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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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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
61/875,192	09/09/2013		330	2104-052-C38-USP		

CONFIRMATION NO. 4553

UPDATED FILING RECEIPT

32964
DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

OC000000066873492

Date Mailed: 02/28/2014

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Benjamin Firooz Ghassabian, Jerusalem, ISRAEL;

Applicant(s)

Benjamin Firooz Ghassabian, Jerusalem, ISRAEL;

Power of Attorney:
David Klein--41118

If Required, Foreign Filing License Granted: 09/26/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/875,192**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

DATA ENTRY SYSTEMS

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

GRANTED

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

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

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national

security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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

SelectUSA

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.

Electronic Patent Application Fee Transmittal

Application Number:	61875192
Filing Date:	09-Sep-2013
Title of Invention:	DATA ENTRY SYSTEMS
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-052-C38-USP

Filed as Small Entity

Provisional Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Provis. Appl Size fee per 50 sheets >100	2085	1	200	200
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($)
Miscellaneous:				
		Total in USD ($)		**200**

Electronic Acknowledgement Receipt	
EFS ID:	17362659
Application Number:	61875192
International Application Number:	
Confirmation Number:	4553
Title of Invention:	DATA ENTRY SYSTEMS
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-052-C38-USP
Receipt Date:	11-NOV-2013
Filing Date:	09-SEP-2013
Time Stamp:	11:38:28
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$200
RAM confirmation Number	10428
Deposit Account	
Authorized User	

File Listing:

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

1	Fee Worksheet (SB06)	fee-info.pdf	30065 61a1b0ae3fe0246080a927d62452ccf012ceee23c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	30065		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
61/875,192	09/09/2013	Benjamin Firooz Ghassabian	2104-052-C38-USP

CONFIRMATION NO. 4553

FORMALITIES LETTER

OC000000064044668

32964
DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

Date Mailed: 10/01/2013

NOTICE TO FILE MISSING PARTS OF PROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(c)

Filing Date Granted

An application number and filing date have been accorded to this provisional application. The items indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is $ **200** for a small entity

- The specification and drawings contain more than 100 pages. Applicant owes $ **200** for **15** pages in excess of **100** pages for a small entity in compliance with 37 CFR 1.27.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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

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

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

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

/pmangum/

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

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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
61/875,192	09/09/2013		130	2104-052-C38-USP		

CONFIRMATION NO. 4553

FILING RECEIPT

32964
DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

OC000000064044667

Date Mailed: 10/01/2013

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Inventor(s)

Benjamin Firooz Ghassabian, Jerusalem, ISRAEL;

Applicant(s)

Benjamin Firooz Ghassabian, Jerusalem, ISRAEL;

Power of Attorney:
David Klein--41118

If Required, Foreign Filing License Granted: 09/26/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/875,192**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

DATA ENTRY SYSTEMS

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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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 AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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SelectUSA

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.

Doc Code: **TR.PROV**
Document Description: Provisional Cover Sheet (SB16)

PTO/SB/16 (04-07)
Approved for use through 06/30/2010 OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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

Provisional Application for Patent Cover Sheet

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)

Inventor(s)

Inventor 1 — Remove

Given Name	Middle Name	Family Name	City	State	Country ¡
Benjamin	Firooz	Ghassabian	Jerusalem		IL

All Inventors Must Be Listed – Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. — Add

Title of Invention	IMPROVED DATA ENTRY SYSTEMS
Attorney Docket Number (if applicable)	2104-052-C38-USP

Correspondence Address

Direct all correspondence to (select one):

◉ The address corresponding to Customer Number	○ Firm or Individual Name
Customer Number	32964

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

◉ No.

○ Yes, the name of the U.S. Government agency and the Government contract number are:

PTO/SB/16 (04-07)
Approved for use through 06/30/2010 OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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

Entity Status

Applicant claims small entity status under 37 CFR 1.27

- (●) Yes, applicant qualifies for small entity status under 37 CFR 1.27
- ( ) No

Warning

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Signature

Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/David Klein/			Date (YYYY-MM-DD)	2013-09-09
First Name	David	Last Name	Klein	Registration Number (If appropriate)	41118

This collection of information is required by 37 CFR 1.51. 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 8 hours 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. **This form can only be used when in conjunction with EFS-Web. If this form is mailed to the USPTO, it may cause delays in handling the provisional application.**

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 an other 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.

