identifiers being generated on a display being chosen for generation in accordance with predetermined criteria.

[0032] In accordance with another aspect, the present invention may provide an apparatus or means for selecting items from a collection of items. The database items may be indexed by a list of item identifiers, and the apparatus may include a means for display, an input means, a generating means for generating an initial display including one or more parts of item identifiers for selection, means for enabling selection via the input means of the one or more parts, means responsive to selection of the one or more parts for generating a display of a further one or more parts for selection, means for enabling selection via the input means

of the further one or more parts, and addition means to add the further one or more parts to the selected one or more parts to build a larger, or whole of an item identifier

[0033] In accordance with another aspect, the present invention may provide an apparatus or means for selecting database items from a database. The database items may be indexed by a list of item identifiers, and the apparatus may include a means for display, an input means, a generating means for generating an initial display including one or more parts of item identifiers for selection, means for enabling selection via the input means of the one or more parts, means responsive to selection of the one or more parts for generating a display of a further one or more parts for selection, means for enabling selection via the input means of the further one or more parts, and addition means to add the further one or more parts to the selected one or more parts to build a larger, or whole of an item identifier

[0034] In accordance with another aspect, the present invention may provide an apparatus for selecting items from a collection of items. The items may be indexed by a list of item identifiers and the apparatus may include a means enabling a display of one or more parts of item identifiers for selection, the means selecting the item identifiers for display in accordance with predetermined criteria.

[0035] In accordance with another aspect, the present invention may provide an apparatus with means for selecting items from a collection of items. The items may be indexed by a list of item identifiers and the apparatus may include a means for enabling a display of one or more parts of item identifiers for selection, and the means for selecting the item identifiers for display in accordance with predetermined criteria.

[0036] In accordance with another aspect, the present invention may provide an apparatus with means for selecting database items from a database. The database items may be indexed by a list of item identifiers and the apparatus may include a means for enabling a display of one or more parts of item identifiers for selection, and the means for selecting the item identifiers for display in accordance with predetermined criteria.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] Features and advantages of the present invention will become apparent from the following description of embodiments thereof, by way of example only, with reference to the accompanying drawings, in which:

[0038] FIGURE 1 is a representation of a traditional mobile telephone layout;

[0039] FIGURE 2 is a representation of a touch screen input device;

[0040] FIGURE 3 is a table showing all possible word completions for the string

“te” out of a dictionary of approximately 14,000 words;

[0041] FIGURE 4 is a table showing all possible partial word completions for the string “te” out of a dictionary of approximately 14,000 words;

[0042] FIGURE 5 is a table of the average number of clicks required to select items from lists of various sizes using a joystick based Partial Word Completion system in accordance with an embodiment of the present invention;

[0043] FIGURE 6 shows a table of timings of selection of 12 contacts out of approximately 900 using partial word completion and two other methods;

[0044] FIGURE 7 shows a table of timings of selection of 7 songs out of approximately 1000 using partial word completion and two other methods;

[0045] FIGURE 8 shows a table of timings of selection of 7 songs out of over 500,000 using partial word completion based joystick selection and touch screen selection and one other method;

[0046] FIGURES 9A-9F show a menu sequence for selection of the song “Black or White” using joystick based Partial Word Completion; in accordance with an embodiment of the present invention;

[0047] FIGURE 10 shows a flowchart for interface component logic in accordance with an embodiment of the present invention;

[0048] FIGURE 11 shows an internal static data tree diagram out of a sample of approximately 2,500 words showing the branch for menus leading to a selection of the word “leaders” in accordance with an embodiment of the present invention;

[0049] FIGURE 12 illustrates the selection sequence based on a static tree structure in accordance with an embodiment of the present invention;

[0050] FIGURE 13 is a table showing a section of a word list for English out of a total list of 2,500 words including all words starting with “l” and all words forming the branch for words starting with “lea” indicated in bold in accordance with an embodiment of the present invention;

[0051] FIGURE 14 shows an internal dynamic data tree diagram out of a sample of approximately 2,500 words showing the branch for words starting with “lea” in accordance with an embodiment of the present invention;

[0052] FIGURE 15 shows a basic engine component lookup logic flowchart in accordance with an embodiment of the present invention;

[0053] FIGURE 16 shows an advanced engine component lookup logic flowchart in accordance with an embodiment of the present invention;

[0054] FIGURE 17 shows a dynamic tree with multi-character nodes (A) and single character nodes (B) in accordance with an embodiment of the present invention;

[0055] FIGURES 18A-18F shows a menu sequence for the selection of the keyword “down” with a view to selecting the song “Down by the water line” from a library of 1041 songs in accordance with an embodiment of the present invention;

[0056] FIGURE 19 shows a possible list of the song titles which have the word “down” in them in accordance with an embodiment of the present invention;

[0057] FIGURE 20 is a list of all words (with their frequencies) that appear in song titles with “down” in them in accordance with an embodiment of the present invention;

[0058] FIGURES 21A-21C show a menu sequence for the selection of the keyword “line” after the keyword “down” has already been selected with a view to selecting the song “Down by the water line” from a library of 1041 songs in accordance with an embodiment of the present invention;

[0059] FIGURE 22A is a representation of an opening joystick based selection menu in accordance with an embodiment of the present invention;

[0060] FIGURE 22B is a representation name partially specified in accordance with an embodiment of the present invention;

[0061] FIGURE 23 is a representation of a touch screen option selection in accordance with an embodiment of the present invention;

[0062] FIGURES 24 and 25 show a PDA touch screen system with options in optimised locations in accordance with an embodiment of the present invention;

[0063] FIGURE 26 is a representation of a traditional address book at the start of the selection process, showing the first four entries in an address book with selection indicator over first one. There is no entry in search refinement field;

[0064] FIGURE 27 is a representation of a selection from a reduced list of contacts from an address book using a traditional selection process where the user has entered “je” to refine the search to a manageable number of entries and then used the cursor to move and highlight “Jessie Lares”;

[0065] FIGURE 28 is a table of fast food items selectable as images using Partial Word Completion in accordance with an embodiment of the present invention;

[0066] FIGURE 29 is a possible tree structure for fast food items in the above table in accordance with an embodiment of the present invention;

[0067] FIGURES 30A-30C show a menu sequence of joystick based Partial Word Completion menus to select a “Burger snack” through images in accordance with an

embodiment of the present invention;

[0068] FIGURES 31A-33H illustrate an exemplary system for looking up Yellow Pages categories in accordance with an embodiment of the present invention; and

[0069] FIGURES 34A-34J illustrates an exemplary system for performing a general internet search using keywords in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0070] The present invention provides a method and apparatus for rapidly selecting an item from a collection of items the method being referred to as "partial word completion". Each item being identifiable through a sequence of a common set of components (the "identifier"). A system based on the present invention performs an analysis of all the identifiers in order and determines where the sequences of components diverge or branch. The collection of one or more components between each branch makes up a "segment". A partial word completion system allows the user to narrow a search by selecting segments in order to be concatenated to make up some or all of an identifier. The system presents the segments to the user through some output means and the user indicates through some input means which of the presented segments is the next section of the identifier they are building up.

[0071] In an embodiment, in order to allow the user to make their selection, the system may first present the set of initial segments for the user to start the select with. As each segment is selected it is concatenated to the identifier section and the system then presents the segments that continue the build up of the identifier. This process is continued until the complete identifier is built up and the desired item has been identified or it becomes apparent that the desired item does not match any identifier and hence is not in the collection of items. Alternatively the identifier may be only partially specified which results in all matching items being selected.

[0072] The system may apply some ranking to items in the collection and present segments that correspond to higher ranked items with more prominence. The components making up the item identifier may include characters, symbols, graphics, sounds, gestures, DNA nucleotides, chess moves, dance steps or combinations of the above. In one aspect of the present invention any component that can be combined in sequence to form an identifier may be used.

[0073] In presenting the segments to the user for selection the system may present a subset of the segments at a time. The system may provide the user with some means to indicate that the desired segment is not currently being presented and so the system should present further segments for consideration. The segments may be presented on an output means such as a display on a computing device and the number of segments presented at a time may be determined by the input means. For instance the input means may be a joystick with four discrete directional movements in which case it may be appropriate to present four segments at a time, in addition the joystick may have an additional operation of a press "in" which could be used to indicate that the desired segment is not being presented. In addition to a joystick being used as an input mechanism many other means may be used including a toggle switch, touch screen, movement sensors, touch sensitive zones on the device, buttons with corresponding on-screen menus or dedicated buttons or combinations of the above.

[0074] A common system for identifying items in a collection of items is through identifiers which are text strings whereby the components making up the identifiers are text characters. Examples of this include identifying a contact in an address book by name, a music track in a music library by artist and track name, a web page by keywords, etc. In embodiments of systems to allow for selection of such items, a means is provided to refine a search by entry of a text string which matches to some or all of the desired identifier. However, this requires text input which can be cumbersome on devices with keyboards or keypads and is particularly onerous on devices with even less text input ability. As should be readily understood by a person of ordinary skill in the art, certain embodiments of the present invention may provide rapid selection of an item from a collection on almost any computing device but may be particularly beneficial to devices with limited or no text entry means. Such devices include mobile phones, music players, PDAs, tablet PCs, cameras, games systems, navigation systems, information kiosks and "lounge room" media devices or combinations of the above. Additional, exemplary devices are discussed below.

[0075] In an embodiment of the present invention, the method and apparatus improves on list selection processes by providing a means to navigate through a list of textually indexed items a string section at a time. So rather than presenting the user with a list of all the possible selections, the embodiment of the present invention uses partial word completion to present a hierarchical tree of string sections that make up the list of selectable items. This results in the user making selections from a more manageable number of options each time and enabling selection with an exponential like efficiency.

[0076] For example, a system may provide list selection of English words from a

dictionary of 14,000 words. In such an instance, once the user has entered “te”, out of a list of the 14,000 word dictionary there are about 130 possible completions, these possibilities are listed in the table in FIGURE 3. It is very difficult to present all these options for the user to easily select from. There are only approximately 10 word part continuations for the word start of “te” these are listed in the table in FIGURE 4. In an embodiment of the present invention, this smaller number of options can be presented to the user as a menu of items which can be selected by some limited means such as a joystick.

[0077] In embodiments, a list selection system of the present invention may allow the user to select one of the proposed part continuations (based on the selection string specified thus far), append the selection to the selection string specified thus far, determine a new set of most likely part continuations and present them for selection. The user could then repeat this cycle until the selection was complete. This method facilitates efficient list selection on devices which have traditionally cumbersome list selection means.

[0078] Using this method the desired result can be entered as menu selections from the first letter onwards without the need for explicit character entry from a keyboard or keypad. Use of the present invention may result in one or more user benefits, including, but not limited to, allowing text entry at a rate comparable or better than other systems for devices with a limited user input. Additionally, the present invention may be less stressful due to the fact that there may be significantly less key presses or movements of the joystick. Additionally, by not having to use a small device keypad, there are fewer mispresses of small keys and less fatigue and less damage to the user’s fingers and hand. Furthermore, in embodiments, it may be possible to enter several characters with one user input such as a key press or other user action. Additional benefits of embodiments of the present invention include, for example, less flicking of focus between the controls and screen since the user’s gaze generally remains on the screen. Further, the user may be guided through known text in the items in the list so it is more difficult to misspell a selection. Typically, only the joystick is used so there is no need to transfer the thumb or finger between buttons and risk mis-hitting buttons. It is also possible in certain embodiments to combine the joystick with other mechanisms for entering information. In certain embodiments, the present invention may also allow an application to be used efficiently with just a joystick whereas previously it relied on touch screen inputs – this may avoid the disadvantages of touch screen usage such as poor tactile feedback and marking of the screen with finger prints. The user may also be informed on the menu of what is available for selection.

[0079] It also possible in certain embodiments to prioritise entries which make list

selection more efficient by making more common words, phrases, or selections easier and faster to select. This prioritization is useful when applied to list selection tasks such as contacts lookup. Furthermore, the system does not rely on hardware labels printed on keys, for instance Asian mobile phones generally need to have different characters printed on their keys than those for countries using the Latin alphabet, and with a partial word completion based system the presentation of letters may be done on-screen in software. Another potential advantage of certain on-screen labels is that it is possible to increase the size of the labels to make them more readable for those with vision impairment, an option not possible for labels on small keypad keys. Additionally, in embodiments, partial word completion based text entry encourages entry of full words rather than abbreviated text like “c u l8r”, this may be desirable in certain applications such as, for example, for enterprise level messages and emails. It may also be desirable in certain languages with large words such as German.

[0080] The present invention is not limited to words. It could also work with phrases, numbers, abbreviations, Asian characters, images, sounds or any other list of items which are composed of a collection of components in sequence. Partial word completion as disclosed in the present invention provides the ability to select an item from a list of known items in general. In addition to provision of text based partial word completion based list selection, it may be advantageous in certain embodiments to provide selection of items made up of components other than characters. These components may be graphical, audible, tactile, etc. These benefits and advantages are only some of the benefits and advantages provided in using partial word completion as disclosed in the present invention. Other advantages and benefits are disclosed herein.

[0081] In general, whenever a system provides selection of items from a list of multiple items, the items being composed of a sequence of components, then partial word completion could be applied to the selection of those components. In embodiment, the items may be entirely graphical for instance and unrelated to text or character sets. An example of this may be a fast food selection mechanism (described in more detail below).

[0082] Additionally, because each option selection marks a choice of one branch out of a tree of options the result is that traversal through the tree, and hence selection of the desired item, happens at a rate which is more exponential than linear. To illustrate this point, FIGURE 5 shows a table of the average number of clicks required to select items from lists of various sizes using a joystick based Partial Word Completion system. As can be seen, as the number of items in the list increases, the average number of clicks does not increase in linear proportion but more approximates an exponential curve.

[0083] To further illustrate this point, Figure 6 shows a table that compares selection of 12 items from a list of approximately 900 items, in this case contacts from an address book, using partial word completion joystick based list selection as disclosed in the present invention. The table also sets out timings for: selecting the same items using a standard address book application on a mobile phone using the phone keypad to refine the search; and a PC based contacts application using a full screen, keyboard and mouse to make selections. As can be seen, of the 12 items selected using the partial word completion method, selection of each item requires an average of 3.8 seconds. In comparison, using the mobile phone based selection method the average amount of time per selection is 6.8 seconds and with a PC based contacts application the average selection time is 6.3 seconds.

[0084] In addition, Figure 7 shows a table comparing selection of 7 items from a list of approximately 1,000 items, in this case songs in a music library. The selection methods listed are: partial word completion based joystick selection on a handheld device; selection of music tracks using a “click wheel” on a portable music player and selection of music tracks using a full screen, mouse and keyboard of a music application running on a PC. As can be seen, of the 7 items selected using the partial word completion method, selection of each item requires an average of 3.6 seconds. In comparison, using the portal music player wheel based selection method the average amount of time per selection is 11.5 seconds and with a PC based music application the average selection time is 4.8 seconds.

[0085] In addition, Figure 8 shows a table comparing selection of 7 items from a list of more than 500,000 items, in this case songs in a large music database. The selection methods listed are: partial word completion based joystick selection on a handheld device; partial word completion based touch screen selection on a handheld device; and selection of music tracks using a full screen, mouse and keyboard of a music application running on a PC. As can be seen, of the 7 items selected using the partial word completion joystick method, selection of each item requires an average of 7.8 seconds and using the partial word completion touch screen method selection of each item requires an average of 7.4 seconds. In comparison, using the PC based music application the average selection time is 10.5 seconds.

[0086] The above timings were an average of recorded sessions performed by users who were of average competency of the systems described. Users had at least 30 minutes experience of the systems being tested for familiarity purposes. For each selection reading, the user was told the target item, and navigated to the opening screen of the selection system. The timer was then started and the user proceeded to select the target item as quickly as possible, once the target item was uniquely selected or highlighted the timer was stopped and

a reading recorded. Where navigational errors were performed, this reading was discarded and the selection restarted in order to record the best error-free timings. It should be noted that the partial word completion based systems encountered the least amount of navigation errors.

[0087] The process for selecting on each of the systems described above were: for joystick based partial word completion selection the user started at the top menu of the selection tree and navigated through the menu tree to the point where a joystick movement selected the target item; for touch screen based partial word completion selection the user started at the top menu of the selection tree with nine options shown at a time on a PDA touch screen and navigated through the menu tree by selecting items with a stylus to the point where they selected the target item; for mobile phone contacts, the standard contacts application on a Nokia N93 was used, the user entered refining letters on the keypad using multi-tap until the desired item was displayed in the list on the screen, this was then selected with the joystick; for PC based contact lookup, the Contacts option in Microsoft Outlook was used with the user first selecting the letter at the start of the target item name, then scanning through and selecting the target item using the mouse from the contacts displayed on the screen; for the audio player with wheel selection an iPod Nano was used and the user started at the top of the Music list, to make the selection, the user used the click wheel to scroll through the list to the target item; for the PC music store selection, the iTunes application was used to access the iTunes Store using the “Power Search” facility, to make a song selection the user entered what they thought were the most efficient refining search terms in the “Artist” and/or “Song” fields and then used the mouse to select the target item from the resultant on-screen list, where the response from the system was slowed by communications issues, the timing for that test was discarded and the test repeated until response time was close to instant.

[0088] In another test, users of various ages, genders and levels of expertise were asked to select ten contacts from an address book of approximately 900 contacts as quickly as possible using the two methods described below.

[0089] Partial word completion selection was performed through a joystick based contacts lookup application running on a mobile phone.

[0090] The comparison system involved selection of contacts on a mobile phone using the traditional system of a scrolling list of contacts. Searches for particular contacts could be refined by entering characters through the phone keypad.

[0091] Each selection was timed from start to completion. Total key presses were counted. In addition error rates were noted. An error was defined as key presses made in excess of the minimum required to make the selection.

[0092] The resultant average values per selection were as follows:

	Traditional phone address book	Partial word completion	Pwc proportion
Seconds	10.17	5.10	50%
Key presses	9.63	5.70	59%
Errors	0.93	0.20	21%

[0093] In summary, for this test, partial word completion based list selection applied to contacts lookup using only a joystick compared to traditional mobile phone contacts lookup allows for selection in 50% of the time, with 59% of the key clicks and 21% of the errors.

[0094] In yet another test, users of various ages, genders and levels of expertise were asked to select ten contacts from an address book of approximately 900 contacts as quickly as possible using the two methods described below.

[0095] Partial word completion selection was performed through a joystick based contacts lookup application running on a mobile phone.

[0096] The comparison system involved selection of contacts on a personal computer using a typical address book application. A mouse was used to select the first letter of the desired contact then scrolling and mouse selection were used to highlight the desired contact.

[0097] Each selection was timed from start to completion.

[0098] The resultant average seconds per selection were as follows:

Traditional PC address book	Partial word completion	Pwc proportion
8.38	5.10	61%

[0099] In summary, for this test, partial word completion based list selection applied to contacts lookup using only a joystick compared to traditional personal computer contacts lookup allows for selection in 61% of the time.

[00100] The details of these previous two tests are described in the below tables:

Minimum clicks	Partial word completion		Traditional phone address book	
	By first name	By surname	By first name	By surname
Harland Close	6	4	3	9

Martie Harrow	5	7	6	13
Harold Reed	6	6	9	9
Leanora Foster	5	8	8	10
Wendi Woollard	6	6	6	11
Rachel Holdsworth	5	5	8	9
Maurine Lineman	4	6	6	11
Alanis Hoffhants	6	6	6	8
Kaylyn Johnston	7	6	7	13
Deana Cypret	4	4	4	6
Total	54	58	63	99
Average	5.40	5.80	6.30	9.90

Test subject: Adult male	Partial word completion			Traditional phone address book			Traditional PC address book		
	Time	Clicks	Errors	Time	Clicks	Errors	Time	Clicks	Errors
Harland Close	4.62	6	0	1.96	3	0	4.00	na	na
Martie Harrow	3.12	5	0	6.06	6	0	8.46	na	na
Harold Reed	3.50	6	0	8.03	9	0	4.62	na	na
Leanora Foster	3.90	5	0	4.56	8	0	3.62	na	na
Wendi Woollard	3.75	6	0	10.65	6	0	8.15	na	na
Rachel Holdsworth	3.21	5	0	6.90	9	1	6.21	na	na
Maurine Lineman	2.84	4	0	5.15	6	0	4.68	na	na
Alanis Hoffhants	4.43	6	0	4.50	6	0	8.53	na	na
Kaylyn Johnston	4.03	7	0	5.28	8	1	4.06	na	na
Deana Cypret	4.18	6	2	6.46	8	4	5.28	na	na
Total	37.58	56	2	59.55	69	6	57.61	na	na
Average	3.76	5.60	0.20	5.96	6.90	0.60	5.76	na	na

Test subject: 11 year old male	Partial word completion			Traditional phone address book			Traditional PC address book		
	Time	Clicks	Errors	Time	Clicks	Errors	Time	Clicks	Errors
Harland Close	3.12	4	0	6.68	9	0	4.62	na	na
Martie Harrow	7.37	7	0	20.28	15	2	12.03	na	na
Harold Reed	7.84	6	0	12.06	13	4	5.62	na	na
Leanora Foster	4.78	5	0	5.40	10	0	8.53	na	na
Wendi Woollard	6.06	6	0	9.40	11	0	9.37	na	na
Rachel Holdsworth	3.59	5	0	10.25	9	0	18.59	na	na
Maurine Lineman	8.31	6	2	7.31	12	1	7.90	na	na
Alanis Hoffhants	7.90	8	2	20.37	20	12	11.68	na	na
Kaylyn Johnston	7.09	6	0	25.65	13	0	11.46	na	na
Deana Cypret	7.15	4	0	4.21	6	0	19.25	na	na
Total	63.21	57	4	121.61	118	19	109.05	na	na
Average	6.32	5.70	0.40	12.16	11.80	1.90	10.91	na	na

Test subject: Adult female	Partial word completion			Traditional phone address book			Traditional PC address book		
	Time	Clicks	Errors	Time	Clicks	Errors	Time	Clicks	Errors
Harland Close	2.65	4	0	11.56	9	0	5.21	na	na

Martie Harrow	7.21	7	0	20.68	13	0	10.00	na	na
Harold Reed	6.03	6	0	14.15	9	0	10.31	na	na
Leanora Foster	6.81	8	0	10.25	10	0	7.75	na	na
Wendi Woollard	7.50	6	0	14.09	12	1	8.28	na	na
Rachel Holdsworth	4.09	5	0	10.62	9	0	17.43	na	na
Maurine Lineman	4.62	6	0	9.21	13	2	6.31	na	na
Alanis Hoffhants	4.40	6	0	8.15	8	0	7.59	na	na
Kaylyn Johnston	5.62	6	0	19.43	13	0	4.56	na	na
Deana Cypret	3.28	4	0	5.87	6	0	7.43	na	na
Total	52.21	58	0	124.01	102	3	84.87	na	na
Average	5.22	5.80	0.00	12.40	10.20	0.30	8.49	na	na

Summary	Partial word completion			Traditional phone address book			Traditional PC address book		
	Time	Clicks	Errors	Time	Clicks	Errors	Time	Clicks	Errors
Adult male	3.76	5.60	0.20	5.96	6.90	0.60	5.76	na	na
11 year old male	6.32	5.70	0.40	12.16	11.80	1.90	10.91	na	na
Adult female	5.22	5.80	0.00	12.40	10.20	0.30	8.49	na	na
Average	5.10	5.70	0.20	10.17	9.63	0.93	8.38	na	na
PWC proportion	100%	100%	100%	50%	59%	21%	61%	na	na

[00101] In still a further test, users of various ages, genders and levels of expertise were asked to select ten music tracks from a music library of approximately 1,000 music tracks as quickly as possible using the two methods described below.

[00102] Partial word completion selection was performed through a joystick based music selection application running on a mobile phone.

[00103] The comparison system involved selection of music tracks through a music player presenting an onscreen list through which the user can scroll to make their selection using a “click wheel”.

[00104] Each selection was timed from start to completion. In addition error rates were noted. For the partial word completion based system, an error was defined as key presses made in excess of the minimum required to make the selection. For the click wheel system an error was defined as the user changing direction in their scrolling.

[00105] The details of this test included the following results:

Test subject: Adult Male	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Stay With Me Till Dawn	3.84	5	0	12.40	3
To Sir With Love	3.09	4	0	15.71	4
Takin' Care of Business	3.00	5	0	13.62	9
That Don't Impress Me Much [Dance Mix]	3.46	4	0	13.28	2
Does your mother know	4.31	5	0	7.28	2

Test subject: Adult Male	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Strawberry Letter 23	2.59	4	0	11.50	5
Hairy Piano	5.31	8	1	8.21	1
Hold on tight	3.84	6	0	8.93	5
S-s-s single bed	2.84	4	0	8.53	1
Keep It Comin' Love	5.68	10	1	10.31	5
Total	37.96	55	2	109.77	37
Average	3.80	5.50	0.20	10.98	3.70

Test subject: 11 year old male	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Stay With Me Till Dawn	4.46	5	0	16.71	3
To Sir With Love	5.12	4	0	21.90	3
Takin' Care of Business	5.56	5	0	12.50	5
That Don't Impress Me Much [Dance Mix]	4.40	4	0	23.53	2
Does your mother know	3.81	5	0	7.31	0
Strawberry Letter 23	3.53	4	0	8.90	2
Hairy Piano	5.68	6	0	34.28	11
Hold on tight	5.62	6	0	19.31	3
S-s-s single bed	3.53	4	0	na	na
Keep It Comin' Love	9.93	10	2	37.50	5
Total	51.64	53	2	181.94	34
Average	5.16	5.30	0.20	20.22	3.78

Test subject: Adult female	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Stay With Me Till Dawn	4.03	5	0	18.34	1
To Sir With Love	4.59	4	0	7.68	1
Takin' Care of Business	4.84	5	0	11.06	2
That Don't Impress Me Much [Dance Mix]	3.59	4	0	6.12	2
Does your mother know	4.15	5	0	17.65	3
Strawberry Letter 23	2.62	4	0	21.31	1
Hairy Piano	5.34	6	0	20.09	2
Hold on tight	5.15	6	0	8.25	2
S-s-s single bed	3.78	4	0	na	na
Keep It Comin' Love	6.40	8	0	26.65	2
Total	44.49	51	0	137.15	16
Average	4.45	5.10	0.00	15.24	1.78

Summary	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Adult male	3.80	5.50	0.20	10.98	3.70
11 year old male	5.16	5.30	0.20	20.22	3.78

Summary	Partial word completion			“Click wheel” player	
	Time	Clicks	Errors	Time	Errors
Adult female	4.45	5.10	0.00	15.24	1.78
Average	4.47	5.30	0.13	15.48	3.09
PWC proportion	100%	100%	100%	28.88%	4.32%

[00106] The resultant average values per selection were as follows:

	“Click wheel” music player	Partial word completion	Pwc proportion
Seconds	15.48	4.47	29%
Errors	3.09	0.13	4.3%

[00107] In summary, for this test, partial word completion based list selection applied to music track selection using only a joystick compared to music selection on a “click wheel” music player allows for selection in 29% of the time, with 4.3% of the errors.

[00108] Finally, a further test involved a user of moderate expertise selecting 7 music tracks from a music library of approximately 500,000 music tracks as quickly as possible using the two methods described below.

[00109] Partial word completion selection was performed through a joystick based music selection application running on a mobile phone.

[00110] The comparison system involved selection of music tracks through a web site which provided a search engine mechanism to allow the user to refine the search based on artist, album, etc. The user entered a search term and then selected the desired track from the resultant list using the mouse.

[00111] Each selection was timed from start to completion. The details of this test included the following results:

Seconds taken to perform selection	Partial word completion	Online music site
Bing Crosby - Danny Boy	6.8	12.9
Nine Inch Nails - We're in This Together	9.9	10.6
Love over gold - Dire Straits	8.4	11.0
Material girl - Madonna	7.5	11.9
Rikki don't lose that number - Steely dan	6.8	9.5
Run like Hell - Pink Floyd	8.4	11.0
Doctor my eyes - Jackson Brown	7.2	11.5
Girls talk - Dave Edmunds	8.1	8.7
Hungry like the wolf - Duran Duran	8.1	10.2
Average	7.91	10.81
PWC proportion	100%	73%

[00112] The resultant average seconds per selection were as follows:

Online music site	Partial word completion	Pwc proportion
10.81	7.91	73%

[00113] In summary, for this test, partial word completion based list selection applied to music track selection using only a joystick compared to music selection on an online music site using a PC keyboard and mouse allows for selection in 73% of the time.

[00114] In general, partial word completion takes less time, requires fewer clicks and results in fewer errors than conventional selection techniques.

[00115] In embodiments, partial word completion may require between about 20% and about 85% (e.g., between about 35% and about 50%, between about 40% and about 75%, about 30%, about 45%, about 50%, about 65%, about 75%, and between about 40% and about 60%) less time than that of conventional systems. In embodiments, partial word completion may require between about 20% and about 90% (e.g., between about 25% and about 50%, between about 40% and about 65%, about 30%, about 45%, about 50%, about 65%, about 75%, about 90%, and between about 40% and about 75%) of the clicks required in conventional systems. In embodiments, partial word completion may result in between about 15% and about 95% (e.g., between about 25% and about 50%, between about 40% and about 55%, about 30%, about 55%, about 50%, about 65%, about 75%, about 90%, and between about 40% and about 70%) fewer errors than that of conventional systems. In embodiments, the invention may benefit from any combination of these improvements, including, but not limited to, for example, partial word completion may require between about 20% and about 85% (e.g., between about 35% and about 50%, between about 40% and about 75%, about 30%, about 45%, about 50%, about 65%, about 75%, and between about 40% and about 60%) less time than that of conventional systems; between about 20% and about 90% (e.g., between about 25% and about 50%, between about 40% and about 65%, about 30%, about 45%, about 50%, about 65%, about 75%, about 90%, and between about 40% and about 75%) of the clicks required in conventional systems, and/or may result in between about 15% and about 95% (e.g., between about 25% and about 50%, between about 40% and about 55%, about 30%, about 55%, about 50%, about 65%, about 75%, about 90%, and between about 40% and about 70%) fewer errors than that of conventional systems.

[00116] In embodiments for implementing a partial word completion based system the functions there may be two main components, the interface and the engine. The

components can be separate or combined. Additionally, this implementation is exemplary, other implementations of the present invention do not have to follow this architecture and other implementation methods are possible. The roles of the interface component and engine component described herein may be shifted such that one component performs some of the roles of the other component. Alternatively there may be no separation of components in the system such that the partial word completion based selection process is entirely handled by one module, or there may be many more modules than described herein to implement the system. Although the separation of tasks into the interface component and the engine component may or may not exist in an embodiment of a partial word completion based system, it does not necessarily reflect a separation implemented in the architecture of the system. The interface component and the engine component or any other combination of processing modules may coexist in any configuration including: within a computer application where the two components are implemented as objects or functions within a computer application or similar; within a device where the two components are implemented as separate systems running on the same device, for example: the interface component could be implemented in an application which is communicating with an engine component which is implemented as a server application running in the operating system of the device (in embodiments, the partial word completion engine component server may be providing its services to several connected interface component applications); between devices or systems over some communications mechanism (including wired or wireless networks, serial or parallel communications, or any other means for computing systems to communicate within or between devices).

[00117] In certain configurations, a list being selected from could reside remotely with the engine component and hence have the benefits of being centrally located and maintained and applications on devices could provide partial word completion based access to this data from applications running on remote devices via communications between the partial word completion based interface application and the engine component located on a server and accessed by the communication means. In addition, the functions of the engine component may be distributed between locations. For instance a system may have multiple dictionaries being accessed simultaneously with those dictionaries being at different locations (possibly one remote and one local to the device). A communication mechanism would be used to access the various engine component sections to derive the options to present for partial word completion selection.

[00118] In embodiments, partial word completion implementation may require a dynamic means or way of displaying one or more partial word options and control mechanism or means that the user may use to indicate which of the one or more options presented they want to select. In certain embodiments of the present invention the dynamic means or way of displaying the partial word option would include any or numerous methods. Some of the options would include, but are not limited to, a small screen on a device, a large screen such as a television connected to a device, a “dialog” on a screen where the information is presented in a section of the screen whilst leaving other images or applications to use the rest of the screen, a system for audibly indicating the current options, presentation by touch, or any other means that conveys the information and combinations thereof.

[00119] Furthermore, the entry may be displayed separately or within some broader text such as a document being edited. In embodiments, the system could indicate which word was being edited possibly by underlining it and partial word completion options would be appended to this word within the document as they are selected. Alternatively, in embodiments, the system may not present the entry at all, in which case the user may be expected to maintain their own memory of what has been entered so far.

[00120] In the present invention, partial word completion implementation may also require a control mechanism or means used by the user to select the desired option from the one or more options presented to them. Examples of the control means the user may use to indicate which of the one or more options presented they want to select, include, but are not limited to any of the following or combinations of the following: a joystick; “dPad”, a switch with the ability to indicate selections through two or more movements, an array of buttons, touch sensitive zones or other user input mechanism with some indication of how each button corresponds to a dynamic menu option, (e.g., side keys where buttons are placed adjacent to the edge of the screen and option labels are displayed on the edge of the screen opposite the corresponding button); pedals; movement sensors in a device, gesture based interfaces detecting movements of the body of the user by means of cameras, motion sensors, or other means, a touch screen where the user presses the portion of the screen corresponding to the desired option using fingers, a stylus or some other means, auditory input – using sound to indicate a selection, time based selection where a device could indicate selections cycled through over time and the user indicates a selection by activating some control means at the time that the desired option is indicated, and wheel based selection where the user may scroll through options to highlight the desired one and then perform some action to select it.

[00121] In conjunction with, or instead of, the above there may be controls with static option strings that may be for options that are sufficiently common to warrant a permanent, dedicated control input. These controls may or may not have labels indicating their function.

[00122] In embodiments, the system may present all possible options and thus present a variable number of options each time or provide, for example, a control means used to indicate the “more” function for the user to activate to indicate that their desired option has not been presented instead of selecting one of the one or more options presented. The mechanism for this control means could also include any of the ways listed above for the option selection control but, due to the fact that the “more” option may be provided by some action which does not vary – it may also be provided by a simple static button, switch, etc. which does not need a dynamic means for indicating its function.

[00123] Additionally, the controls may include an input means which allows the user to explicitly enter characters. This could include, for example, a computer keyboard, mobile phone keypad, an on-screen keyboard on a touch screen device, and the user may take this option if the partial word completion system is not presenting the partial continuation that the user desires for the current string input. In certain embodiments, this may be an alternative to use of a “more” function for situations where explicit input is for some reason preferable or the Partial Word Completion system does not provide a “more” function. When the user enters explicit characters, the partial word completion menu may have to update itself to reflect the completion options for the newly entered word part. Although, with the option of entering explicit characters, the user may enter a word part that does not correspond to any words known to the Partial Word Completion system which may then result in the menu showing no options to select and may need to be flagged as an error to the user if the system restricts input only to strings in the Partial Word Completion database. The selection process may be carried with zero or more rounds of menu selection or explicit entry combined in any order.

[00124] Any other means for continuing input where the presented options do not correspond with the text that the user intends to input may also be used.

[00125] In addition to the above minimal configuration, it may be desirable to also provide a “back” or “undo” function to allow the user to return to a previous state if they inadvertently made a selection or performed an action they didn’t want. This also can be provided through any static or dynamic input means similar to the “more” function.

[00126] Some examples of interfaces for applications using partial word completion

may include, for example: a minimal configuration with a display of the entry so far and a single line menu display which indicates a single option with two buttons: one to indicate selection of the displayed item, the other to indicate “more”; a 5-way joystick where the options are presented in a menu as in the example illustrated in FIGURES 9A – 9F. Four options being presented as movements in the 4 directions of the joystick, and a press in of the joystick indicating “more”; a 5-way joystick similar to the configuration in the previous item but only 3 of the directions are used to present options (e.g. left, up and right) and the remaining direction indicating “back” to return to a previous state after an inadvertent action, and a press in of the joystick indicating “more”; a touch screen device like a personal digital assistant presenting a grid of 3 by 3 onscreen buttons wherein the top 6 buttons may be partial word completion options for the user to select by pressing them and the bottom left being “back”, the bottom right being “more”, and the bottom middle button being available for some other application specific operation; a gesture based console game where the Partial Word Completion device is using a television screen to provide the menu of options in a circle of 4 options with the “more” option being in the middle (e.g., the system would monitor the user’s arm movements and use them as indications of selections of the options, a punch in the direction of the middle of the screen may activate “more”); a personal computer where a four-way menu is displayed with options being selected by presses of the arrow keys wherein the “more” function could be provided by a press of the “Enter” key and the main keyboard could be used to enter explicit characters where the user wanted to bypass Partial Word Completion entry for some or all of the text.

[00127] The above is just a short list of the many possibilities of implementations of partial word completion applications. Many other means of implementation of the present invention are possible and the above is not meant to exclude these other possibilities.

[00128] As discussed herein, in order to implement a partial word completion based system on a computing device using any interface means the system may use an interface component and an engine component. The interface component performs the management of the user input and output and queries the engine to supply the Partial Word Completion options strings to be presented in the menu for selection by the user activating some input means. The engine component performs the internal logic of determining the best partial word completion strings to be presented and it may be supplied with the following exemplary pieces of information: the “entry so far”, i.e. the part of the word or item being selected that has been entered so far, a list identifying zero or more menu items that have already been presented and rejected due to a “more” press or a number indicating how many levels in the

menu to go down (e.g. how many times the “more” button has been pressed on the current entry so far), and the number of menu options to return.

[00129] As described herein, the user interface format could vary greatly and the number of options presented and the means by which they are presented and selected could vary as well. This is why the engine component may take as one of its parameters the number of options required. In the case of a system using a joystick based menu such as those illustrated in FIGURES 9A – 9F the system would request four options (one for the menu locations for up, down, left and right). Other interface variations may require other numbers of options from one upwards.

[00130] FIGURE 10 illustrates a flow chart which summarises the logic that the interface component would apply to allow list selection based on Partial Word Completion menus in certain embodiments of the present invention. In this particular embodiment, throughout the process from start to end, the system maintains the state of two items of data: (1) the entry so far, i.e., the part of the word or item being selected that has been entered so far, and (2) the options presented list, a list identifying zero or more menu items that have already been presented and rejected due to a “more” press. At the start point, the “entry so far” may be empty or it may have the beginning of a string which has been entered prior to beginning Partial Word Completion selection. In the flowchart, the system starts by clearing the list of “options presented”. Next, the system uses its output means to display the entry so far. The system then calls the engine component providing it: the “entry so far”, the “options presented” list and the number of options it requires. The engine component will then return a list of options to present which would number from zero up to the maximum number of options specified. The system then populates the options menu on the output means with the items returned. The system then waits for the user to make some input action. Next, if the input action is the action that activates the “more” function then the system appends the list options it has just presented to the “options presented” list so that the engine component will not present these again, it then returns to the calling step above. The option that has been specified by the input action is then appended to the “entry so far”, extending the string that is being entered. Lastly, if the string is complete then the system exits, otherwise it goes back to the first step for further input. This flowchart represents an implementation of processing to operate a partial word completion menu system.

[00131] The present invention contemplates other implementation systems with additional logic steps. For example, in certain embodiments the system may also provide a “back” function which may result in the last action being undone. This would be

incorporated as an additional test for the appropriate input action after the “Wait for user input” stage. If this action is detected, the system may undo the last action then go back to the second step discussed above. The system may also allow for input actions to perform explicit character entry. This also would be tested for after the “Wait for user input” stage. If this action is performed the character specified may be appended to the entry so far.

[00132] In order for the engine component to respond to a request from the interface component to supply a set of options to present, the engine component in certain embodiments may have knowledge of: the “dictionary data” that the system should use to base its menu option suggestions on – this may be a reference to a file, a pointer to internal memory or any other means of indicating the location or contents of the data – this data may be in any format that can be processed by the engine component; the “entry so far”, i.e. the part of the word, string or item being selected that has been entered so far; the “rejected options” – the menu options that have already been presented and rejected through selection of the “more” function (if any) by the user for the current “entry so far” or a number indicating the number of full menus of options that have been rejected through the “more” function (if any) for the current “entry so far”; and the “number of options” – the number of menu options to return. The above knowledge can be obtained in a number of ways it may, for example, be supplied at the time of the interface component request, maintained in memory between requests, and/or calculated from some other information.

[00133] There are numerous possible methods for the interface component to provide the above information to the engine component. For example, a stateless set is a set of parameters that is highly versatile. All the information needed to derive the set of menu options is supplied at the time of request and there is no assumption made that the engine component has maintained any information about the state of the entry/selection process. When the interface component makes a call to the engine component to provide it with a set of menu options, it may provide the exemplary parameters discussed above.

[00134] An exemplary variation of this may be to replace the list of options already presented with a number indicating how many full menu sets of options have been rejected for the current “entry so far” through the selection of the “more” option. With this information, assuming the “dictionary data” and the “number of options” hasn’t changed between requests, the menu items that have been rejected through the “more” option can be calculated. For example, if there have been two menus rejected through the “more” option and the “number of options” is 4 then the system would determine the first 8 items that would be presented and bypass them (as they have previously been rejected by the user for the

current “entry so far”) and return the subsequent 4 items in the lookup logic.

[00135] Additionally, if the application level state is maintained this is a more pragmatic approach (as compared to the stateless set) whereby information that is not likely to vary between requests is maintained by the engine component. This information may include the “dictionary data” and the “number of options”. When the interface component makes a call to the engine component to provide it with a set of menu options, it may provide the following parameters: the “entry so far”; the “rejected options” - a list identifying zero or more menu items that have already been presented and rejected due to a “more” press for the current “entry so far”. A variation of this, as discussed above, may be to replace the list of options already presented with a number indicating how many full menu sets of options have been rejected for the current “entry so far” through the selection of the “more” option.

[00136] In a transaction level state maintained embodiment, the engine component maintains a memory of previous calls from the interface component for one or more selection/entry transactions and/or the current state of the selection process such that the interface component may only have to supply information about the last action the user performed and the engine component updates its state information and responds with the menu options accordingly. In this mode the interface component may not need to maintain state information but, if the engine component is tracking more than one transaction at a time, the interface may need to maintain a knowledge of an identifier to identify to the engine component the transaction that corresponds to that instance of the interface component. As with the “Application level state maintained” mode described above, in this mode the engine component is likely to maintain knowledge of the “dictionary data” and “number of options” such that this information does not need to be supplied at each request. When the interface makes a call to the engine component to provide it with a set of menu options, it may provide the following parameters: a transaction identifier if the engine component is able to maintain multiple transaction states, and the action last performed by the user, this may include, for example, Start – to start or restart the selection, clear the “entry so far” (note – the system may provide the option to have an “entry so far” value supplied on this call such that the selection starts at a particular “entry so far”); More – reject the last set of options presented and go to the next set of options for the current “entry so far”; Back – undo the most recent action, and revert back to the previous state including the previous menu and “entry so far”; Selection – An identifier indicating that one of the menu options has been selected and which one – the engine component may react to this by appending the string for that selection to the “entry so far” and then presenting the initial menu of options for the new “entry so far”;

Reload – indicates that there is no change of state required for this request – this call may be useful when the interface wants the engine component to report back its state information; and/or End – finish the current transaction.

[00137] As with other parameter set modes, the engine component is likely to respond to requests with a set of menu options for the interface component to present. But in this mode, as the engine component is maintaining the state of the transaction, it may be beneficial for the engine component to respond with additional information such as: the “entry so far”; and the transaction identifier – this may only be returned on a “Start” action to be retained by the interface component and supplied as a parameter to subsequent calls, or returned on each call as a verification mechanism. In order to implement the engine component for providing the present invention on a computing device several components should be considered: source data – what form will the source data be in to make up the options that are presented and how will this data be imported into the system, internal data – the system may find it advantageous to process the source data into some other format to expedite the processing and presentation of the Partial Word Completion options, lookup logic – what is the process of analysing the data to devise the best set of options to present at any particular state of string entry or selection.

[00138] In general, the internal implementation of the system could take several approaches, for example, the static tree index and the dynamic tree index. In the “static tree” methodology, the system maintains internal data in a tree form reflecting the structure of the menu of options to be presented to the user as they navigate a selection as opposed to the structure of the source data strings. Unlike dynamic tree structures (discussed below), static tree structures are more limited in their ability to dynamically change the priorities and hence the order in which options are presented without the need for a restructuring of the internal data. Static tree structures have the advantage of requiring minimal processing by the application to determine the desired menu options at a particular point in the selection process. This facilitates, in certain circumstances, partial word completion based selection to run more efficiently on computing devices with limited processing power. When a set of partial word completion options are needed, the internal logic traverses the tree and returns the best options to present. For example, a partial word completion based system may determine and present a series of menus of options for the user to select from. As the user selects options and builds up their selection to the point where the full text of the item is entered a tree structure of menu items is navigated through. If a system was to take the role of the user and traverse the tree of options that were generated by a partial word completion

based selection mechanism and store the contents of each menu at each level by following all branches in turn to the end points, the system would build up an internal tree structure which directly reflected the menus to present for navigation to any of the items that have been indexed. Embodiments using a static tree structure may be based on the structure of the menus to be presented as selections are made. As such a static tree structure may be specific to a particular value for the number of menu items being presented, e.g. a static tree structure generated for a system presenting 4 items at a time may not be capable of being used efficiently to generate options 5 at a time.

[00139] FIGURE 11 illustrates a sample section of a static tree structure. Each node in the diagram (1) represented by a rectangular box corresponds to a menu to be presented. The tree structure illustrated is for a partial word completion based system which is presenting four options plus, possibly, a “more” option on each menu. This may be typical for a joystick driven system when the four options correspond to joystick movements in the directions up, right, down and left and the “more” option is some other action such as a press in the middle of the joystick. As shown in FIGURE 11, the selection of an option leads onto another menu (and hence another node (1)) this is represented by a directional line ((2) and (3)) showing the links. Links (2) with a dashed line indicate that the selection of that item leads onto further menu branches but they have not been illustrated in Figure 29, however links (3) with a solid line indicate that the selection leads on to further menus and these have been illustrated in FIGURE 11. Where a selection has no link line off it such as that illustrated by (4) this is an end selection. When the systems allows the user to traverse through the menus from the from the root node (5) to an end selection and concatenates the strings of each selection in sequence they would build up the string associated with the end selection reached. For example, if a system traverses to the end selection (4), it would build up the string sections: “l”, “e”, “a”, “d”, “ers”, “hip” making the word “leadership”. The selection of a “more” option navigates to the indicated menu but does not result in the appending of any string sections.

[00140] The static tree structure is menu-oriented and an efficient way for the interface component to issue requests to the engine component would be by using the “transaction level state maintained” communication method described above. This does not preclude the use of one or more other methods to pass information between the interface component and the engine component. As such it is possible that the “rejected options” data is more likely to be the number of rejected full menus rather than a list of rejected options as the latter could theoretically result in an option set to be presented that does not mesh with

the menu structure in the static tree. For example, if the “number of options” is 4 then having 2 menus rejected is simply a matter of bypassing those menus in the tree structure, however, having 6 menu options rejected when the first two menus are composed of 8 menu options may not be compatible with data in a static tree structure. The following description of the lookup logic for the system assumes that the system is using the “transaction level state maintained” communication method described herein.

[00141] Given the information described herein, the engine component must traverse the tree to identify the appropriate menu option set to return to the interface component to present to the user. In one embodiment of the system the engine may maintain a memory of the “current menu” pointer. On a request from the interface component for a menu option set, the system may apply the following logic on each call to the engine component to traverse the static tree and return to the interface component the options it should present. At the start of a selection or when the action parameter supplied was “start”, the system would move the “current menu” pointer to the initial menu (in Figure 11 this is indicated with (5)) and clear the “entry so far”. If the parameter is “more” and the “current menu” has a “more” option, the “current menu” would be moved to the menu indicated by the “more” link in the node (for example (6)) and no text would be appended to the “entry so far”. If the parameter is “back” then the system would revert back to the previous state including the previous menu and value of “entry so far” – this may entail moving the “current menu” pointer back to its previous location, or if the “current menu” is at the initial menu, removing the last appended string from the “entry so far”. If the parameter indicates an option has been selected then the string for that option may be appended to the “entry so far” and the “current menu” may be moved to the menu linked to by that option in the current menu. For example, if the “current menu” is that indicated by (7) in Figure 11 (and hence the user is presented with the four selections: “w”, “l”, “o” and “h”) and the user selects “l” then “l” may be appended to the “entry so far” and the “current entry” may be moved down the corresponding link (3) to menu node (8) and the new menu with values: “e”, “i”, “o” and “a” may be presented to continue the text starting with “l”. If there is no link corresponding to the selected option, then this is the end of a selection – this may be indicated to the calling system by appending some end-of-word character to the “entry so far”. If the parameter is “reload” the system may not make any changes to the state.

[00142] After each of the above actions, the system then may return the strings that correspond to each of the options in the “current menu”, if the system has reached an end selection, there may be no options returned. The system may also return the “entry so far” or

information about how the “entry so far” string has been modified by the last action (e.g. “append ‘l’”) so that the interface component can present the modified entry so far.

[00143] In an exemplary explanation of this logic the user may intend to enter the word “leadership”. The interface is based on a five way joystick input with a menu indicating partial word completion options in four directions of movement of the joystick similar to the menu in FIGURE 9A. The interface component would initiate the selection by calling the engine component with a “start” action. A possible sequence of actions based on the internal static tree structure illustrated in FIGURE 11 would follow the sequence illustrated in FIGURE 12.

[00144] As disclosed herein with partial word completion based list selection systems, it is possible to apply a priority to the items being selected from. Depending on the lookup logic, a higher priority for an item can result in the string sections that make up that item appearing higher in the tree of menus presented and hence the item being quicker to select than lower priority items.

[00145] The determination of a priority for an item may be as simple as allocating a fixed value to each item. However, much greater power and usability can be provided to the system if the priority is allocated based on some metric which reflects the likelihood that a particular item is the one that the user is trying to select. This priority may be static and set at the time of the installation of the system, or dynamic and changing between or within selections depending on the state of historical and current data maintained by the system.

[00146] In embodiments, it may be advantageous to keep track of usage of the system and adjust the priority based on the likelihood of an item to be the one that is the current desired selection. Some mechanisms that could be used to adjust the priority to reflect this may include, for example, frequency, location, time, and sequence. In the frequency based mechanism, items that are more frequently used or selected have higher priorities. For example, on a music player, the user may have a favourite song which they select to play frequently; this song could be given a higher priority to make selection of it quicker. In the location based mechanism, if a device has access to the current location it could take this into account in adjusting the priorities of items based on knowledge of the likelihood of selection of items at the current location. For example, an address book lookup system on a mobile phone may take into account the cell that the user is currently in and make contacts that are accessed more frequently in the current cell have a higher priority – thus people the user calls at the office, for instance, will have a higher priority when they are at the office. In the time based mechanism, priority could be based on the current time of day

and/or day of week whereby items that are more often selected at the current time get a higher priority for that period. For example, a system allowing selection of favourite web pages may have recorded the fact that the user often reads a particular web page in the morning, such as a local news web page, in this case, around this period the system could give that web page a higher priority and hence improve the ease with which it is selected for that period. In a sequence based mechanism, the user may have a history of following a particular selection with another particular selection. If this was the case, the system could increase the priority of the second item once the first item was selected. For example, a system may be providing the ability to look up stock quotes and the user usually checks their stocks in order. Once the user selects a particular stock to view, the system could apply historical information to increase the priority of the stock(s) that the user generally views following that selection.

[00147] In exemplary dynamic tree implementations, the system maintains internal data in a tree form reflecting the structure of the text's supplied in the source data. In conjunction with each text, there may be an associated priority value which may influence the relative priorities of the items in the tree when the system is performing the analysis of which items to present as partial word completion options. This structure provides the ability to dynamically change the priorities and hence the sequence that options are presented without the need for a restructuring of the internal data. This facilitates applications which have priorities changing dynamically such as increasing the priority of words that are used more frequently. When a set of partial word completion options are needed, the internal logic traverses the tree and returns the best options to present. The tree structure is built up from some raw data. The simplest form of this data would take the form of a list of strings with, optionally, an associated priority value for each string. If the data has no specified priority values the system can assign each string a constant value such as 1, this would allow the system to function but would remove any advantages of prioritisation.

[00148] FIGURE 13 is a table showing a section of a word list for English out of a total list of 2,500 words. The section includes all words starting with "l" as well as some words before and after these words. All words forming the branch for words starting with "lea" are indicated in bold. It is from this list that the tree in FIGURE 14 has been built up. In addition to a simple flat list, the data may come from any other source which could supply a set of strings with, optionally, a priority value for some or all of the strings. The data may come from a feed from a database for instance. Alternatively the system may avoid the pre-

processing stage of translating such a list and be provided the data directly in the tree structure described in the next section.

[00149] FIGURE 14 illustrates a section of an example dynamic tree structure for a dictionary. The section illustrated shows a region of the tree around the branch containing words starting with the letter “l”. In the figure, each box represents a branch node or leaf node. Boxes with a bold border such as that indicated by (1) are leaf nodes which are at the periphery of the tree and correspond to the end of an item. Nodes with a thin solid border such as that indicated by (2) are branch nodes which have all the branches below them expanded in Figure 14. Nodes with a dashed border such as that indicated by (3) are branch nodes that have branches below them but these have not been fully expanded in FIGURE 14. As illustrated in FIGURE 14, each node may have the following information associated with it: a string section of one or more characters or symbols which corresponds to that location; a priority value; for leaf nodes this may correspond to the priority for the item that that node is the termination of, for branch nodes it is the sum of the priorities of all the nodes below it; a pointer to zero or more child nodes; a pointer to the parent node; and optionally a link or identifier or additional data describing an action to be performed when that node is selected or other data associated with the node/item selected. For example, in a contacts application, leaf nodes may have a phone number to call when the leaf node is reached; or in a database lookup scenario, each leaf may contain the database identifier of the database item(s) that it corresponds to so that navigating to that node in the tree enacts the selection of the corresponding item(s) from the database and the application would then perform the appropriate actions on those selected items such as bring up a form to edit the items’ details. If a program traverses from the root node (4) to any leaf node and concatenates the strings of each node in sequence they would build up the string associated with the leaf node reached. For example, if a system traverses to the leaf node (1), it would build up the string sections: “l”, “e”, “a”, “v”, “ing” making the word “leaving” which, based on the priority field in leaf node 4, has a priority of 9240. In FIGURE 14 it can be seen that the branch composed of all words starting with “lea” has been fully expanded. The top of the branch is indicated by (2).

[00150] To assist processing, each string may have an “end of word” symbol added to it. This allows a word termination to exist as a separate branch to other branches which are further continuations based on the same string. An example of this is the word “lead”. In FIGURE 14 the branch to the complete word “lead” ends at node 5, however, there is also a branch node leading on to words starting with “leader” (6) as well as another termination node competing the word “leading” (7).

[00151] In one embodiment of the system the engine component could choose the candidates for presentation by the simple logic of returning the child nodes of the “entry so far”. FIGURE 15 represents a flowchart of the logic that may be applied to do this. The system would start with a pointer at the root node of the dictionary. It would then traverse the tree to the node corresponding to the supplied “entry so far”. If no corresponding node is found then the engine component would respond to the interface component to indicate that the supplied “entry so far” is not a known string in the dictionary. The interface component would then respond to the user according to the task being performed. In the case of text entry, it may provide an explicit character entry facility to spell out a word and then have that word added to the dictionary for subsequent entry. In the case of list selection the interface component may inform the user that the desired selection is not available. If the node is found then the system would compile a list of all the child nodes of that node. The system would then remove from that list all nodes of menu options that have already been presented. If, after the above step, there are no nodes left in the candidate list then the system would respond to the interface component that the entry was not found as in step 3 above. If the number of candidates is less than the supplied parameter “number of options” then the system would return all the candidates in the list, otherwise the system would select “number of options” items from the candidates and return them. The selection of the subset of nodes to return from the list and the order that those nodes are presented could be based on the objects with highest priority first, or random selection, or the first candidates based on some sort such as alphabetical order or some other means.

[00152] For example, if the user has entered the string “lea” and intends to enter the word “leaving”. The interface is based on a five way joystick input with a menu indicating Partial Word Completion options in four directions of movement of the joystick similar to the menu in FIGURE 9A. The first call from the interface component would specify the following parameters: (1) entry so far: “lea”, (2) menu items already presented: none, and (3) number of options: 4.