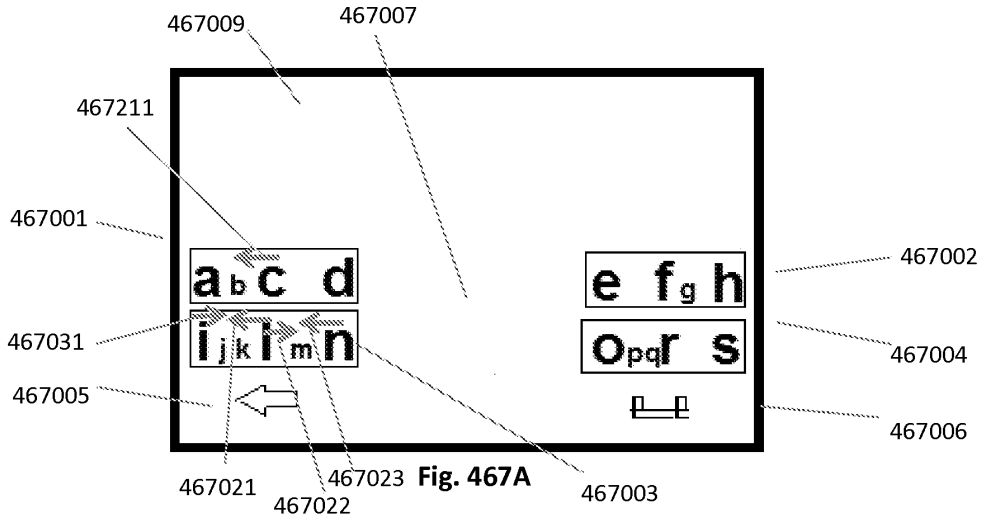


Fig. 467A

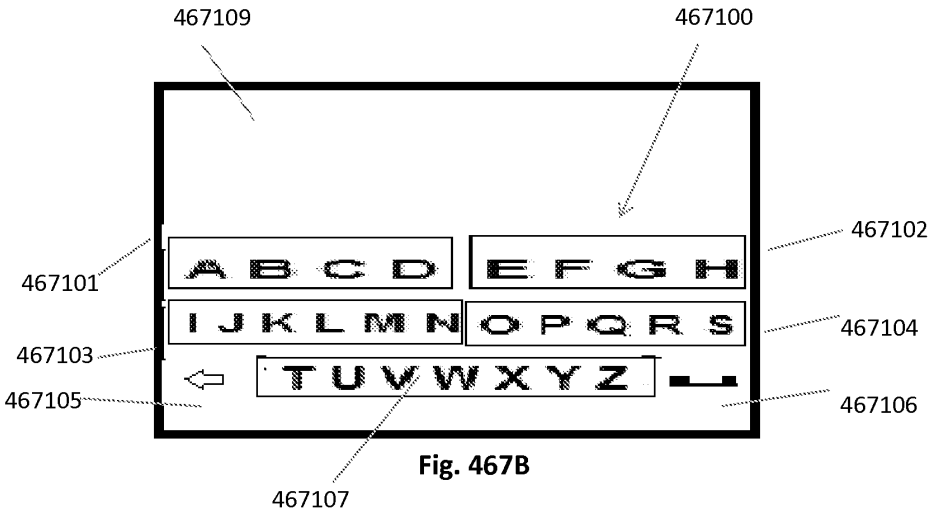


Fig. 467B

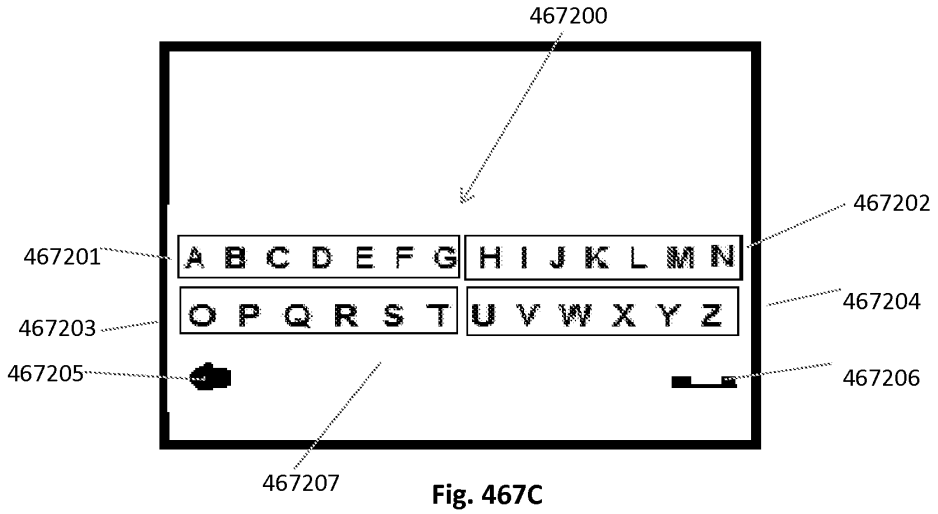


Fig. 467C

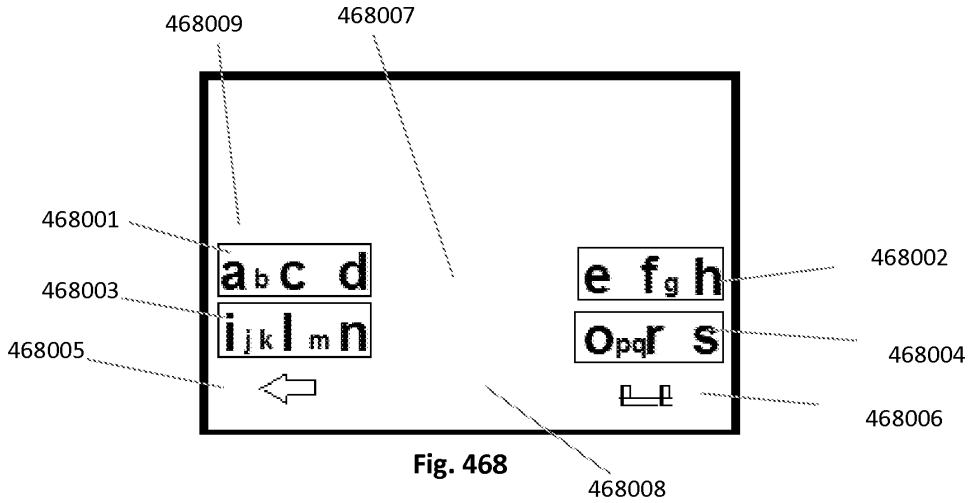


Fig. 468

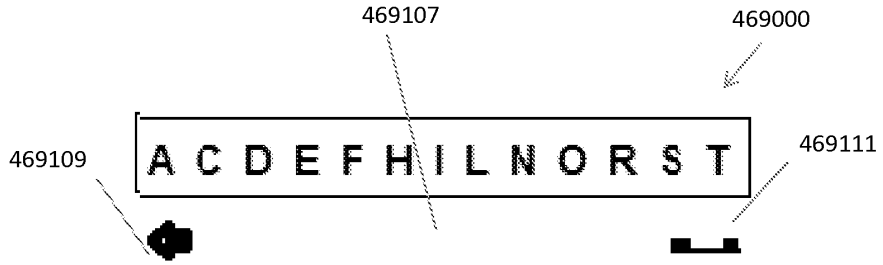


Fig. 469A

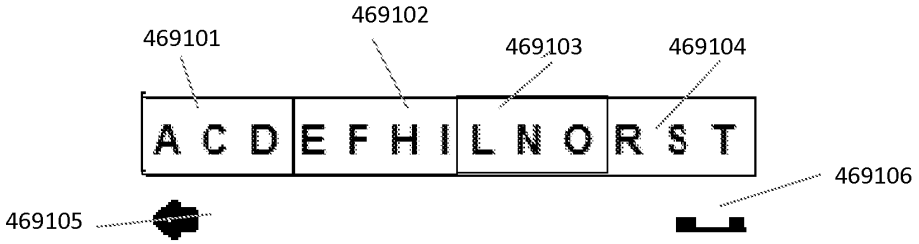


Fig. 469B

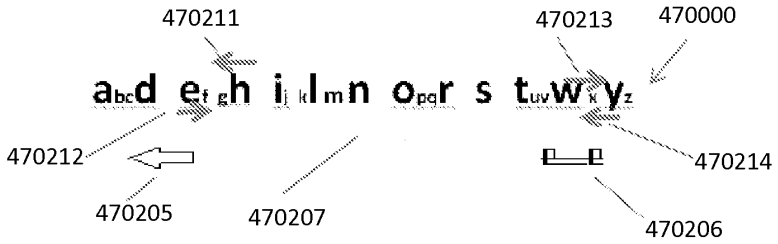


Fig. 470

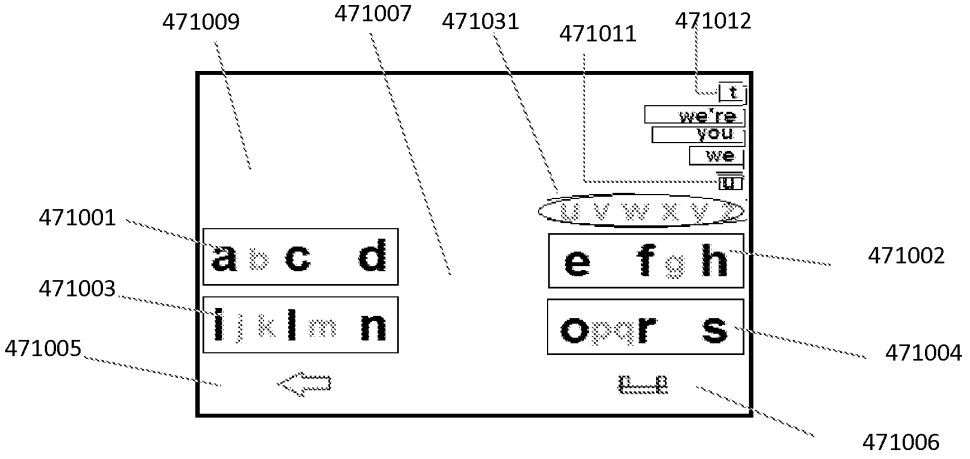


Fig. 471A

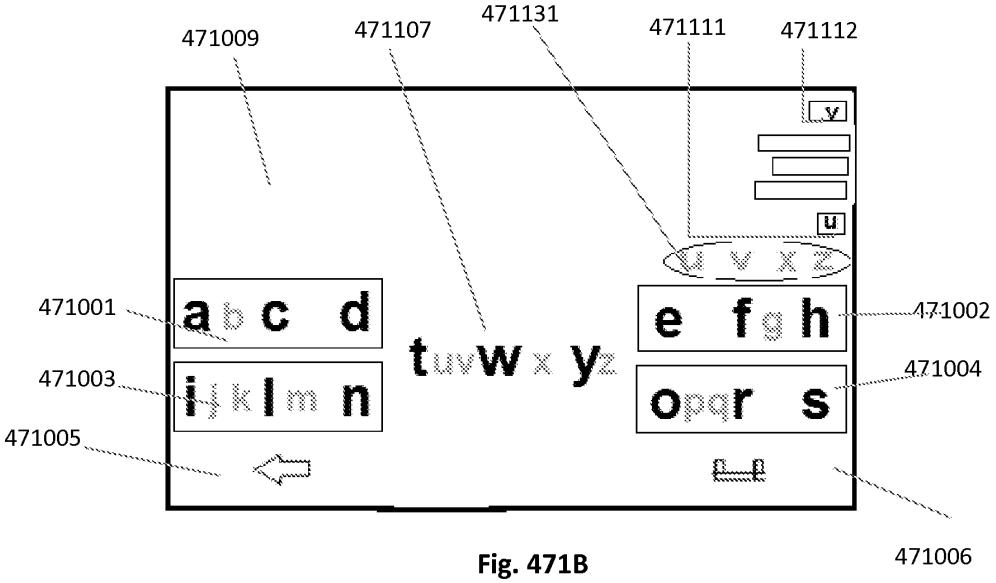


Fig. 471B

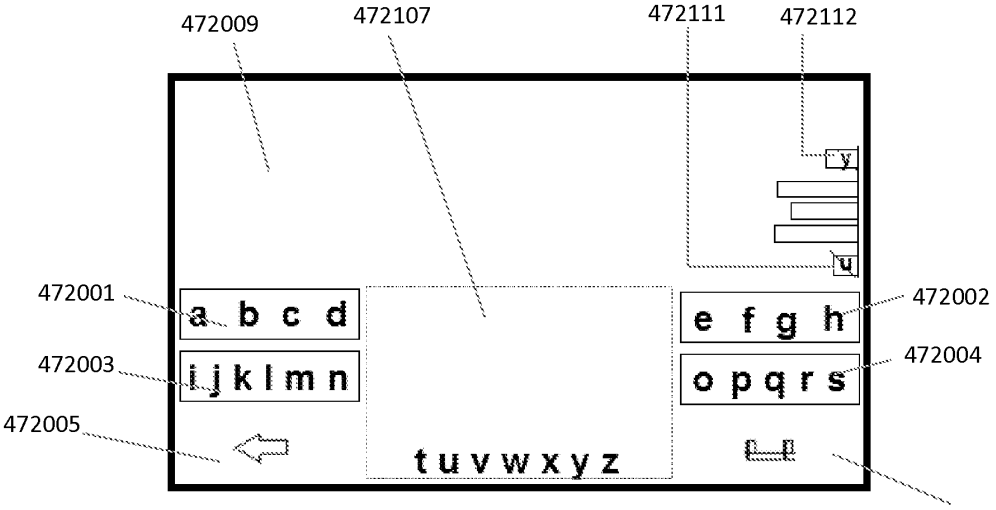


Fig. 472A

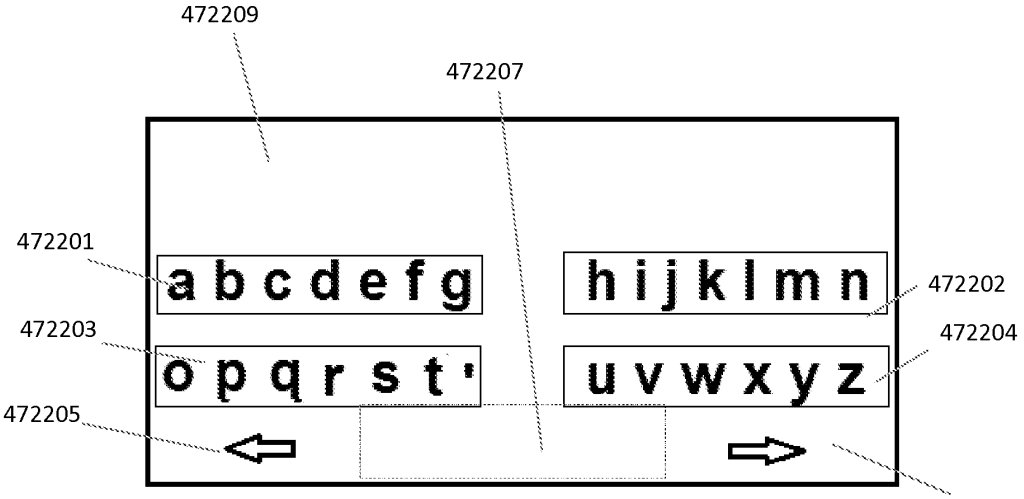


Fig. 472B

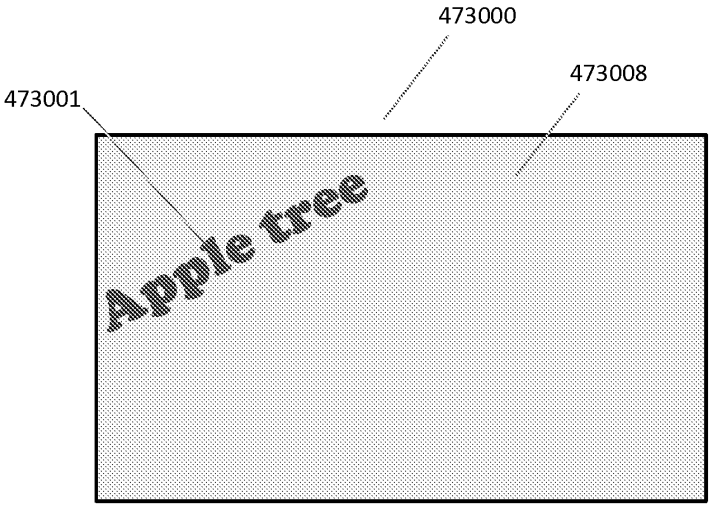


Fig. 473

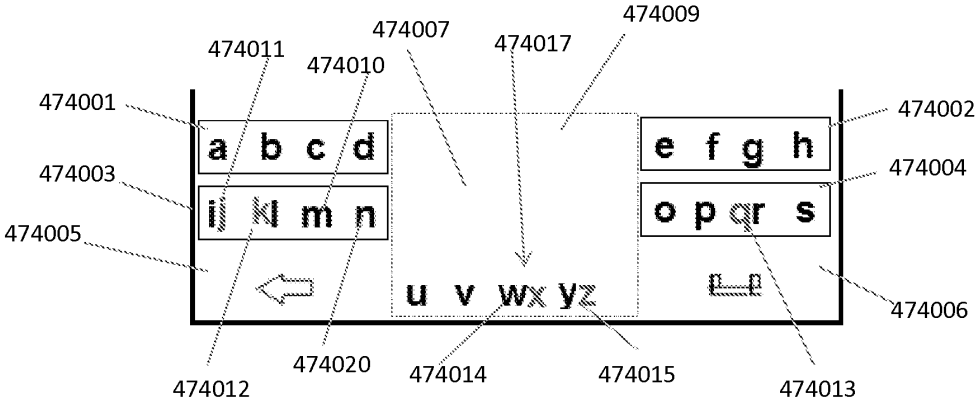


Fig. 474A

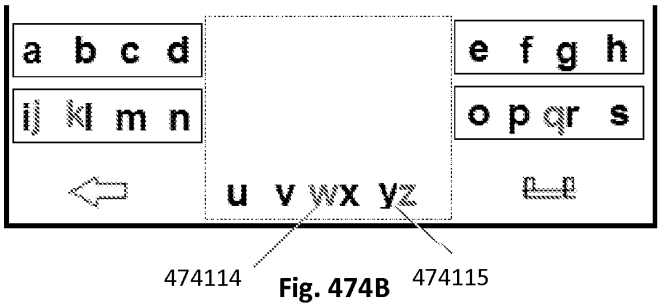


Fig. 474B

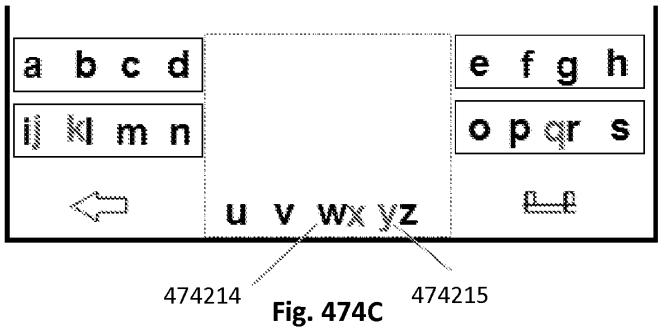


Fig. 474C

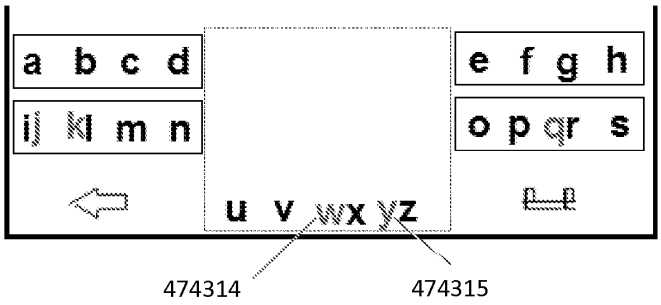


Fig. 474D

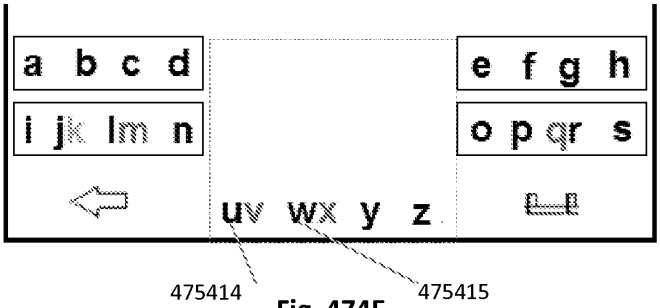


Fig. 474E

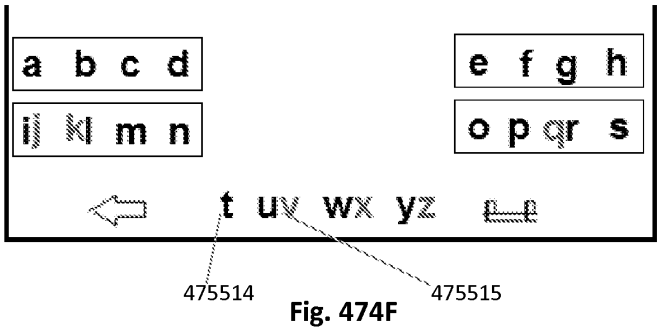


Fig. 474F

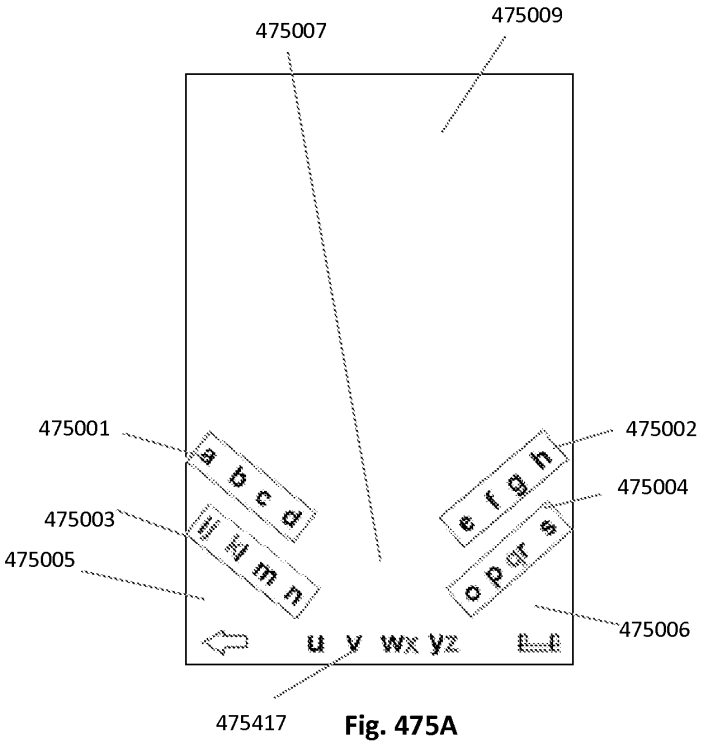


Fig. 475A

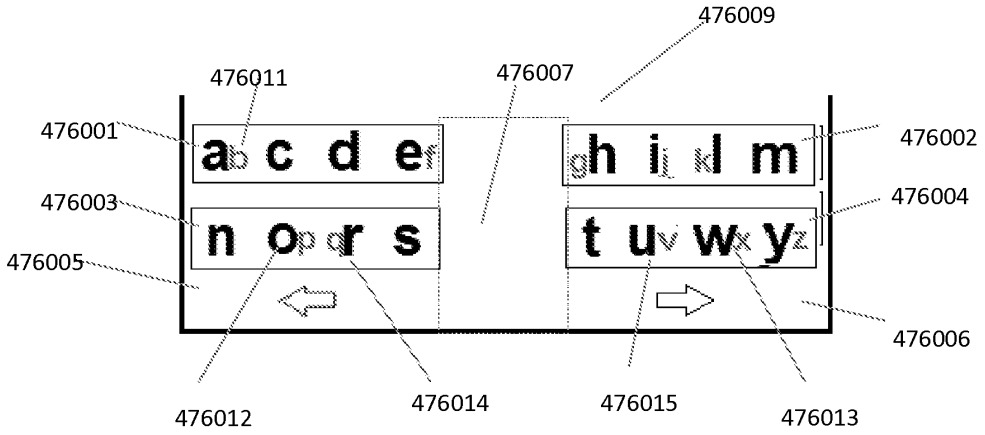


Fig. 476A

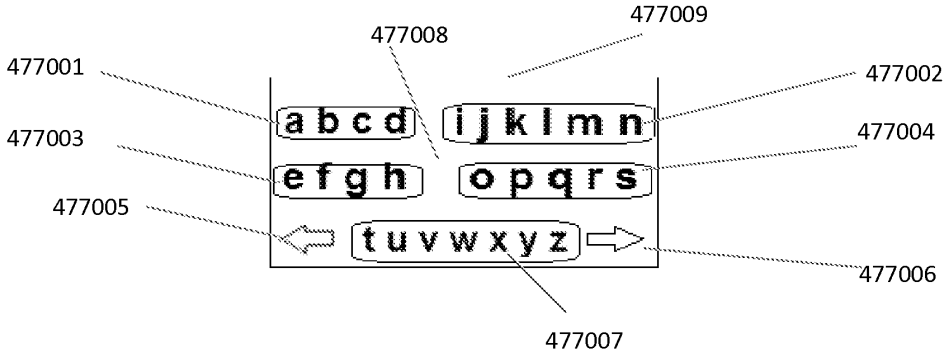


Fig. 477A

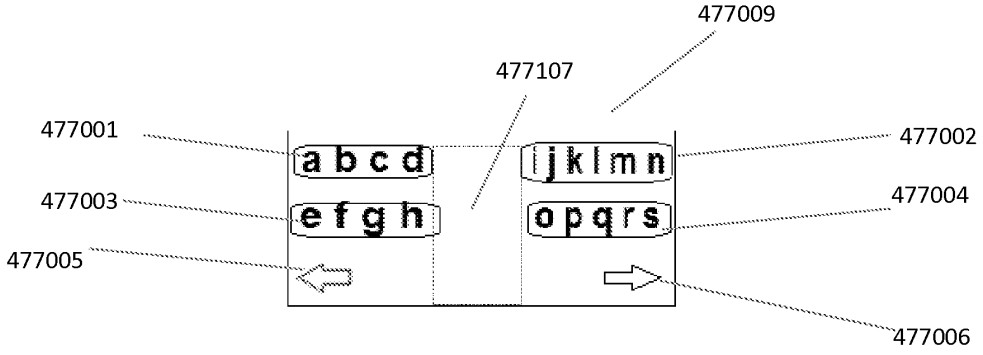


Fig. 477B

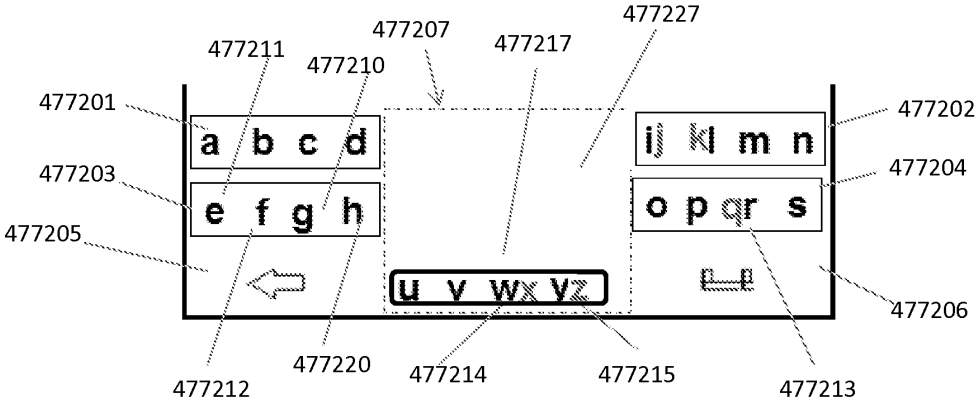


Fig. 477C

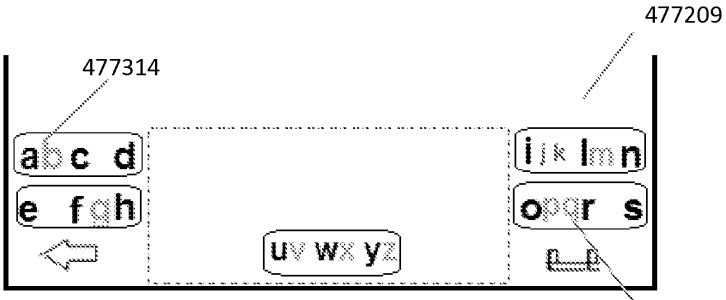


Fig. 477D

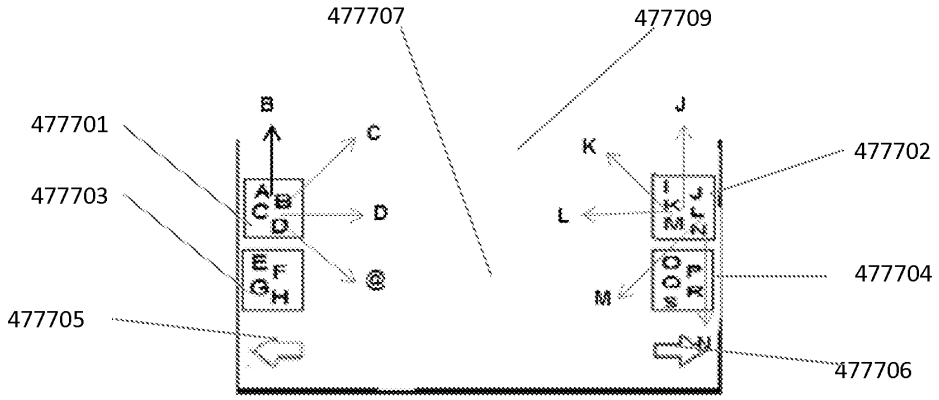


Fig. 477E

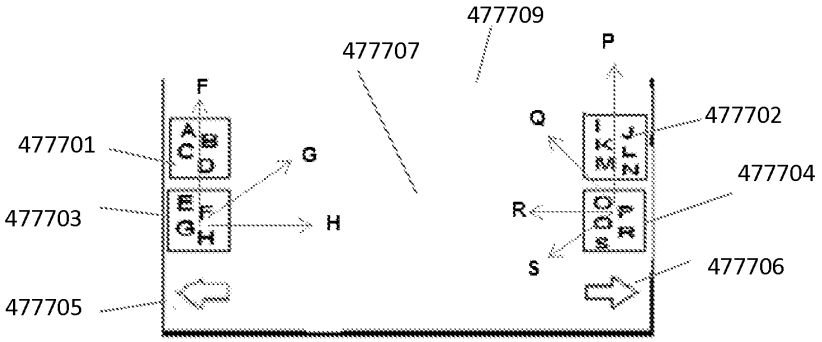


Fig. 477F

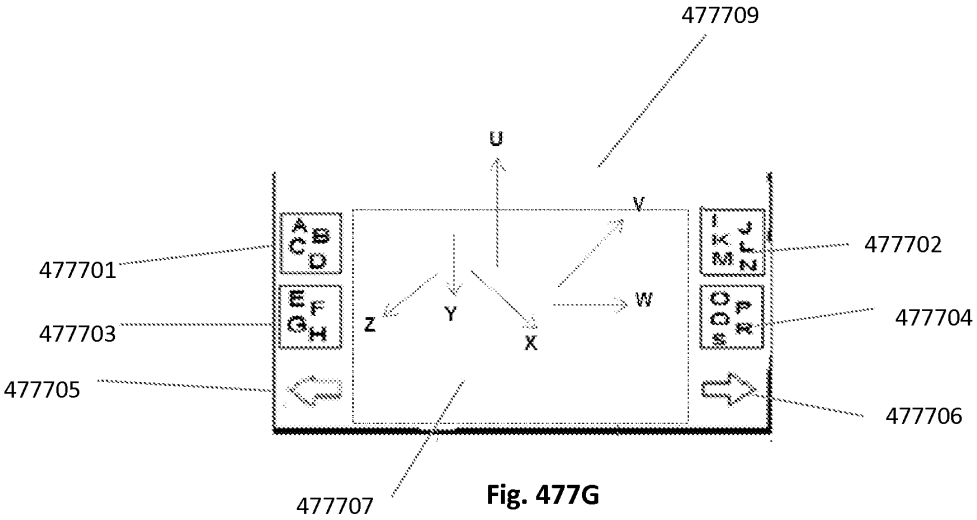
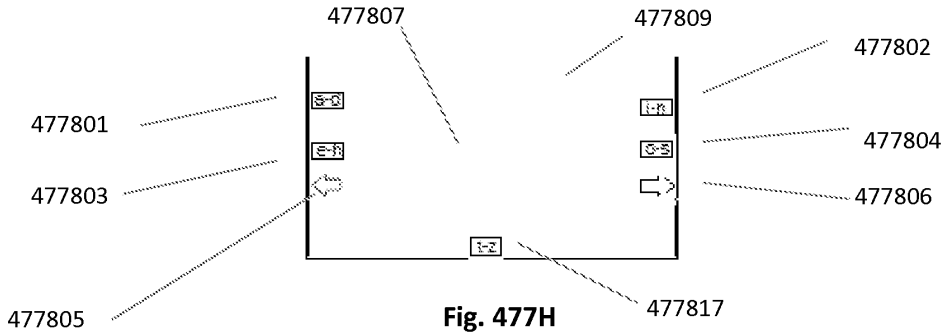