[00153] Referring to FIGURE 14, the system would start at the root node (4) and, based on the entry so far (“lea”) traverse to the branch node 2. From that node it would identify all the child nodes (all the nodes below (2) in FIGURE 14: “d”, “gue_”, “rn”, “st_” and “v” - note the character “_” is being used here to represent an end of word character). From these 5 candidates, if it was selecting based on alphabetical order it would return the 4 menu options: “d”, “gue_”, “rn” and “st_”. The interface component would then present these four options in the menu for the user to select from. As none of these options leads on

to the user's desired word "leaving" they may select a "more" function, in which case the interface component may call the engine component again with the following parameters: entry so far: "lea"; menu items already presented: "d", "gue_", "rn" and "st_"; and number of options: 4. Once again the system would traverse to node 2 in Figure 24 and it would then identify the same five child nodes as candidates ("d", "gue_", "rn", "st_" and "v") and then it would remove from this list of candidates the menu items presented already ("d", "gue_", "rn" and "st_") leaving one candidate item ("v"). As the number of candidates (1) is less than the "number of options" (4) – all the candidates would be returned to the interface component for presentation. The interface component would then present the one option returned ("v"). As this is a continuation of the word the user wants to enter, they would operate the input means to select that option. The interface component would then make another call to the engine component with the following parameters: entry so far: "leav"; menu items already presented: none; and number of options: 4. The engine component would then traverse to node 8 in FIGURE 14 which corresponds to the string "leav". It would then build the candidate list of the two child nodes ("e_" and "ing_") and as they number less than "number of options", both would be returned as options to the user interface component which would then present them for selection to the user. The user then selects the option "ing_" and their word or selection is complete.

[00154] Using this "basic lookup" logic, once the tree structure has been built, the system managing the data may remove the priority figures from the nodes as this may not be necessary for determining the options to return. Even with the system wanting to present the options in priority order, as long as the tree structure reflects the correct ordering of the options such that they can be returned based on that ordering, it may not be necessary to maintain storage of the actual priority value. Removing this data from the tree structure should result in less storage being necessary for the data. The above sequence is a viable implementation of partial word completion menuing and provides a means of selection of menu options. The following table summarises another example (selection of the word "leaders"):

step	entry so far	already presented	number of options	options returned	user action
1	"lea"	none	4	"d", "gue_", "rn", st_"	select "d"
2	"lead"	none	4	"_", "er", "ing_"	select "er"
3	"leader"	none	4	"s", "_"	select "s"

4	"leaders"	none	4	"hip_", "_"	select "_"
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The above took four steps but it can be seen that in steps 2, 3, and 4, less options than the "number of options" value (4) were returned.

[00155] In another embodiment the logic used may perform additional processing when the child nodes were selected. This would fill out remaining slots in the menu by travelling further down the tree and picking the higher priority nodes further down the branch until all the "number of options" slots were full. One method for doing this is illustrated in the flowchart at FIGURE 16. The system would start with a pointer at the root node of the dictionary. It would then traverse the tree to the node corresponding to the supplied "entry so far" (the "base node"), create a list for holding nodes (the "compiler set") and put the "base node" in it, create an additional list for holding nodes (the "compiler subset"), for every node in the "option compiler list" get all their child nodes and put them in this list, remove from the "compiler subset" any nodes that have already been presented (and rejected as a result of the user selecting the "more" function), and subtract their priority value from their parent's so they no longer contribute to this round of processing. If the "base node" is still in the "compiler set", extract it – it is only needed there to kick start this process. While the number of items in the "compiler set" is less than "number of options", take the node with the highest priority out of the "compiler subset" and add it to the "compiler set", in the process subtract the priority value of the node just moved from any of its parent nodes in the "compiler set". This is so that its priority does not get double counted. If the above process resulted in any node in the "compiler set" having its priority reduced to zero then take it out of the "compiler set", this node has been completely subsumed by its child nodes and delete the "compiler subset" as the remaining nodes will no longer be candidates and repeat the above steps until the "compiler set" contains "number of options" items and a cycle through the loop does not add or remove any nodes to the list, or "compiler set" contains less than "number of options" but all child nodes have been added to it.

[00156] Using this logic, the following table summarises the sequence used to select the word "leaders" from the data (note: the "number of options" column has been removed as it is always 4, the "already presented" column has been removed as it is always none):

step	entry so far	"option set"	"option subset"	options returned	user action
1a	"lea"	base node	"d", "v", "rn", "gue_", "st_"		
1b		"d", "v", "rn",		"d", "v", "rn",	select "d"

		“gue_”		“gue_”	
2a	“lead”	base node	“er”, “_”, “ing_”		
2b		“er”, “_”, “ing_”	“ers”, “er_”		
2c		“ers”, “er_”, “_”, “ing_”		“ers”, “er_”, “_”, “ing_”	select “ers”
3a	“leaders”	base node	“hip_”, “_”		
3b		“hip_”, “_”		“hip_”, “_”	select “_”

As can be seen from the table, the user now has to make only 3 selections rather than 4 as in the method described in the previous section. Referring to steps 2a to 2c above: 2a: From the base node, all the child nodes (“er”, “_”, “ing_”) are added to the “option subset”, as these number less than “number of options” they are all transferred to the “option set”. 2b: Then all the children of the nodes in the “option set” are loaded into the “option subset” (“ers”, “er_”). 2c: These are then transferred into the “option set” and, as they are added their priorities are subtracted from their parent (“er”) and ultimately this results in “er” having a zero priority so it is removed from the “option set” as “ers” and “er” have completely subsumed the parent “er”. As this results in “number of options” nodes, these are returned to the interface component. This method selects menu options ensuring all candidate branches that are children of the base node are presented and where there is room for more options, these are chosen from nodes further down the branches based on priority.

[00157] A further method of selecting the optimal nodes in the tree for determining the Partial Word Completion options to present would be to make priority the main driver for selection. In this case the system traverses the tree below the node for the “entry so far” (the “base node”) and selects up to the “number of options” nodes with the highest priority with the following proviso: the priority value is the node’s priority value minus the priorities of any nodes below them on the tree which are being returned as candidates. To determine this the system would apply logic similar to that illustrated in FIGURE 16 and described below based on the example of determining the options for the “entry so far” of “lea” in FIGURE 14. The “number of options” figure in this example would be 4 and there would be no items displayed already.

Step	Commentary	Selections
1	Determine the “number of options” (4) top priority nodes	“d” (41929), “v” (27628), “der” (20589), “ve” (18388)
2	For each node with child nodes as candidates, subtract the candidate child’s priority from the	“d” (21340), “der” (20589), “ve” (18388),

	parent's (changed values in bold)	"v" (9240)
3	Based on the new values determine the "number of options" (4) top priority nodes again	"d" (21340), "der" (20589), "d_" (11721), "ve" (18388)
4	Once again subtract the priorities of the child nodes just added from the parent nodes	"d" (9619), "der" (20589), "d_" (11721), "ve" (18388)
5	Based on the new values determine the "number of options" (4) top priority nodes again	"der" (20589), "ve" (18388), "ders" (11920), "d_" (11721)
6	Once again subtract the priorities of the child nodes just added from the parent nodes	"der" (8669), "ve" (18388), "ders" (11920), "d_" (11721)
7	Based on the new values determine the "number of options" (4) top priority nodes again	"ve" (18388), "d_" (11721), "ders" (11920), "rn" (10461)
8	There are now no candidate nodes which are children of other candidate nodes whose priority has not been discounted for the child so the processing is complete.	"ve" (18388), "d_" (11721), "ders" (11920), "rn" (10461)

Thus the option that would be presented are "ve", "d_", "ders" and "rn".

[00158] In the above descriptions, the dynamic tree structure is illustrated with one or more characters (or the end of word symbol) making up the string at each node. This is because the logic of the system is based on where the strings in the dictionary branch and options are presented based on this notion. However, there may be circumstances where the structure has to be changed slightly to limit each node to a single character. FIGURE 17 illustrates an example of how this may be implemented. Referring to FIGURE 17, tree section (A) illustrates the nodes that make up the words beginning with "lead" (the nodes for the letters to this point are likely to have several other branches not illustrated in FIGURE 17) and the fully expanded tree of nodes that may make up all the words starting with "lead". As can be seen in FIGURE 17 (A), leaf node (1) contains the multi-character string section "ing_", similarly the branch node (2) contains the multi-character string section "er". The tree structure can be reconfigured to that illustrated in FIGURE 17 (B) whereby all nodes with more than one character in them can be expanded to a sequence of single character nodes all with the same priority value and a single link to a subsequent node. So node (1) is expanded to a string of 4 nodes starting at (3) and node (2) is expanded to a string of 2 nodes starting at (4). The lookup logic for this modified structure is similar to that described above with the additional consideration that when determining a string for a node, the system should

include that node as well as the characters for the nodes under the node up to the first branch or end node.

[00159] There are potentially many situations where this structure may be useful, two are described below: If a system allows for entry, or selection, of characters outside the string sections that make up the branches of the partial word completion based dictionary (the “options”), the “entry so far” may end up resulting in a string which maps to part way through the text of a node. For example the user may use a partial word completion based system to enter the initial string of “lead” using a tree of data as illustrated in FIGURE 17 (A), they may then use some explicit character entry means to enter the letter “i”. The next time the engine component is called to present options, the entry so far will be “lead i” and given a structure as in FIGURE 17 (A), this leads to a point which is within the string for node (1). As a result it may not be possible to determine the options to present. However given a structure as in FIGURE 17 (B) it is a simpler task for the system to traverse to node (3) and hence present the string made up of the child nodes (just the one string “ng_”) as the options to present.

[00160] In embodiments, there may be circumstances where selection is provided through multiple simultaneous dictionaries being traversed in parallel. In this situation, it cannot be guaranteed that for any particular entry so far that all the dictionaries will traverse to the start of a node string in the case where there are multiple characters per node. However, if each dictionary structure is limited to a single character per node this issue is removed. The above description suggests converting single nodes with multiple characters into multiple, single character nodes. However, it may be advantageous to implement the described structure in a “virtual” way such that the internal storage of the dictionary still allows for multi-character nodes as this may be more efficient in terms of storage and processing required. However, as the system traverses through the tree it works a character at a time as if there was just one character per node but maintains additional information internally to allow it to traverse the multi-character string of a node a character at a time. This may be done through a virtual node pointer. In previous descriptions, traversal of the tree was managed through a pointer which was navigated through the nodes. A virtual pointer could be implemented through the maintenance of a memory of a node pointer plus an index of the character that the virtual pointer is at within the node that the node pointer is pointed at.

[00161] For example, if the word so far is “lead” then the node pointer may point to node (5) in Figure 17 (A) and a character index value of 0 indicating that the virtual pointer is

at the first character. If the user then enters “e” by some other means the node pointer would move to node (2) with the character index value of 0 indicating that the virtual pointer is at the first character “e”. This would mean that the “r” component would be treated as a virtual subnode. If the user then entered or selected “r”, the node pointer would remain at node 2 but the character index would change to 1 indicating that the virtual pointer is now at the second character in “er”.

[00162] Although the above description provides several approaches to determining the menu options to present to the customer, other methods may be used within the scope of the present invention.

[00163] In addition to the core functionality described above, there are many enhancements that could be included in implementations of partial word completion based list selection. For example, the partial word completion based systems of the present invention may include list selection based on multiple, simultaneous dictionaries. Embodiments of the present invention may be used to provide selection from multiple languages. For example, if the user wants to select items from lists in French and/or English it may be advantageous to provide this as two partial word completion dictionaries being traversed simultaneously. Embodiments of the present invention may also be used to provide list selection from multiple sources, for instance an online media portal may allow for a user to select media to purchase via a device. This media may be in the form of music or video however, some customers only have access to music purchases, some only to video and some to both. Having the music and video libraries as separate partial word completion dictionaries but allowing for the possibility of simultaneous selection will allow for the simple separation of the two lists. Embodiments of the present invention may also be used for the purposes of optimising storage or other computer resources it may be advantageous to be able to split a large dictionary into several smaller dictionaries which are still selected from as one. Where multiple dictionaries (or databases) are used, it would be preferable in certain circumstances for the partial word completion based system to provide a single selection process which seamlessly provides selection from one or more lists simultaneously without the user’s method of operation of the system having to change. Below is described an implementation of such a system.

[00164] As described such a system could be implemented with an interface component which handles the interaction with the user and an engine component which manages the process of traversing the partial word completion based dictionary(s) and determines the options to be presented to the user. The logic to implement selection from

multiple simultaneous dictionaries may reside in the interface component, the engine component or combination of both. In certain embodiments such a scheme the logic to implement selection from multiple simultaneous dictionaries is likely to largely reside in the engine component.

[00165] Implementation of multiple simultaneous dictionaries indexed in a dynamic tree structure in certain embodiments would work as follows: On a request for a set of options to present the engine component would perform the following operations. For all active dictionaries, traversing the tree to the node that corresponds with the entry so far (some dictionaries may not have a corresponding node for the current entry so far in which case those dictionaries would be removed from consideration for this selection), and if at least one node is found. Determine all branches off all the nodes found in the above step, where there are branches from different dictionaries which correspond to the same continuation, combine their relative priorities and treat them as a single “virtual” node, compile a set of all branches either combined in this manner or unique throughout the dictionaries. From the set of branches derived in the above set, remove any branches that have been rejected through a previous selection of a “more option”. Select the “num of entries” remaining branches in the set that have the highest priority and return them for presentation as Partial Word Completion options to the user.

[00166] For the above logic there are some considerations that may need to be taken into account. A particular “entry so far” may not exactly equate to a node in the tree structures of each of the dictionaries so it may be advantageous to implement the dictionary tree structures with a structure that limits each node to having one character. In determining the priority of a “virtual” node (in step 2 above) which is the result of a combination of multiple nodes it may be sufficient to simply sum the priorities of all the component nodes together. However, there is scope for the system to apply more complex prioritisation logic. For instance it may apply different weights to nodes from different dictionaries before summing them together, possibly by applying different multiples to the base priority of each node in different dictionaries. For instance, if there is a static, language dictionary, as well as a dynamically learning usage dictionary which holds new words and modified usage values of used words, the system may give the usage dictionary higher priority as it is more likely that the desired word will be one that has been used previously. Similarly, if the user has active an English and French dictionary in order to enter text in either language but their native language is French and hence they enter more text in French, the system may allow the user the option of applying higher priority to the French dictionary nodes. In implementing

multiple simultaneous dictionaries where the dictionaries are indexed using a static structure it may be possible for the engine component to provide this by getting the proposed options from each dictionary for the entry so far, compiling them into a larger list and removing duplicates, then presenting them “number of options” at a time for each request for more options from the interface component.

[00167] Furthermore, at the end of the selection process, the system may provide functionality to allow the user to choose some action(s) to perform upon the selected item or the system may automatically invoke some action based on the selection without further user input. For example, once a music track was selected the system could present information about that track such as artist, title, album, track length then give the user options to play the track, delete it, add it to a play list etc. Similarly for an address book lookup, once the desired item is selected then the system could provide options to call the contact by mobile phone, email them, send them a message, etc. Alternatively the system may present a selection of a video in a local library of videos and as soon as the desired video is uniquely identified in the selection process, the system may start the selected video playing without further input from the user.

[00168] In certain embodiments it may be useful to combine partial word completion based list selection with other selection mechanisms. For instance an application may provide the ability to start the selection using partial word completion but at any point allow the user to have the remaining items presented as a list to scroll through and select from. For example, if a system provides selection of music tracks and is indexed on artist concatenated with album name then track name, the user may want to look up an album for a particular artist but then may want to browse through a list of all the tracks on that album. The user may use a partial word completion list selection means to select a particular artist then album but then revert to a scrolling list selection means to browse through all remaining items (i.e. the tracks for that album). Another possible reason for resorting to multiple selection means is if the object of the selection process is to select multiple items within a particular partial word completion selection. As with the example above, if the user was using a music selection system and wanted to go to a single specific album by a single specific artist but then wanted to select several tracks (to copy elsewhere for instance) then it may make sense to provide partial word completion based selection for the specification of the artist and album but the tracks may be presented using some other selection means such as a scrolling list which is more amenable to selecting several items at once. Another possible reason for a need for an additional selection means is if the items that the partial

word completion based list selection is indexed on do not resolve to a single, unique result. This may be an intentional part of the design of the system. For instance a contact lookup application may provide selection based on a contact's name but the user may have more than one "John Smith" so the system may provide a scrolling list or some other mechanism to select the intended contact by some other differentiator such as postal address. The above examples describe embodiment where the system switches from one mode to one other, in some instances there may be any number of different selection modes used throughout a selection session. It is acceptable for a subsequent selection mode to also be partial word completion based, for example a contacts application may provide partial word completion based selection indexed by name and once a name is selected, a subsequent partial word completion based list selection mechanism may provided the choice between the contact means (e.g., "home phone", "business phone", "fax", "email", "SMS", etc.). The system may start the selection by some other means and then switch to partial word completion based selection, e.g. in the above contact lookup example, the selection of the contact may be through a scrolling list mechanism but the choice of contact means may be through Partial Word Completion selection. Whilst the alternative selection mechanism described in the above examples is often a scrolling list, any other selection mechanisms may be combined with partial word completion selection such as voice selection, direct touch screen indication, etc. In the process of partial word completion based list selection it may prove useful to have an indication of the total number of items matching the selection so far in order to assist the user in gauging at what point the number of options has reduced to a manageable number to be browsed by some other means such as a scrolling list.

[00169] Often, when providing a partial word completion based list selection system the object of the exercise may be to select from a sequence of lists which hierarchically follow on from one another. A typical example is selection of music tracks. It may be convenient to allow the user to first specify the artist and then select a specific album from a list of all the albums by that artist and then select a particular track from the specific album that was just selected. This scenario may be achieved in a partial word completion based list selection by concatenation of the index strings. In the example above, each index would be a concatenation of the artist name, then the album name, then the track name. Each of the resultant indices would then correspond to a particular track in the system which is then played (for instance) once the selection is made.

[00170] As discussed previously, in a partial word completion based list selection system a single index can correspond to a single item in a list. However this is not the only

possible implementation. It is also possible to implement partial word completion based list selection such that multiple indices correspond to a single item in the list. An example may be contact lookup where the system allows the user to select a contact from their address book and that contact is then dialled. For example, the system may allow for selection based on an index of a concatenation of first name then surname as well as an index of a concatenation of surname then first name. Thus the strings “John Smith” and “Smith John” may be two of the indices in the list for selection but they result in the selection of the same item for processing (in this case a contact record which is dialled).

[00171] Further to the above it may also be desirable for a single index string to correspond to multiple items. For example, by allowing selection based on keywords: a list of items may each have one or more keywords associated with it such that a particular keyword can be associated with one or more items in the list. For example, a system may provide access to articles by journalists where each item for selection is an article and all articles about war have a keyword of “war” but they may also have any number of other keywords as well, for example an article about war in Iraq may have the keywords “war” and “Iraq” but there may be other articles in the database which are about agriculture in Iraq which may have the keywords “Iraq” and “agriculture”. Thus there are overlaps of items for each keyword. Additionally, allowing selection based on subsections of indices: a Partial Word Completion based list selection may provide selection of items indexed on sections or components of the index string instead of, or in addition to, the complete index string. An example of this may be indexing of song names not only by the complete titles from the start but also the separate words or phrases within each title. Thus, a system may index the song “Black or White” by Michael Jackson with a string “Michael Jackson, Black or White” which uniquely identifies the song but there may also (or instead) be index strings “Michael Jackson”, “Black” and “White” added to the partial word completion based list selection system to select from. Furthermore, any other scenario where a single index may correspond to zero or more items or when a single index results in one or more list items, it may be necessary for the user to go through more than one selection phase. The user may initially be presented with partial word completion based list selection to specify a first index out of all the known indices. Once this initial index is entered there may be one or more resultant items, in order for the user to narrow the selection down further there may need to be additional selection phases. These additional selections may be one of many means including, for example, presenting the remaining items in a list for the user to browse over and select the desired item(s), or going into subsequent partial word completion based list

selection sessions to refine the search by specifying additional indices selected from only indices that apply to items that match all the indices entered so far, the result(s) of the overall selection being the items in the list matching all the specified indices.

[00172] As an exemplary embodiment, assume a user has 1,041 songs on a device indexed by song title. The user wants to select the song “Right down the line” by Gerry Rafferty. In this example the system provides selection based on individual words within indices rather than restricting selection to specifying the complete index from the start. The selection of words is managed through partial word completion selection. The system allows the user to input words until a single unique entry is identified, alternatively the system may provide a mechanism for the user to indicate that they do not want to be more specific and that the system should present all the items that match the entry so far specified, in order for the user to select one or more of them through some other means.

[00173] In the example, the partial word completion based list selection is managed through a joystick based interface with 4 options presented and a central click used to indicate “more”.

[00174] As the user is looking for “Right down the line” in the example they decide to first specify “down”. Referring to FIGURE 18A – 18F the following sequence may be executed to firstly enter the word “down”:

Step	Figure	Description
1.	FIG. 18a	This is the opening screen of options, the desired letter “d” to start down is not visible so the user selects the center option “more”. At the bottom left is an indicator showing how many items match the current selection (match indicator), at this stage all the songs match the selection so this match indicator reflects the total number of items (1041).
2.	FIG. 18b	The seconds screen still does not show “d” so the user select “more”
3.	FIG. 18c	The letter “d” is shown as the top option so the user selects this with a press up of the joystick
4.	FIG. 18d	The word entered so far is now “d” and the “o” to continue the word is at the top position so the user selects this with a press up of the joystick. The match indicator now shows how many items have a word in the title that starts with “d”, this is 156 items.
5.	FIG. 18e	The word entered so far is now “do” and the rest of the desired word “wn_” is at the bottom position so the user selects this with a press down of the joystick. The match indicator now shows that there are 66 items with words in their title that start

		with “do”.
6.	FIG. 18f	The word “down” has now been successfully entered and there are 11 items which have the word “down” in their title.

[00175] The user has now specified down and has been made aware that there are 11 song titles which have the word “down” in them. FIGURE 19 shows a possible list of the 11 song titles which have the word “down” in them. The user now enters Partial Word Completion selection again to refine the search further by entering an additional word to match on, in this case they will enter the word “line”. The system now presents menus to perform partial word completion based list selection out of only the words (except “down” unless there are songs with “down” in their title twice) that are in the titles of songs with “down” in their title. This is a much reduced list and is shown in FIGURE 20. As can be seen in FIGURE 20, the remaining words are prioritised by how many times they occur however they could be prioritised on some other basis with a value assigned to each item (in this case song) so that each word gets a priority based on the sum of the priority values of the items that that word occurs in. Referring to FIGURE 21A – 21C the user now progresses with partial word completion based list selection to specify the next word “line”:

Step	Figure	Description
1.	FIG. 21a	The start of specifying the next word “Line”. The “l” to start line is at the bottom so that is selected through a movement of the joystick down.
2.	FIG. 21b	“l” has been selected and there are only 3 options left (songs that have “down” in them as well as another word starting with “l”). A movement of the joystick right will complete the selection of “line”.
3.	FIG. 21c	Both words “down” and “line” have been specified, as there is only one song title that has both words in it then this is now uniquely identified.

[00176] Once the selection has been made the system may then automatically perform some action to apply to the selection, in this case as it is a song that has been selected, the device may start the song playing. Alternatively the system may present further menus or other mechanism for presenting choices to the user (including partial word completion based list selection) to allow the user to select an action to be performed on the selected item.

[00177] The above example illustrates one scenario whereby the partial word completion based list selection system does not have a one-to-one relationship between items and indices, however, there are many other implementations which may use this concept. For

example, the indices may be keywords or any other system of strings which may or may not be contained in the title or unique identifier of the item. Each keyword or string may be linked to one or more item. Alternatively, for example, the items may not have a one-to-one identifier (e.g. song title) at all, and each item may be uniquely specifiable by a unique combination of index strings. Additionally, the items may have priorities such that the string identifier(s) associated with that item receive corresponding increase in priority when being presented in Partial Word Completion based list selection,

[00178] The above exemplary embodiment shows selection to a single result but the system may allow for partial word completion based list selection to be used to a selection of multiple results and then some other mechanism such as a scrolling list to perform the remaining manipulation. While the above example provided a “match indicator” as useful additional information for the user, this is not necessary to provide selection as described above.

[00179] A further enhancement to the basic function of partial word completion based selection aims to streamline further the selection of options from the screen by taking advantage of the user’s familiarity with a QWERTY keypad or similar. A partial word completion based system presents options to be selected in an on-screen menu. This menu may be four options in a circular or star pattern for joystick input such as in FIGURE 22A and 22B or it may be a grid pattern for selection through a touch screen such as in FIGURE 23 or it may be some other arrangement. With these systems, the user wants to be able to quickly find their desired option and in order to further streamline this process the system could position the options in locations as close as possible to where they would be in a traditional QWERTY keypad. For example if the system is a touch screen device presenting a grid of options to select from and an option string starting with “q” is to be presented then it should ideally be positioned at the top left of the grid of options, similarly a string starting with “b” should approximately be in the centre of the bottom row. This is particularly advantageous as it makes use of the user instinctively looking at a particular section of the grid for the desired letter based on training that has occurred through long periods on a QWERTY keyboard. Due to the fact that this system may determine that more than one menu option may be applicable to a particular location, some overflow logic will have to be applied to determine the best alternative location for one or more of these.

[00180] For instance, if strings starting with “q”, “w” and “e” are to be presented the system may not be able to present all of them in the top, left region on the screen. When determining the location of an option the following rules could be applied: (1) options should

be positioned in descending order of priority such that higher priority options should get preference over lower priority items that are trying to share the same location, (2) ideally the desired option should be at the expected location or within one key radius of the expected location so that the user can instantly register its presence and hit it by looking at the expected location and seeing it directly or slightly peripherally but not having to scan across all the options except rarely for obscure strings, (3) make the most likely options be closest to proper location on screen, (4) moving things off location horizontally is preferable to vertically, and (5) in multi-character options, when the first character position is filled, when determining which direction to relocate the option should go in the direction which moves toward the location of second character in the string,

[00181] When the key is just space aim to place it in the middle of the bottom row. An example of the above logic is illustrated in FIGURE 24 and 25. The system illustrated in FIGURE 24 and 25 is a touch screen PDA system allowing for partial word completion based selection from a grid of 12 string options plus a button for numbers and symbols (bottom left) and a more option (bottom right). In FIGURE 24 this may be the state of the system at the start of a selection showing the most likely 12 strings to start a selection. As can be seen, the options are located at approximately the location they would be on a QWERTY keyboard. For instance the “w” is in the top left and the “m” is in the bottom right. Also note that “d” may have had a lower priority than “a” and “s” as it has been moved further from its ideal location by the other two. In FIGURE 25 the same system is now at a stage where the entry so far is “think” and the options for continuing the selection are being presented and as can be seen many of them are multi-character strings. Once again the options have been located in approximately the location they would be on a QWERTY keyboard but it can be seen that “i” and “u” have been shifted down a line due to a lower priority.

[00182] While the above embodiment describes applying location logic based on a standard QWERTY keyboard, the logic can also be based on any other comparable system. Another example may be to match the position of letters on a phone keypad such that options starting with “p”, “q”, “r” or “s” may be position in the bottom left of a menu as this is where they reside on the “9” key on a phone keypad. It may also be advantageous for the system to remove items from a dictionary individually when the user selects that item. This may give the effect of a “checklist” whereby only items remaining in the list are selectable and once selected the item is removed from the list.

[00183] At any time the user can navigate throughout the menu tree to determine what are left and select items as they are completed. When the menu does not show any more options then the user would know that all the items in the list have been completed.

[00184] This system may be useful, for example, to work through a shopping list, checking off items as they are selected for purchase.

[00185] Many computing devices and/or applications on computing devices have a number of selectable items available to the user to operate the device or application. These selectable items (referred to as “items” in this document) include any item that can be selected to be activated, opened, changed, etc. in the process of using the device or application. Examples of such items include: functions of the device or application, e.g. make a phone call, take a picture, start a new email (may be indexed by function name); content items or files on the device or application, e.g. audio and video recordings, images, recordings of data such as variation of temperature over time (may be indexed by filename, stored description, keywords or other metadata such as artist, title, album, etc); documents, e.g. text notes, formatted documents, eBooks (may be indexed by title, author, keywords, text body); settings, options, preferences, etc., e.g. screen brightness, network password (may be indexed by setting name); a level in a hierarchical menu of items (e.g. rather than the item being a particular setting as in the above point, an “item” may also be the “Settings” menu level in the hierarchical menu tree from which the user can navigate by some other means to the desired item selection); local data fields, e.g. contact details in an address book, calendar items, to do items, application specific database content (may be indexed by defined index item such as surname and christian name, title, etc.); help topics from the on-device or in-application help system (may be indexed by help item heading and/or keywords); an online entity such as a web page, rss feed, blog, game, podcast, etc. (may be indexed by title, description, keywords, body text); and any other item available on, or accessible to, the computing device or application that the user may desire to select.

[00186] Often these functions are presented in menus to be selected through some user interface means. The user interface mechanism(s) used by the device depends on the type of device. Exemplary various device types may include: personal computers and laptop computers and other screen/mouse based devices for selection of items from an onscreen list by pointing using a mouse; personal music players, personal video players, video game devices (both portable and consoles), digital still or video cameras, fixed, wireless and mobile phones, televisions and television connected devices like cable set-top-boxes, personal video recorders, media center devices providing media viewing, streaming, recording and playback,

navigation systems, personal computers and laptop computers with input via directional keys or some similar mechanism, and any other devices allowing user input through directional controls for Selection of function from an onscreen list through directional inputs from a directional input mechanism such as a joystick, wheel or directional keys; personal digital assistants (PDAs), some digital still or video cameras, some navigation systems, information kiosks, vending machines, and any other device allowing user input through a touch screen for selection of items displayed on a touch screen device by direct indication of the desired option by tapping the corresponding location on the screen with a stylus, finger or similar implement; and any other system allowing the user to select an item on a device through the system's user interface.

[00187] It is often the case that these items are presented in menus with a hierarchical structure. This is due to the desire to present a large total number of items without any particular menu stage being excessively large. For instance, a PC operating system may present a top level menu with the following items: Programs, Document, Settings, Search, Help, Log off, and Turn off. The first three options (“Programs”, “Documents” and “Settings”) may lead on to further lists of possible items such as (respectively) all the programs installed on the device; all the documents stored on the device, or all the settings that can be changed on the device. These further lists may also be broken down into hierarchies if there are still a large number of items to present.

[00188] In another exemplary embodiment, on a digital camera, for example, the user may want to set the “frame numbering” setting to “continuous”. The traditional way for the user to do this would be traversing the menu tree in a manner such as: selecting the <Menu key>, selecting “options”, selecting “set-up”, selecting “frame numbering”, and selecting “continuous”, where any of the above selections may take one or more input actions such as button presses. This hierarchical system is very common in many of the device types listed earlier in this section. Whilst it provides more efficiency than a simple list of items it can still present a difficult selection process for the user, especially when the total number of options is large and/or the interface of the device is limited. Some of the difficulties encountered are due to a large number of items can result in large lists of options at a particular level which means the user has to scan a large number of items to find their desired one and/or if the list is too large for the available display they will have to operate a system of navigating the list, generally through directional keys to scroll or page up and down the list, in order to find their desired item. Additional difficulties are due to a large number of items can result in a hierarchical tree with many levels requiring the user to provide many control

inputs to navigate around the levels and down through the levels to the desired options, and when there are a large number of items, it is often the case that it is not obvious which branch of the hierarchy of items should be entered to find the desired item. For instance, on a mobile phone a user may want to change a setting for transmitting images and in the settings menu hierarchy they may be presented with choice between “Communication Settings” and “Image Settings”. At this point it is not obvious which option the user should take and a wrong choice may result in wasted effort on the part of the user as they will be searching the wrong branch until they realise their desired option is not there. Additional difficulties arise if a desired option is not available at all, this is not immediately apparent and the user may have to navigate several branches of the hierarchy which may be perceived to be potentially where the desired option may reside. Once the user fails to find the desired item and gives up, they may still not be certain that the item is not available, it may be on the device but they were not able to discover its location.

[00189] Some devices implement a solution to the above mentioned issues by allowing the user to directly access an item on the system through a textual search mechanism. With such systems the user is able to go directly to an item, by typing in a textual identifier for the desired item. This identifier is then compared against a stored index and if there is a matching item on the device, the computing device may open or activate the item for the user.

[00190] However, whilst the ideal scenario is that the search results in one matching item which is then opened or activated, there is also the possibility of other scenarios such as: zero results being found, and multiple results being found. If the search results in zero matches this could be for several reasons including: the item that is being searched for is not available on the device or application; or the item that is being searched for is not indexed within the search subsystem. For instance the user may be performing a search on a music player for a particular music track without realising that the search implementation does not index media content just the application’s functions. Additionally, the user may have misspelled the text index that matches the desired item, e.g. the user may type in “settings” to find the settings menu; or the user may not be using the same text string as the system has applied to the desired option. For instance the user may have typed “settings” to change on-device settings but the system may use the term “preferences” instead.

[00191] In the above situations where the user is presented with a response of zero results matching the entered term, the user is often unable to discern the reason for this. It may be any of the reasons listed above or perhaps some other and as such they do not know

whether they should try again with a different term or give up because the option is not available. This may result in several more attempts for the user before successfully finding the desired item or ascertaining that the item is not available or giving up unsure what the reason for failure to find the desired item is.

[00192] If the search results in multiple matches this is likely to be because the user has not been specific enough in their search term. For instance, a computing device may have several “screen” items, some possible values could be, for example, screen brightness, screen contrast, screen saver, junk email screening, and local movies currently screening.

[00193] In this case, if the user entered the search term “screen” they could be presented with the five results listed above as well as potentially many more. At this point the user must go through one or more subsequent search phases which may take the form of one or more of: specifying further search terms to refine the search further and repeat the process with hopefully less results, scanning through a list of search result items looking for their desired item, being fed into a hierarchical menu tree at a branch and navigating from there to a leaf of the tree that corresponds with the desired item by some other navigation means such with a joystick, and any other way of selecting the desired option from a list of multiple search results.

[00194] The above scenarios result in a complex sequence of actions for the user and, in the case where the desired item is either not available or unable to be found due to the complexity of the system, the sequence of actions may ultimately prove futile.

[00195] Another issue relating to the textual search process is that it requires the computing device to provide a facility for entering text in some form. Where a device has a full keyboard this is largely manageable although even a full keyboard can be problematic for text entry when used for some languages such as Asian languages.

[00196] Where a device does not have a full keyboard the text entry system may be cumbersome such as systems which are based on numeric keypads where text entry is achieved by assigning multiple letters, symbols, etc. to a key and having the user press the key multiple times depending on the desired letter. There are also other systems which try and improve on keypad text entry with some sort of predictive mechanism or more rapid selection of the desired letter by some other means. These systems may improve the process somewhat but generally the result is still an undesirable level of complexity and inefficiency in the process of text entry.

[00197] Where a device does not have a full keyboard or a keypad, text entry may be difficult or impossible. There are several mechanisms developed which allow text entry

through a joystick interface or input actions through a revolving wheel movement, one such system is covered by a related patent [details of our text entry patent] but in general, when a device has a limited interface whether it is mildly limiting such as a with a keyboard, more limiting such as a with a keypad (e.g. mobile phones) or extremely limiting such as with just a screen and a joystick (e.g. music players, games devices, navigation systems) – a text based search process is hampered by the need for the user to enter text search parameters.

[00198] The most common methods of finding and activating items in a computing device are navigating a flat or hierarchical menu or through a text based search mechanism. Both these systems have inefficiencies that result in a less than optimum experience for the user. These inefficiencies become more pronounced when the number of selectable items available increases, and/or the user interface on the computing device become more limited. The present invention is an improved method of providing direct access to items on a computing device that is quick, efficient, less prone to errors and not hampered by a device having limited input means. The present embodiment provides a solution to the issues set out above by providing for direct access to items on a computing device and/or application via partial word completion based list selection. The present embodiment would provide selection of items which may be one or more types of selectable component of the system including functions, media files, settings, menu levels, etc (see a more complete list of possibilities in the text at the start of the description of this exemplary embodiment). The nature of the items made selectable will vary depending on the application and/or device

[00199] When the user wants to access an item indexed in a system based on the present invention, they would perform some action to indicate they want to invoke the partial word completion based selection mechanism. At that point the system would present a partial word completion option menu as described above. From this menu the user would navigate their way through the options presented to build up the text string that corresponds to their desired item. For example, on a digital camera the user may want to set the “frame numbering” setting to “continuous”. The traditional way for the user to do this could be traversing a hierarchical menu tree in the manner discussed above. Using Partial Word Completion the process may be selecting: <Menu key>; selecting “c”, selecting “ontinuous”, and selecting “frame numbering”. Once the text string for the desired item was complete, the system would then invoke the item selected. The nature of the invocation will depend on the type of item and may also be influenced by preferences the user has specified to the system. For instance, if the selected item was a system setting, the user may be prompted for a new value; if the item was an audio file then the system might start that file playing; if the item

was a text document, the system may invoke an editor to edit the document. The result would be an application which would provide direct access to an array of items in an application or on a device with specific characteristics. Exemplary characteristics may include, that there would be minimal inputs (e.g. key presses required), there would be no navigation down “dead end” paths, only items that exist in the index can be searched for, the presence of an item would be immediately apparent, selection would be based on a text description of an item, not a location within a hierarchical menu of items, all selection could be specified with minimal input means such as a screen and a joystick, an increase in the number of items does not result in a proportionate increase in the difficulty of selection so large to very large lists can still feasibly be selected from, and there is no need for text input so the system is fully functional on devices without keyboards or keypads.

[00200] The above embodiments provides a combination that provide a rapid, error free and low stress experience for a user even on a device with very minimal input capability. In order to implement a system for providing direct access to items via partial word completion the nature of the items that are to be made available through the partial word completion based system should be determined. Next, the system should determine the method by which text based indices will be assigned to the items to be selected by partial word completion. As described above, the indices may have a one to one relationship such that each index uniquely identifies one item. However there may also be a many to one relationship (in which case one or more text indices may result in the same item) or one to many (in which case a text string may result in multiple items which may then be narrowed down to one by further partial word completion text selection and/or some other mechanism like navigating the list of items and selecting with a key press). The system should also determine what the action(s) will be once an item has been selected via the system. Different types of items will have different actions invoked when the items are selected or the user may be presented with a choice of actions once an item has been selected (e.g. if a document item is selected the system may then provide the option of editing it, viewing it or deleting it and these additional options may be presented within the partial word completion selection as appended texts to the text index of the selected item). In order to efficiently present the partial word completion option menus the system may convert the list of indices of items to an internal structure to streamline determination of options on the fly. These structures (referred to as “dictionaries”) may be dynamic (for situations where the options vary such as a list of music items in a music player) or static (for situations where the list of options varies

minimally such as list of settings available for a device). Also there may be multiple dictionaries which would be navigated in parallel through the selection process.

[00201] For instance there may be a dictionary of device functions as well as a dictionary of media content and a dictionary of help items, all three of these dictionaries could be navigated simultaneously allowing for selection of any of the three types of items from the one partial word completion based selection system. Once the dictionaries have been built and stored ready for selection, the system would provide some means for the user to invoke the search mechanism and initiate the partial word completion based list selection process. Once the list selection process is invoked, the system would then manage the process of allowing the user to select their desired item by building up the text associated with it as partial texts presented in menus. Once the text identifier is complete an item is selected and the appropriate corresponding action for that item would be invoked.

[00202] In certain embodiments, the computing device, service or system described herein may incorporate more than one application. For example, in certain embodiments, a mobile phone may have an address book application for which the list selection described herein could be used to find a contact, a music player application for which the list selection described herein could be used to find a particular track to play, and the general functions, options, and applications which could be selected, activated and/or accessed by means of the list selection described herein. In such an embodiment, it may be beneficial to combine one or more of the list selections into a single list selection. This may be achieved by searching multiple dictionaries simultaneously or by using a composite dictionary, as discussed earlier.

[00203] In such an embodiment, it would be possible to provide access to multiple sources of data, content, applications, etc. Simultaneously which may, in certain embodiments, homogenise the user interface of those applications into a single interface and minimize the number of different modes and selections the user needs to perform to access any item.

[00204] For example, a user would no longer be required to navigate through a menu system to reach a contacts list. Instead, in these embodiments, if a computing device, service or system applied this type of a single interface design, content (e.g. music), data (e.g. contacts), functions, options, applications, etc. would be accessible from the list selection interface. Specifically, for example, it is common for a mobile phone device to provide a multi-level, hierarchical on-screen menu from which the user is asked to select the desired application or function or, alternatively, a "menu folder" which traverses the menu hierarchy to a subsequent level of menu items. Additionally, in conventional interfaces, many items

may traditionally only be accessible from within an application once it has been invoked by a selection from the main device menu. For example, to play a music track may entail starting up the music application, then traversing the list of music tracks within that application to access one of the tracks for playback. However, in these embodiments, the functions, applications and options normally accessible by a conventional menu could be selected by name using the list selection methodology described herein. Therefore, in certain embodiments, a user, may be able to use the list selection methodology described herein to enter a contact name and view (or call, e-mail, etc.) the particular contact that is selected. Alternatively, but from the same level of the interface that a contact was selected, the user may be able to input and select a song from the music player's dictionary to play that song. It would not be necessary to navigate to a specific contacts interface or a specific music interface.

[00205] Although, there may be certain embodiments where the list selection described herein is applied as the overall interface for all of the available applications, there may be additional embodiments where the interface would be utilized as only a sub-part of the overall interface. For example, the list selection on a mobile phone may be used to invoke applications or functions but content such as music tracks may not be included in the lookup tree and may instead be accessed from within an application by some other means.

[00206] In addition to the examples discussed above related to using list selection to access local applications, functions, options, data, etc. list selection as described herein may also be desirable to include items from lists which reside outside the device such as in online services. For example the partial word completion lookup may include access to local contacts but in addition may also give access to a much larger online phone list for a company. Similarly it may be possible to select music stored locally but if a desired track name does not match a local track, the system may in addition include track names from an online music service such that the track can be streamed, downloaded and/or purchased.

[00207] In some embodiments, it may be desirable to have the user go through a multi-stage selection whereby the user first selects the type of item they are looking for and then select the actual item. For example if a user wants to find a music track, they would first select "music" from a list of all applications available, and then select the name of the track. This multi-stage selection may go through one or more categories of item type before selecting the desired item type. For example, to expand the music example above, the user may select "content" (to differentiate from other options such "applications" or "functions",

then "music", then the track name. Each of the selections at each stage may be based on the list selection described herein or some other selection means.

[00208] In some embodiments, there may be items of several different types within the same lookup and it may be desirable to indicate by some means the type of item that the user desired. This indication may, for example, be applied once the selection is at the final string component of the selection or when all the remaining options are of the same type. The indication may be any means to differentiate item types such as, an additional text identifier, a distinct icon at the end of the string, distinct colours, typographic features such as underline, italic, etc. In certain embodiments, this may also assist in differentiating duplicate items which have the same identifying string but are of different types. For instance the system may have a video called "Cats" and a music track called "Cats", in this case the system could present each item for selection but one would terminate with a video icon (or similar identifier) and one would terminate with a music icon (or similar identifier).

A First Exemplary Embodiment

[00209] The following description of the present invention relates to selection of a contact from an address book of a mobile telephone. The invention is however not limited to this application and may be implemented on any device with computational processing ability on any list which has items composed of a series of components such as text. The conventional way of selecting a contact from an address book on a mobile telephone entails the user following the sequence: (1) The user starts the address book application and is presented with a the full list of all contacts in the address book, (FIGURE 26); (2) Using the multi-tap feature on the device to enter characters with multiple presses of keypad keys, the user enters the first letter of the name they want to find; (3) This results in the list of names presented changing from the entire address book to only those names starting with the specified letter; (4) The user can now decided to use the joystick to move the selection to the desired contact and select it (FIGURE 27), if however the list is still too long the user goes back to step 2 above to enter the next character and proceeds until the list is short enough to find the contact, and (5) Once the contact is selected, their information is presented and the user is given the option of calling them, emailing them, etc.

[00210] In an embodiment of the current invention the above process can be streamlined greatly by presenting the user with the following sequence: (1) The user starts the address book application which is implemented based on the present invention, the user is presented with 4 strings in a menu indicating the strings are selected by movements of the

joystick in the directions left, right, up and down (FIGURE 22A), these initial four options are the four most likely word section or string sections in the database at the start of a contact name based on an analysis of the frequency of words in the address book; (2) If the user sees the word section or string section that starts, or is a continuation of, the contact they want to select they move the joystick in the indicated direction to select that word section or string section, appending it to the name thus far specified. The next set of most likely word section or string sections which continue the name thus far specified are then presented (FIGURE 22B), if the selection is not complete the user repeats this step 2; (3) If the word section or string section the user desires is not presented they activate the “more” function, in this case a press in of the joystick to be presented with the next most likely set of four options to continue the name thus far specified, the user then repeats step 2; and (4) Once the user has completed the name the user is then presented with their information and the user is given the option of calling them, emailing them, and so forth.

[00211] Referring to FIGURES 22A and 22B, if the user wants to select the contact information for “John Smith” they would activate the partial word completion base contacts system which would initially present the menu shown in FIGURE 22A. The user would then select the option “John_” by pressing the joystick to the right. The system would then change to the state show in FIGURE 22B where the string “”John_’ is shown as having been specified and the know continuations are presented as options for selection. The user would then select “Smith” by pushing the joystick up and thus complete their selection of “John Smith”. The present invention has much broader application than just the example listed above, as well as a mobile phone, the present invention can be used to improve list selection on other devices including but not limited to personal computers, tablet PCs, PDAs, remote controls and small watch sized devices. Also, the present invention can be used to select an item from any list which is composed of items which can be built up as sequences of components . The list could be of any size from a handful of entries to a large database of thousands or even millions of entries

A Second Exemplary Embodiment

[00212] A partial word completion based music track selection function utilising a device in accordance with an embodiment of the present invention will now be described with reference to FIGURES 9A – 9F. In this embodiment list selection is being provided through a 5-way joystick of a device. The on-screen menu shows 4 partial word completion options presented in a display with each of the four options being selectable by a movement

of the joystick in the corresponding direction. This system also provides a “more” option through some other control means which may be a press “in” of the joystick. In addition the system may provide a “back” option by some other control means to allow the user to undo the last action(s). Movement of the joystick in the direction indicated in the menu selects that option. If the option is not visible and the “more” indicator shows “...”, then a click *in* of the joystick accesses the next most likely options. The example below simulates the selection of a particular song (in this case “Black or White” by Michael Jackson) from a library of approximately 1,000 songs. In FIGURES 9A – 9F, the top zone shows the selection so far, the bottom zone shows the options that can be selected by joystick movements.

Step	Figure	Description
1.	FIG. 9A	This is the start of the selection with no part of the string entered yet (the top zone is empty) and the most likely 4 letters for the start of any song title (T, S, I and L) presented to be selected by a joystick movement in the corresponding direction. The letter we are looking for, “B” to start “Black or White”, is not visible so we click the joystick in (the “more” function indicated by “...” in the middle menu position) to go to the next most likely four letters.
2.	FIG. 9B	The desired letter “B” is visible so we move the joystick right to select it.
3.	FIG. 9C	Note the selection so far (“B”) appears in the top zone. We now select “l” by moving the joystick down.
4.	FIG. 9D	We then select “a” by moving the joystick up. Note: The “...” symbol at the end of string options may be used to indicate that the string option extends past the limit of screen component it is displayed in.
5.	FIG. 9E	We then complete the selection by moving the joystick up to append “ck Or White”. Note: The “»” symbol indicates that that string option finishes a selection.
6.	FIG. 9F	We have selected the song in 5 clicks. The application may then play the song or allow the user to perform other operations on it such as delete it from the library, add it to a play list, etc.

A Third Exemplary Embodiment

[00213] Referring to FIGURE 28 to FIGURE 30C, a fast food system may have a list of meal options which are composed of a sequence of food items which are represented as

images. FIGURE 28 illustrates a possible list of such items (meals) - one per row. Each meal has a name, one or more graphical elements in sequence corresponding to meal components and a relative popularity figure reflecting the average number of times that the meal is ordered in a day and hence an approximation of the likelihood of that meal being ordered at any time. From the above list a partial word completion based tree structure can be built as described above except in this case, instead of each node containing a string of characters, each node contains a sequence of one or more graphical elements corresponding to images. Each node is also assigned a priority value which is based on the popularity figure for that meal. FIGURE 29 illustrates how the tree structure may look based on the aforementioned list of items. Based on the structure in FIGURE 29, standard partial word completion based processing can be applied except now the interface is providing the ability to select sequences of images rather than strings of characters. A joystick based Partial Word Completion based list selection system could then be implemented to make a selection from this data with menu options in four directions corresponding to movements of the joystick in those directions and a click in of the joystick indicating “more”.

[00214] FIGURES 30A – 30C illustrate how the menus may look on such a system in the process of selecting a “Burger snack” through graphical imagery. The menus present options in four directions to be selected by corresponding movements of a joystick in those directions. A press in of the joystick indicates that none of the presented options matches the desired selection. FIGURE 30A could be the opening menu with the four most likely starts to a meal sequence. As “Burger snack” starts with fries and a drink (but not a hotdog) the user would press the joystick to the right to select the item on the right of the menu. This could then lead to the menu in Figure 30B. In FIGURE 30B the “entry so far” is fries and a drink. The user is presented with options to complete the meal with either a burger (up) or taco (left). The user would push the joystick up to select the burger which would complete the selection as shown in Figure 30C.

[00215] The above example describes selection of items from the start of their sequence to the end, Partial Word Completion based list selection is not limited to this mode of selection as the system may provide selection based on keywords or other equivalents. However in this case, rather than words, the selection may be based on sequences of one or more components (whether they are images, sounds, etc) making up the identifier of each item. Referring to the example list of items in Figure 18, the user could have selected their “Burger snack” via a keyword based list selection system as described herein by first selecting a burger image (which would narrow the search to two items (“Burger snack” and

“Burger meal”) and then selecting a drink image which would uniquely identify “Burger snack”.

[00216] Other exemplary applications where items are made up of a sequence of components could include: music notes: select a song by inputting the music score; chess moves: recall past games or research tactics by selecting games based on moves made; choreography steps: recall dances by selecting based on sequences of movements; DNA sequence: choose an individual’s DNA by selecting their gene sequence; Tones: select a song by choosing the tones in sequence that make up the song; or sign language: an on screen display could have animations of sign language words to select from to make up a sentence.

A Fourth Exemplary Embodiment

[00217] In this exemplary embodiment, the user wishes to find a Chiropractor in the Seattle (Washington) area. The user will use a “Yellow Pages” provider which allows one to retrieve a list of companies based on their location and category of business. The user will access the “Yellow Pages” service via the web browser on their mobile phone. The Yellow Pages provider has set up a web based front end to their service which is tailored to devices with limited interface and uses partial word completion based list selection to allow the user to select a US state, a city within that state and a business category. Given this information the Yellow Pages provider then responds with a list of businesses matching those criteria. In this case the interface component is running as code (possibly Java, JavaScript or AJAX) within the phone browser, taking and relaying user inputs to the engine component and displaying options that the engine component responds with. The engine component resides on an online server. The interface component running in the web browser of the mobile phone is communicating with the engine component using IP (Internet Protocol) communications over the wide area wireless connection of the phone to a base station and then via the wired connections of the mobile phone service provider and the general Internet to the server running the engine component. The sequence of selecting a state is illustrated in FIGURES 31A – 31D:

Step	Figure	Description
1.	FIG. 31A	This is the opening screen of the system with the fields for State, City and Category empty and needing specifying. The user highlights the “State” field and clicks on it to initiate partial word completion based selection.
2.	FIG. 31B	This is the opening options menu for the partial word

Step	Figure	Description
		completion system providing selection of one of the 50 states of the United States. The most likely 4 letters to start the selection process are presented (“M”, “N”, “I” and “W”). The user selects “W” by pressing the joystick left.
3.	FIG. 31C	Now “W” has been entered and the most likely continuations of the state name are presented. The user presses the joystick down to complete the selection of the state “Washington”
4.	FIG. 31D	The selection of the state is complete and the value has been entered into the appropriate field.

[00218] Next the user specifies the city “Seattle”:

Step	Figure	Description
1.	FIG. 32A	The user now navigates to the “City” field (or the system may have automatically selected it for them) and they click in to initiate the selection process.
2.	FIG. 32B	The system is now presenting partial word completion based selection of all the cities in Washington state. In this case the cities are prioritized by population so larger cities get priority over smaller ones on the assumption that they are more likely to be the desired selection. The most likely four letters are presented and the user selects “S” by pressing the joystick down.
3.	FIG. 32C	In this menu “S” has been entered. The “e” needed to continue the selection is not there so the user clicks the joystick in to activate the “more” option to be presented with the next most likely letters.
4.	FIG. 32D	The user is now able to push the joystick to the right and select “ea” to continue the selection.
5.	FIG. 32E	The user now pushes the joystick to the right to complete the selection of “Seattle”.
6.	FIG. 32F	The selection of the city is complete and the value has been entered into the appropriate field.

[00219] Next the user specifies the category of business they are looking for, in this example: “chiropractor”:

Step	Figure	Description
1.	FIG. 33A	The user now navigates to the “Category” field (or the system may have automatically selected it for them) and they click in to initiate the selection process.
2.	FIG. 33B	The system is now providing partial word completion based selection of a Yellow Pages category out of a list of 8,747

Step	Figure	Description
		values. The user presses the joystick up to select “C” and start the process of specifying “chiropractor”.
3.	FIG. 33C	The user then selects “h” (down)
4.	FIG. 33D	The user then selects “i” (up)
5.	FIG. 33E	The user then selects “ropract” (left)
6.	FIG. 33F	The user then completes the selection by pressing the joystick left to select “ors” and complete the selection “chiropractors”.
7.	FIG. 33G	The selection of the category is complete and the value has been entered into the appropriate field.
8.	FIG. 33H	The system then refers to its database and returns a list of the chiropractors in Seattle for the user to scroll through and choose from.

[00220] In this example, the literal text of the category was “chiropractors” rather than “chiropractor”. This was not an issue with the partial word completion based system as the actual value is immediately apparent to the user and no more effort to enter. In a system that required a search term to be typed in it is possible such a minor discrepancy could have result in a “zero results found” error. This example demonstrates several exemplary applications of partial word completion based list selection. For example, selection of geographic data. In this case a user narrowed down a selection of a particular US city in 6 clicks of the joystick. Similar processes can be used for other services or devices that need selection of geographic data such as navigation systems which can benefit from partial word completion based list selection applied to selection of city, street name, building name, etc. Additional applications include a remote engine component. The system had the partial word completion logic and data being carried out at a remote server allowing it to make use of the greater storage, security and processing power of this system. A further application includes selection from a finite list. In this case a list of 8,747 Yellow Pages categories. This same mechanism can be used to select from larger or smaller lists of items, some example lists to be selected from may include category of item, manufacturer or model of an item in an auction site, genre of music from a music library, movie category, food preference, job category, etc.

A Fifth Exemplary Embodiment

[00221] The above example shows selection from a list which is maintained online over some communications means. Such lists can range in size from small to very large but generally the selection process can be narrowed to one item, for instance a system which provided phone book look up for residents in the United States would have over 100 million items but with the search refined sufficiently will result in one individual as the desired result. Some alternative search processes generally do not result in a single item as an outcome, an example of this is general Internet search engines such as Google. In this case the user enters one or more search terms which could be words or phrases and the search engine responds with a list of items that it has determined are the most likely to relate to the concepts the user is searching for. The current example illustrates how such an operation may look based on partial word completion.