Fig. 477G


477807
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477806
477805
477817

Fig. 477H

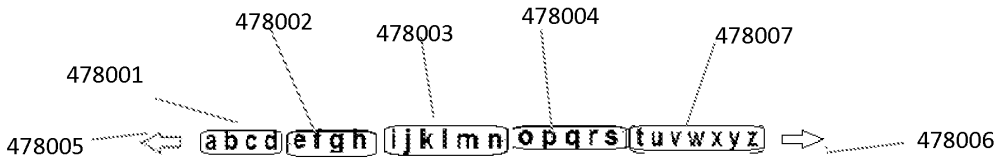


Fig. 478A

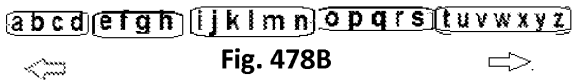


Fig. 478B

Fig. 478C

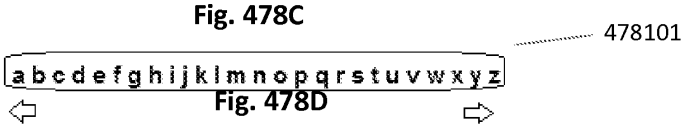


Fig. 478D

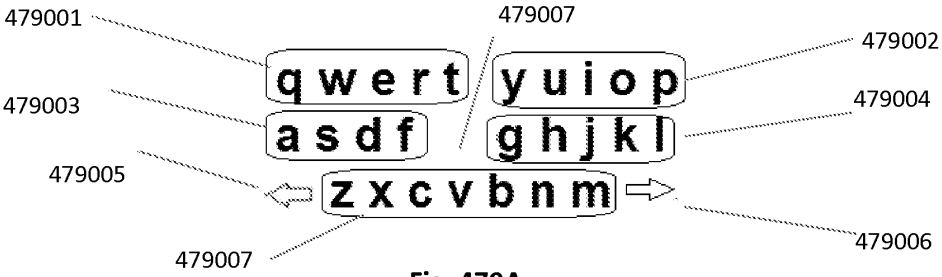


Fig. 479A

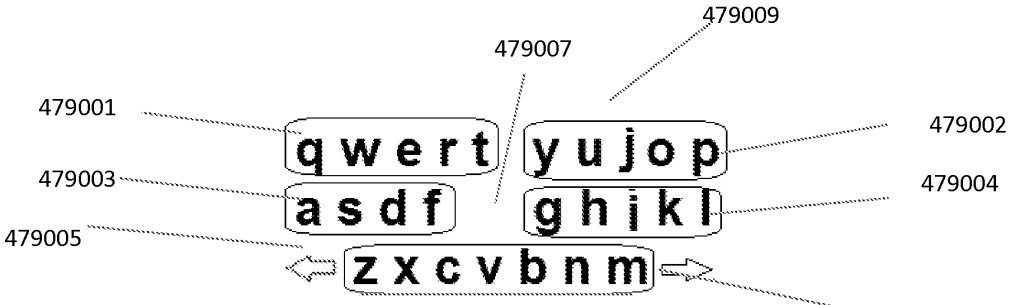


Fig. 479B

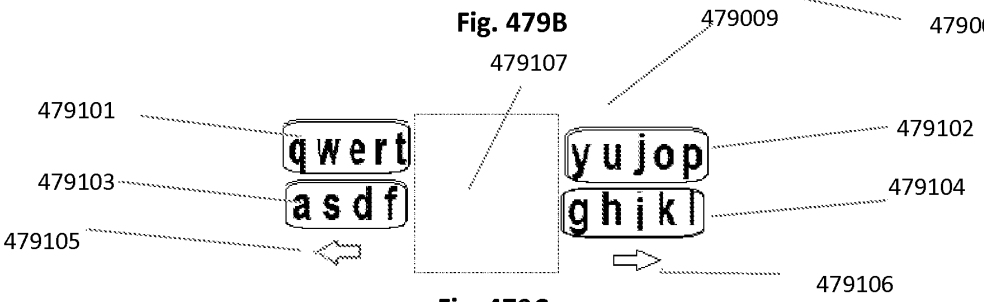


Fig. 479C

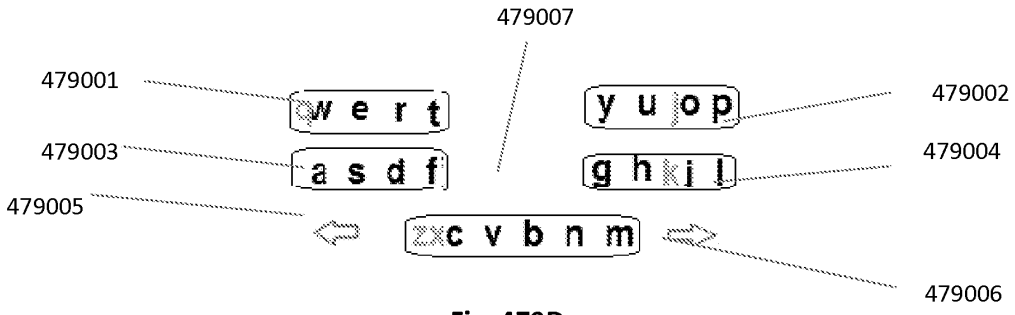


Fig. 479D

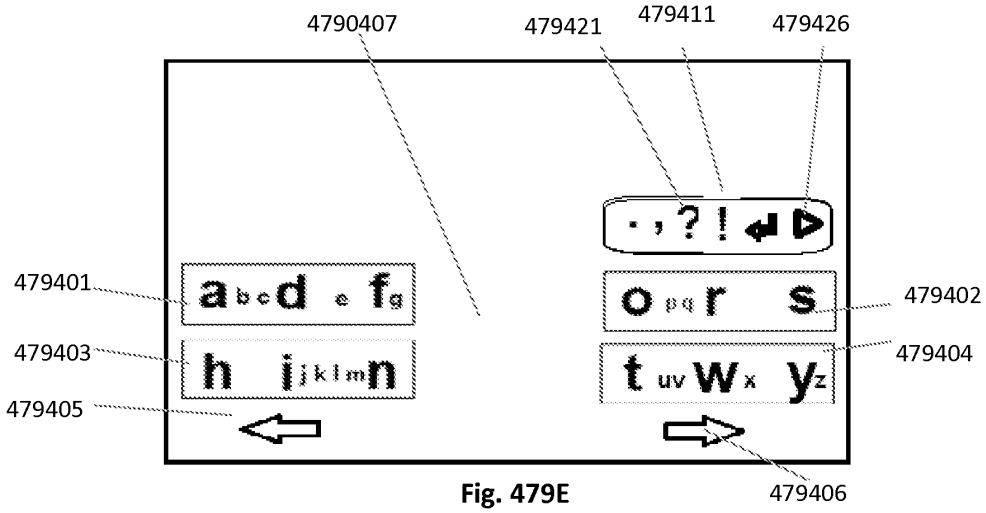


Fig. 479E

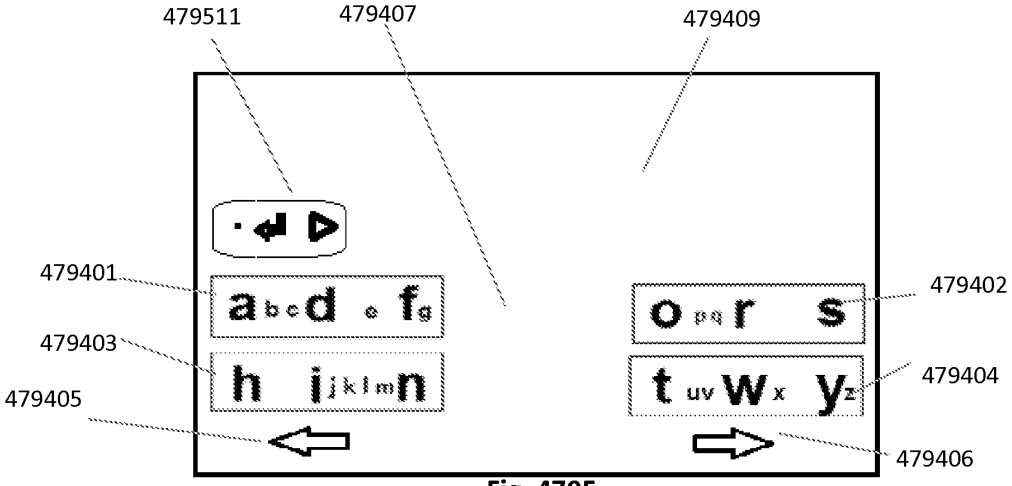


Fig. 479F

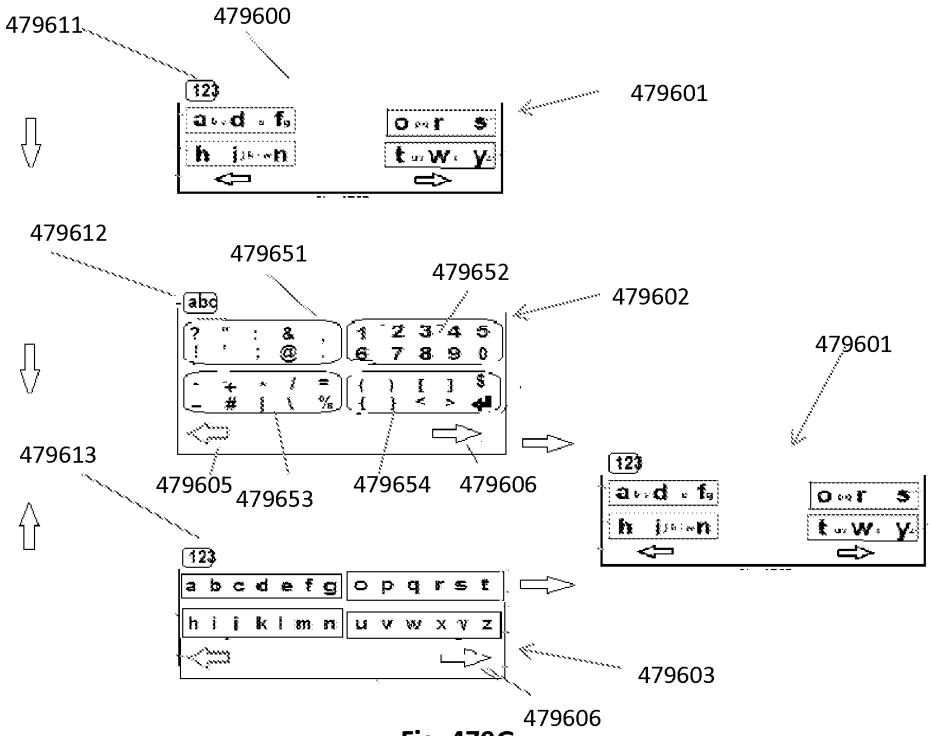


Fig. 479G

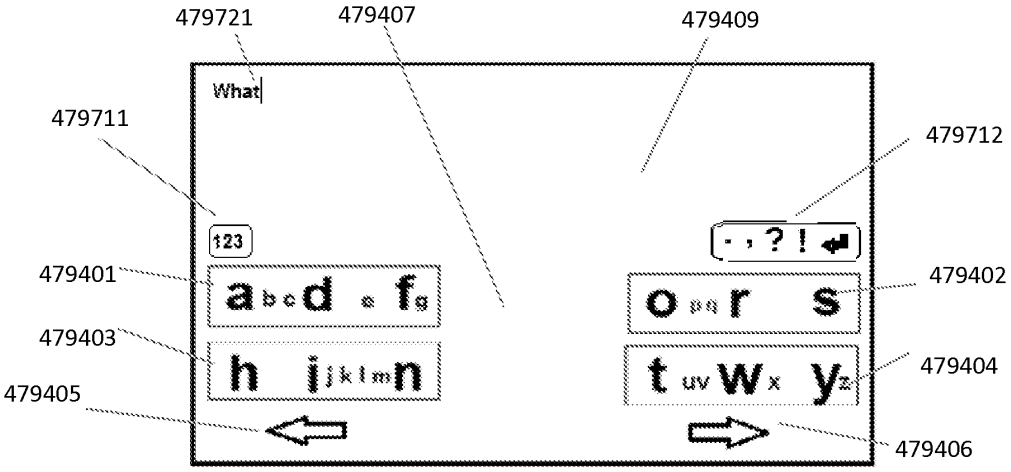


Fig. 479H

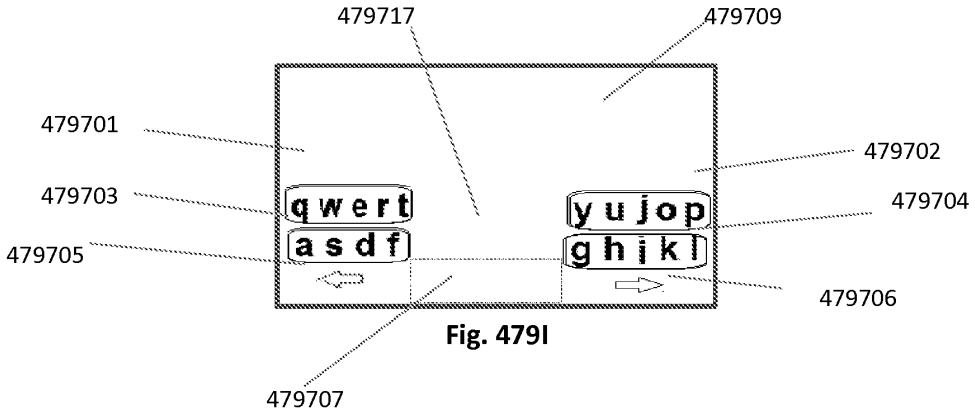


Fig. 479I

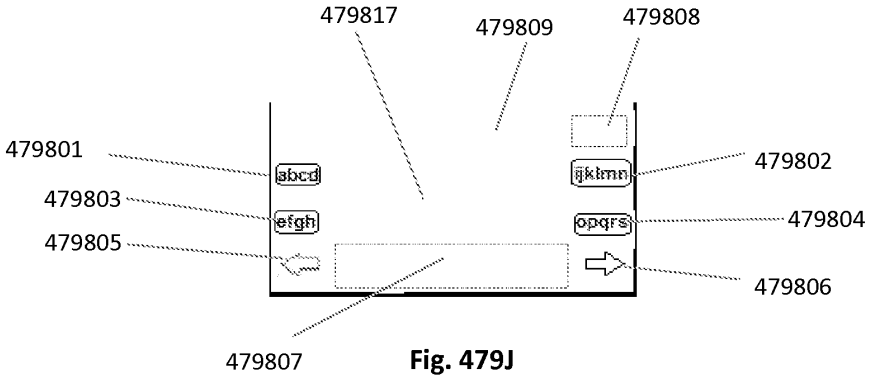


Fig. 479J

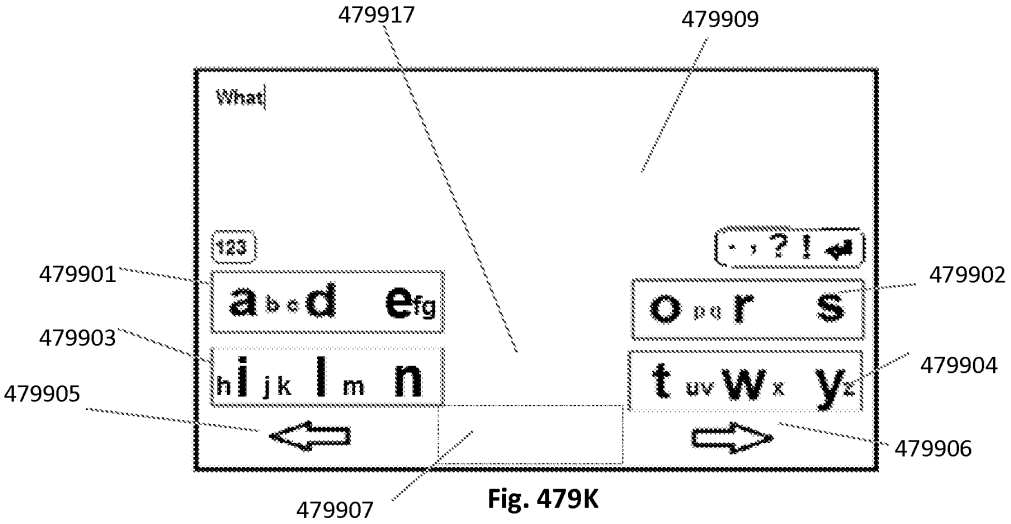


Fig. 479K

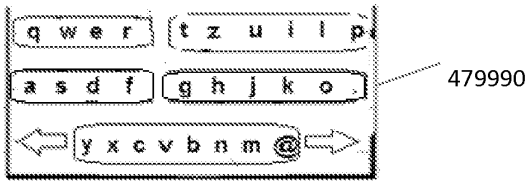


Fig. 479P

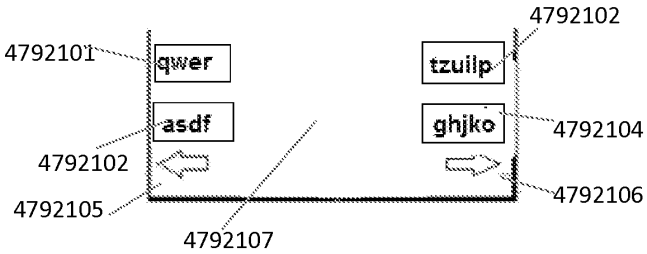


Fig. 479Q

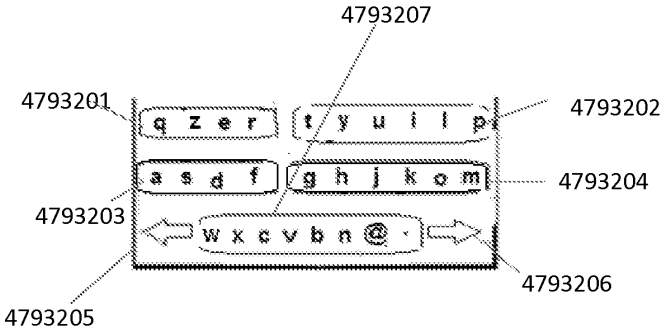


Fig. 479R

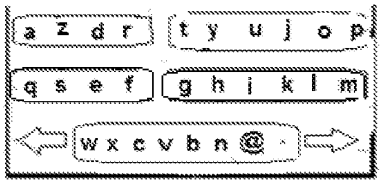


Fig. 479S

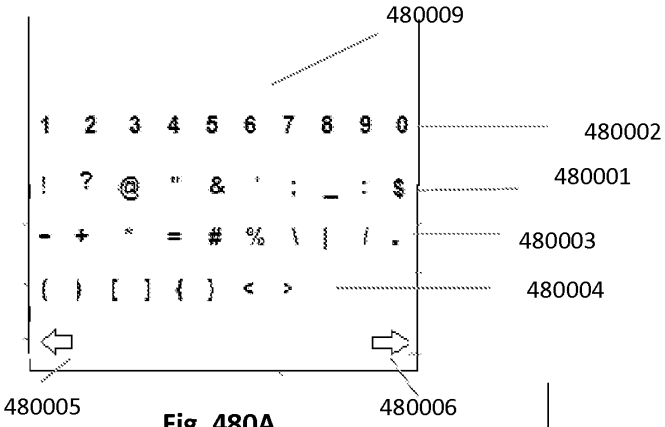


Fig. 480A

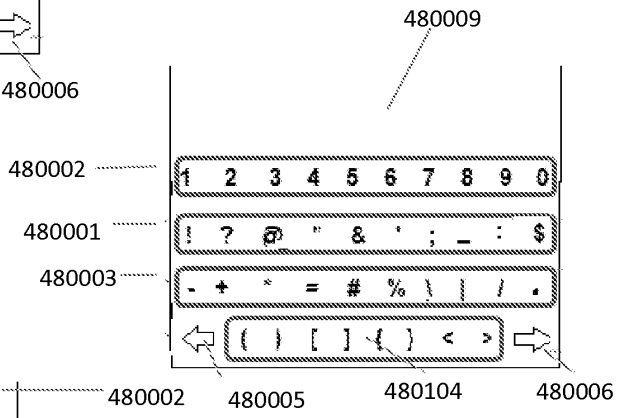


Fig. 480B

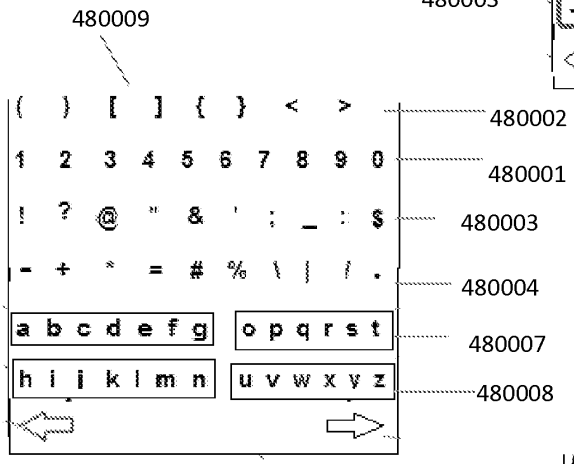


Fig. 480C

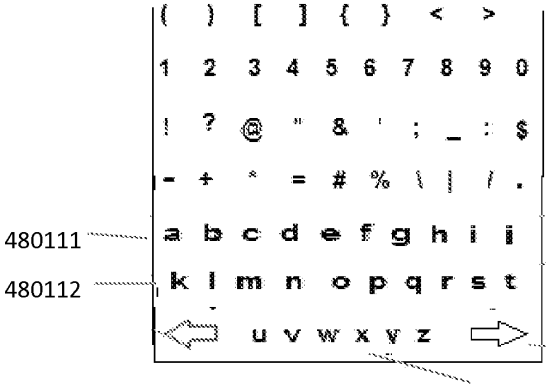


Fig. 480D

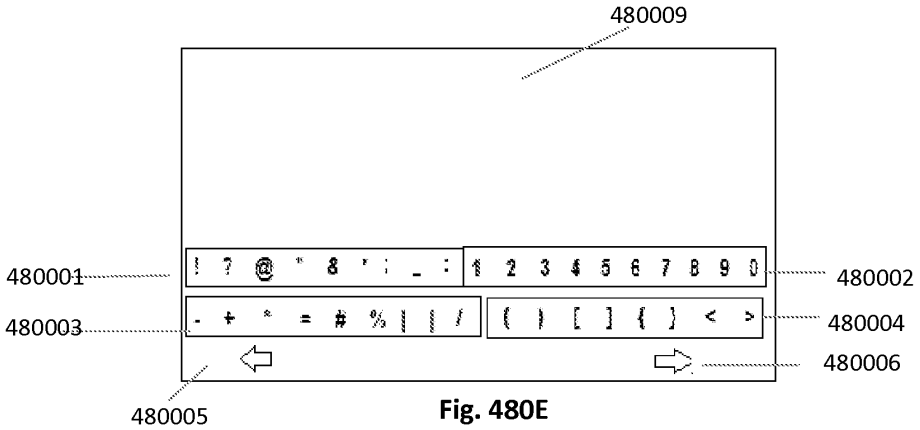


Fig. 480E

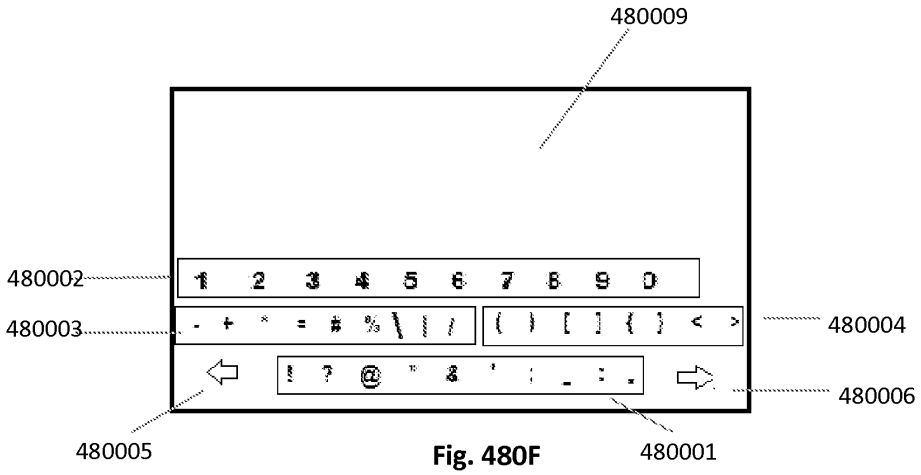


Fig. 480F

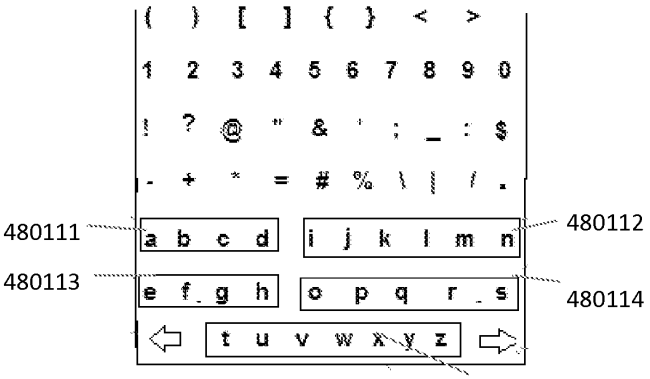


Fig. 480G

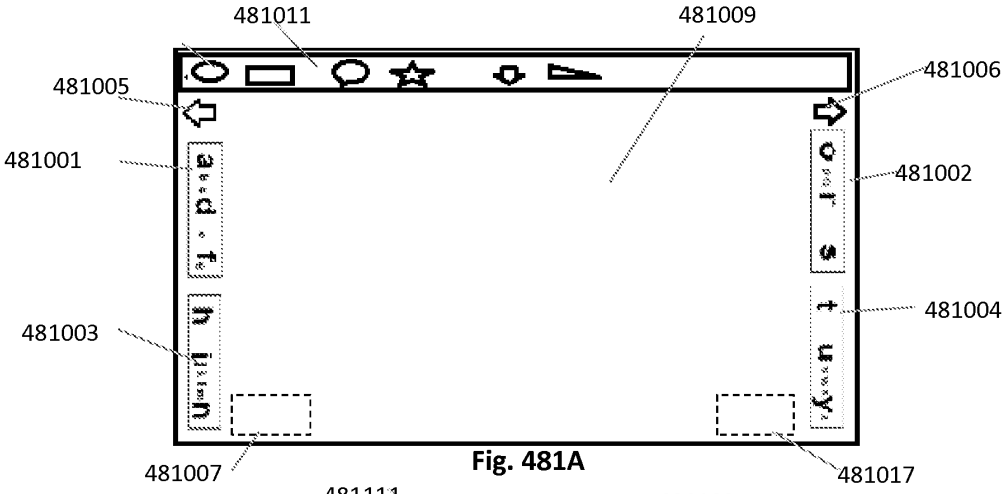


Fig. 481A

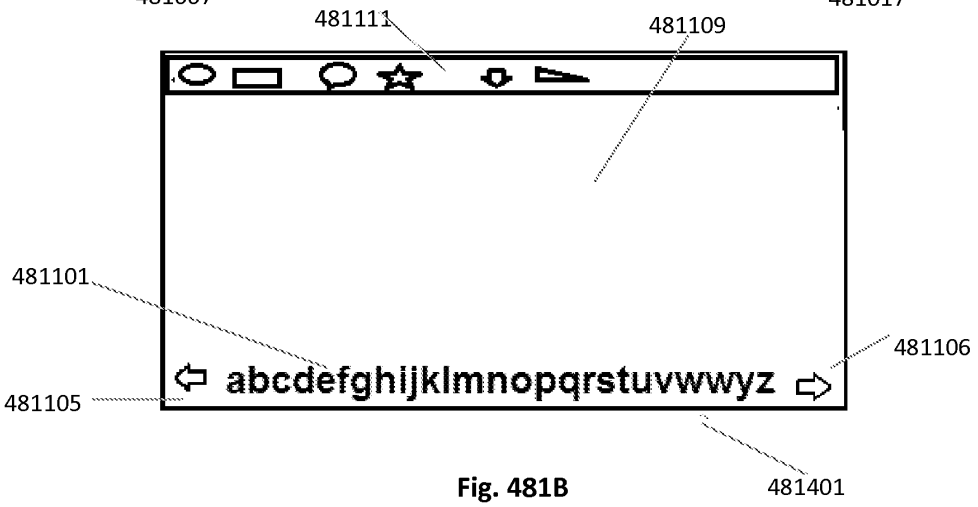


Fig. 481B

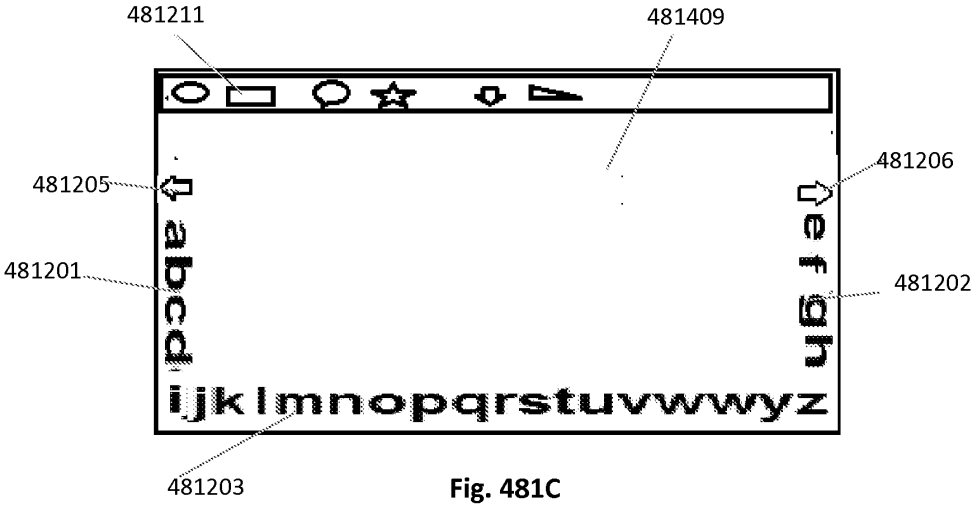