[00222] In this example the user wants to find information on holidays in Greece. For this search the two main concepts which the user will use as keywords are “holiday” and “Greece” and the search system should respond with any results which match these two keywords. The sequence of performing the search is illustrated in FIGURES 34A – 34I which are described below:

Step	Figure	Description
1.	FIG. 34A	This is the opening screen with nothing entered so far and the four most likely start strings for a keyword search (“s”, “h”, “n” and “m”) presented in the menu. The user presses the joystick right to select “h” to start entry of the first keyword “holiday”
2.	FIG. 34B	The user now presses the joystick down to select “o”
3.	FIG. 34C	The user now selects “l” (right)
4.	FIG. 34D	The user completes the word “holiday” by selecting “iday” (up on the joystick).
5.	FIG. 34E	The user selects “_” to indicate that that is the end of that keyword (as opposed to continuing to enter “holidays” for instance).
6.	FIG. 34F	The first keyword “holiday” has been completed and the system now reports that this will result in 533m results. The user will now continue to refine the selection by entering the keyword “Greece”. The four options presented now are different to those in FIG 34a as this is now based on the most likely four strings to start a keyword based on all entries with “holiday” as keywords. The user selects “g” (a press of the joystick left) to start the

Step	Figure	Description
		entry of “Greece”.
7.	FIG. 34G	The user now selects “ree” (up)
8.	FIG. 34H and I	<p>The user now selects “ce_” (down) to complete the entry of the second keyword “Greece”.</p> <p>The system now reports that there are 4.6m items that match the current query (have both keywords “holiday” and “greece”).</p> <p>At this point the user opts to see the results rather than carry on to enter more keywords. This is indicated through the press of the left function key marked “Select”.</p>
9.	FIG. 34J	The search system presents the results in a list with the best matches first. The user can now scan through the results and view the one(s) that have the desired information in them.

Additional Exemplary Embodiments

[00223] Several devices can make use of partial word completion based list selection and may have applications associated with the device that would especially benefit from partial word completion based list selection. Mobile phones - Mobile phones can have a large number of functions and settings as well as media such as images, videos and audio tracks as well as potentially a large range of other selectable items. Access to these can prove complex whether the interface is through a joystick mechanism, wheel, side keys or touch screen. The present invention could provide a major improvement in speed and ease of selecting these items. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process.

[00224] Digital cameras - The operation of digital cameras has become increasingly advanced and complex and so has the resultant menu structure. Whilst this structure can be navigated using the 5-way control this is often complex as the desired function can be many levels down in the tree, and it may not be immediately apparent the correct location of the desired function which can result in traversing several branches of the tree in search of the desired function. The present invention could streamline access to the device’s functions and

settings as well as streamline finding of content on the device. The latter case would be possible if the image content of the camera had textual descriptive data associated with it.

[00225] Digital video cameras - Digital video cameras can have a large number of functions and settings and access to them can prove complex whether the interface is through a joystick mechanism, wheel or touch screen. The present invention could streamline access to the functions and settings as well as streamline finding of content on the device. The latter case would be possible if the video content of the camera had textual descriptive data associated with the video recordings and/or sections of the video recordings.

[00226] Music players - Music players would benefit greatly from having a Partial Word Completion based selection system to provide rapid access to not only the device functions but also rapid access to the media content stored on the device. Music tracks are often categorised by artist, album, genre, title, etc. Each track on the device could be indexed by one, many or all of the available categorisations such that a selection could be made on any of these bases. For example, the user could first select an artist from the Partial Word Completion based selection system, this may result in multiple results which the user could then perform further Partial Word Completion based selection of based on the title of the track. Assuming this would be sufficient to establish a unique item, that item could then be selected and the invocation action for it may be to start the track playing. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process.

[00227] Handheld games systems - Handheld games systems could benefit from the improved access to the device's functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. The device may have multiple games available to it as well as media and other items so the selection of these could be incorporated into the Partial Word Completion based selection system. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process. Also, with the burgeoning market for online games, there are various times when partaking in these that

the user may feel the need to select items, other users, game information, game functions, online character possessions, etc. These sorts of activities could benefit from Partial Word Completion based selection as either part of a single system for the whole device or a separate selection system for the online game activities.

[00228] Portable video players - Portable video players could benefit from the improved access to the device's functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. It could also benefit from rapid access to the media content stored on the device. Video recordings are often categorised by genre, title, actors, director, etc. Each video on the device could be indexed by one, many or all of the available categorisations such that a selection could be made on any of these bases. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process.

[00229] Navigation systems - Navigation systems could benefit from the improved access to the device's functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. In addition, navigation systems require input of geographical information such as town, suburb, street, etc. in order to determine the location to navigate from or to. These items could be indexed in the Partial Word Completion based selection system. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for navigation operations. These selections could be provided within the same option tree as local item access or as a separate selection process.

[00230] Auxiliary display - An auxiliary display on a laptop or similar computing device could benefit from the improved access to the device's functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. As auxiliary displays may provide access to some or all of the information present on a laptop computer this can result in an extremely broad array of functions and content (such as address book information, calendar information, etc.) all of which has to be selected

via the screen and joystick of the auxiliary display. Thus a Partial Word Completion based selection system may vastly improve the efficiency of such operations.

[00231] “Lounge room” media devices - “Lounge room” media devices could benefit from the improved access to the device’s functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. A “lounge room” media device may not only have a complex set of functions available but also a large array of local and online media to be selected for managing, playing, etc. And often these activities have to be carried out with an input device as limited as a standard TV style remote control. Thus a Partial Word Completion based selection system may vastly improve the efficiency of such operations. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process.

[00232] Games consoles - Games consoles could benefit from the improved access to the device’s functions and settings as they can have a complex array of operations available and limited means to specify a selection of an item. The device may have multiple games available to it as well as media and other items so the selection of these could be incorporated into the Partial Word Completion based selection system. In addition, if the device was able to communicate to a network based server which had compatible content available, the Partial Word Completion based selection system could include this content in the dictionaries included in the selection process allowing the user rapid access to this content for streaming, downloading, purchase, etc. These selections could be provided within the same option tree as local item access or as a separate selection process. Also, with the burgeoning market for online games, there are various times when partaking in these that the user may feel the need to select items, other users, game information, game functions, online character possessions, etc. These sorts of activities could benefit from Partial Word Completion based selection as either part of a single system for the whole device or a separate selection system for the online game activities.

[00233] Watch phone/PDAs - These wrist sized devices have particular issues with allowing selection of any options as the room available for input mechanisms is very limited. As such providing rapid access to all functions, settings, content, etc. on such a device purely

through a joystick or some similar small limited means through use of the present invention could be extremely beneficial.

[00234] Eye level screen plus joystick - These “wearable” devices benefit greatly from limiting input to a joystick because that means that the user is able to maintain their gaze on the projected screen as a feedback mechanism. A common alternative would be input through a keypad or keyboard generally mounted on a sleeve or otherwise made accessible but this mode of input generally necessitates repeatedly redirecting ones gaze between the eye level screen and the input keypad and keyboard. With a Partial Word Completion based selection system the user would be provided a mechanism for accessing all function, settings, content, etc of the device whilst being able to maintain their gaze on the screen and a head up attitude to take in the environment around them.

[00235] Car system controllers (e.g. BMW iDrive)– In this case the Partial Word Completion based selection system could give access to all car functions through a single joystick/screen interface. As cars become more advanced, computerised and complex with various settings (such as cruise, sport, etc.) as well as inbuilt communication, entertainment and navigation systems – a Partial Word Completion based interface could make access to such functions more easy as well as potentially more safe for the operator.

[00236] Printers with screen and joystick for running menus – Modern printers can have many functions and settings which generally have to be navigated through as a hierarchical tree, in addition they may need to select media such as images from local or removable storage (such as a memory card or digital camera attached by cable) – a Partial Word Completion based selection system could streamline this process.

[00237] Communications system for disabled – As described in the summary of the invention there are many device which currently have multiple items selectable by the user and access to these is often through hierarchical menu and/or text based search. Also, as described these have many disadvantages involving complexity and inefficiency. These disadvantages can be greatly increased for people with disabilities as input actions can be very challenging for them so having to perform excess actions to make a selection is a severe impediment. The present invention’s characteristics of providing rapid, efficient selection of any of a devices items through just a simple means such as a joystick could revolutionise access of such devices to the disabled population.

[00238] Heads-up display – A Partial Word Completion based list selection mechanism presented on a heads-up display could provide rapid access to in-car, in-plane,

etc. systems This may be especially beneficial in complex systems such as aviation navigation and avionics with large numbers of functions.

[00239] Personal Computer input devices – As mentioned in the Background to the invention, a Partial Word Completion based list selection system could provide rapid access to all selectable items (functions, settings, content, etc.) of a personal computer. Despite the fact that these devices generally have full sized keyboard, the present invention could still be extremely beneficial to the process of selecting these items due to the advantages listed in the Summary of the invention section.

[00240] Vending machines – A Partial Word Completion based item selection system could provide rapid access to functions for maintenance via the limited front panel interface of a vending machine. In addition it could also provide a customer a Partial Word Completion based selection mechanism to choose the item that they want to purchase.

[00241] PDAs – Personal Digital Assistants are generally small handheld devices with generally limited interfaces often consisting of a touch screen plus a small number of additional controls. Despite this the devices can have a large array of selectable items (functions, settings, applications, content, etc.) thus a Partial Word Completion item selection system could greatly streamline access to this large range of options.

[00242] Kiosks (e.g. information devices for finding shops in malls) – A Partial Word Completion based item selection system could provide access to maintenance functions through the simple touch screen interface in addition a Partial Word Completion based selection mechanism could be presented to the user of the system to allow them to select the item that they want information on, directions to, etc.

[00243] Tablet PCs, UM (Ultra Mobile) PCs – Tablet PCs and UMPCS are generally small handheld or laptop devices with generally limited interfaces often consisting of a touch screen plus a small number of additional controls. Despite this the devices can have a large array of selectable items (functions, settings, applications, content, etc.) thus a Partial Word Completion item selection system could greatly streamline access to this large range of options.

[00244] Personal Computers – PCs generally have large amounts of functions and content, partial word completion based list selection could assist in accessing such items through the use of the direction keys, function keys, a wireless remote control style device, games controllers, etc.

[00245] Store check-out systems – Store check-out systems can often have a touch screen interface or some other limited means. On this interface the operator may have to

perform a large range of activities including selecting an item to be charged for as well as general administrative functions such as configuring the system and financial functions such as taking payment by credit card, etc. This wide range of disparate functions could be streamlined through the provision of a Partial Word Completion based interface to select these items.

[00246] Medical devices – Many medical devices have a large range of complex functions and settings as well as possibly requiring selection of other data such as patient and physician profiles. This wide range of disparate functions could be streamlined through the provision of a Partial Word Completion based interface to select these items.

[00247] ATMs – A Partial Word Completion based system providing direct access to maintenance functions of the system through simple side key interface could enhance the usability of the administrative activities as well as customer activities of the Automatic Teller Machines.

[00248] Side key based aircraft systems - A Partial Word Completion based list selection mechanism presented on side key based aircraft systems could provide rapid access to in-plane systems, this may be especially beneficial in complex systems such as aviation navigation and avionics with large numbers of functions.

[00249] Car system controllers (e.g. Mercedes Command) - A Partial Word Completion based list selection mechanism presented on side key based car system controller could provide rapid access to in-car systems.

[00250] Dynamic display keyboards – A dynamic display keyboard could be used to present the Partial Word Completion options as displays on dynamic display keys. This would provide the benefits of allowing for Partial Word Completion selection of items on a PC as previously discussed but with the added enhancement of having the options presented on a key rather than on the screen.

[00251] Gesture based interface – A gesture based interfaces implemented through motion sensors of some sort could allow the selection of items through bodily movements. This may be desirable if there is no more convenient means to provide input to the system, or alternatively the user may prefer this method as it is more fun and/or it may provide some form of physical activity to improve health, coordination, etc.

[00252] Floor pads used to select options (e.g. Dance Dance Revolution) – Similar to the gesture based interface, the options in the Partial Word Completion based item selection system could be selected through foot presses on floor pads or hand presses on pads reachable by hands or some other similar movements. This may be desirable if there is no

more convenient means to provide input to the system, or alternatively the user may prefer this method as it is more fun and/or it may provide some form of physical activity to improve health, coordination, etc.

[00253] 3-dimensional input devices – Options for the Partial Word Completion based item selection may also be selectable through some form of 3 dimensional selection device. The options would have to be presented on some form of output mechanism which would make it clear which 3D movement would select which items. And there would be a corresponding 3D selection mechanism that the user would manipulate to indicate their desired selection.

[00254] It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

CLAIMS:

1. A method of selecting items from a collection of items, said collection of items being indexed by a list of item identifiers, the method comprising:
 - generating an initial display including one or more parts of said item identifiers for selection;
 - enabling selection of said one or more parts;
 - generating a display of a further one or more parts of said item identifiers for selection in response to selection of said one or more parts, and
 - enabling selection of said further one or more parts in order to add to said selected one or more parts to build a larger part or whole of said item identifier.
2. The method according to claim 1, further comprising iterating said selection steps until said item identifier is completed, and enabling selection of the item identifier to select the item.
3. The method according to claim 1, wherein generating said initial display includes selecting said one or more parts of said item identifiers to be displayed based on a prioritization scheme.
4. The method according to claim 1, wherein said item identifier includes a sequence of one or more alphanumeric characters and said one or more parts or said item identifier is a subsequence of alphanumeric characters.
5. The method according to claim 4, wherein said item identifier is a text string.
6. The method according to claim 5, wherein, said text string is a word.
7. The method according to claim 6, wherein, said collection of items are words from at least one language.
8. The method according to claim 6, wherein, said collection of items are songs.

9. The method according to claim 1, wherein said item identifier includes a graphical depiction.

10. The method according to claim 9, wherein, said collection of items are selections from a menu.

11. The method according to claim 6, wherein, said collection of items are contacts.

12. The method according to claim 1, wherein said method is performed in a computing device and the computing device is a mobile telephone.

13. The method according to claim 1, wherein said method is performed in a computing device and the computing device is a PDA.

14. The method according to claim 1, wherein selection of the one or more parts is enabled by way of a joystick.

15. The method according to claim 14, wherein said joystick is a five-way joystick.

16. The method according to claim 1, wherein selection of the one or more parts is enabled by way of a touch screen.

17. The method according to claim 1, wherein selection of the one or more parts is enabled by way of programmable keys.

18. The method according to claim 1, wherein the method is performed on a computing device and said collection of items is stored on said computing device.

19. The method according to claim 1, wherein the method is performed on a computing device and said collection of items is stored on a remote device.

20. The method according to claim 1, wherein generating said initial display includes selecting said one or more parts of said item identifiers to be displayed based on a dynamic prioritization scheme that adjusts priorities of said item identifiers based on the number of times the item identifier was previously selected.

21. The method according to claim 1, wherein selection using said method takes about 50% less time than for a conventional system.

22. The method according to claim 1, wherein selection using said method takes about 60% fewer clicks than for a conventional system.

23. The method according to claim 1, wherein selection using said method results in about 80% fewer errors than that of conventional systems.

24. The method according to claim 1, wherein selection using said method takes between about 30% and about 60% less time than for a conventional system.

25. The method according to claim 1, wherein selection using said method takes between about 40% and about 75% fewer clicks than for a conventional system.

26. The method according to claim 1, wherein selection using said method results in between about 40% and about 95% fewer errors than that of conventional systems.

ABSTRACT

A method and apparatus for selecting items from a collection of items are indexed by a list of item identifiers. The item identifiers may be in the form of text, symbols, graphics, etc. An initial display is generated which includes one or more parts of the item identifiers. Selection of the one or more parts may be made and results in the generation of a display of further one or more parts for selection. The further one or more parts may be selected in order to the selected one or more parts to build a larger part or whole of an item identifier. Accordingly, selection from a large list of item identifiers may be carried out in a relatively short time period.

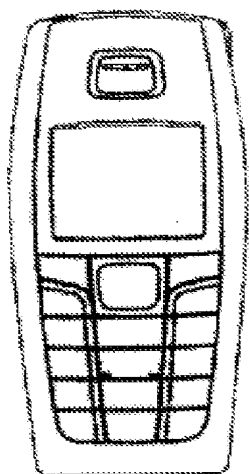


FIG. 1

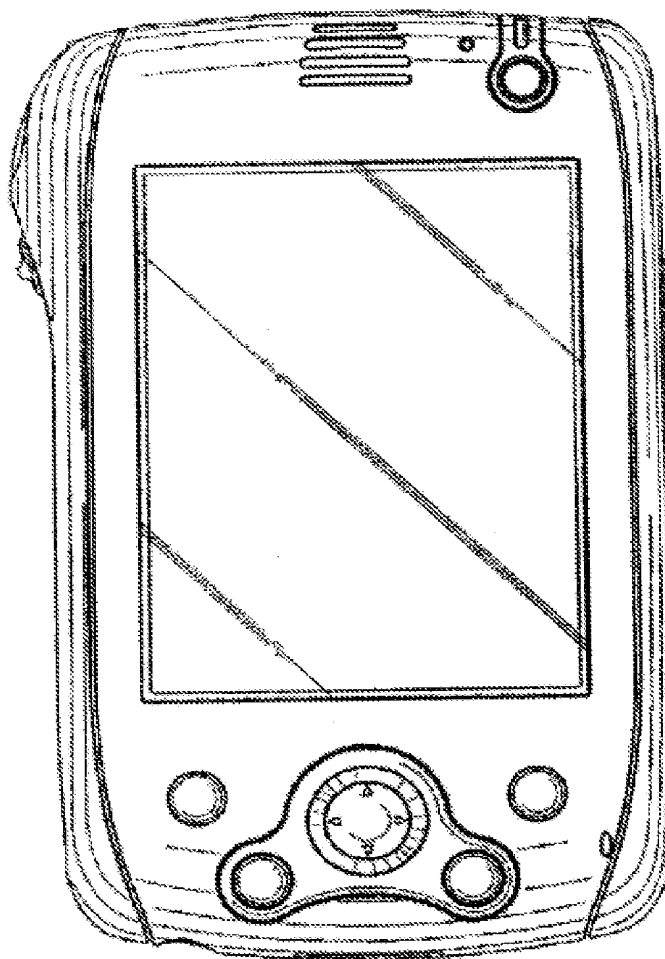


FIG. 2

FIG. 3

a	Chnically	legraph	mporary	nor	rrible	stosterone
ach	Chnician	lephone	mpt	ns	rribly	sts
acher	Chnicians	lephoned	mptation	nse	rrier	tanus
achers	Chnique	lephones	mptations	nsion	rrific	xt
aches	Chniques	lephonist	mpted	nsions	rrified	xtbook
aching	Chnological	lescope	mpting	nt	rrifying	xtbooks
am	Chnologies	levision	n	ntative	rritorial	xtile
ams	Chnology	levisions	nancy	nth	rritories	xtiles
amwork	Ddy	ll	nant	nths	rritory	xting
ar	Dious	lling	nants	nts	rror	xts
aring	E	lls	nd	rm	rrorism	xture
ars	En	mper	nded	rmed	rrorist	
as	Enage	mperature	ndencies	rminal	rrorists	
ase	Enager	mperatures	ndency	rminals	rriary	
ased	Enagers	mpest	nder	rminate	st	
aspoonful	Ens	mplate	ndering	rminology	stament	
atime	Eth	mple	nders	rms	sted	
chnical	Lecom	mples	nding	rrace	stes	
chnicalities	Lcommunications	mpo	nds	rraced	stimony	
chnicality	Legram	mporarily	nnis	rraces	sting	

FIG. 4

xt
l
n
a
r
chn
st
mp

FIG. 5

Total Entries	Average Clicks
51	3.14
423	5.14
1,096	5.52
8,555	7.22
31,838	8.45
503,756	11.30

FIG. 6

Selection	PWC (joystick)	Mobile phone contacts (multi-tap)	PC based contacts (screen, KB, mouse)
Harland Close	4.1	3.4	6.3
Martie Harrow	3.3	6.9	5.5
Harold Reed	4.4	8.8	4.8
Leanora Foster	3.1	6.4	5.6
Wendi Woollard	4.1	6.5	10.2
Rachel Holdsworth	2.5	9.0	4.7
Maurine Lineman	2.5	6.0	5.5
Alanis Hoffhants	4.3	6.0	8.1
Kaylyn Johnston	4.9	6.0	7.0
Deana Cypret	3.1	4.6	4.5
Giselle Highlands	4.7	8.8	7.4
Perry Pyle	4.3	8.7	5.6
Average:	3.8	6.8	6.3

FIG. 7

Selection	PWC (joystick)	PC music player (screen, KB, mouse)	Audio player (wheel)
Love over gold - Dire Straits	5.0	6.3	14.1
Material girl - Madonna	3.2	4.4	13.7
Rikki don't lose that number - Steely dan	3.1	4.5	13.8
Run like Hell - Pink Floyd	3.0	5.5	12.8
Doctor my eyes - Jackson Brown	3.1	3.8	5.3
Girls talk - Dave Edmunds	4.3	5.0	9.5
Hungry like the wolf - Duran Duran	3.3	3.8	11.0
Average:	3.6	4.8	11.5

FIG. 8

Selection	PWC (joystick)	PWC (touchscreen)	PC music store (screen, KB, mouse)
Love over gold - Dire Straits	8.4	6.4	11.0
Material girl - Madonna	7.5	9.2	11.9
Rikki don't lose that number - Steely dan	6.8	7.5	9.5
Run like Hell - Pink Floyd	8.4	8.1	11.0
Doctor my eyes - Jackson Brown	7.2	6.0	11.5
Girls talk - Dave Edmunds	8.1	7.6	8.7
Hungry like the wolf - Duran Duran	8.1	7.1	10.2
Average:	7.8	7.4	10.5

FIG. 9a

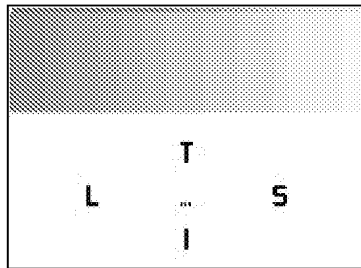


FIG. 9b

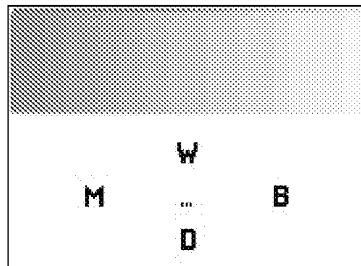


FIG. 9c

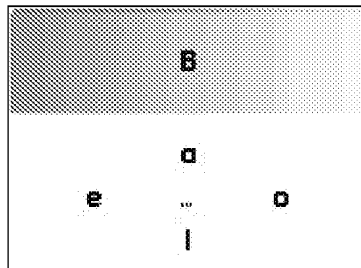


FIG. 9d

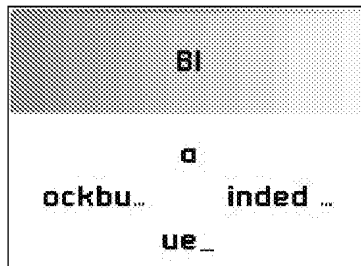


FIG. 9e

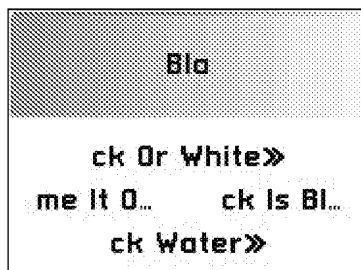
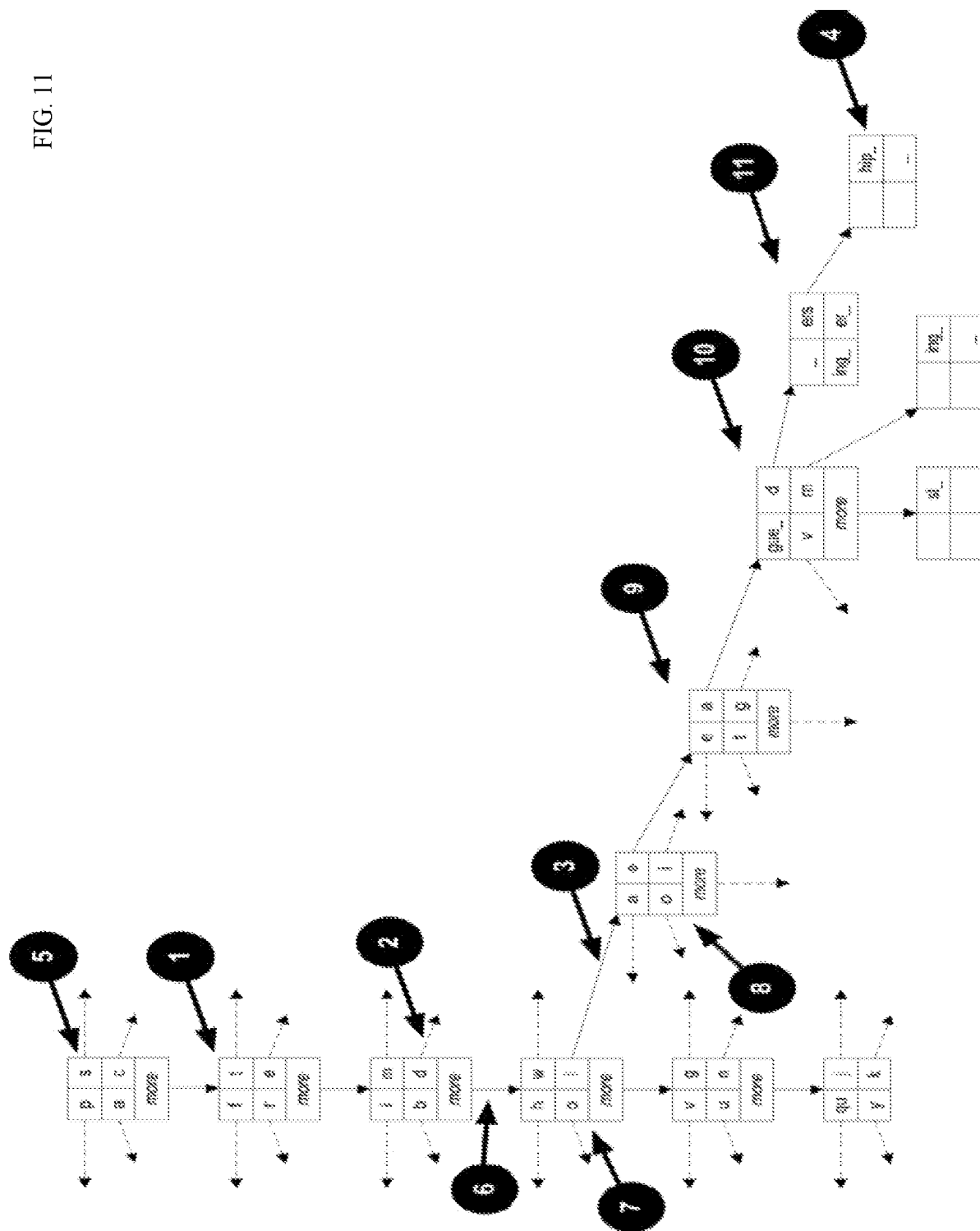


FIG. 9f

Black Or White
Michael Jackson
Dangerous
R&B
1992
Chars: 49
Clicks: 5

FIG. 11



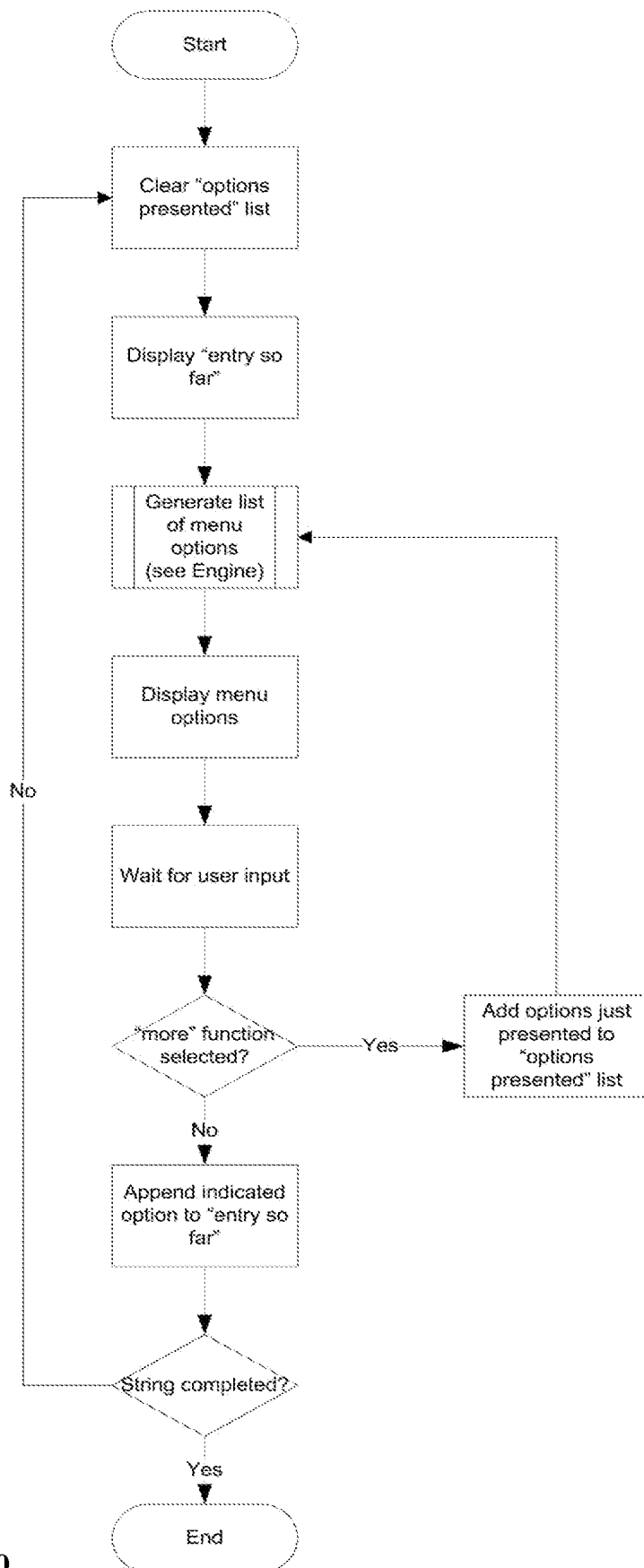


FIG. 10

Menu options presented						Values at end of call		
1	2	3	4	User action	Call parameter	"Entry so far"	"Current menu"	Comments
				Start selection	Start	"	(5)	"Entry so far" is cleared; "Current menu" is moved to initial menu (5); the system may generate and return a transaction ID to be used for subsequent calls
"s"	"c"	"a"	"p"	Select "more"	More	"	(1)	The user is looking for "l" to start their word "leadership" and continues to press more until "l" is found
"t"	"e"	"i"	"f"	Select "more"	More	"	(2)	
"m"	"d"	"b"	"i"	Select "more"	More	"	(7)	
"w"	"l"	"o"	"h"	Select "l"	Option 2	"l"	(8)	User has found and selected "l" to start the word
"e"	"i"	"o"	"a"	Select "e"	Option 1	"le"	(9)	Continuing word with "e"
"a"	"g"	"t"	"e"	Select "a"	Option 1	"lea"	(10)	
"d"	"m"	"v"	"gue"	Select "d"	Option 1	"lead"	(11)	
"ers"	"er"	"ing"	" "	Select "ers"	Option 1	"leaders"	(4)	
"hip"	" "			Select "hip"	Option 1	"leadership"	none	The word is complete

FIG. 12

FIG. 13

...	...				
knowledge	14586	left	39454	Live	13995
known	22432	leg	5333	Lived	3648
knows	8419	legal	13103	Liverpool	5517
labour	26488	legislation	6965	Lives	7172
lack	8898	legs	6507	Living	13317
lady	6514	length	7171	Loan	3815
land	17301	less	35669	Local	44220
language	18771	let	23322	Location	4030
large	33768	let's	8161	London	35142
largely	7350	letter	13589	Long	50267
larger	7639	letters	7880	Longer	4834
largest	5778	level	25360	long-term	4103
last	68063	levels	11894	Look	54354
late	20068	lewis	3730	Looked	35178
later	39496	liability	3760	Looking	25477
latest	6331	liberal	5164	Looks	9118
latter	7762	library	8206	Lord	11218
laughed	4585	licence	3492	Lose	4771
law	24510	lies	3828	Loss	11601
laws	4816	life	56592	Losses	3841
lay	6875	lifespan	3698	Lost	16625
lead	11721	light	20090	Lot	18319
leader	8669	lights	4336	Lots	4077
leaders	7234	like	142767	Love	16167
leadership	4686	likely	22592	Lovely	6263
leading	9619	limited	5146	Low	16144
league	8103	line	22333	Lower	10882
learn	6204	lines	10172	Ltd	5066
learning	4257	link	3494	Lucky	4008
least	4642	lips	5032	Luke	3531
leave	18388	list	11644	Lunch	4998
leaving	9240	listening	3506	Lying	4401
led	15451	literary	3385	Machine	8902
lee	3587	Literature	5210	Machines	4461
leeds	4522	Little	46355	Made	94386
				...	...

FIG. 14

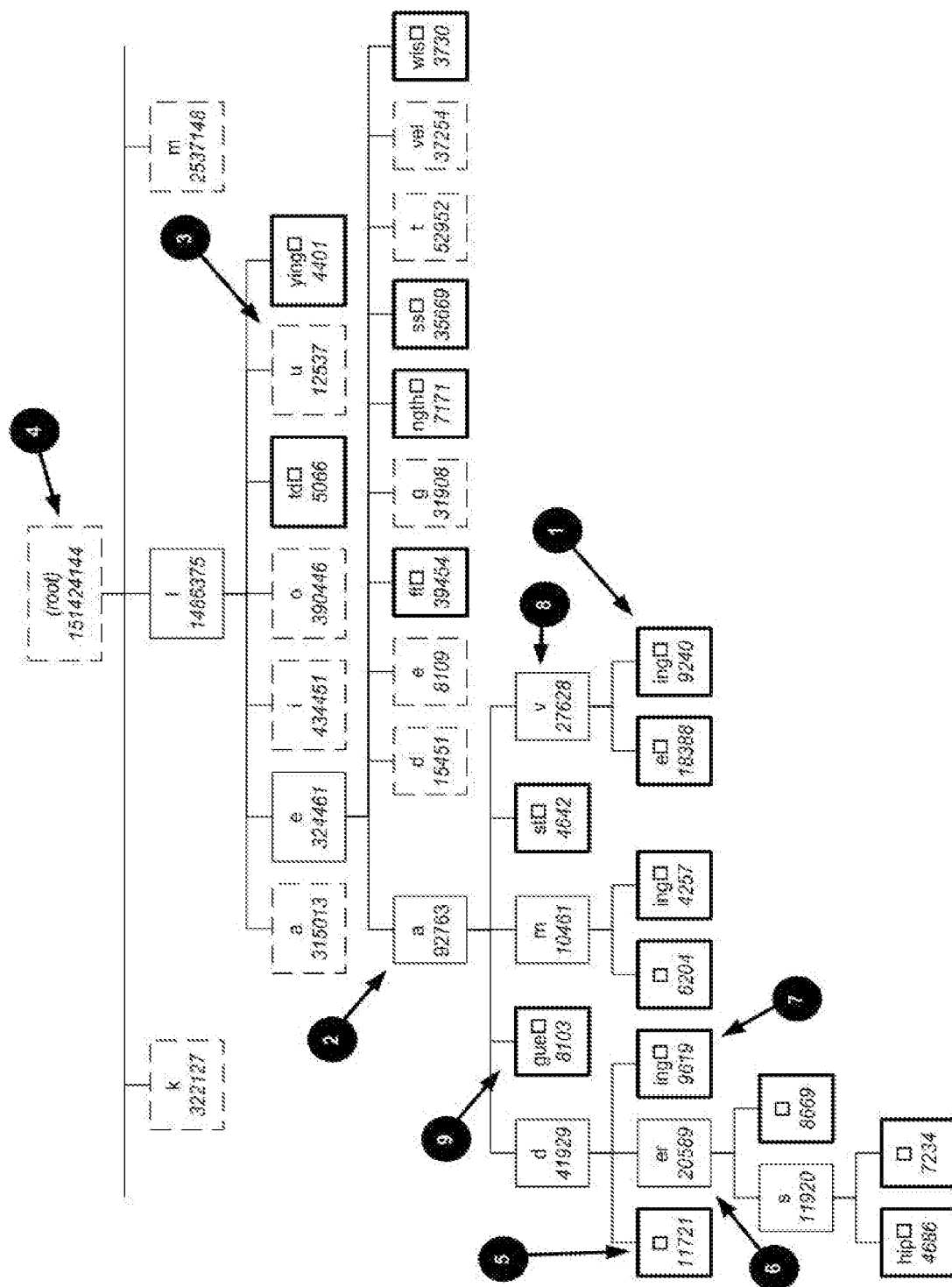


FIG. 15

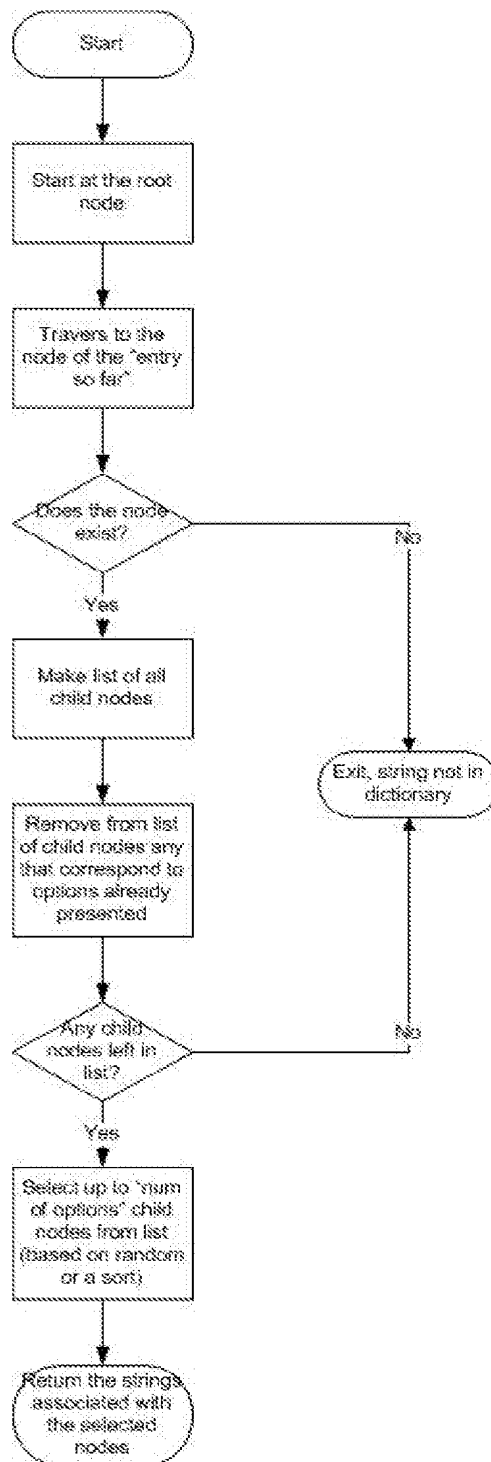


FIG. 16

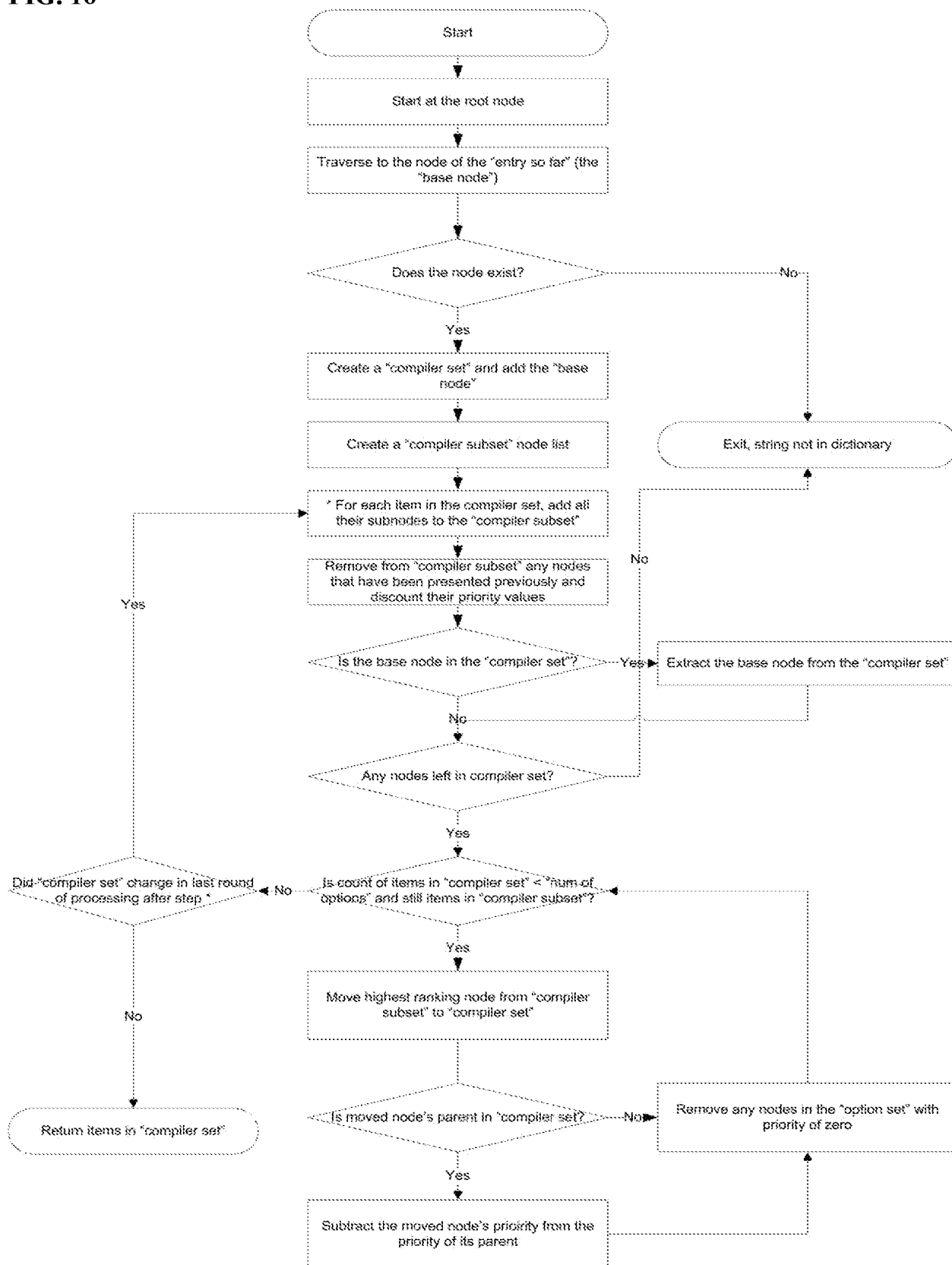


FIG. 17

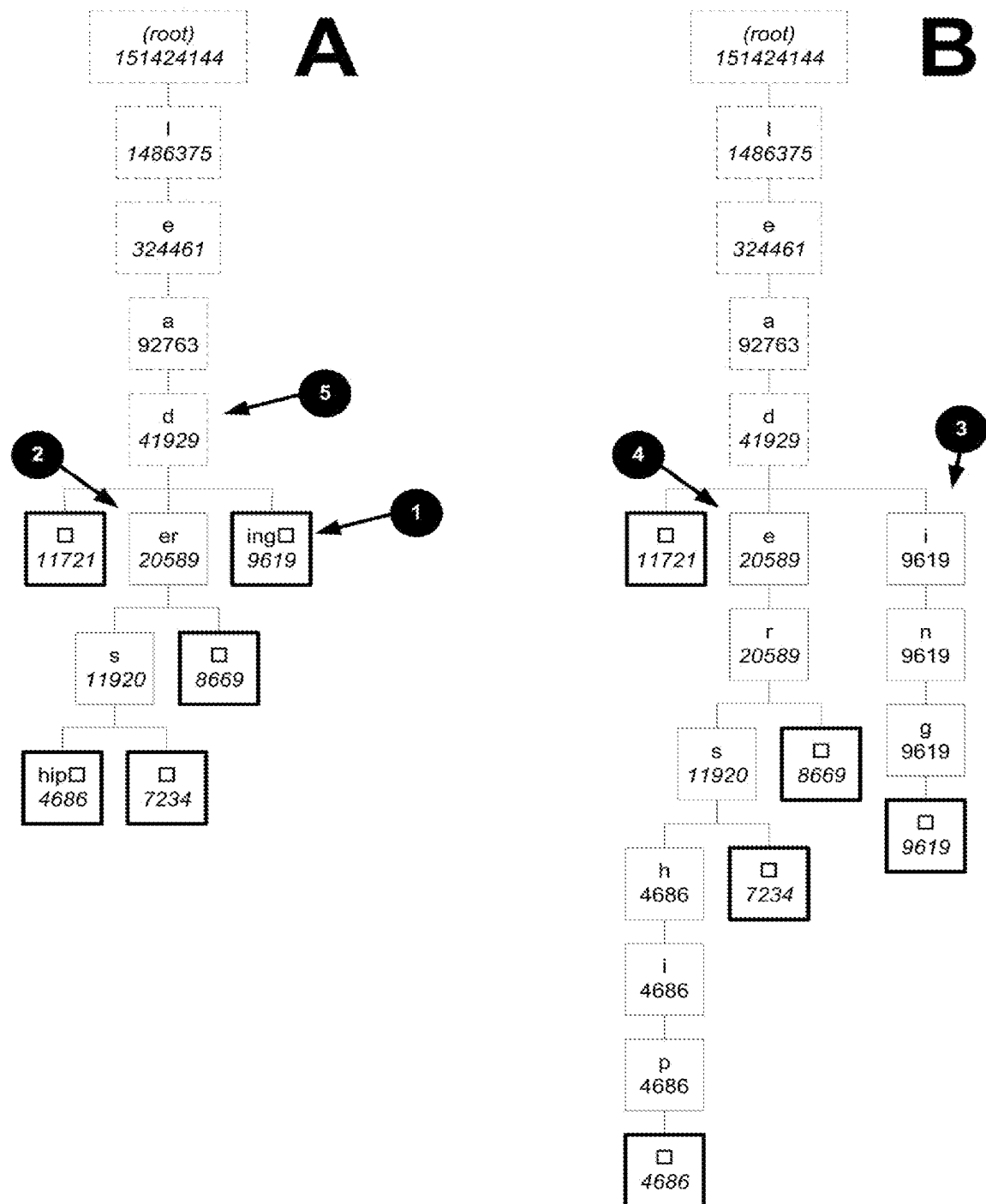


FIG. 18a

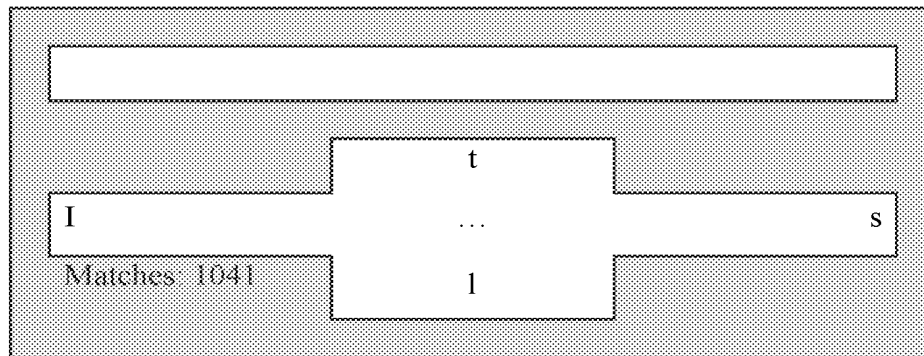


FIG. 18b

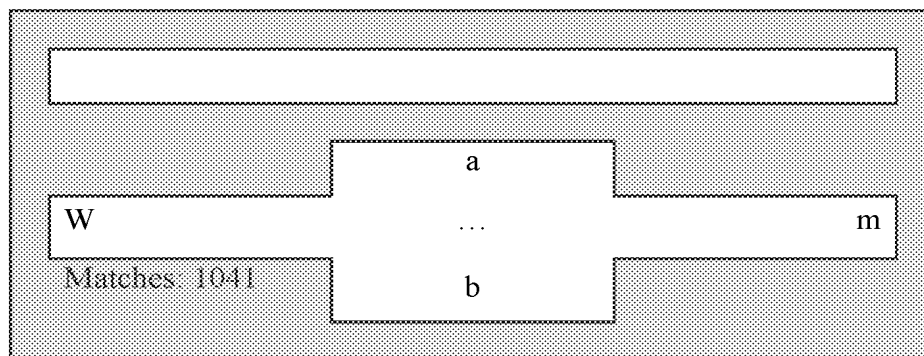


FIG. 18c

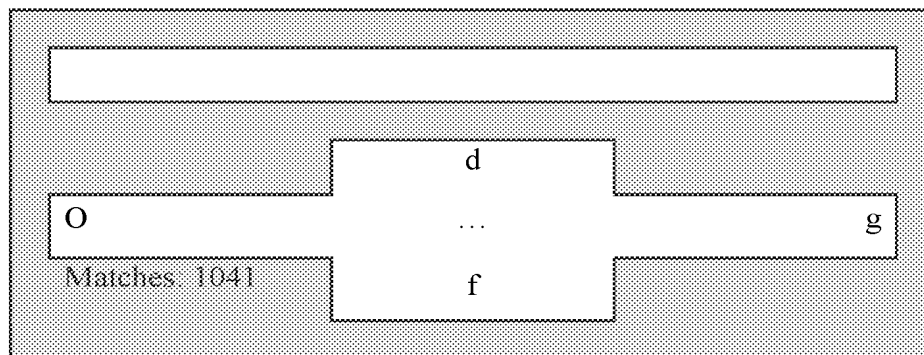


FIG. 18d

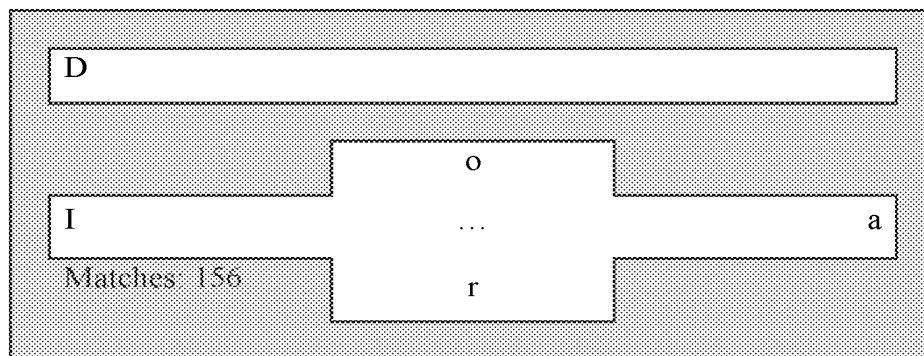


FIG. 18e

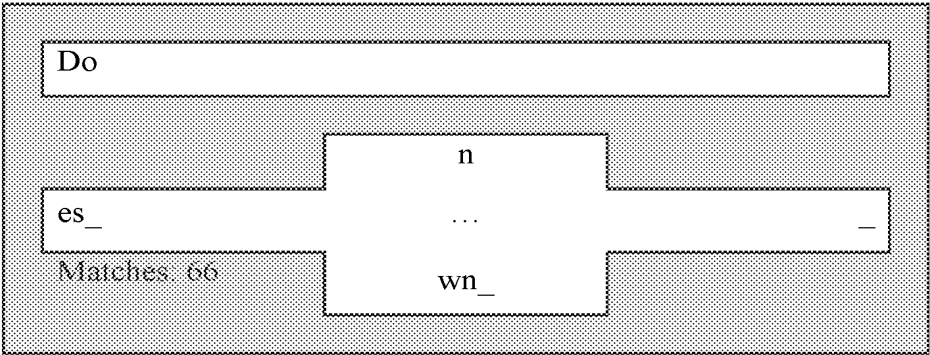


FIG. 18f

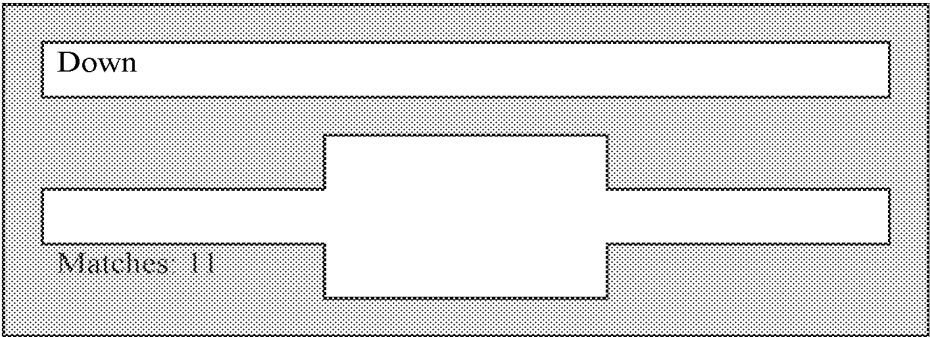


FIG. 19

Burning Down The House
Don't bring me down
Down On The Corner
Down to the Waterline
Get Down Tonight
Right Down the Line
Rockin' Down the Highway
Roll Over Lay Down
The Fire Down Below (Live)
Tie Your Mother Down
Won't Back Down

FIG. 20

Word	Frequency
back	1
below	1
bring	1
burning	1
corner	1
don't	1
fire	1
get	1
highway	1
house	1
lay	1
line	1
live	1
me	1
mother	1
on	1
over	1
right	1
rockin'	1
roll	1
the	6
tie	1
to	1
tonight	1
waterline	1
won't	1
your	1

FIG. 21a

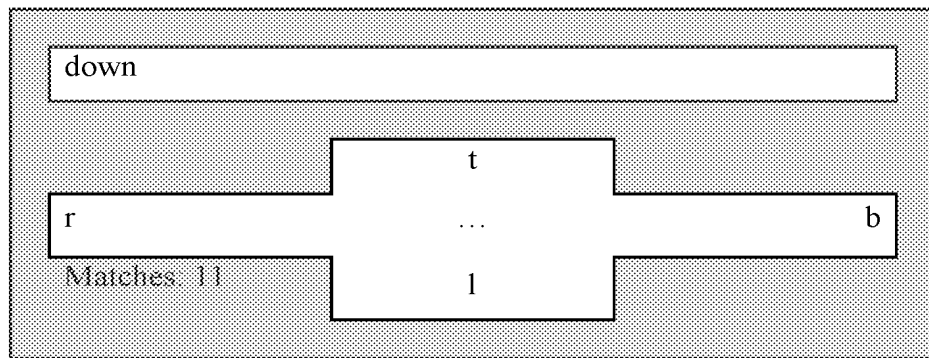


FIG. 21b

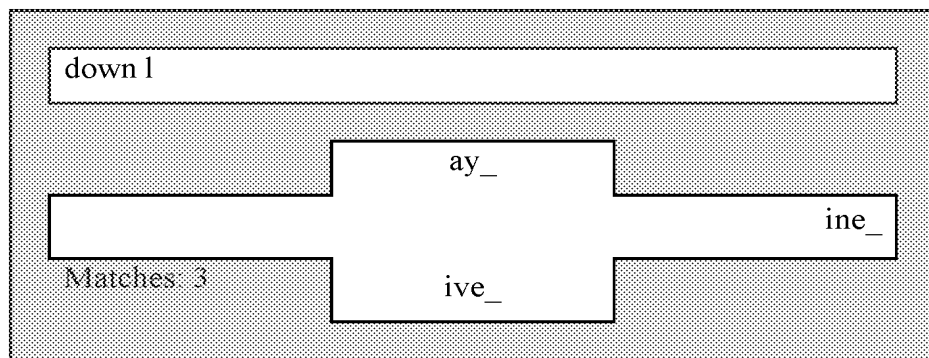
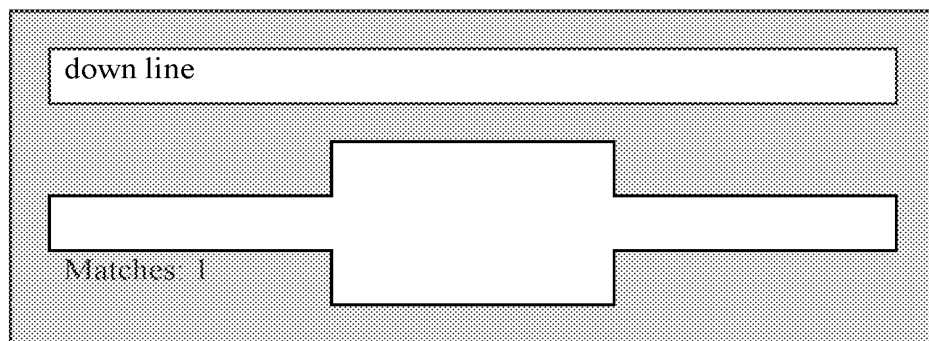