Fig. 481C

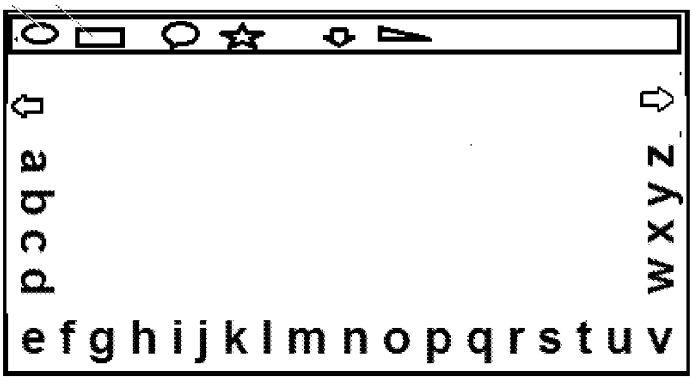


Fig. 482A

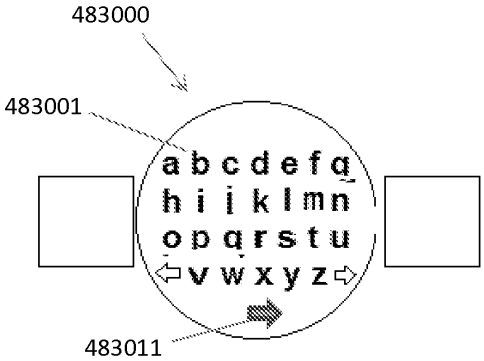


Fig. 483A

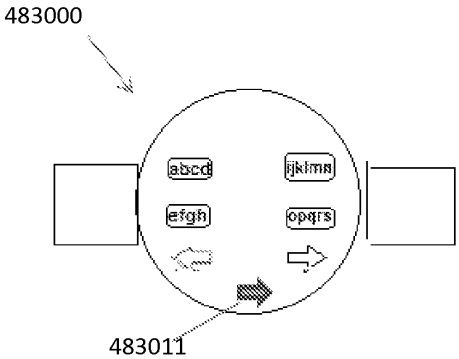


Fig. 483B

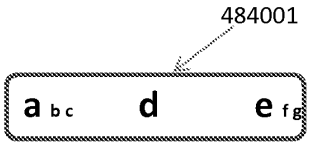


Fig. 484A

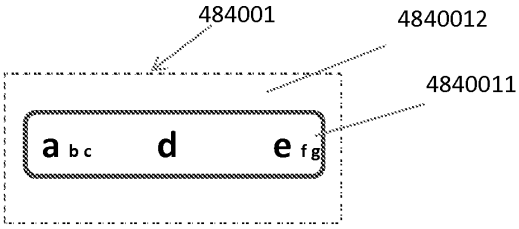


Fig. 484B

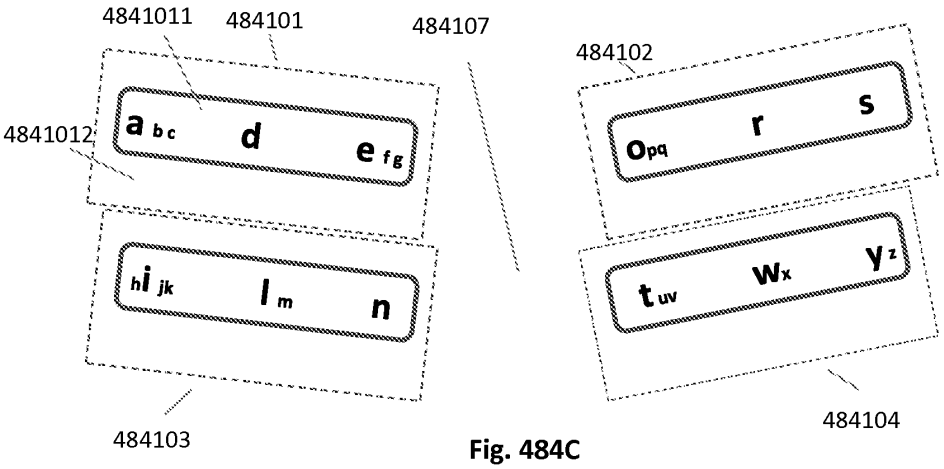


Fig. 484C

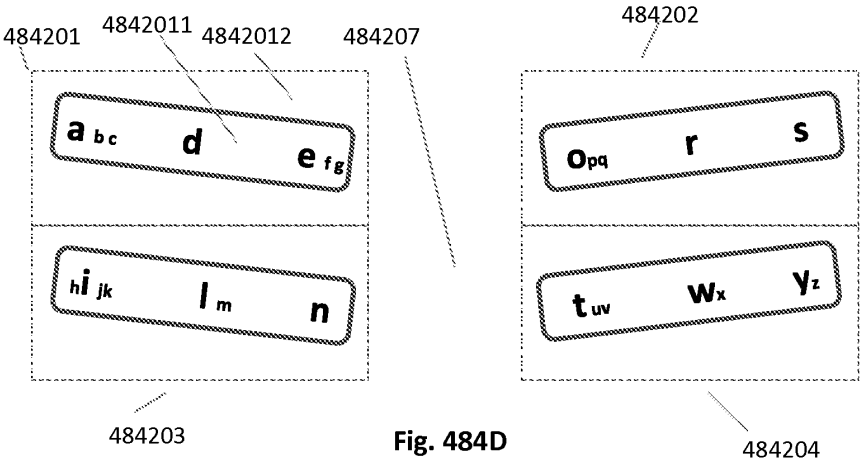
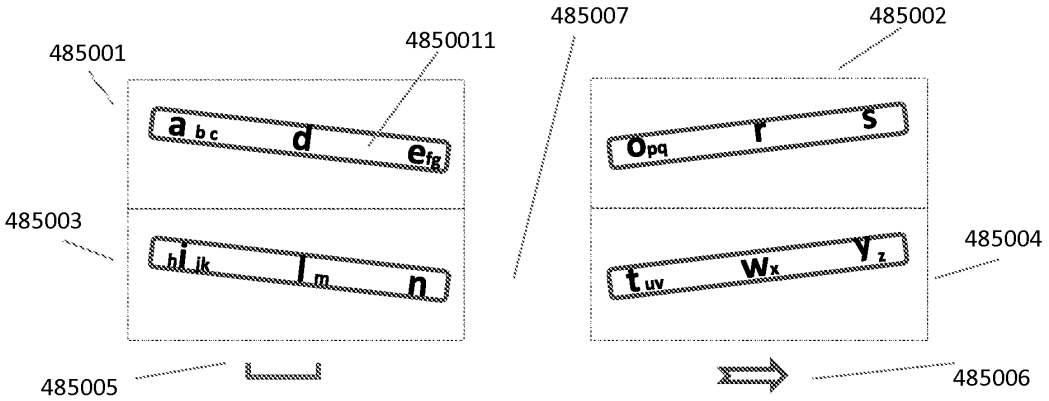


Fig. 484D



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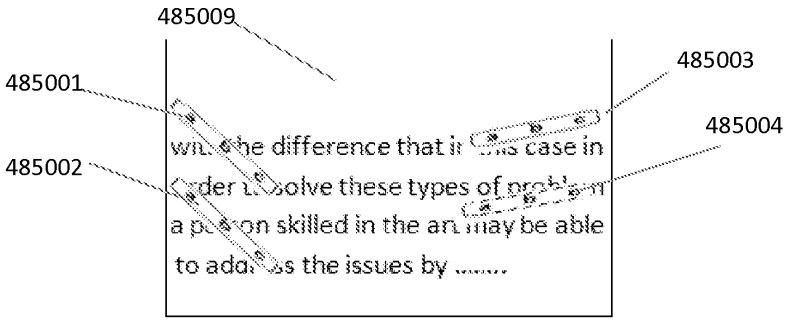


Fig. 485B

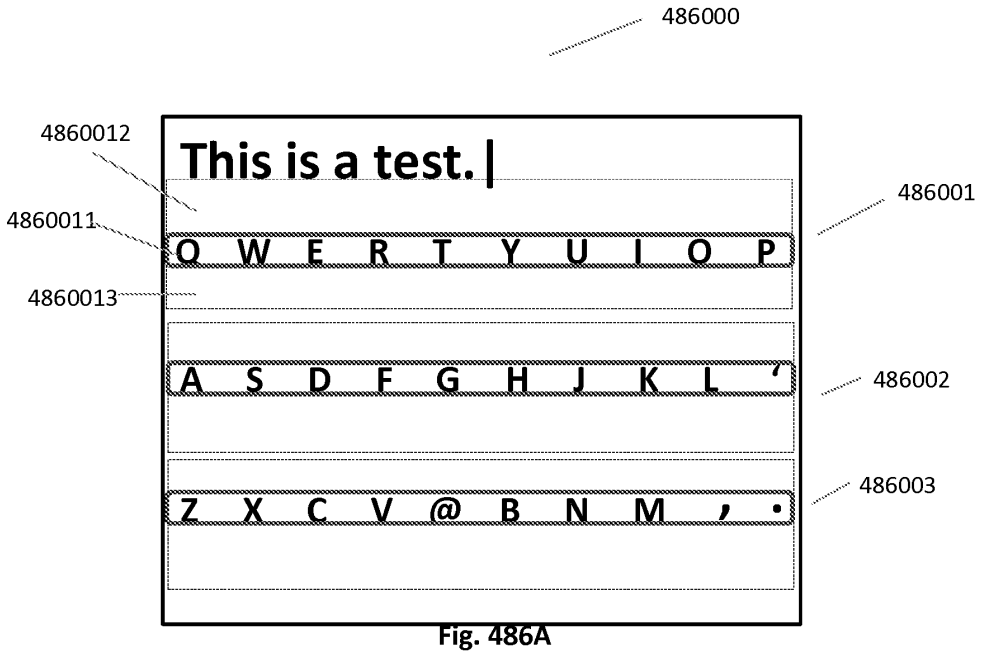


Fig. 486A

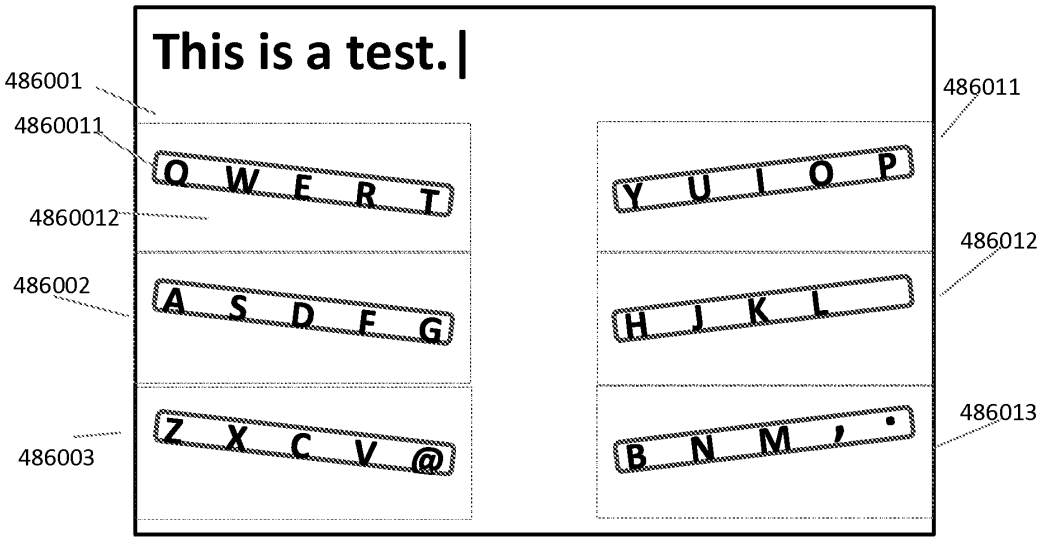
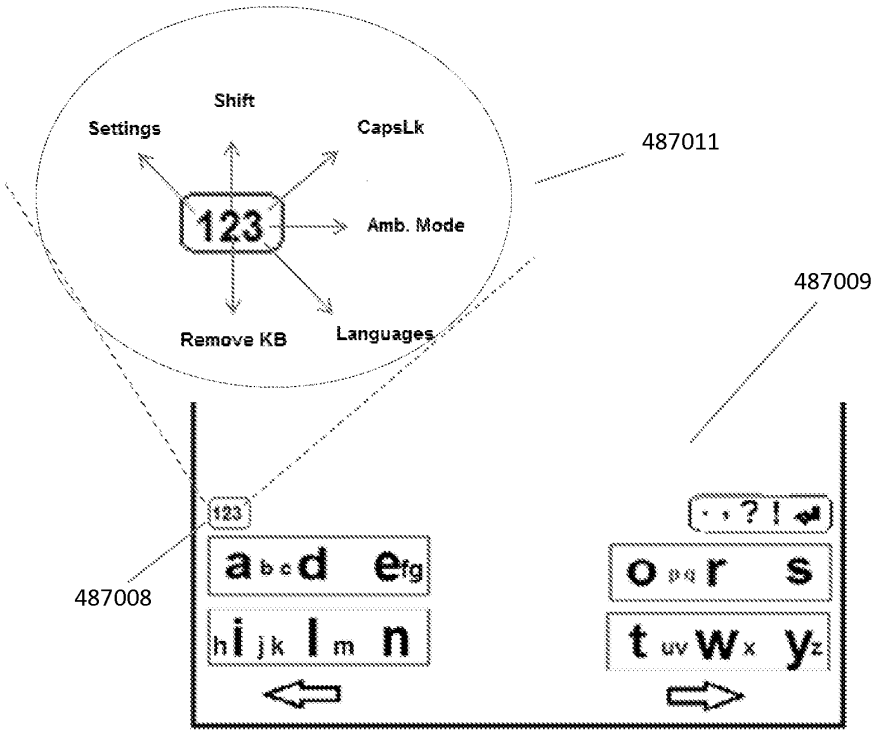


Fig. 486B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o p q r s
t u v w x y z

Fig. 487A

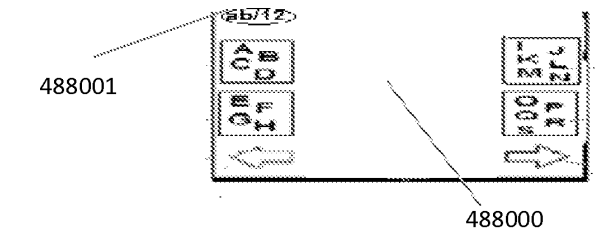


Fig. 488A

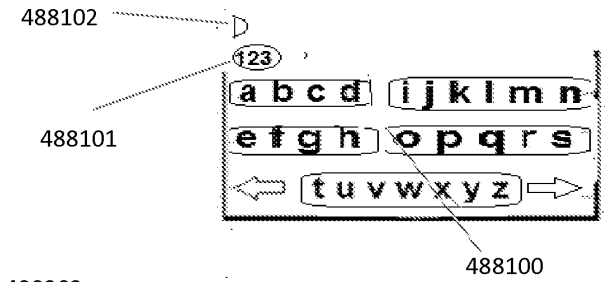


Fig. 488B

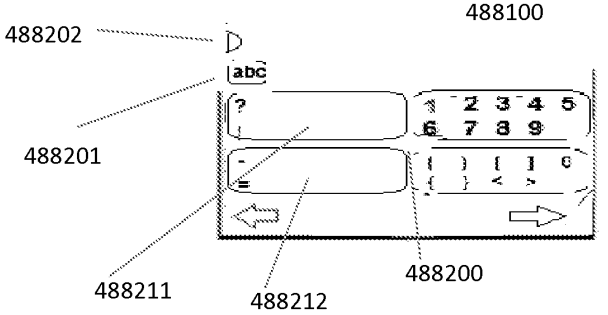
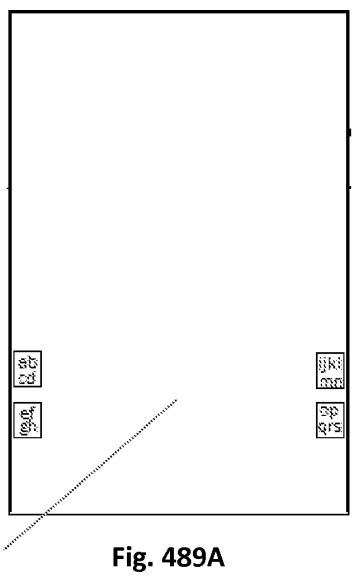


Fig. 488C



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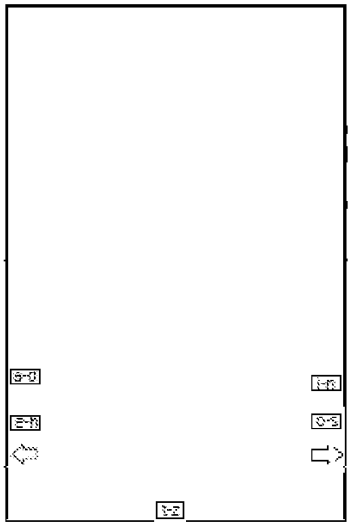
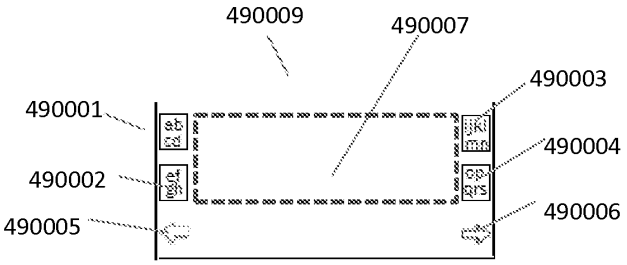


Fig. 489B

489008



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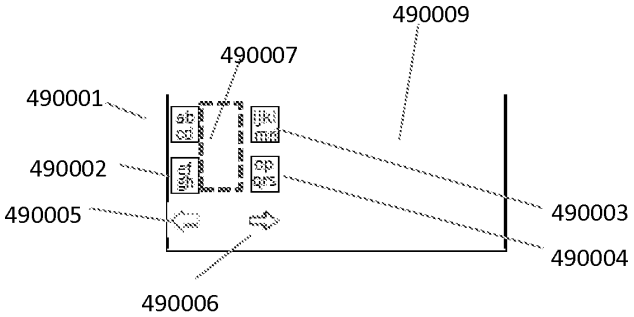


Fig. 490B

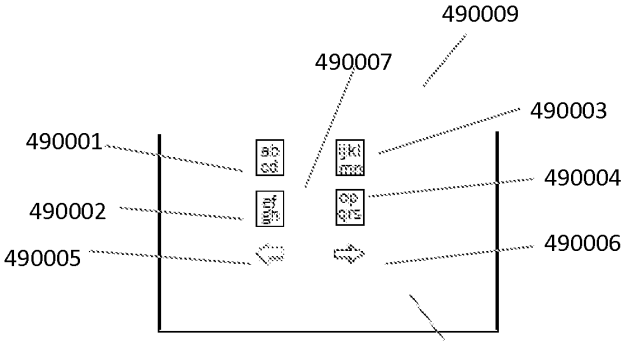


Fig. 490C

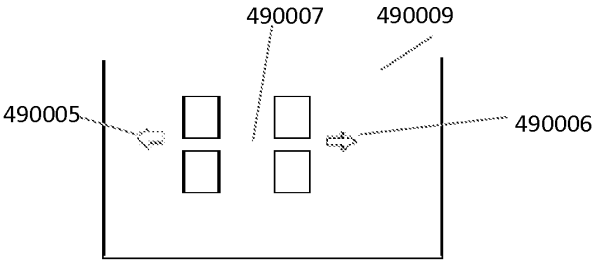
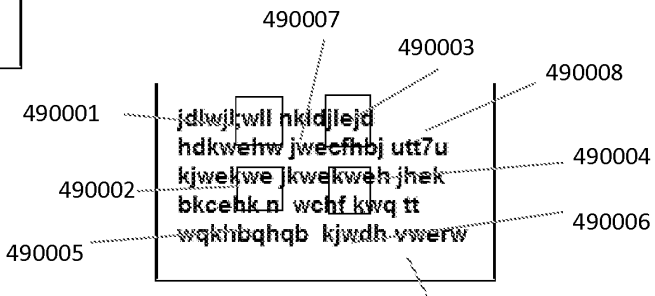


Fig. 490D



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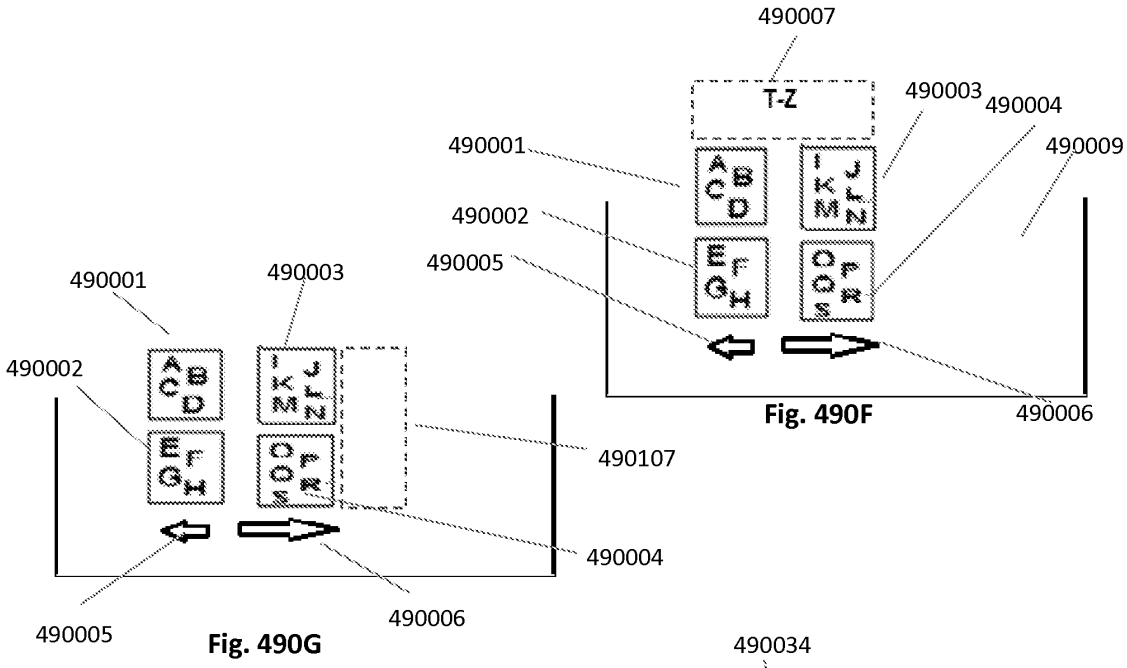


Fig. 490F

Fig. 490G

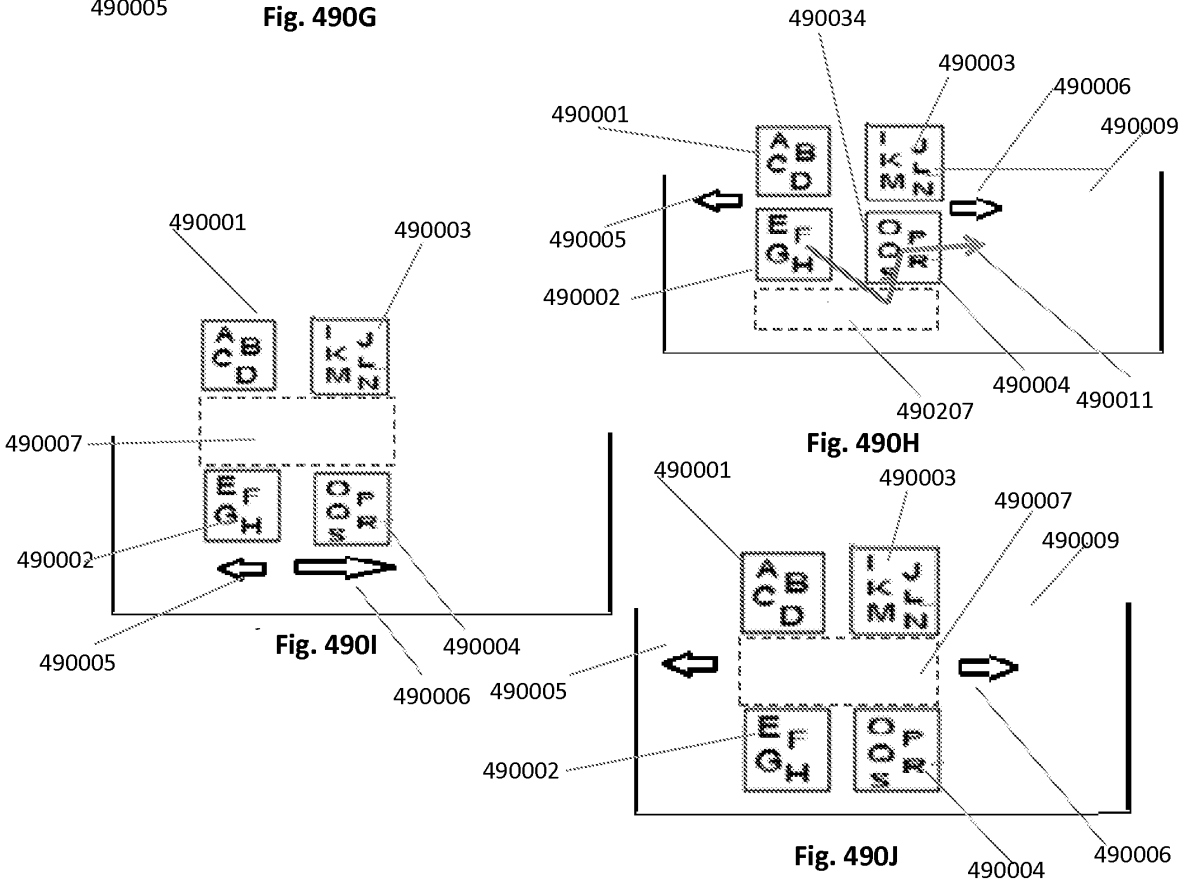
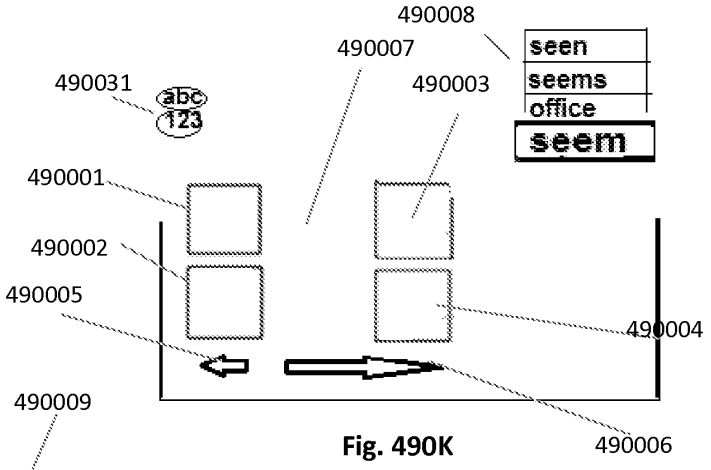