FIG. 21c



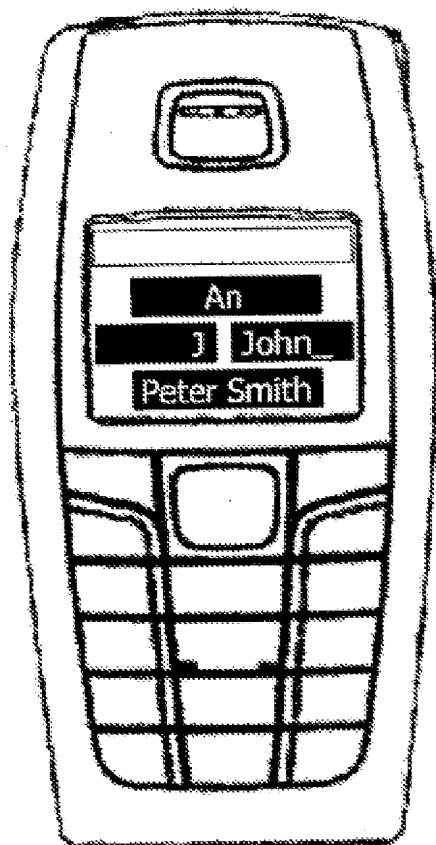


FIG. 22A

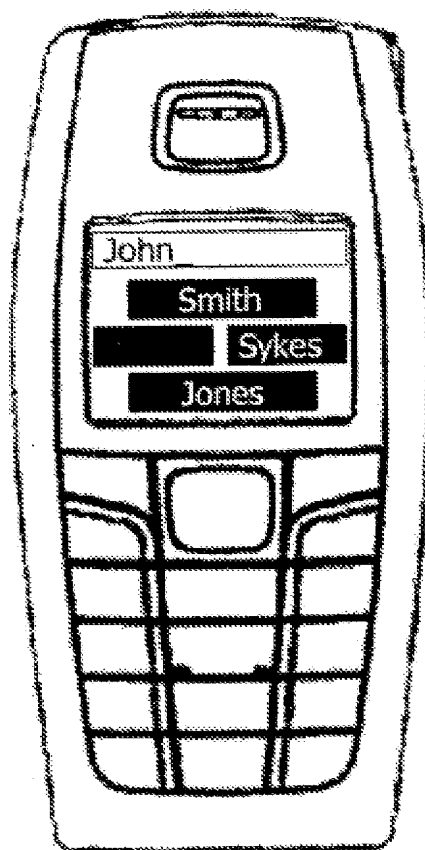
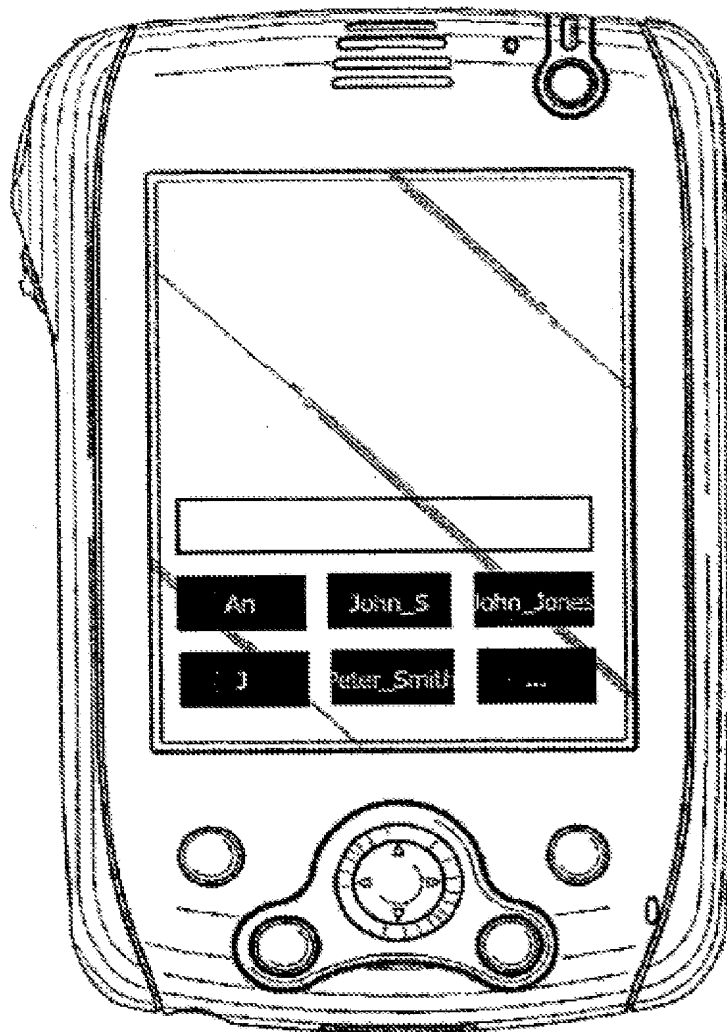


FIG. 22B

FIG. 23



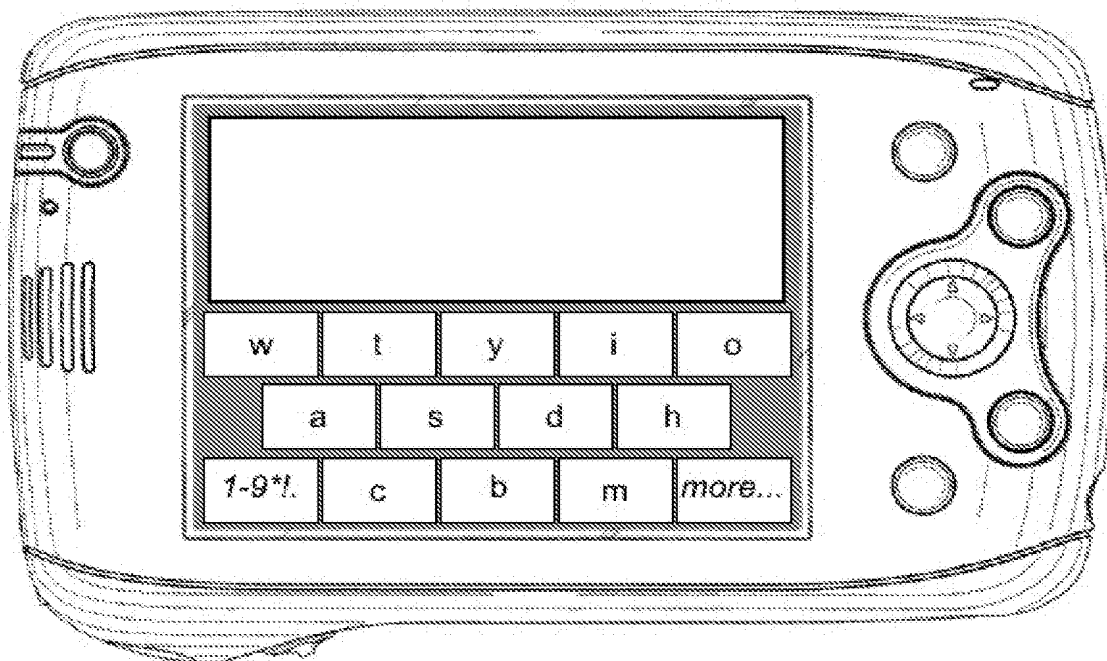


FIG. 24

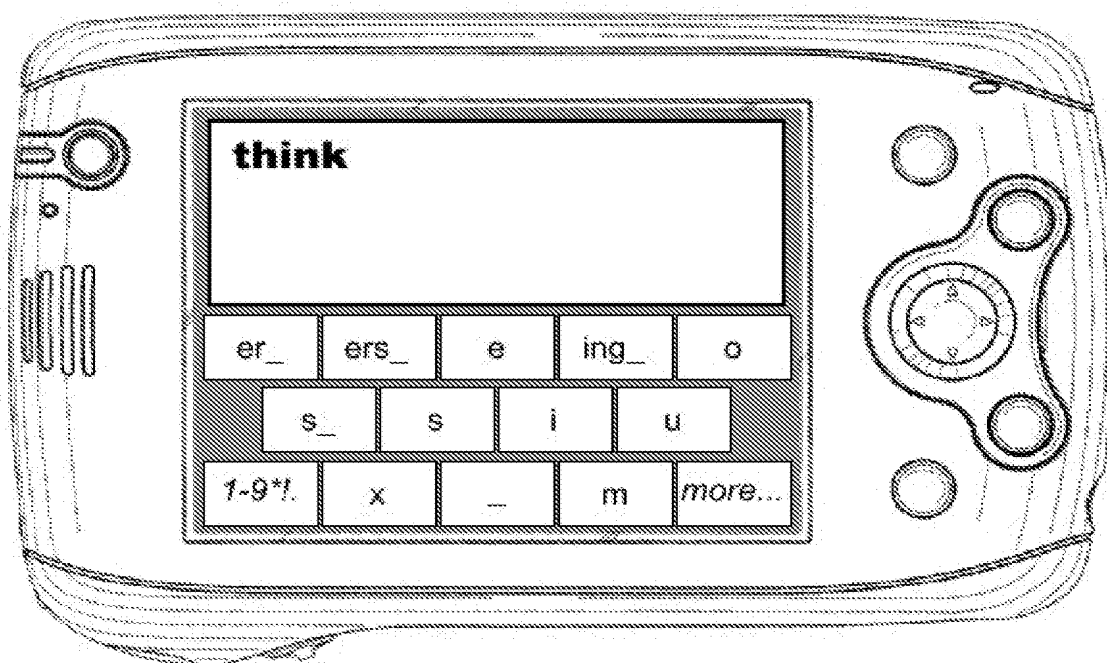


FIG. 25

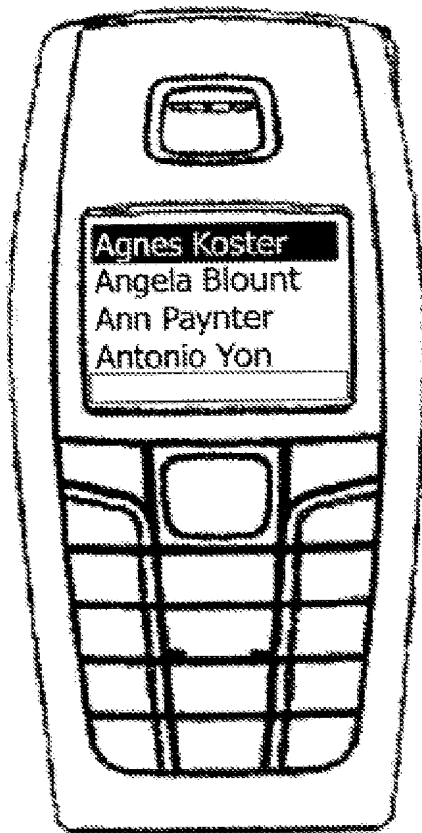


FIG. 26

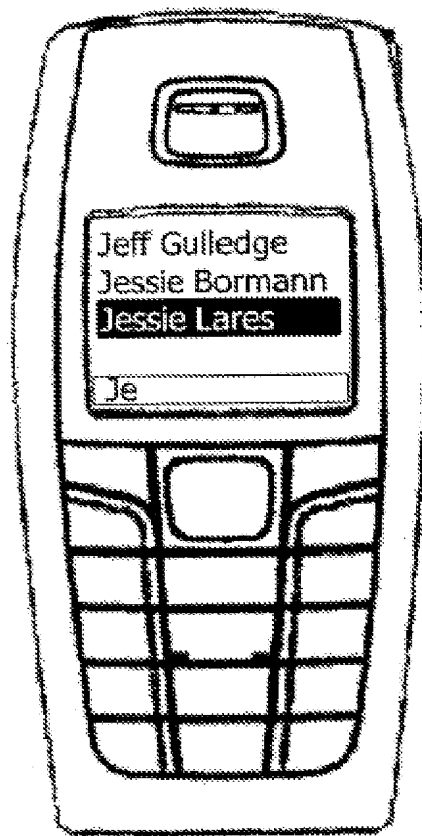


FIG. 27

FIG. 28

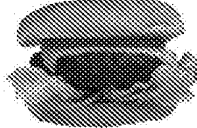
Meal		Components			Popularity
Muffin break					33
Pretzel break					15
Bagel break					27
Pizza meal					37
Burger meal					23
Burger snack					38
Hotdog snack					62
Taco snack					35

FIG. 29

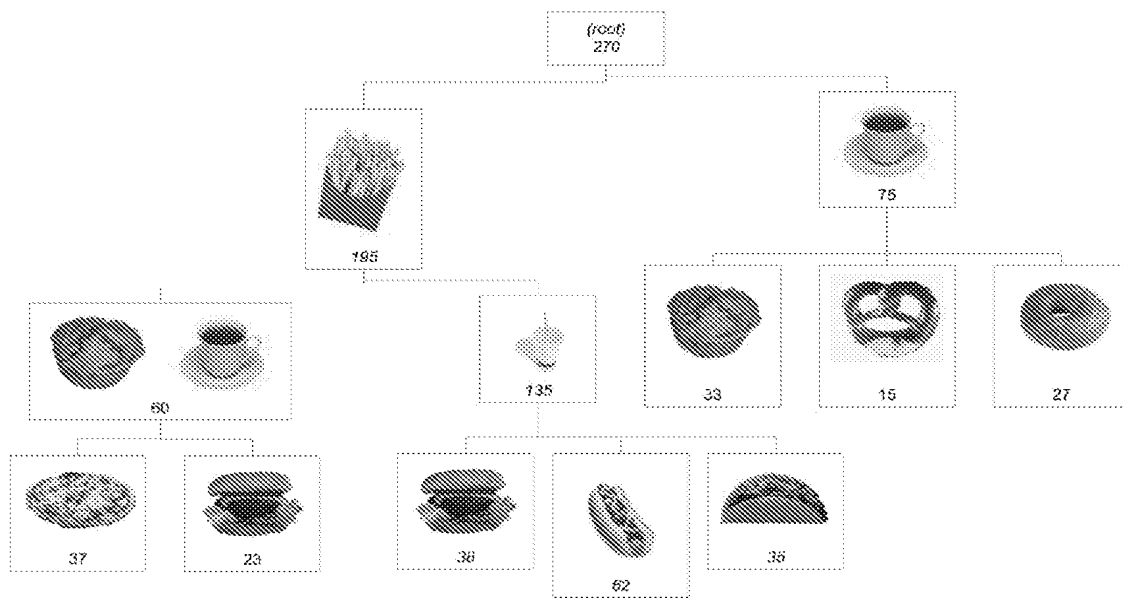


FIG. 30a

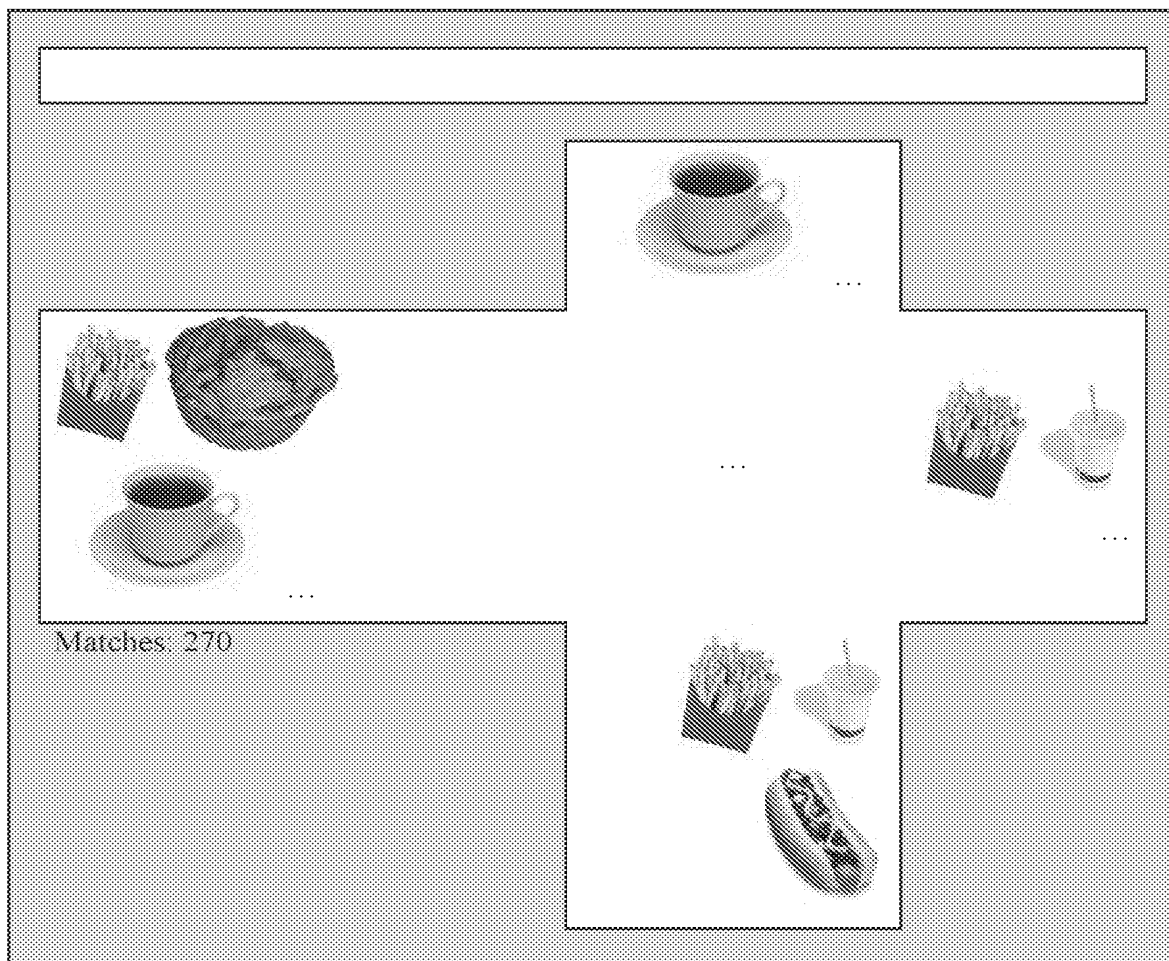


FIG. 30b

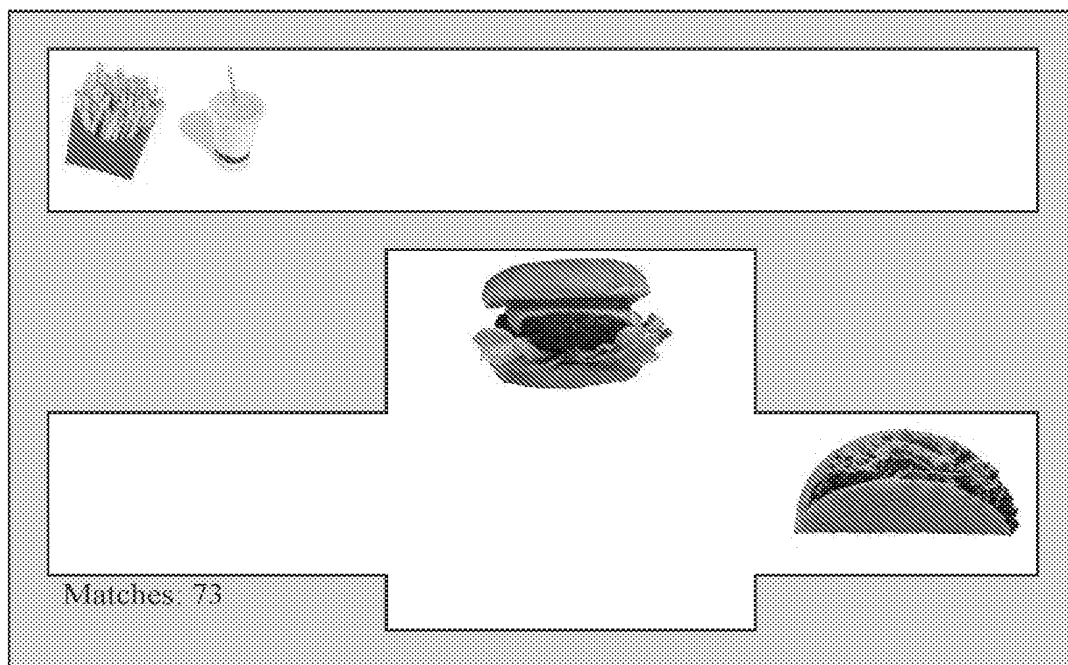


FIG. 30c

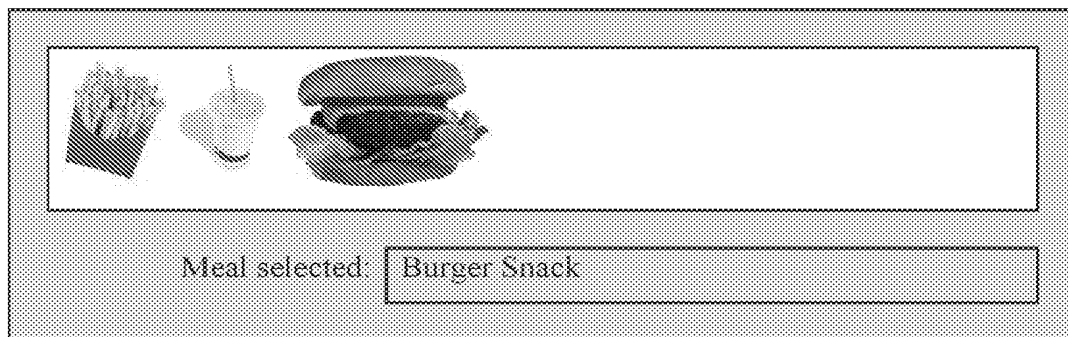


FIG. 31a

Yellow Pages

State:

City:

Category:

FIG. 31b

W N

FIG. 31c

yoming_ isconsin_

FIG. 31d

Yellow Pages

State:

City:

Category:

FIG. 32a

Yellow Pages

State:

City:

Category:

FIG. 32b

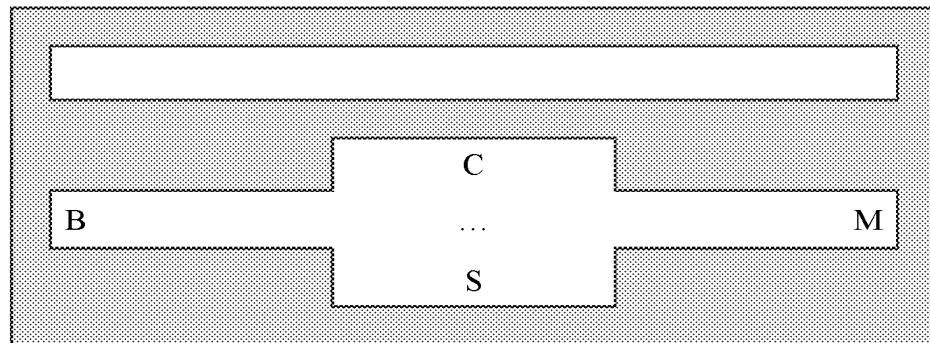


FIG. 32c

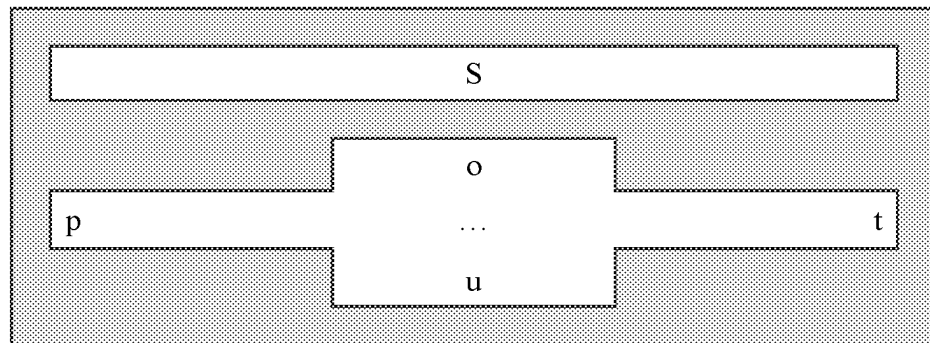


FIG. 32d

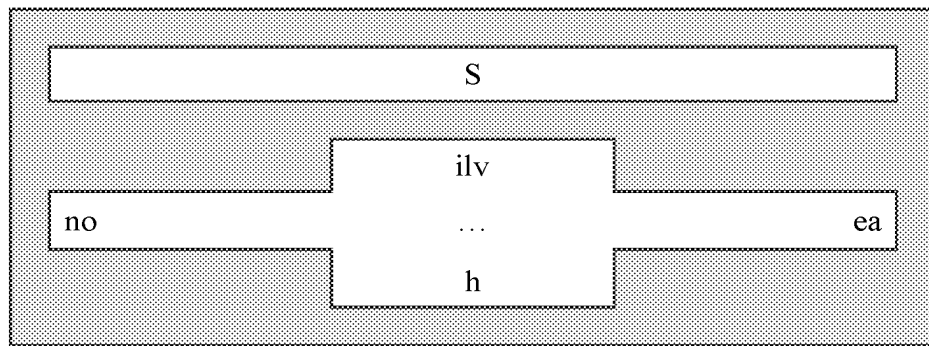


FIG. 32e

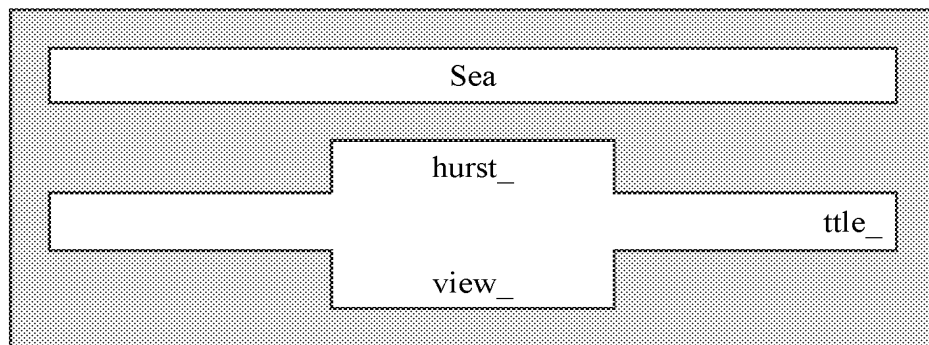


FIG. 32f

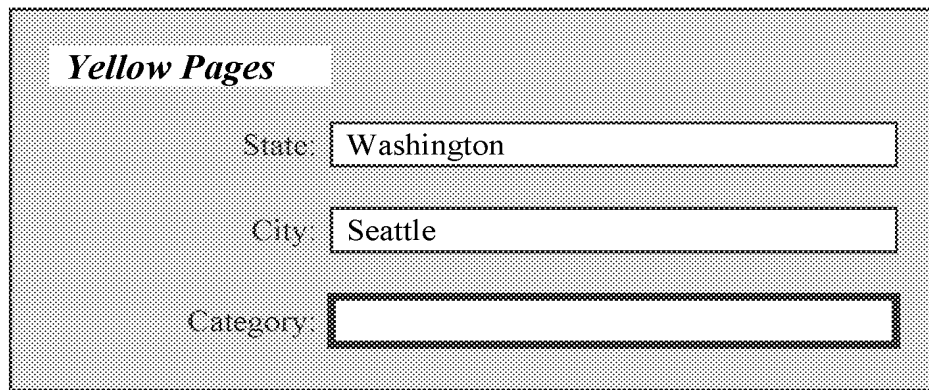
Yellow Pages

State:

City:

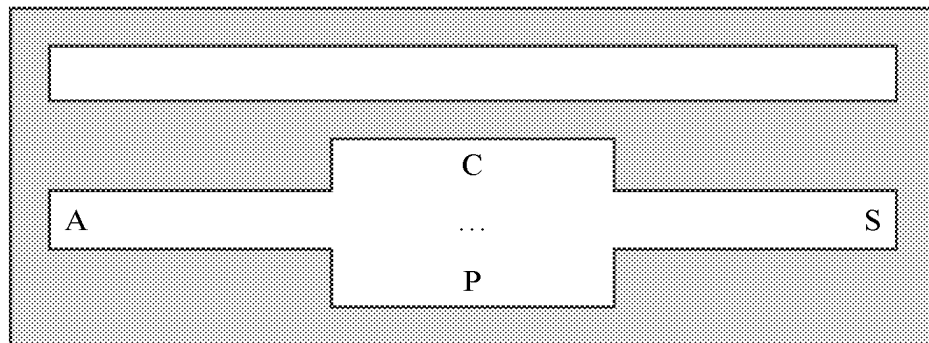
Category:

FIG. 33a



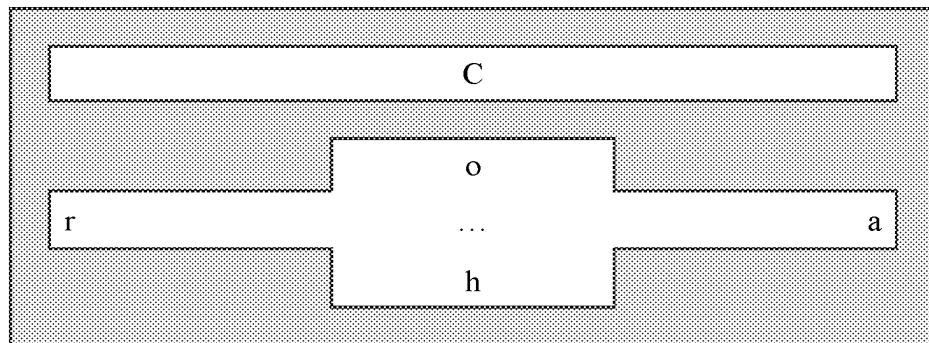
A search form titled "Yellow Pages" in a stylized font. It contains three input fields: "State" with the text "Washington", "City" with the text "Seattle", and "Category" which is empty. The form has a light gray background and a thin border.