Fig. 490H

Fig. 490I

Fig. 490J



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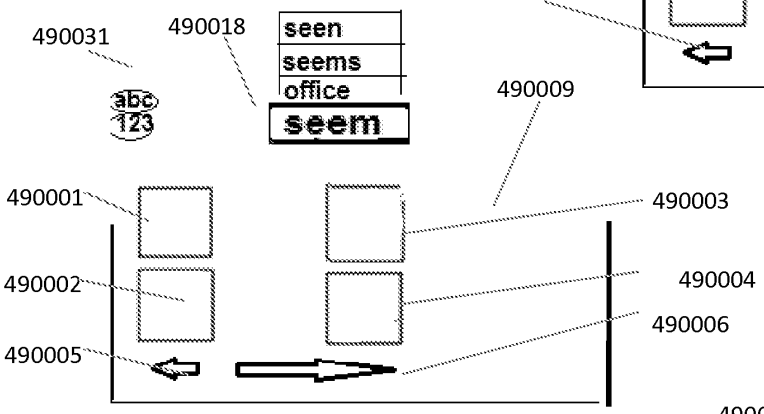

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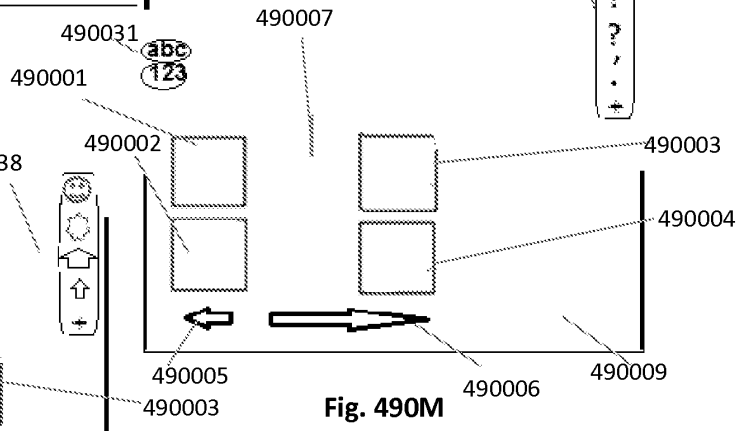

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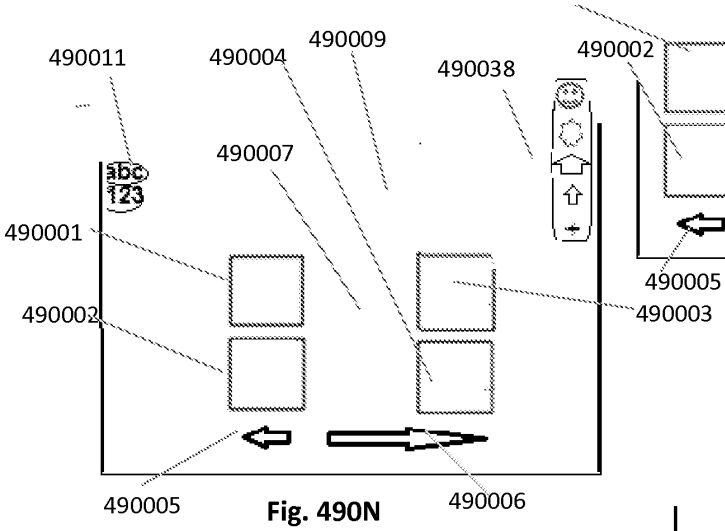


Fig. 490N

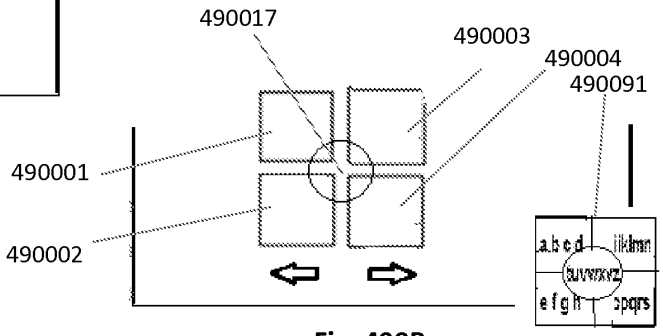


Fig. 490P

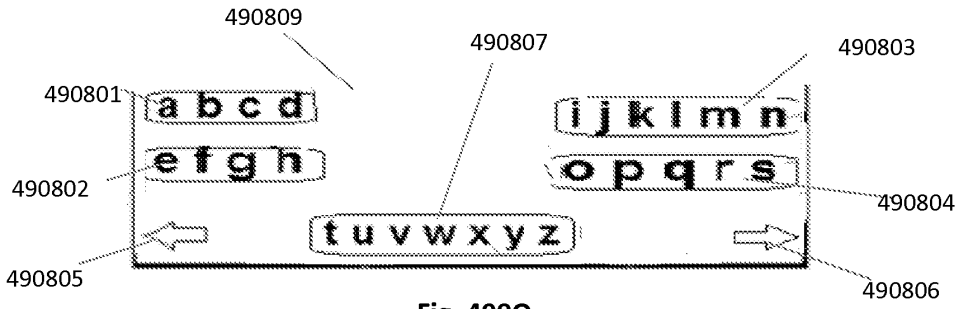
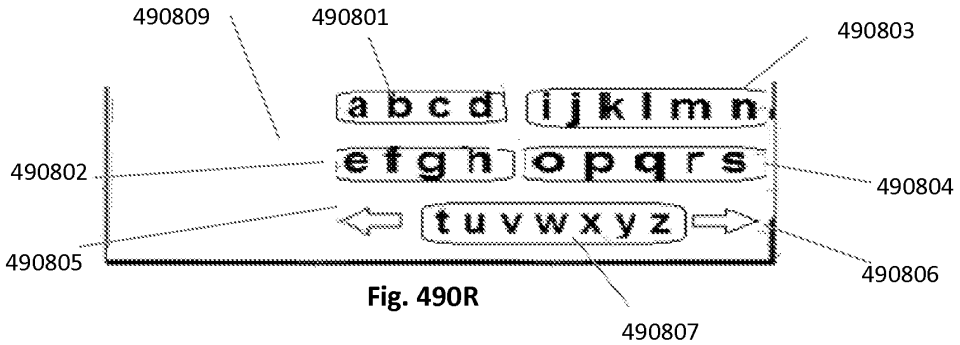


Fig. 490Q



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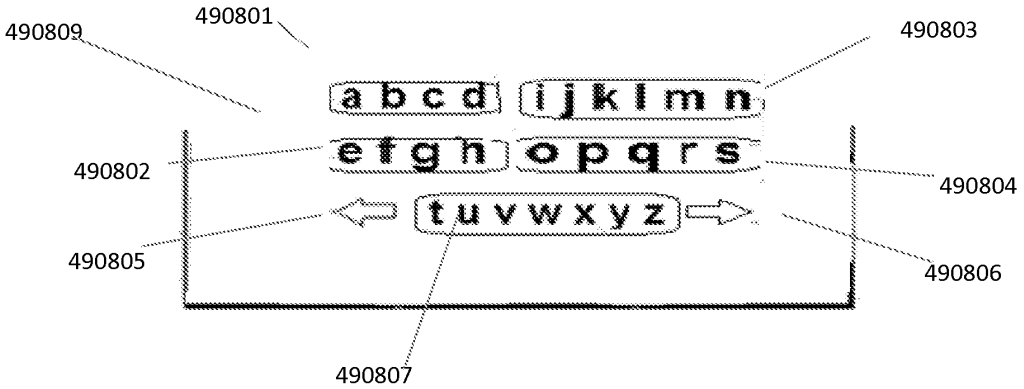

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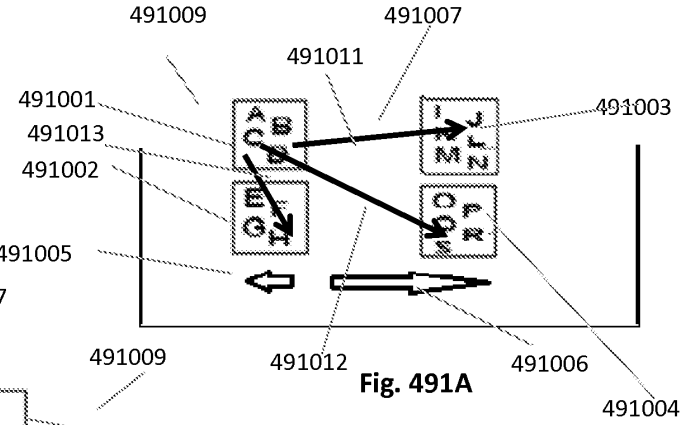


Fig. 491A

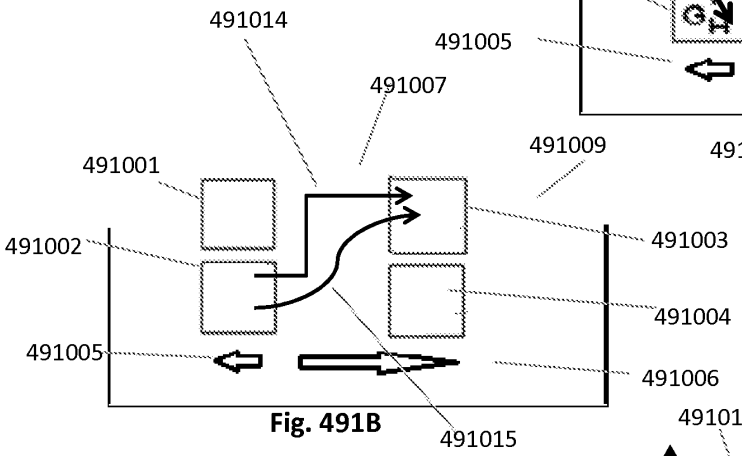


Fig. 491B

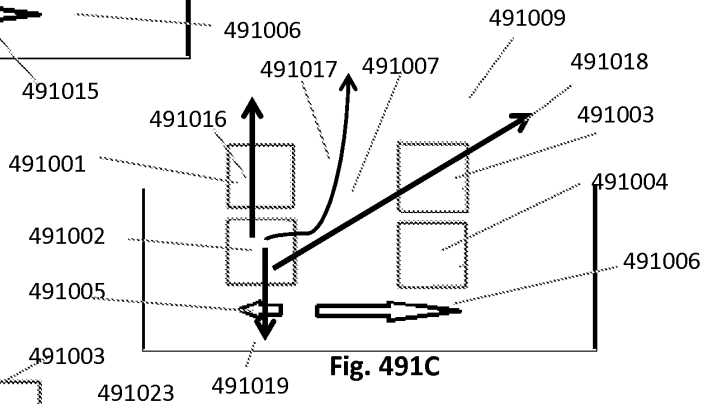


Fig. 491C

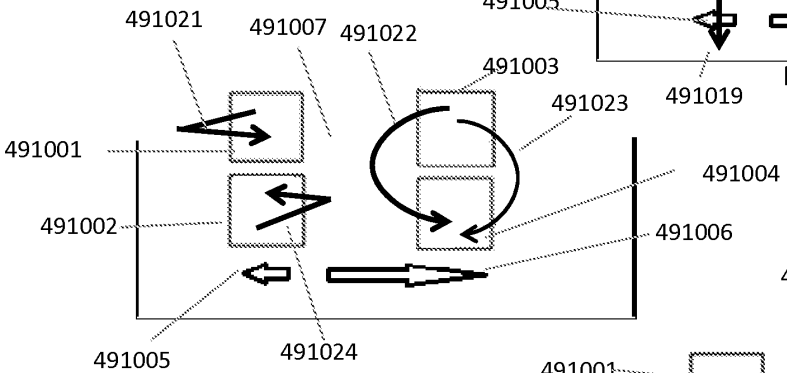


Fig. 491D

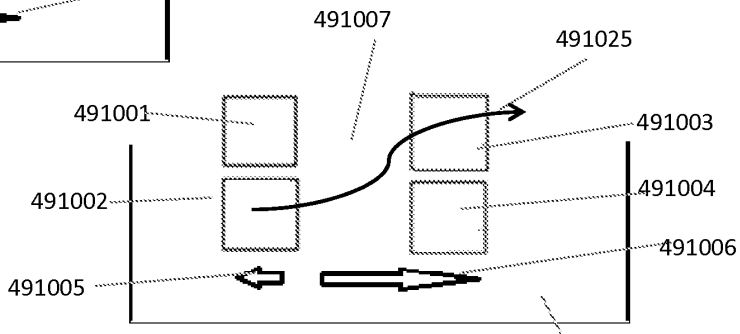


Fig. 491E

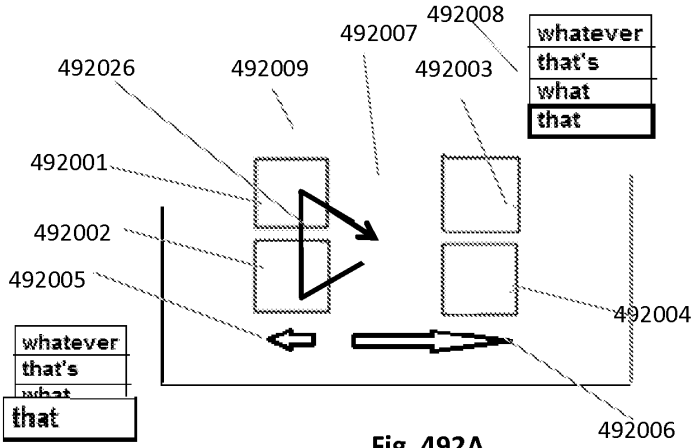


Fig. 492A

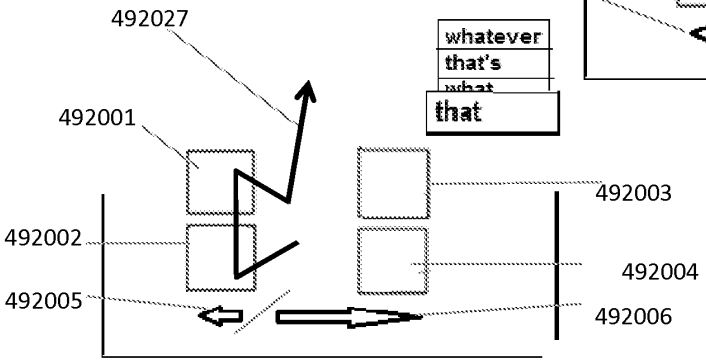


Fig. 492B

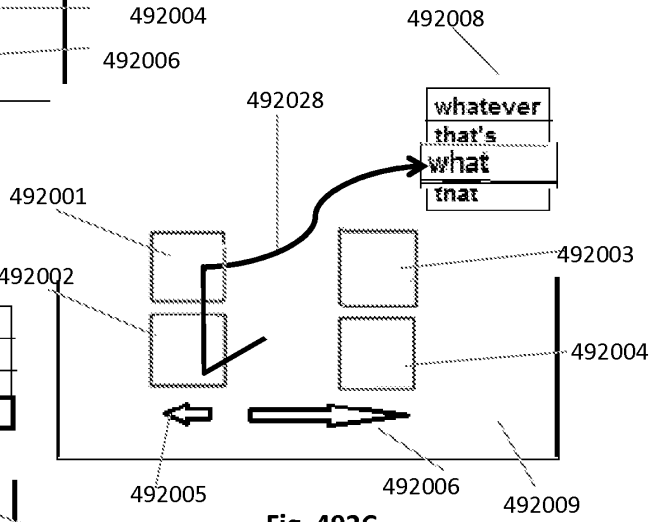


Fig. 492C

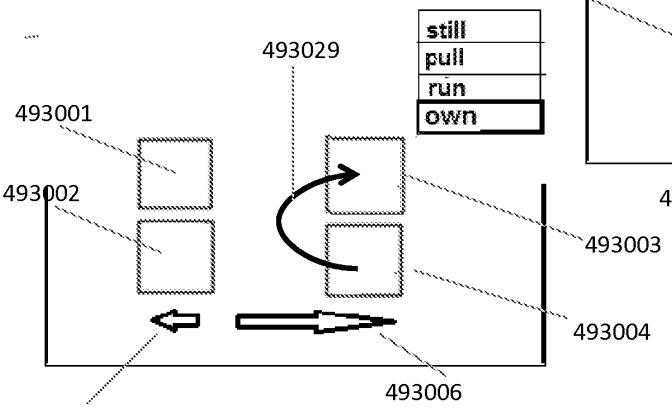
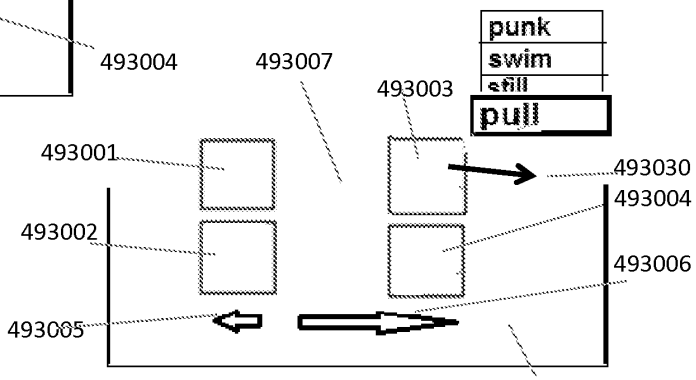


Fig. 493A



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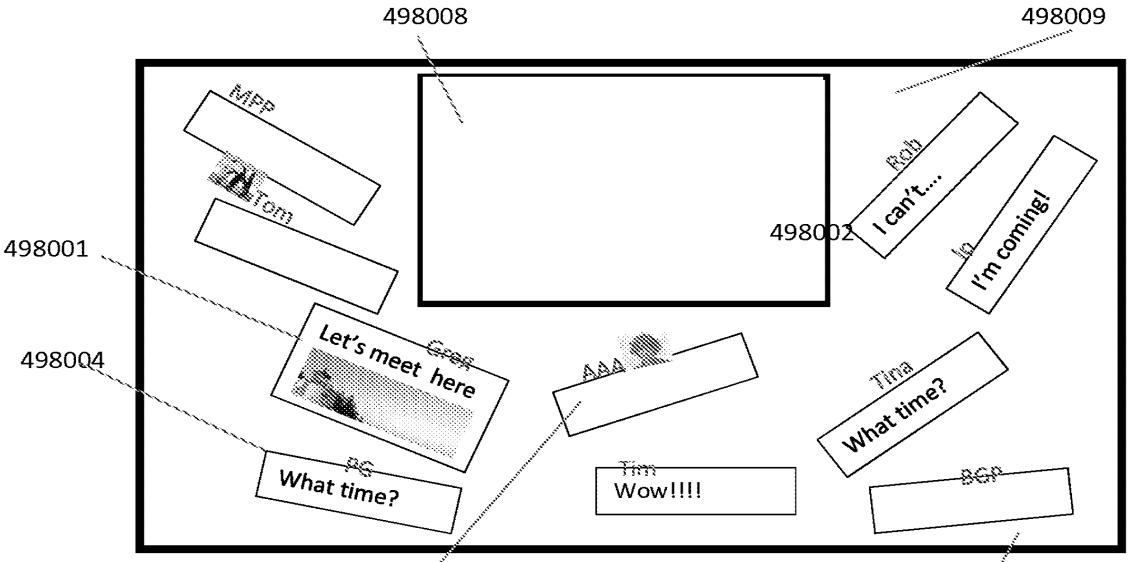

Fig. 498A

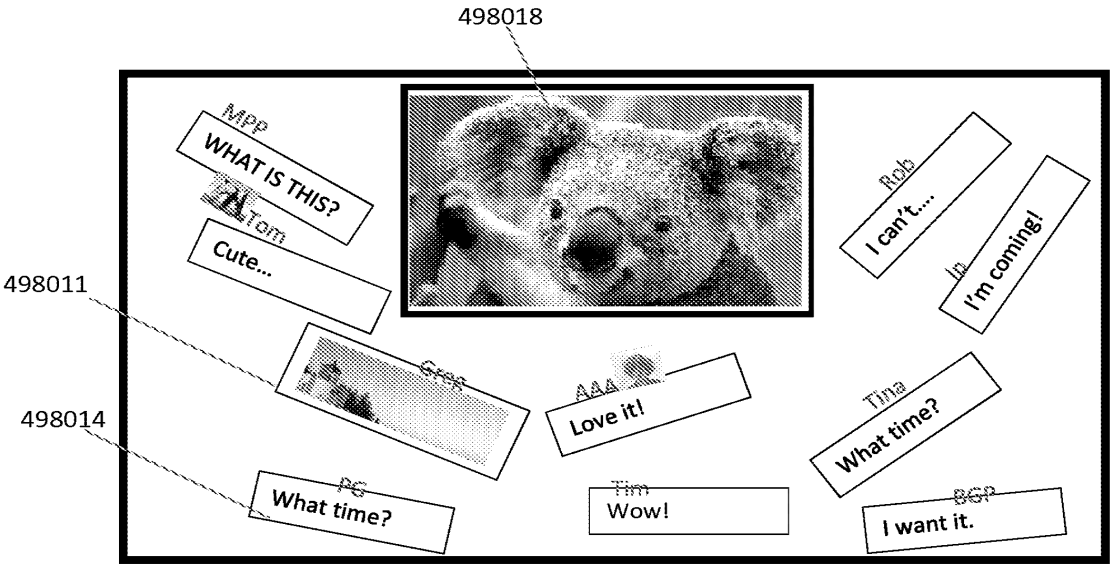

Fig. 498B

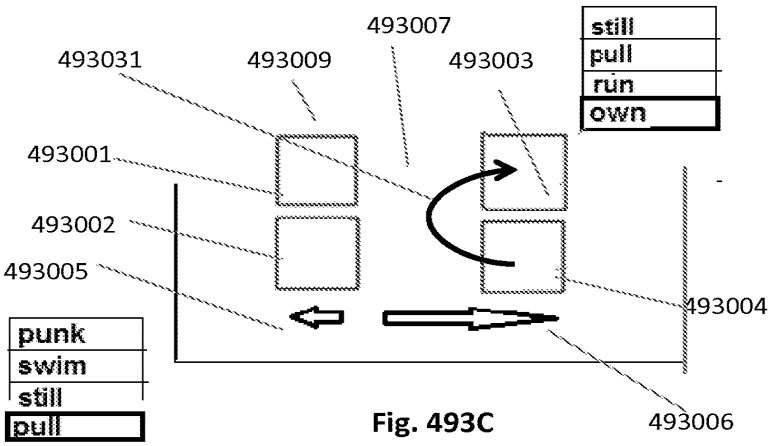

Fig. 493C

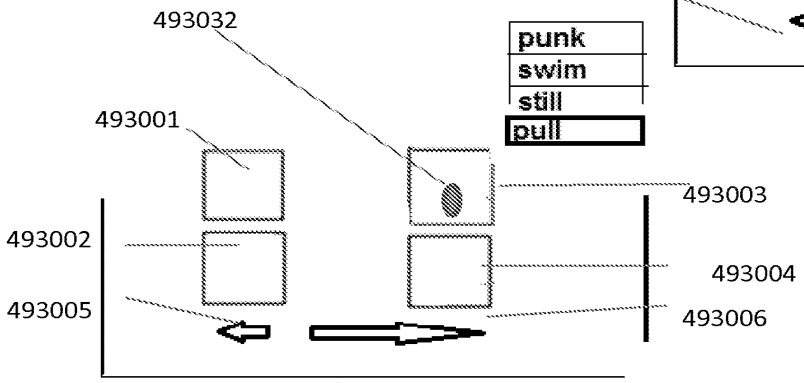

Fig. 493D

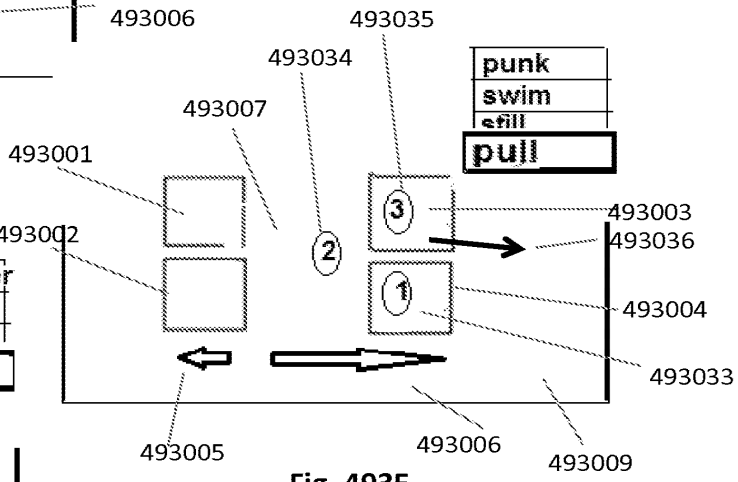

Fig. 493E

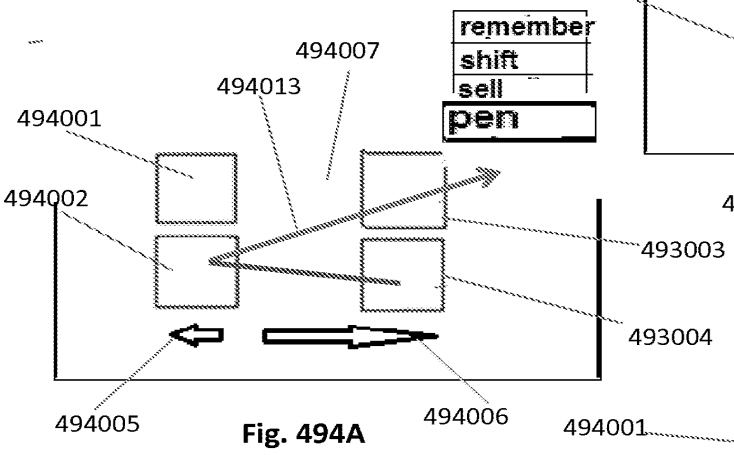

Fig. 494A

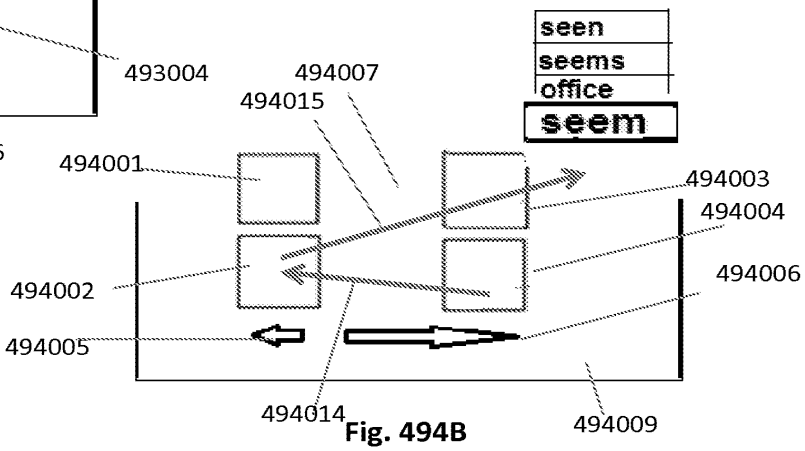

Fig. 494B

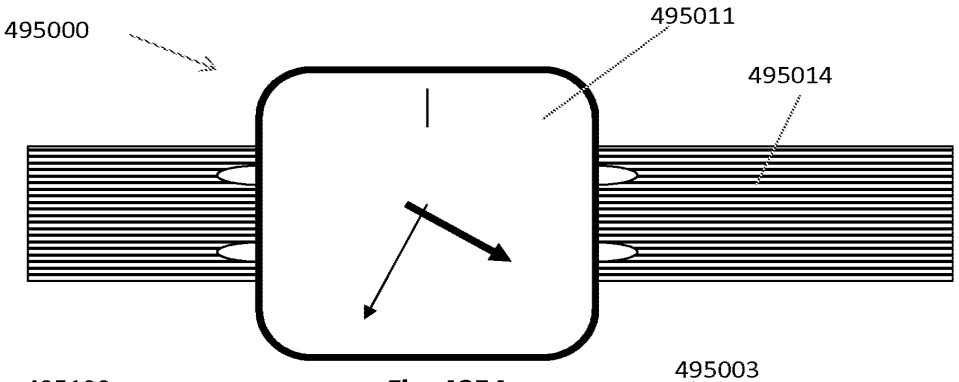

Fig. 495A

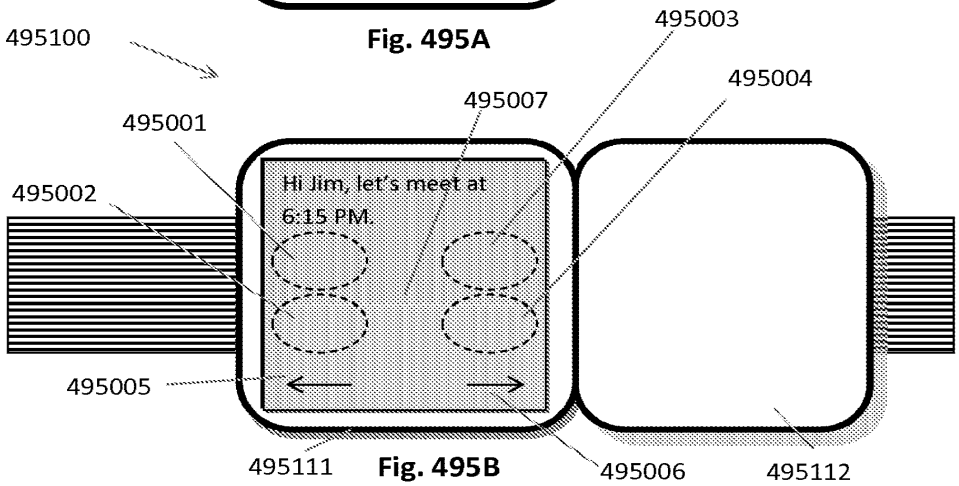

Fig. 495B

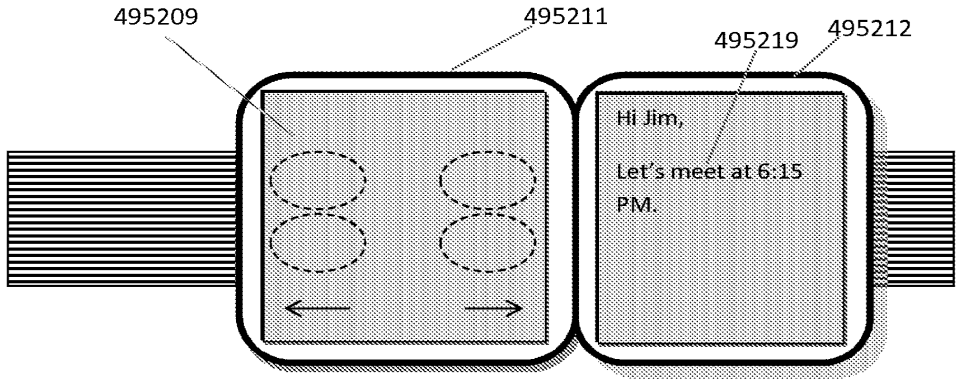

Fig. 495C

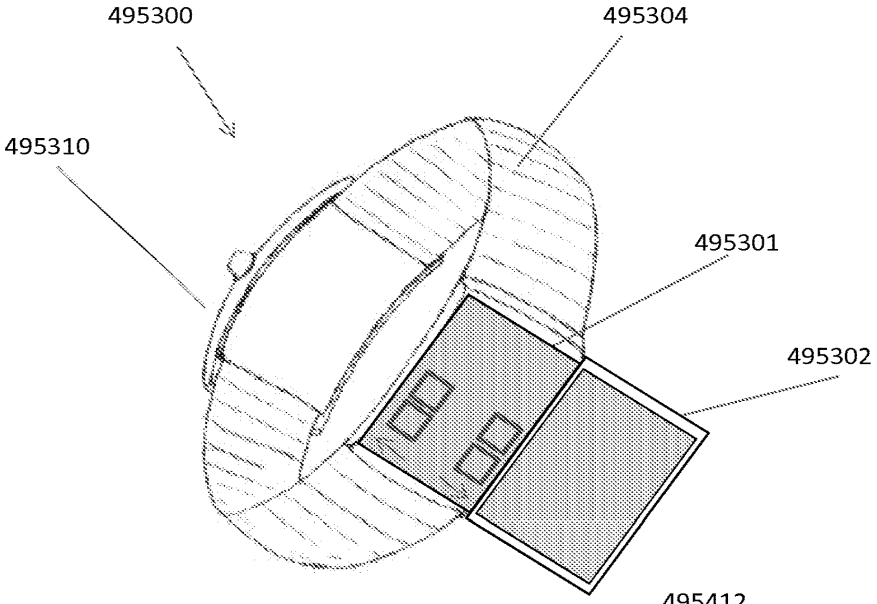

Fig. 495D

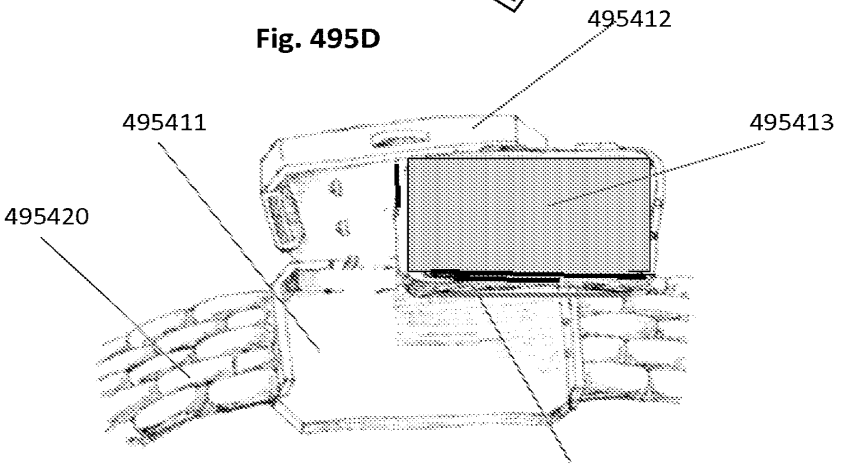

Fig. 495E

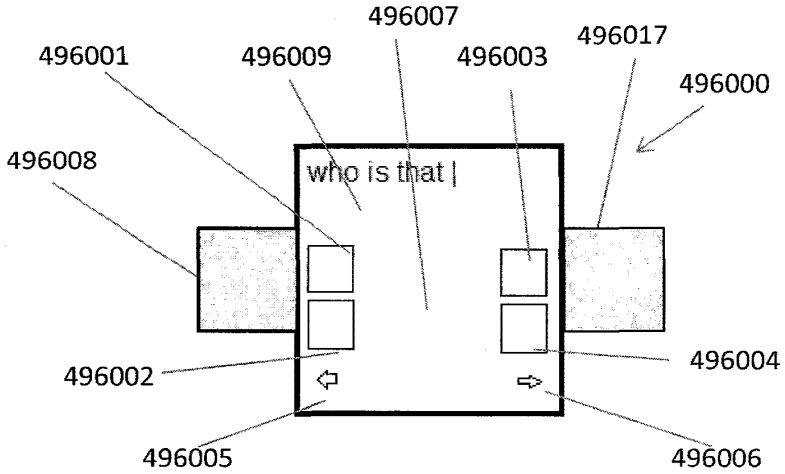

Fig. 496A

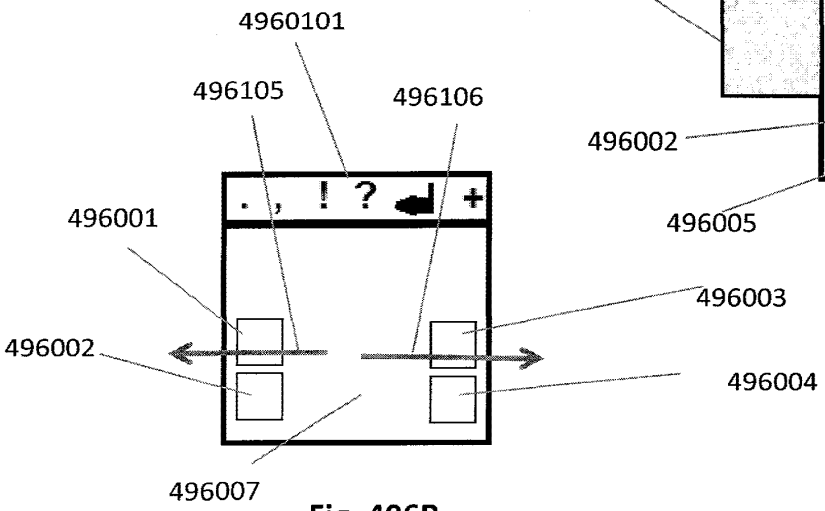

Fig. 496B

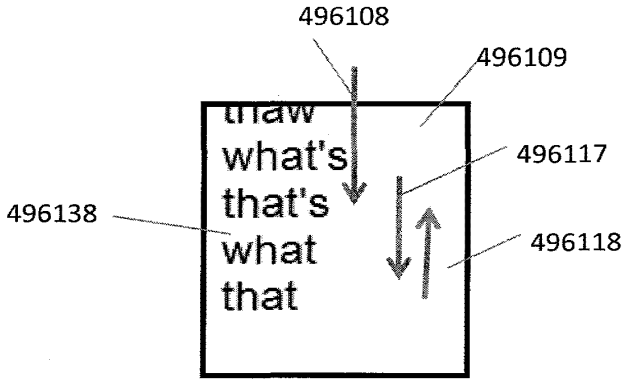

Fig. 496C

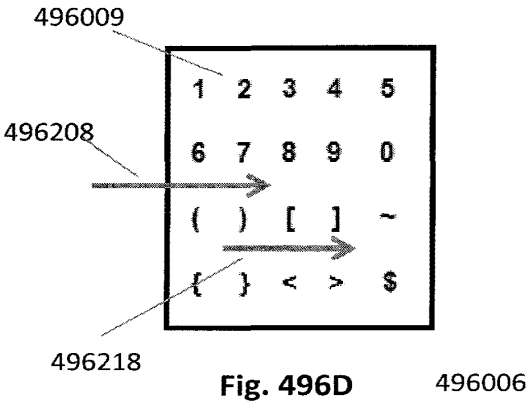

Fig. 496D

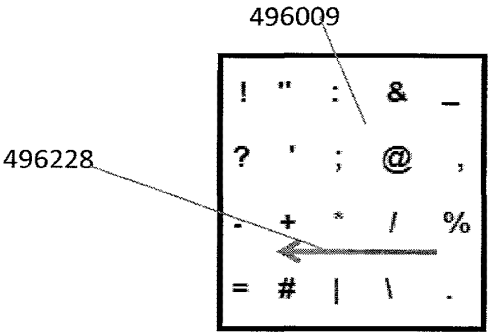

Fig. 496E

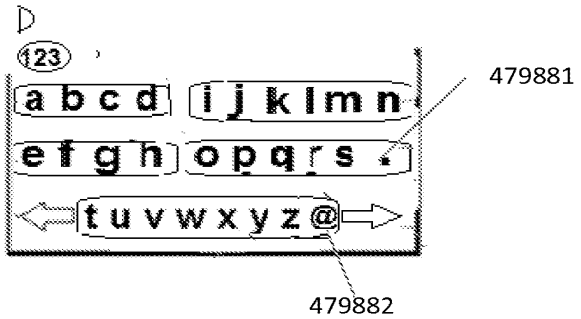

Fig. 479L

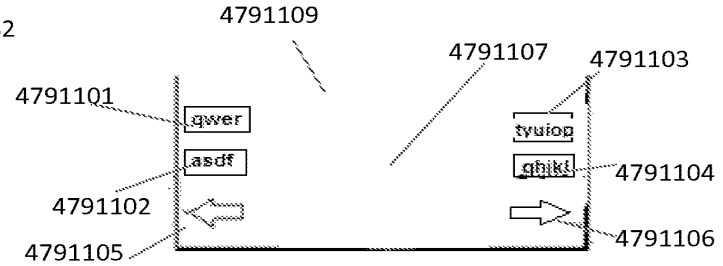

Fig. 479M

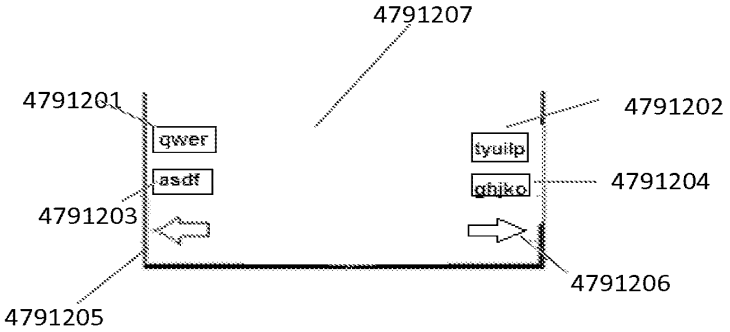

Fig. 479N

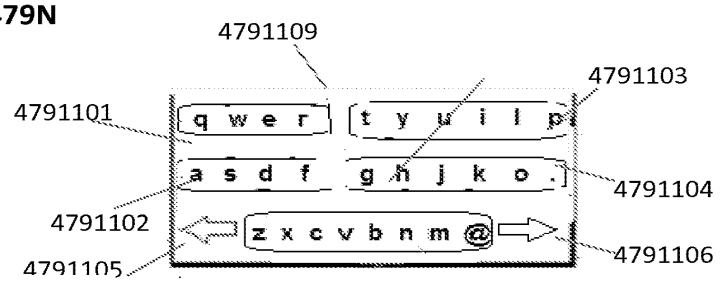

Fig. 479O

Fig. 479P1

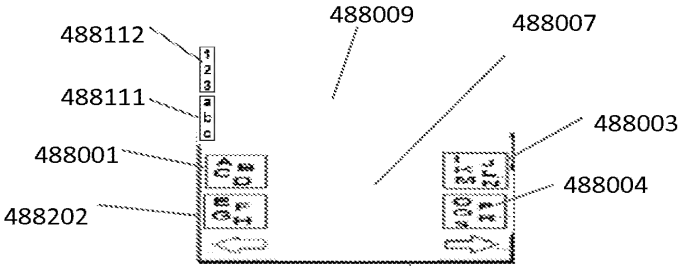

Fig. 488D

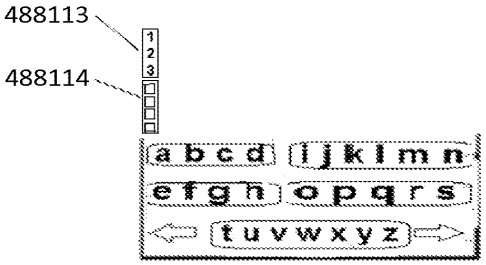

Fig. 488E

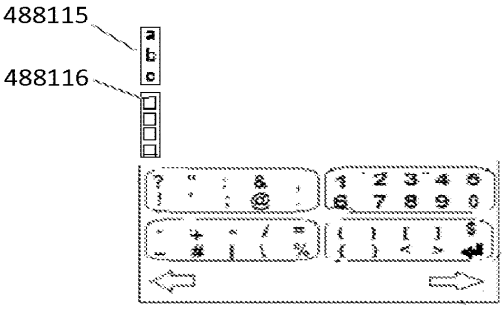

Fig. 488F

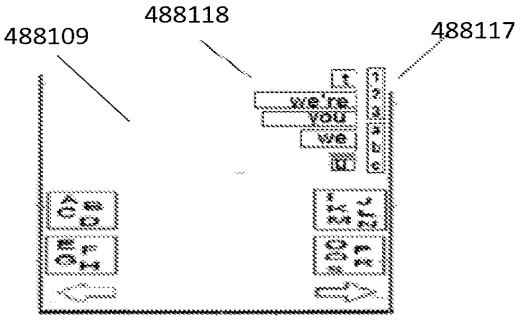

Fig. 488H

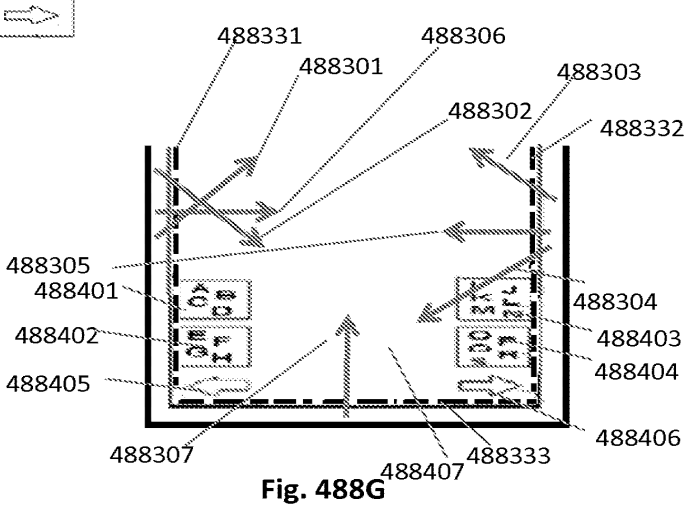

Fig. 488G

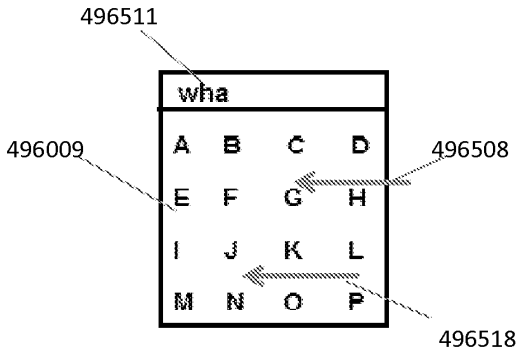

Fig. 496F

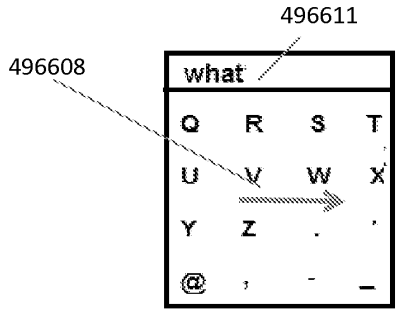

Fig. 496G

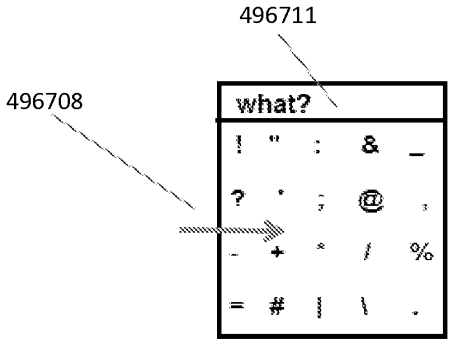

Fig. 496H

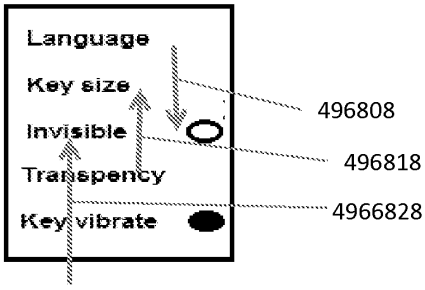

Fig. 496I

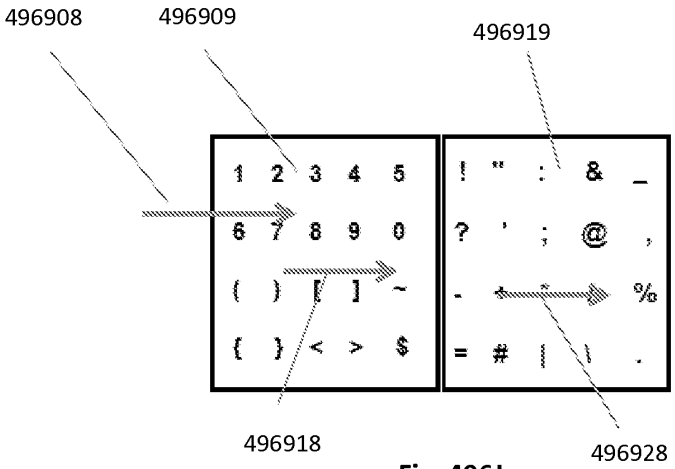

Fig. 496J

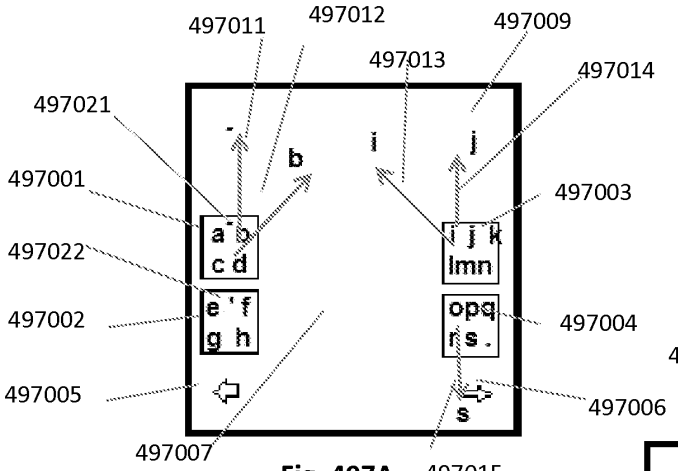

Fig. 497A

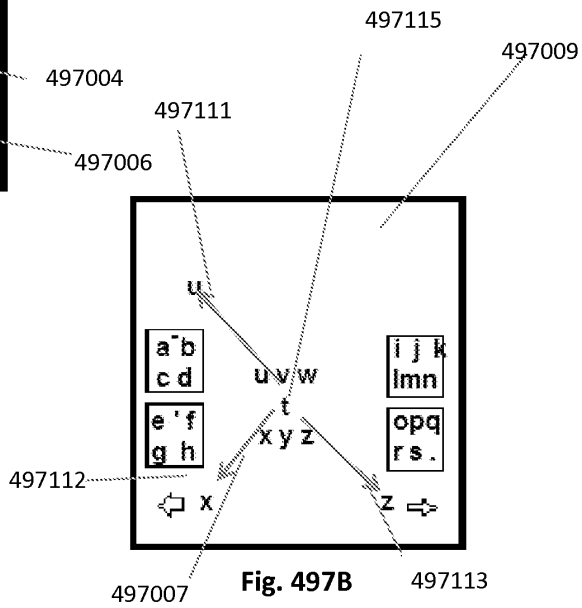

Fig. 497B

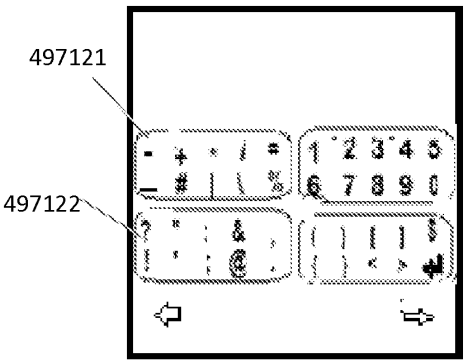

Fig. 497C

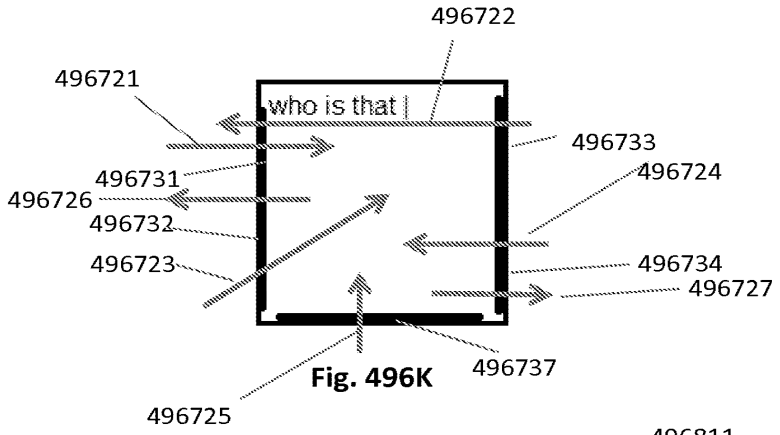

Fig. 496K

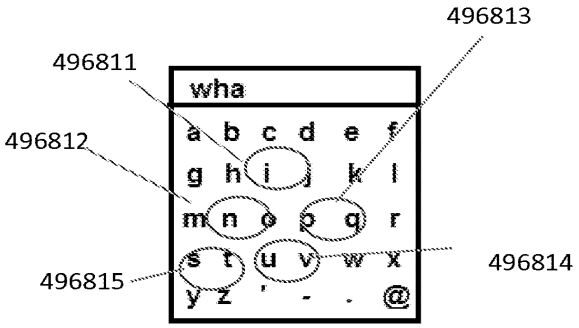

Fig. 496L

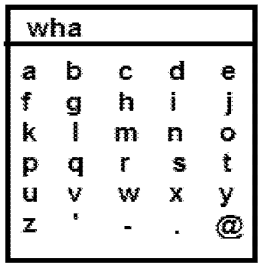

Fig. 496M

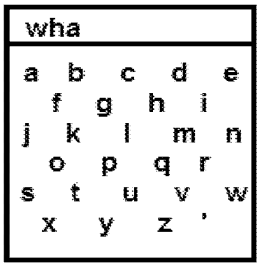

Fig. 496N

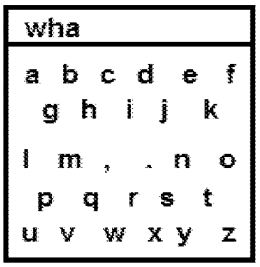

Fig. 496O

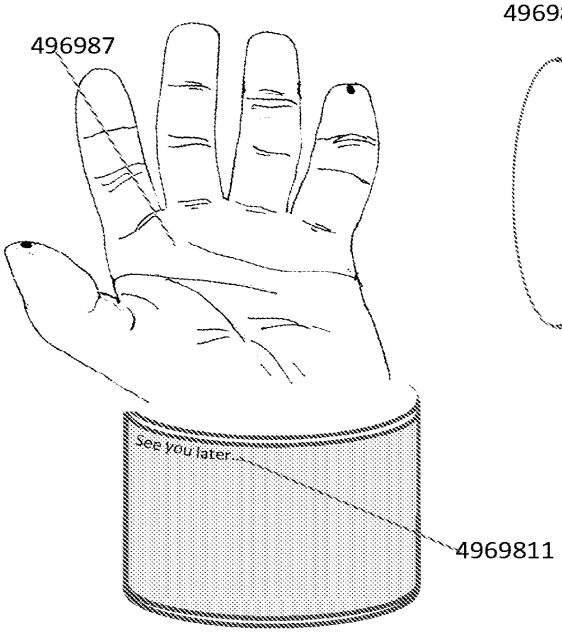

Fig. 496Q

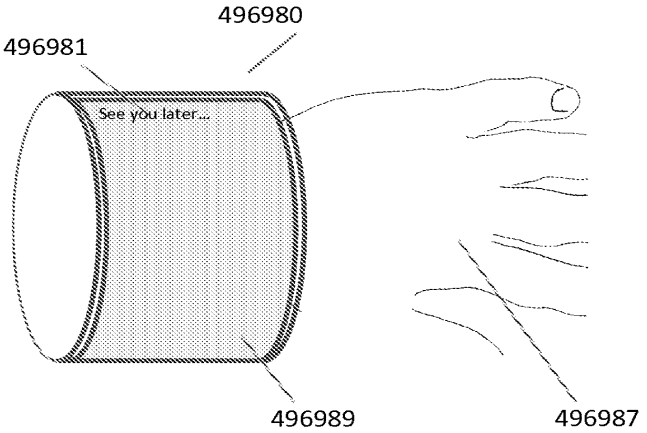

Fig. 496P

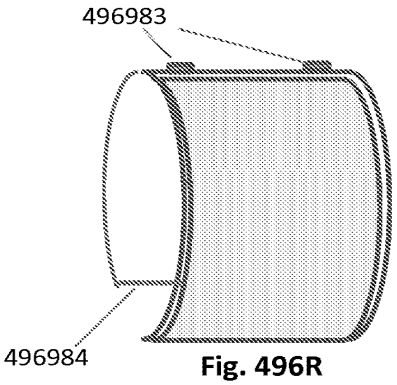

Fig. 496R

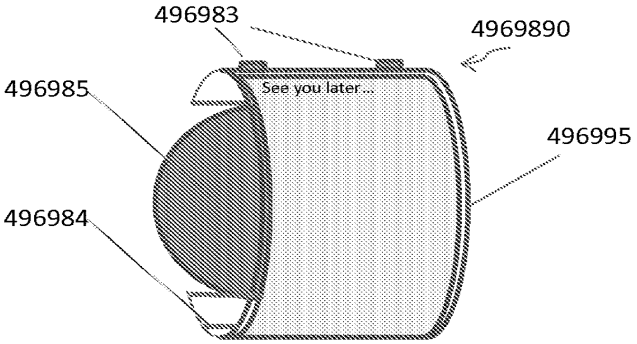

Fig. 496S

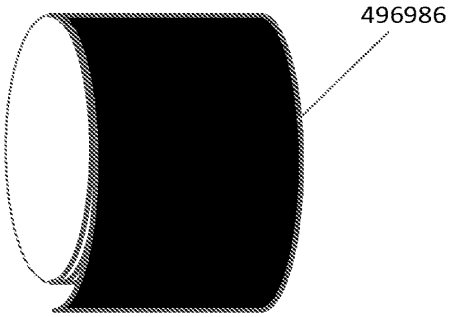

Fig. 496T

Fig. 496O

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	IMPROVED DATA ENTRY SYSTEMS
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-052-C38-USP
Filed as Small Entity	

Provisional Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Provisional Application Filing Fee	2005	1	130	130
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($)
Miscellaneous:				
		Total in USD ($)		**130**

Electronic Acknowledgement Receipt	
EFS ID:	16795822
Application Number:	61875192
International Application Number:	
Confirmation Number:	4553
Title of Invention:	IMPROVED DATA ENTRY SYSTEMS
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-052-C38-USP
Receipt Date:	09-SEP-2013
Filing Date:	
Time Stamp:	13:02:41
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
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RAM confirmation Number	11887
Deposit Account	
Authorized User	

File Listing:

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

1	Specification	2104-052-C38-desc-clean-09-09-13.pdf	803832 5339488010a520650ca31e33bca885c6a0d52af1	no	111
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Information:					
2	Transmittal of New Application	2104-052-C38-transmit.pdf	822729 fcf139fa9c5148ca3caa0d13fb50da46550ee955	no	3
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3	Drawings-only black and white line drawings	2104-052-C38-figs467A-498B.pdf	1170264 3fe99df1a53e38b4f043b1736849e505d6c45466	no	37
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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.

Date: 09/September/2013

US Provisional Patent Application

Our ref: 052-c38

Title: IMPROVED DATA ENTRY SYSTEMS

Inventor: BENJAMIN FIROOZ GHASSABIAN

This application is part of the previous US Provisional Patent Applications:
The present application claims priority from US patent applications:

- application number 61599000 filed on February-15th, 2012
- application number 61601143 filed on February-21st, 2012;
- application number 61603390 filed on February-26th, 2012;
- application number 61608181 filed on March-8th, 2012;
- application number 61612509 filed on March-19th, 2012;
- application number 61613580 filed on March-21th, 2012;
- application number 61617224 filed on March-29th, 2012;
- application number 61620525 filed on April-5th, 2012 ;
- application number 61637384 filed on April-24th, 2012;
- application number 61641378 filed on May 2nd, 2012;
- application number 61647611 filed on May 16th, 2012;
- application number 61649322 filed on May 20th, 2012;
- application number 61651089 filed on May 24th, 2012;
- application number 61652950 filed on May 30th, 2012;
- application number 61656091 filed on June 06th, 2012;
- application number 61659536 filed on June 14th, 2012;
- application number 61660755 filed on June 17th, 2012;
- application number 61661390 filed on June 19th, 2012;
- application number 61663582 filed on June 24th, 2012;
- application number 61669152 filed on July 09th, 2012;
- application number 61671741 filed on July 15th, 2012;
- application number 61674358 filed on July 22th, 2012;
- application number 61679858 filed on August 06th, 2012;
- application number 61683219 filed on August 15th, 2012;
- application number 61697414 filed on September 6th, 2012;
- application number 61699408 filed on September 11th, 2012;
- application number 61704682 filed on September 24th, 2012;
- application number 61705164 filed on September 25th, 2012;
- application number 61711798 filed on October 10th, 2012;
- application number 61714842 filed on October 17th, 2012;
- application number 61718297 filed on October 25th, 2012;
- application number 61723860 filed on November 08th, 2012;
- application number 61730130 filed on November 27th, 2012 ;

- application number 61730584 filed on November 28th, 2012;
- application number 61737951 filed on December 17th, 2012;
- application number 61746581 filed on December 28th, 2012;
- application number 61749338 filed on January 06th, 2013;
- application number 61754707 filed on January 21th, 2013;
- application number 61760770 filed on February 5th, 2013;
- application number 61761321 filed on February 6th, 2013;
- application number 61764078 filed on February 13th, 2013;
- application number 61765751 filed on February 17th, 2013;
- application number 61766747 filed on February 19th, 2013;
- application number 61769285 filed on February 26th, 2013;
- application number 61772066 filed on March 4th, 2013;
- application number 61774605 filed on March 8th, 2013;
- application number 61777102 filed on March 12th, 2013;
- application number 61778888 filed on March 13th, 2013;
- application number 61802690 filed on March 17th, 2013;
- application number 61803456 filed on March 20th, 2013;
- application number 61804681 filed on March 24th, 2013;
- application number 61810805 filed on April 11th, 2013;
- application number 61811756 filed on April 14th, 2013;
- application number 61813271 filed on April 18th, 2013;
- application number 61814290 filed on April 21st 2013;
- application number 61819598 filed on May 5th 2013;
- application number 61821331 filed on May 9th 2013;
- application number 61822934 filed on May 14th 2013;
- application number 61823971 filed on May 16th 2013;
- application number 61825049 filed on May 17th 2013;
- application number 61827020 filed on May 24th 2013;
- application number 61830114 filed on June 02nd 2013;
- application number 61833512 filed on June 11th 2013;
- application number 61833991 filed on June 12th 2013 ;
- application number 61834889 filed on June 14th 2013;
- application number 61835704 filed on June 17th 2013;
- application number 61837662 filed on June 21th 2013;
- application number 61838288 filed on June 23th 2013;
- application number 61838403 filed on June 24th 2013;
- application number 61841360 filed on June 30th 2013;
- application number 61843391 filed on July 07th 2013;
- application number 61846030 filed on July 14th 2013;
- application number 61858210 filed on July 25th 2013;
- application number 61860396 filed on July 31st 2013;
- application number 61865254 filed on August 13th 2013;
- application number 61866119 filed on August 15th 2013;
- application number 61868172 filed on August 21st 2013; and
- application number 61869722 filed on August 25th 2013.
-

The drawings and text of the above applications are incorporated herein by reference. The titles used in this application and in the related applications may preferably not be considered as part of the descriptions.

Glide and hold for selecting a text written in said trajectory