FIG. 33b



A search form with a light gray background and a thin border. It features a long horizontal input field at the top. Below it, there is a central box containing the letters "C", "...", and "P" stacked vertically. To the left of this central box is a smaller box containing the letter "A", and to the right is a smaller box containing the letter "S".

FIG. 33c



A search form with a light gray background and a thin border. It features a long horizontal input field at the top containing the letter "C". Below it, there is a central box containing the letters "o", "...", and "h" stacked vertically. To the left of this central box is a smaller box containing the letter "r", and to the right is a smaller box containing the letter "a".

FIG. 33d

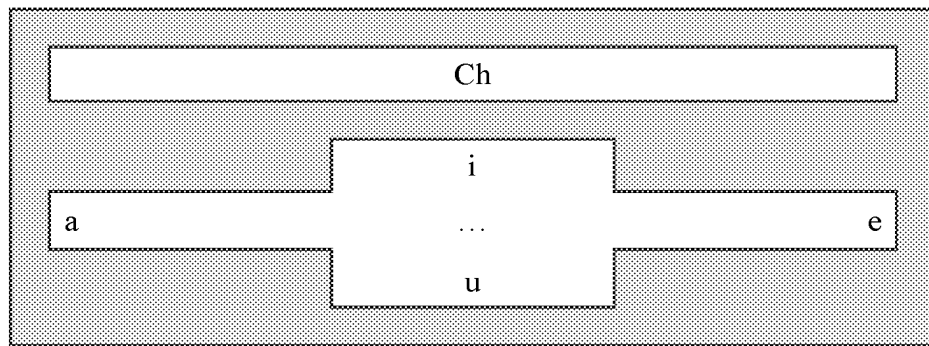


FIG. 33e

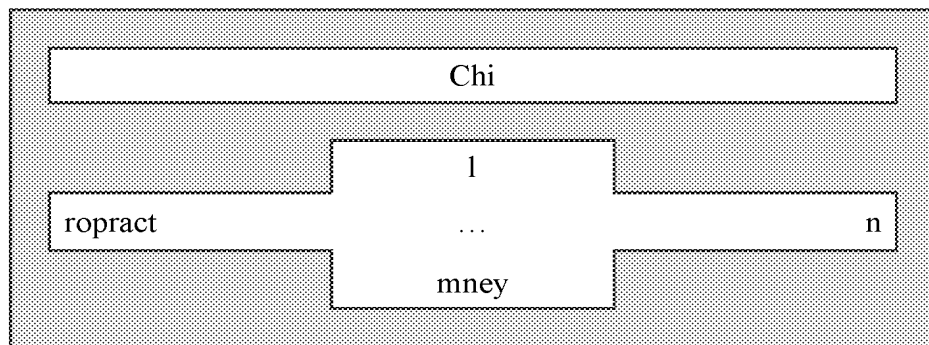


FIG. 33f

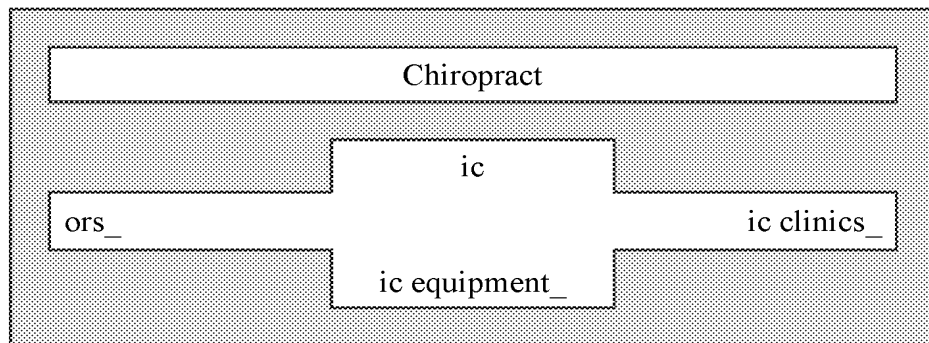
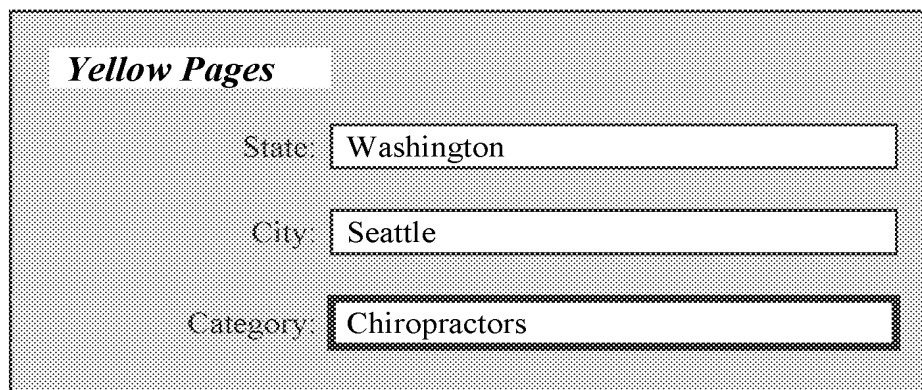


FIG. 33g



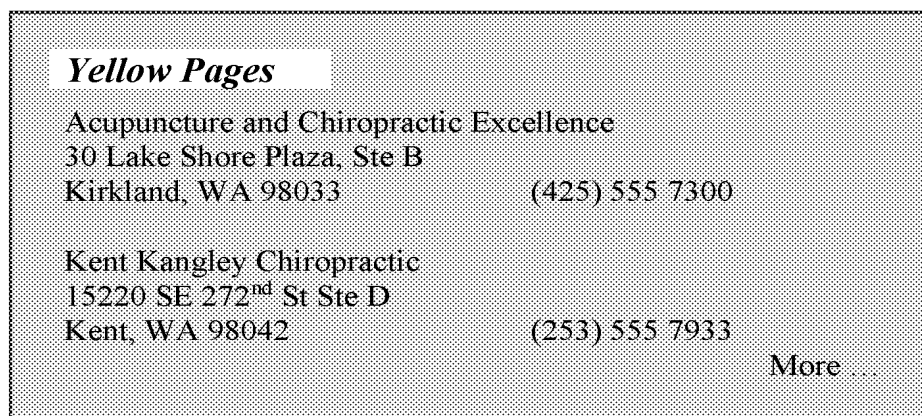
Yellow Pages

State:

City:

Category:

FIG. 33h



Yellow Pages

Acupuncture and Chiropractic Excellence
30 Lake Shore Plaza, Ste B
Kirkland, WA 98033 (425) 555 7300

Kent Kangley Chiropractic
15220 SE 272nd St Ste D
Kent, WA 98042 (253) 555 7933

[More ...](#)

FIG. 34a

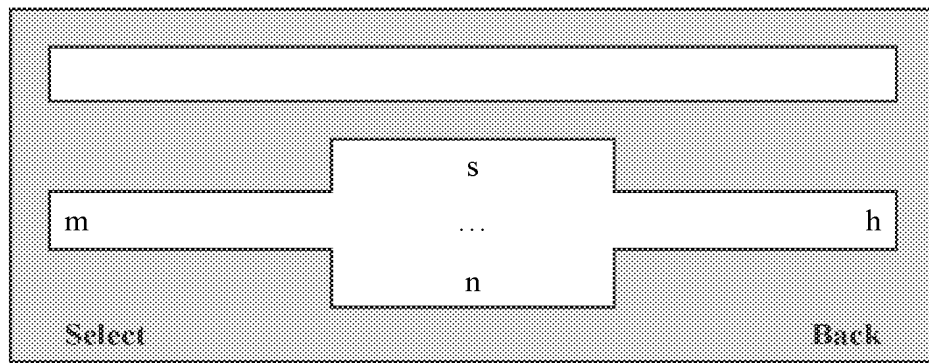


FIG. 34b

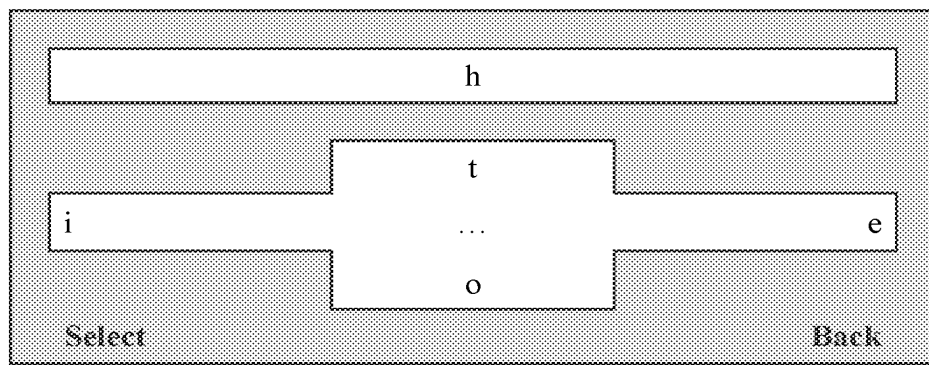


FIG. 34c

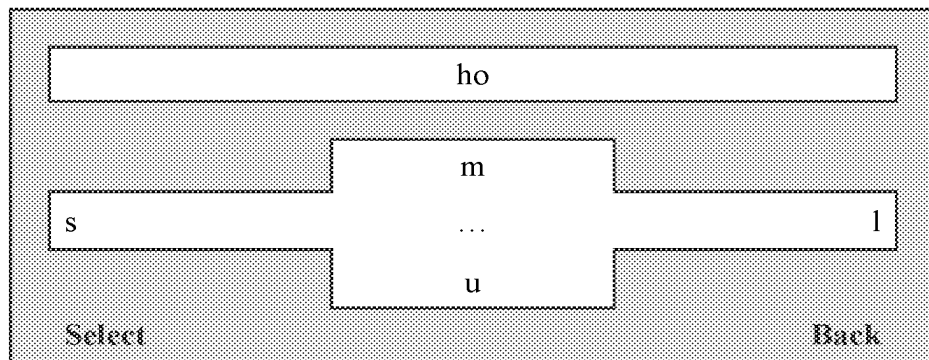


FIG. 34d

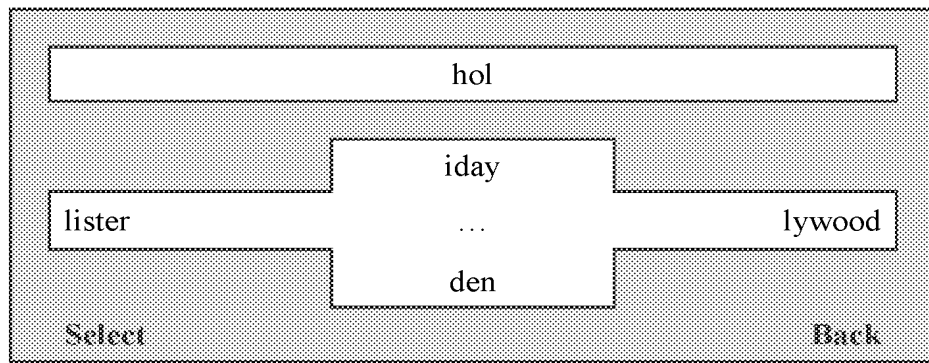


FIG. 34e

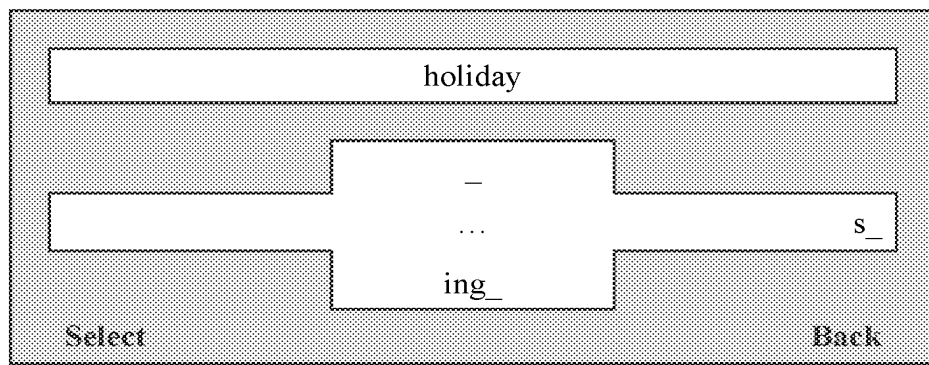


FIG. 34f

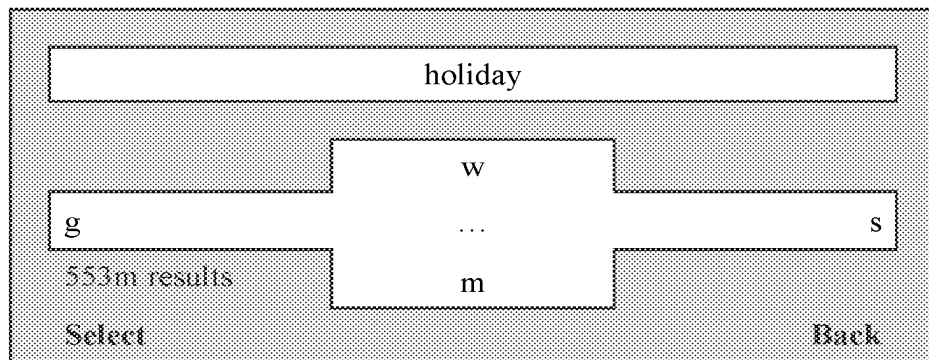


FIG. 34g

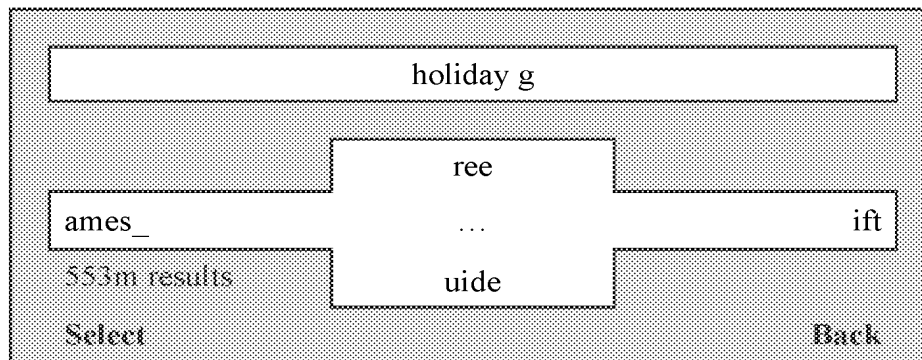


FIG. 34h

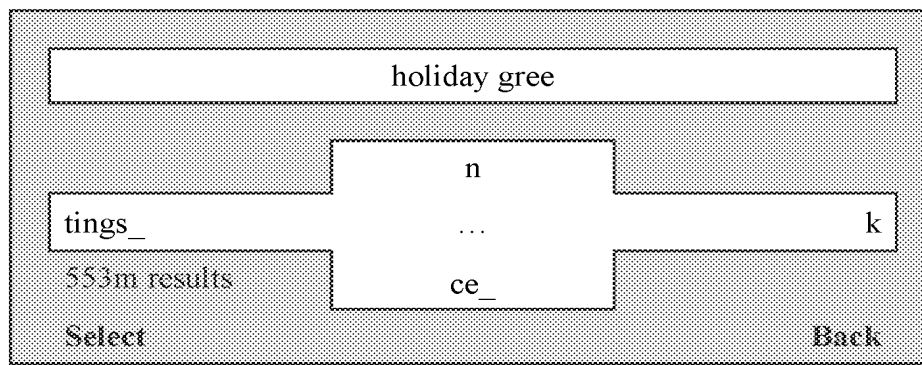


FIG. 34i

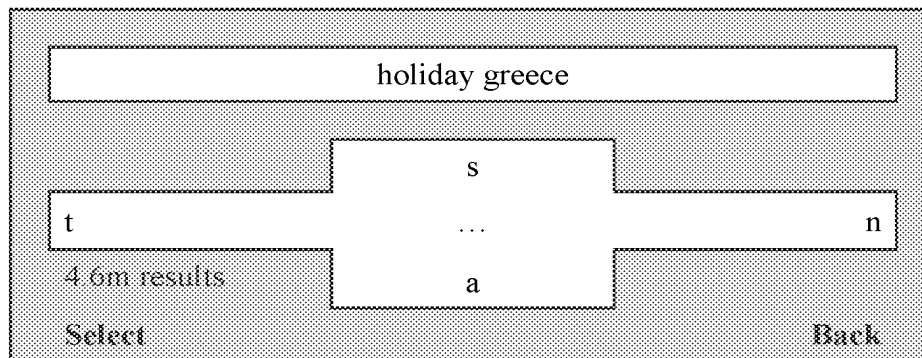


FIG. 34j



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	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		
<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>			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Kevin	W.	Dinn		
Residence Information (Select One) US Residency • Non US Residency Active US Military Service					
City	Mount Kuring-Gai, NSW		Country of Residence ⁱ	AU	
Mailing Address of Inventor:					
Address 1	2 Glenlee Close				
Address 2					
City	Mount Kuring-Gai, NSW		State/Province		
Postal Code	2080	Country ⁱ	AU		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	20583		
Email Address		<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	Improved Process and Apparatus for Selecting An Item From A Database		
Attorney Docket Number	011844-0034-999	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	36	Suggested Figure for Publication (if any)	1

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **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.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	20583		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16806753	2020-03-02

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		011844-0034-999	
		Application Number			
Title of Invention		Improved Process and Apparatus for Selecting An Item From A Database			

Prior Application Status		Abandoned		Remove	
Application Number		Continuity Type		Prior Application Number	
16806753		Continuation of		15615478	
Prior Application Status		Patented		Remove	
Application Number		Continuity Type		Prior Application Number	
15615478		Continuation of		12448601	
Filing Date (YYYY-MM-DD)		Patent Number		Issue Date (YYYY-MM-DD)	
2010-02-22		9697264		2017-07-04	
Prior Application Status		Expired		Remove	
Application Number		Continuity Type		Prior Application Number	
12448601		a 371 of international		PCTAU2007002010	
Prior Application Status		Expired		Remove	
Application Number		Continuity Type		Prior Application Number	
PCTAU2007002010		Claims benefit of provisional		60878083	
Prior Application Status		Expired		Remove	
Application Number		Continuity Type		Prior Application Number	
PCTAU2007002010		Claims benefit of provisional		60960345	
Filing or 371(c) Date (YYYY-MM-DD)		Filing or 371(c) Date (YYYY-MM-DD)		Filing or 371(c) Date (YYYY-MM-DD)	
2007-01-03		2007-09-26			

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

		Remove	
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

<p>This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.</p> <p>☐ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.</p>	
--	--

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	<input type="button" value="Remove"/>
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p> <p style="text-align: right;"><input type="button" value="Clear"/></p>		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>		
Name of the Deceased or Legally Incapacitated Inventor: <div style="border: 1px solid black; height: 20px; width: 100%;"></div>		
If the Applicant is an Organization check here. ☒		
Organization Name	Kannuu Pty Ltd.	
Mailing Address Information For Applicant:		
Address 1	2 Glenlee Close	
Address 2		
City	Mount-Kuring-Gai, NSW	State/Province
Country	AU	Postal Code
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

Assignee	1			
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
				<input type="button" value="Remove"/>
If the Assignee or Non-Applicant Assignee is an Organization check here.				☐
Prefix	Given Name	Middle Name	Family Name	Suffix
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1		<input type="text"/>		
Address 2		<input type="text"/>		
City	<input type="text"/>	State/Province	<input type="text"/>	
Country ⁱ	<input type="text"/>	Postal Code	<input type="text"/>	
Phone Number	<input type="text"/>	Fax Number	<input type="text"/>	
Email Address	<input type="text"/>			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Vishal V. Khatri/		Date (YYYY-MM-DD)	2020-07-13
First Name	Vishal	Last Name	Khatri	Registration Number
				51873
Additional Signature may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	011844-0034-999
		Application Number	
Title of Invention	Improved Process and Apparatus for Selecting An Item From A Database		

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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Application Number : (unassigned)
Applicant : Kevin Dinn
Filed : July 13, 2020
Tech Cntr/AU : (unassigned)
Examiner : (unassigned)
Entitled : PROCESS AND APPARATUS FOR SELECTING
AN ITEM FROM A DATABASE

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

PRELIMINARY AMENDMENT

Sir:

Prior to prosecution on the merits, please amend the above-identified application as follows:

- Amendments to the Claims with a complete claim listing; and
- Remarks.

Amendments to the Claims:

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1-26. (Cancelled)

27. (New) A system for selecting items associated with corresponding item identifiers from a plurality of items, the system comprising:

a television display;

a remote control device comprising a 4-way directional controller; and

a computer processor configured to:

generate, on the television display, a first display of an on-screen keyboard including one or more parts of an item identifier for selection;

enable the selection of the one or more parts by utilizing the 4-way directional controller;

in response to the selection of the one or more parts of item identifiers, generate a display of a further one or more parts of item identifiers for selection, wherein the further one or more parts of item identifiers are arranged on the display relative to one another and corresponding to an up, down, left and right position;

enable selection of the further one or more parts of item identifiers in order to add to the selected one or more parts to build a larger part or whole of a particular item identifier; and

select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers;

wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word; and

wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

28. (New) The system of claim 27, wherein the processor is located within the television.

29. (New) The system of claim 27, wherein the processor is further configured to enable navigation and selection of the one or more parts of item identifiers and the further one or more parts of item identifiers by way of the 4-way directional controller.

30. (New) The system of claim 27, wherein the further one of more parts is selected for display based at least in part on a ranking scheme, and the highest ranked of the further one or more parts of item identifiers is positioned in one of the up, down, left and right positions.

31. (New) The system of claim 30, wherein the highest ranked of the further one or more parts of item identifiers being positioned in one of the up, down, left and right positions is specifically positioned in a circular menu over the on-screen keyboard on the television display indicating the item identifiers to be selected by movements of the user in the directions left, right, up, and down using the 4-way directional controller.

32. (New) The system of claim 28, wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory.

33. (New) The system of claim 30, wherein the items are stored in a database and indexed based on the item identifiers and capable of being queried.

34. (New) The system of claim 30, wherein the number of key presses of the remote control keypad to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.

35. (New) The system of claim 27, wherein the computer processor is further configured to:

iterate the selection until the particular item identifier is completed, and enable selection of the particular item identifier to select the item.

36. (New) The system of claim 27, wherein the computer processor configured to generate the initial display further includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.

37. (New) The system of claim 36, wherein the at least one predetermined criterion is selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.

38. (New) The system of claim 27, wherein the computer processor configured to generate the initial display further includes displaying a plurality of parts of item identifiers.

39. (New) The system of claim 27, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.

40. (New) A system for selecting items, the system comprising:
a television comprising a display;
a remote control comprising an up, down, left, right directional controller with a selection key located in centrally relative to the up, down, left, and right keys; and
a computer processor configured to:
display in a first area of the display of the television, a first plurality of portions of item identifiers, wherein the item identifiers correspond to the plurality of items in the database, and the first plurality of portions of item identifiers is displayed in a position corresponding to the up, down, left, right select directional controller of the remote control;
enable selection of one of the first plurality of portions of the item identifiers by using the up, down, left, or right, select functionality of the directional controller of the remote control to navigate to the one of the first plurality of portions of the item identifiers with a single activation of the up, down, left, or right key prior to selection with the selection key;
display the selected portion of the item identifier in a second area of the display of the television, wherein the second area of the display is separate from the first area of the display;
display in response to the selection of the one of the first plurality of the portions of item identifiers and in the first area of the display, a second plurality of portions of the item identifiers, the second plurality of portions of the item identifiers comprising at least two portions of the item identifiers chosen for display based on the selection of the one of the plurality of portions of the item identifiers;
enable selection of one of the second plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the directional controller of the remote control to navigate to the one of the second plurality of portions of the item identifiers with a single activation of the up, down, left, or right key prior to selection with the selection key;
combine the portion of the item identifier selected from the second plurality of portions of the item identifiers with the portion of the item identifier

selected from the first plurality of portions of the item identifiers to create a larger portion of the item identifier; and

display larger portion of the item identifier in the second area of the display of the television;

wherein the first plurality of portions of item identifiers and the second plurality of portions of item identifiers are orthographic symbols representing at least a writing language;

wherein the at least two portions of item identifiers chosen for display based on the selection of the one of the plurality of portions of item identifiers are chosen to minimize a number of actuations of the directional controller of the remote control that is otherwise necessary to input the item identifier; and

wherein the second plurality of portions of item identifiers comprises four portions of item identifiers.

41. (New) The system of claim 40, wherein the enabling of the selection of one of the second plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the remote control is further enabled via a circular menu on the display indicating the item identifiers to be selected.

42. (New) The system of claim 40, wherein the computer processor is further configured to select one of the further one or more parts of item identifiers in response to a single activation of a corresponding up, down, left, or right key on the directional controller of the remote control.

43. (New) The system of claim 40, wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory on the television.

44. (New) The system of claim 40, wherein the items are indexed based on the item identifiers and capable of being queried.

45. (New) The system of claim 40, wherein the number of key presses of the up, down, left, right directional controller of the remote control to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.

46. (New) The system of claim 40, wherein the selected two portions of item identifiers are chosen based on at least one predetermined criterion selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.

47. (New) The system of claim 40, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.

48. (New) A system for selecting items associated with corresponding item identifiers, the system comprising:

- an output display of a television;

- a remote control device comprising a directional input device with an up, down, left, right functionality; and

- a computer processor contained within the television configured to:

- generate a first display on the output display, the first display

comprises:

- a part of an item identifier corresponding to a first set of items

- and

- a part of an item identifier corresponding to a second set of items;

enable selection of one of the two parts of the item identifiers;
generate, in response to the selection of the one of the two parts of item identifiers, a further display on the output display, the further display comprises:
an additional part of an item identifier corresponding to a subset of the selected set of items and
another additional part of an item identifier corresponding to another subset of the selected set of items;
enable selection of one of the two additional parts of the item identifiers;
combine the selected one of the two parts of the item identifiers with the selected one of the two additional parts of the item identifiers to create a larger part of the item identifiers; and
display the larger part of the item identifiers on the output display, wherein the additional parts of the item identifiers are shorter than complete item identifiers; and
wherein the up, down, left, right, select functionality of the remote control keypad enables the selection of portions of item identifiers specifically positioned in a circular menu on the display.

49. (New) The system of claim 48, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.

REMARKS

Claims 27-49 are pending. Claims 1-26 have been cancelled. Claims 27-49 are newly presented. No new matter has been added.

It is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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Application Number: 16927723

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