According to one embodiment, a word or a chain of words may be selected by a predefined type of interaction such as a gliding action including a holding action (e.g. glide and hold, press and hold and glide) on said word (e.g. or chain of words) or preferably near said word (e.g. or chain of words) in the direction/trajectory that said word (e.g. or chain of words) has been entered. In this case, according to one method, a press and holding action on the screen/picture may correspond to another function such as for example a horizontal trajectory for a text to be entered. A selected word may be edited. According to one method, after selecting a word, other candidates corresponding to the input information corresponding to the selected word may be presented to the user.

Using online graffiti

Sharing real time

Private fonts, Share fonts, share tools

The image editing application/functions described herein may permit providing/typing graffiti on a background image / textbox. As such according to one embodiment a social picture sharing application may be created so that user can, edit (e.g. write graffiti preferably simultaneously, an image in in a cloud server.

Reserved location on an image

According to one embodiment, the image editing system may be designed such that to not allow (e.g. editing) access in a predefined location on an image, preferably unless a user has an authorization (e.g. through a password). For example, access to the bottom right of an image may be reserved to an editor's signature or an advertisement, etc.

According to one embodiment, mouse function of the system may be used to edit an image. As an example, if the user provides a press-and-holding action (e.g. anywhere or between the keys) on an image/screen, the system may show several mouse functions such as select, select all, copy, cut, past, preferably around his/her finger. The user them may slide the finger towards one of the functions to activate it. As an example:

Select: a portion of an image may be selected by many means. As an example, the menu of the system may have several selection pattern (e.g. square, round, free pattern, etc.) buttons, wherein after interaction with such a button, the use may provide a gliding action on a desired location on the picture, and the system may select a portion of the picture according to the shape of the selected pattern and preferably the length of the gliding action. Optionally, a press-and-holding-and-gliding action at any moment on the screen/image may result in selecting a portion of the image based on a predefined or the last selected pattern.

According to one embodiment, the selected portion may be resized by for example touching a predefined point of it and dragging said point. According to one method, providing a long pressing action combined with gliding action in s predefined direction may resize the selected portion accordingly. According to one method a such gliding action in the middle of the selected portion drags the portion in the corresponding direction on the screen.

Copy: after selecting a portion of picture, a press and holding action combined with a gliding action in the direction of the Copy function/icon may preferably copy the selected portion of the image.

Cut: after selecting or copying a portion of picture, a press and holding action combined with a gliding action in the direction of the Cut function/icon may preferably cut the selected portion from the image.

Paste: after selecting or copying a portion of picture, a press and holding action in a desired location on the screen/picture combined with a gliding action in the direction of the Paste function/icon may preferably paste the copied portion, preferably on in the pressed position, on the image/screen.

Select-All: a press-and-holding-and-gliding action at any moment on the screen/image in the direction of Select-All function may select the whole image.

It must be noted the features and methods of editing an image/picture as described herein are created to permit a simple and quick picture taking/picking, editing, and sharing procedure(s).

Preferably during the modifications/editing (e.g. of the/a word/text) described above, the image/picture on which the editing procedures are being applied is shown to the user so that he can rectify apply and/or rectify his/her modifications accordingly (e.g. according to the image or a portion of the image characteristics).

According to one embodiment of the invention, preferably, an interaction, such as press-and-holding action or a gliding action, corresponding to mouse functions is not provided on a text or on a selected portion of an image (e.g. herein may be referred to as the selected content) to not interfere with other functions such as dragging a selected content . As such according to one example, after selecting a content such as an image or a text (e.g. one or more words. Note that a grabbed word or a word being entered is also considered as a selected text) if a user provides a gliding action including a press and holding action (e.g. at the beginning of the gliding action) at a position/location on the screen wherein said gliding action corresponds to a pasting action, the selected content may be pasted at that position/location. Fig. 438A shows as an example, a picture 438010 being displayed on the screen of an electronic device such as a smartphone or tablet, and wherein a menu 438011 relating to selecting patterns is also shown/poped up. After the user selects one of the patterns 438012, he may provide a gliding action 438013 on a desired location on the screen to select the portion of the image 438014 at that location corresponding to the shape of the pattern and the length of the gliding action. Then, as shown in fig. 438B, by providing a press and holding action (e.g. or a press and holding action combined with a gliding action in a predefined direction) on a desired position on the screen/image and the system may paste the selected portion at that location. Preferably (not shown), after selecting a selecting pattern, the menu is removed from the screen so that to permit the access to the whole image/screen for the pasting action. Note that, (e.g. after providing a press-and-holding action) the different directions of the gliding actions corresponding to different mouse function may be those described before in related/previous patent applications filed by this inventor (e.g. gliding towards lower-right direction may correspond to selects all/select the whole picture, towards lower-left may correspond to paste function. Gliding towards upper-left direction may correspond to cut function. Gliding upper-right direction may correspond to copy function, etc.

It must be noted that the functions, interactions, procedures, methods. etc., relating to editing a picture as described throughout this and the related patent applications filed by this inventor may not be restricted to editing a picture. The may be used to provide functions in any other application.

The keyboard used with the picture editing applications/concepts/functions/etc., as described in this and the related patent applications filed by this inventor may be of any type. As an example, said keyboard may be a keypad of the invention having any number of (e.g. letter) keys (e.g. two to eight) wherein at least some (e.g. one) of the keys corresponds to several characters/letters, and use a word prediction software to predict words from a corresponding database. According to one method, the letter keys of such keyboard may be related to all of the letters of a language excluding a/the predefined zone corresponding to non-preferred characters. According to another method, such keyboard may include one or more predefined zones corresponding to non-preferred character. Preferably, the letter keys may be split into two or more groups wherein each group is located on a different side/edge of the (e.g. screen of) the corresponding device, and wherein such a/the zone may be located between said split groups. According to another example such keyboard may be a QWERTY keyboard. According to another example, such keyboard may be a keyboard wherein each of its letter keys corresponds to a precise letter/character/symbol and wherein its keys may be (preferably) arranged on the sides of the screen of the corresponding device.

When a (e.g. an edited) picture is shared with another party, preferably at the similar time the receiving party may receive a means such as for example a link/button preferably next/on the picture such that interacting with said means may permit the user to type on the edited picture preferably instantly and may share it (e.g. back) with the sender and/or others. If the corresponding data entry / input system is not installed in the receiving party device, said system may automatically downloaded (e.g. and installed) into the receiving party's device.

A spelling help feature/method used by the system has been described before in detail. According to one embodiment of the invention, the system may be designed such that a user may enable/disable (e.g. switch on/off) said spelling help feature/method. According to one method, said method/features may be enabled or disabled from a settings menu corresponding to the system. According to one method, when activated, said spelling help method, may be applied from the first character of a word being entered. According to one embodiment of the invention (e.g. when the spelling help is enabled), (e.g. during the entry of a text) preferably, said spelling help may be applied to a word being entered only if the user provides at least a predefined number of (e.g. at least two) key presses (e.g. herein said predefined number may be referred to as "required minimum key presses") from the (e.g. four) letter keys (e.g. from the narrowly ambiguous keys, and/or from the precise letter mode keypad). As an example, by considering the keypad of fig. 436B, if said required key presses number is two and the user provides four consecutive tapping actions on the zone 436107 between the keys (e.g. broadly ambiguous zone), the system does not use the spelling help mode even if it is activated (e.g. from the settings), to for example provide the word "much". In this example, the system relates said tapping actions to the non-preferred characters assigned to said zone and does not relate any of said tapping actions provided on the said zone to any of the preferred characters (e.g. which are assigned to the (e.g. four) ambiguous letter keys). Accordingly, according to one example, if the user taps on the key 436101, taps two times on the zone 436107, and taps on the keys 436101, the system may ambiguously relate each of the two tapping actions on the zone 436107 to any of all of the characters assigned to said zone (e.g. non-preferred characters) and to the characters assigned to the four letter keys (e.g. preferred characters) (This matter has been described before in detail) and proposes some words including the word that has the highest priority among the corresponding words. It must be noted that the system may also include a word completion means/software such that to, accordingly, propose completed words based on receiving partial input information corresponding to a (e.g. beginning) portion of a word being entered.

According to one embodiment of the invention, if the device/screen is in portrait mode, the word list may preferably be shown vertically and if the device/screen is in landscape mode, the word list may preferably be shown horizontally (e.g. as shown before).

According to one embodiment of the invention, if a word being entered is entered through interacting with the keypad of the system in precise mode, then preferably said word may simultaneously be entered in the text and in the word list (e.g. as the current predicted word). If a word being entered is entered through interacting with the keypad of the system in predictive mode, then preferably said word may be entered in the word list alone (e.g. as the current predicted word).

Methods of swapping words (e.g. in a word list) have been described before. According to one embodiment, if in the word list, in addition to the current predicted word, one or more candidates are also proposed, then a predefined swapping action for example by means of a gliding action simulating another gliding action provided from the current predicted word towards a candidate (e.g. or vice versa), wherein said gliding action is provided on the word list or in the zone between the keys, may replace the current predicted word by the first candidate word next to the current predicted word. Accordingly, an additional such gliding action may replace the current predicted word by another candidate preferably the second word next to the current predicted word, and so on. Note that, one or more such candidates may be shown on each side of the current predicted word. As such one or more gliding actions provided in a similar direction corresponding to each of the sides of the current predicted word may preferably correspond to the first, second, or other corresponding candidates on a corresponding side of the current predicted word.

With continuous description of the current embodiment, after providing a swapping action, preferably when the user appends a letter/character to or deletes a letter/character from the swapped word, the system may preferably consider the characters of the swapped portion as being precise characters (e.g. herein may be referred to as fixing a word/stem). According to one method, if the user desires to fix the current predicted word, he/she may provide a back and forth gliding action in a predefined direction such as upwards or downwards in preferably the/a predefined zone and/or on the wordlist. Now, a swapping action was applied on the current predicted word, when appending

characters to said word or deleting characters from said word, the swapped portion of the new word may be considered as fixed (e.g. precise)

According to one embodiment of the invention, the system may use one or more database of words including 1 to N (e.g. 5) gram entries. When the user enters the input information corresponding to a current predicted word, the system may preferably consider N-1 words prior to the word being entered (e.g. prior to the cursor) in the text (e.g. herein may be referred to "prefixed portion") and combine it with the input information corresponding to the current word being entered (e.g. herein may be referred to combined word information" to predict one or more words from the N gram database. Subsequently, then the system may consider N-2 words prior to the word being entered (prior to the cursor) combined said input information being entered to predict one or more words from N-1 gram database. And so on until (including) N=0 (e.g. until proposing 1-gram words). If the words preceding the current predicted word being entered are n number of words wherein n<N-1, then the system considers said n words combined with the input information corresponding to the current predicted word and begins to search in the entries of n+1 gram database then, then n, then n-1 until the 1 gram database. It must be noted, that after searching for the corresponding words, the corresponding words may be presented to the user (e.g. according to their priorities) until the user selects one of them. Note that in the search procedure as described, if a combined word information matches an entry in the database, then preferably, the system selects the last gram of said entry and proposes it to the user.

In most cases, a 2 gram word database may provide enough information to the word predictive system to accurately predict a word. But in some cases, in an N gram entry, the first beginning gram of the entry may not provide enough information to the system if it if constituted of one of a number of words such as "the", "a", "of", "to", etc. (e.g. herein may be referred to as non-informing words). In this case, an N gram database wherein N>1, may preferably mainly include entries that their first gram exclude a non-informing word. This may permit to have a reduced sized N-gram database (e.g. that also includes 1-gram entries) for an accurate prediction.

The arrangement of an N gram database to be used by a/the word prediction system for accurate and fast prediction have been described in detail in previous patent application filed by this inventor. They may preferably be included in/with this application by reference. As an example, the first gram of gram N gram entries (e.g. N=>0) may preferably include or be constituted of one or more special characters. In this case, for example, a dot character as the first gram of an N-gram entry (e.g. wherein N=2) may provide information to the system that the second word of the entry is a word that is generally entered at the beginning a sentence.

According to one method, different identified character/word (e.g. '~') or a predefined code may be assigned to different categories of entries in a database. For example, in an N-gram (e.g. 2-gram) database, a first type of character (e.g. "~") delimiting grams from each other, wherein the last gram letters are lowercased letters may be used. In a same database, a second type of character (e.g. "`") delimiting grams from each other, wherein the at least one of the last gram letters is an uppercased letter, may be used. According to another example, a third type of character (e.g. "|") delimiting grams from each other, wherein at least one of the characters of the last gram includes a character other than a letter, may be used. And so on. When the user enters a word having a characteristic such as those just described, the system may be designed such that the system searches for the corresponding word/entries within the database having at least one of said characteristics. This method permits a quicker search in the database.

According to a first method of search, when the system is looking for a word based on the input information provided by the user, the system first look in the corresponding N-gram (e.g. 2-gram) entries of the database wherein the input information provided by the user corresponds to all of the characters of the corresponding (e.g. last) gram. If there is no corresponding word found, the system may then proceed to the 1-gram entries wherein the input information provided by the user corresponds to all of the characters of the corresponding gram.

If there is no corresponding word found, the system then looks in the corresponding N-gram (e.g. 2-gram) entries of the database wherein the input information provided by the user corresponds

to the beginning characters of the corresponding (e.g. last) gram. If there is no corresponding word found, the system may then proceed to the 1-gram entries wherein the input information provided by the user corresponds to the beginning characters of the corresponding gram.

According to a second method of search, when the system is looking for a word based on the input information provided by the user, the system first look in the corresponding N-gram (e.g. 2-gram) entries of the database wherein the input information provided by the user corresponds to all of the characters of the corresponding (e.g. last) gram. If there is no corresponding word found, the system then looks in the corresponding N-gram (e.g. 2-gram) entries of the database wherein the input information provided by the user corresponds to the beginning characters of the corresponding (e.g. last) gram.

If there is no corresponding word found, the system may then proceed to the 1-gram entries wherein the input information provided by the user corresponds to all of the characters of the corresponding gram. If there is no corresponding word found, the system may then proceed to the 1-gram entries wherein the input information provided by the user corresponds to the beginning characters of the corresponding gram.

According to one embodiment of the invention, the user may type a word or grab/select a word within a text and then he/she may be enabled to delete said word from the dictionary / word-database used by the system. According to one method, the user may long-press on said word (e.g. which is preferably in a word list) to delete it. After providing the long pressing action on the word, the user may be informed of the deletion of said word by, for example, changing the color of the word or the words background to, for example, red. Note that, before deleting a word, the system may ask the user to confirm the deletion action. A words/entry deleted from the/a database may be saved along with its frequency of use such that if the user decides to re-insert it in the database, the system may insert its corresponding frequency. According to one method, delting a word from the dictionary may cause deleting it from all of the entries of an N-gram database. According to another method, said word may be deleted from the 1-gram database only.

As mentioned before, the keyboard used with the picture editing software/feature may be of any type such as for example a QWERTY keyboard. According to one embodiment of the invention, a gliding action or a long-pressing action provided from/on said keyboard may be related by the system to the trajectory of the text being entered over a/the image which preferably is printed on the screen wherein preferably a portion of it is located under said keyboard.

According to one embodiment of the invention, the keys of the keypad/keyboard (e.g. preferably in the ambiguous mode) of the invention used with a/the picture editing software/feature may be transparent/invisible so that to permit to see the content (e.g. a portion of a/the image) under said keypad/keyboard. As such, according to one embodiment, only a/the frame of a key may be shown on the screen. In the visible mode, in addition to the frame, the characters/letters assigned to a key may be printed within said frame but preferably, the rest of the key may be transparent/invisible. According to one aspect, the letters on such a key may be printed in two contrasted colors (e.g. white and black) such that regardless of the color of the content under a/the key, at any moment said characters/letters may be visible to the user. An example of a key of such keyboard/keypad is shown on different background colors (e.g. white, black, and red) in Figs. 437A to 437C.

Swapping procedure (e.g. by tapping on a word)

Methods of replacing the current predicted word/stem being entered by another candidate (e.g. another word) relating to the input information provided by the user has been described in detail before. According to one method of the invention, a predefined interaction, such as a tapping action, on any of the words of a list (including the current predicted word) of predicted words (e.g. herein may be referred to as a word list) may preferably set said word as the current predicted word. Preferably, the system also fixes the characters of the selected word (e.g. the system considers all of the characters of said selected word as precisely entered characters). According to one method, in addition to the word list, the system may preferably show the selected word also in the

corresponding text field. Additionally, the system may propose/predict one/more longer-word(s) beginning with the characters of the selected word as a new world list. According to one aspect, at this point in time, on one hand, if the user provides and end-of-word signal such a pressing the Space key, the selected word may preferably be entered into the text and the word list may disappear. On the other hand if the selected word/stem is the beginning of a desired longer-word, at least two scenarios may be considered:

1. The desired word of the user is among the words of the new word list. In this case, the user selects that word (and enters a Space character); and
2. the desired word is not a word of the words in the new word list. In this case the user proceeds to enter/append additional characters at the end of the selected word. By considering the fixed selected portion and the input information corresponding to the additional characters, the system predicts corresponding longer-words (e.g. beginning with the fixed selected portion).

According to one method, after a word is selected, if the user deletes one or more of the selected word, the remaining characters still remain fixed and corresponding longer words may preferably be proposed/predicted (e.g. in a word list of one or more words).

As an example, in order to enter the word "actionable" the user may first tap the keys corresponding to the word/stem "act". The system may propose the word "why" as the current predicted word and several more words which includes the word "act". The user may tap on the word "act" (e.g. in the wordlist) to select it. Preferably, at this time, the word "act" becomes the current (e.g. predicted) word. Now the system may propose longer words that begin with the word/stem "act" including the words "actually", "activity", and "action". At this time the user may select the word "action" by tapping on it. Now the word "action" becomes the current (e.g. predicted) word. At this time the system proposes several longer words beginning with the word/stem "action", including words "actionable", "actions", "action's". The user taps on the word "actionable" to select it. At this time the word "actionable" becomes the current predicted word and the user may press the Space key to enter said word.

Note that after selecting each of said word/stems, in addition or in replacement of within the word list, the system may also show any of the selected word/stems in the text itself.

In the current embodiment, if a provides a predefined interaction, such a tapping action, on the current predicted word (e.g. in the word list) this may result in fixing the current predicted word. As a result, if the user continues to append additional characters to the fixed current predicted word, the fixed portion may remain unchanged and based on the input information, including said fixed portion and additional characters, the system may propose one or more words.

For ease of explanation, predefined interactions such as tapping or sliding actions have been used to describe the principles of the data entry system. Note that this was only used for demonstration purposes and said predefined interactions can be used for the same purpose and can be replaced by any kind of interaction, such as speech commands, interacting with a button, or gestures in the air, etc.

Organizing a database of words

Based on the principles just described above, according to one embodiment, a database of words may be organized/created such as to include at least the most commonly used stems (e.g. "pre", "con", "com", "dia", "multi", "multi-"). According to one concept, preferably, the length of said at least most commonly used stems may be limited to a predefined number of characters (e.g. up to 3). According to one method, the user may provide the input information corresponding to a desired stem.

- If the desired stem (e.g. a stem of a long word may, by itself, be a complete word) is in the word list proposed by the system, the user may select that stem and thereafter the system may propose another word list having longer words (e.g. in some cases said a longer word may be the beginning stem of a still longer word) that may include the user's desired word/stem, as described above. And so on. Note that, as describer earlier, at any moment the user may proceed to appended additional characters to the selected stem/word or to delete characters from selected stem/word.

Note that after providing said input information corresponding to the desired stem, if said stem is not in the word list as proposed by the system, the user may provide a predefined interaction so that the system may propose an additional word list corresponding to said input information, and so on.

Note that the N-Gram database including said at least most commonly used stems may be an N-gram database (e.g. N>0) wherein said stems created as such are preferably located/positioned as the last gram of the corresponding entries of the database.

Word list

- **Wordlist in order based on length**
    - **Blue on the top**

    The predicted/proposed words may be presented in a word list according to different methods. According to a preferred method, the current predicted word may be presented at a predefined location (e.g. on the top, bottom, left side, or right side) in a word list, and the other predicted/presented words may be presented based on their length next to (e.g. under, above, right side, or left side, respectively) the current predicted word. When a proposed word (e.g. among the list) is selected, said word may preferably replace the current predicted word and additional words/candidates may be predicted based on the selected word and be presented preferably next to the current predicted word (e.g. below the current predicted word). The order of presentation of said additional predicted word(s) may preferably be based on their length and preferably, based on the alphabetical order in a same length.

    Double/more taps on a same word provides more choices

    According to one aspect, repeating an interaction such as a tapping action on a same predicted/candidate provides additional candidates based on said word/stem.
- **Spelling help starts after selection**

    According to one aspect, after a word is selected, the automatic spelling help feature described before in detail, may preferably be activated.

- **3 chars stem list**
    - **On the left**
    - **Based on 300ms pause**
- **Next applies to both sides of to the side where the gesture is provided (e.g. gesture can be applied on the wordlist itself)**

According to one embodiment of the invention, a database of words used by the system, may include may include at least substantially significant number of stems wherein their length preferably is up to three characters.

According to one embodiment of the invention, in addition to or in replacement of some of the words of a list/number of words corresponding to the input information provided by the user during the entry of a desired word as described earlier, additionally, at least some corresponding stems, preferably the beginning stem of corresponding words, may be proposed preferably on a different location. For example, the word list described throughout this application may be presented on the right side of a screen and said additional stems may be proposed on the left side of a screen. According to one method, said additional stems may be printed on the screen if the user pauses for at least a predefined period of time during the entry of the input information (e.g. key

interactions) corresponding to the desired word. According to one method, said stem(s) may be presented to the user, after the user provides the input information corresponding to (e.g. at least) a predefined number of characters (e.g. two) of the desired word preferably regardless of the/a (e.g. at least a) predefined length of a stem to be shown to the user. As a first example, after providing the input information corresponding to the first two characters of a word, in addition to longer words, the system may preferably show/present at least some (e.g. preferably, all) of the corresponding beginning stems (e.g. of words to be proposed corresponding to the input information) having two characters. As a second example (e.g. a preferred method), after providing the input information corresponding to at least (e.g. preferably, the first) four or five characters of a word, (e.g. on or starting from that moment) in addition to the corresponding words, the system may preferably show at least some (e.g. preferably, all) of the corresponding beginning stems having two characters.

With continuous description of the current embodiment, if the user selects one of the proposed stems,the system may present/predict/propose the word(s) corresponding to the input information provided by the user wherein their first (e.g. two) characters begin with the selected stem.

According to another embodiment of the invention, when a user selects a proposed/predicted word (e.g. in the word list), the system may preferably consider a predefined number of its (e.g. beginning) characters and propose other words corresponding to the input information provided by the user and having (e.g. beginning with) said characters.

According to another method, during the entry (e.g. of the input information) of a word, the proposed stems may correspond to any predefined portion of a word being entered.

Stems

Proposing the beginning stems

Can have any length

- **System decides, based on the number of diferent stems**
- **From a predefined number**

Stems shown in a tree-based order

- **Tap several times on the stem**

- **Can include all of the stems such that to not require more key presses**

Different length in a same list

According to one embodiment of the invention, during the entry of a word the system may propose the stems corresponding to a portion of a word corresponding to the input information being entered. The length of said stems may be defined differently according to several aspects such as:

a) The (e.g. length of the) stems may be constituted as a predefined number of characters such as, for example, two characters (e.g. herein may be referred to as "fixed length stems"). They may be shown to the user at a predefined moment during the entry of the input information corresponding to the word being entered.
b) The length of the stems and/or the moment to be shown to the user may dynamically be defined by the system based on various parameters. As a first example, different stems corresponding to the input information being provided by the user may be presented to the user when the number of (e.g. different) stems is less than a predefined number. According to one method, the length of the stems being proposed at any instance may be different from each other (e.g. hereafter may be referred to as "free length stems").

Preferably, each of the stems proposed to the user is a different beginning portion of the word(s) corresponding to the input information being entered.

According to one embodiment, the first time (e.g. fixed length) stems are presented to the user is when a user provides the input information corresponding to preferably a predefined number of characters. If the user selects one of said stems, then the system may propose also longer words including/beginning with said stem. Preferably, the system also proposes a number of new stems

corresponding to a longer portion of the word(s) corresponding to the input information provided until then (e.g. the key interactions and the selected (e.g. fixed length) stem). The user may select one of the new stems and so on. Note that, preferably, the length of the new stems may vary based on the corresponding words preferably such that to reduce the number of key interactions required for entry of a desired word, preferably also considering that the number of presented stems are considered as not being significant (e.g. not more than seven so as to not occupy a large portion of the screen). According to another aspect, if the number of various stems is significant (e.g. more than a predefined number), the system may first show a/some of them. According to one aspect, the system may propose more stems after the user provides a predefined rejecting/next interaction.
The order of the stems shown/proposed (e.g. in a stem list) may be of any kind such as based on the frequency of use of the corresponding words, alphabetical order, etc.
It is understood that after a list of stems is shown to the user, the user has the option to select a stem or continue typing without selecting one.
Figure 439 shows a flow chart relating to a preferred method of for entering words while using/interacting with stems and/or complete words and/or the keyboard. In step 439001, the user enters the input information (e.g. appending characters by tapping on the keys of the keyboard) corresponding to a number of characters of a desired word. Said number of characters may be a predefined number of characters or the number may be defined dynamically by the system depending on the number of the corresponding various stems relating to the provided input information. In step 439001, the system shows/proposes the corresponding words corresponding to the provided input information. At step 439003 the system shows/displays, at preferably the same time as step 439002, a number of various stems corresponding to the beginning characters of the words of the database corresponding the provided input information. According to a preferred method, the length of said stems may a fixed and/or limited number of characters such as, preferably, two characters. Note that the number N, in step 439001, may vary depending on the nature of the database. Preferably, the relationship between the said various stems and the input information may be such that the stems may be presented/proposed given that the number of such various stems complies with set criterion/criteria (e.g. predefined number or limit). At the condition 439011, if as show in step 439004, the user selects a proposed stem or a complete word, then as shown in step 439005, the system may propose new word(s), if at all any, wherein their beginning characters start with the selected stem or word of step 439004. Now, as shown in step 439006, the system may propose/show new stems (e.g. longer than the previous stems) preferably beginning with the selected word/stem and corresponding to the input information provided to the user until then. At this point, as shown in condition 439010, if the user provides an end of word (EOW) signal, such as tapping on the Space key, the system may enter the selected word. If not, the system goes to condition 439011.
With the continuous description of the current example, after exiting step 439003 or exiting condition 439010, if at the condition 439011, the user ignores the proposed/presented stems and/or completed words and proceeds to the step 439007 by continuing to input addition input information (e.g. appending characters), the system may show/propose new words and/or stems. Note that if the system enters step 439007 from a path including step 439003, then the length of the proposed stems may preferably be similar to those stems as described in step 439003. Alternatively, if the system enters step 439007 from a path including condition 439010, then the length of the proposed stems may preferably be similar to or longer than the stems proposed/shown in step 439006.

Note that it may happen that the length of the stem and the length of the selected word are equal.

A character in remaining portion which is rarely used with others

According to one embodiment of the invention, instead of or in addition to the stems, during the entry of a word the system may show/propose a specific character of a word corresponding to the input information provided by the user. Preferably, said character may be a character (e.g. z, x, b) that is rarely used in the corresponding words.

In the current embodiment of the invention, providing a predefined interaction corresponding to informing the system that the words in the word list at some location (e.g. on the right side) are rejected so as to cause the system to show more corresponding words, may also cause the system to show more stems at some location, preferably on the left side of a screen.

According to another embodiment of the invention, a first predefined interaction causing the system to show more stems, may be a different predefined interaction from said first predefined interaction such as, for example, sliding on a proposed list of stems.

- **Priority to inverse for stems/ show less priority first**

According to one method, the stems shown to the user corresponding to the input information provided by the user, may be presented according to some criterion/criteria, such as, for example, according to their stem frequency/priority such as, for example, from highest to lowest or, as another example, from lowest to highest.
According to a preferred embodiment, the order of stems being presented to the user based on the corresponding input information entered by the user, may preferably be based on the beginning stems of a word that requires many key presses before being predicted/proposed by the system.

Precise letters in predictive mode for stems

Showing precise and/or ambiguous words, simultaneously (e.g. on opposite sides of a screen), based on user interactions with the keys/zones of a keypad has been described in detail herein. According to one embodiment of the invention, in the word list corresponding to ambiguous key presses provided by the user one or more words corresponding to precise characters relating to said key interactions may be proposed to the user. As such, at any moment during the entry of a word, a user may enter a desired stem of a word and then interact (e.g. tap on) with that stem to select it and to later provide longer words, as described herein, where the beginning portion of the longer word corresponds to the selected stem. According to one embodiment, the keys used for such purpose are ambiguous keys of the invention displaying the preferred (e.g. and/or none-preferred characters).

Precise Characters/Stems

According to one method of the invention, a stem/portion, preferably the beginning stem/portion of a word, may be entered precisely, letter by letter. The method of entring precise characters using/through ambiguous keys has been described in detail before. As an example, according to one method, when the system is in ambiguous mode, interacting with a key (e.g. such as a tapping action on a key) may simultaneously be interpreted by the system as ambiguous interactions and precise interactions. As mentioned before, when a user taps on a key, the system may consider the tap as being ambiguously related to any character on said key. Simultaneously, the system may also relate said tapping action on the key to an identified character on which, or on a zone to which, said said character is assigned and wherein said tapping was provided. Other characters on said key may be entered precisely by providing corresponding gliding actions on/from said key. According to one method, preferred characters may also be entered precisely by providing corresponding (e.g. short) gliding actions as described before (e.g. upward, downward, leftward/rightward). As an example, if the user desires to enter the word "organization" the user may first tap precisely on the letters 'o' and 'r' on the corresponding keys, then provide a gliding actions corresponding to the letter 'g'' to enter it precisely. By considering said tapping and gliding actions (e.g. input information), the system may propose two kinds of words. A first type of word is provide/presented as if all the characters relating to the word are considered by the system as being entered precisely. In this case, the word/stem "org" is proposed. Simultaneously, one or more second type of word(s) may be proposed based on ambiguous key interactions (e.g. except the character 'g' that was entered precisely). In this example, the system may propose 'dog', 'dogs', 'organic' and 'roger'. At this time the user may tap on the precise chain of characters to select it, and the system may propose a number of longer words beginning with said precise chain of characters/stem "org" (e.g. the words:

'organic', 'organized', 'organizes', 'organization'). Selecting a stem to provide longer words/stems and methods of entering any of them have been described in detail before.
Note that, after the user provides such key interactions/input information, according to various methods, the system may provide one or more longer words based on or considering said chain of characters as being precisely entered and one or more words (e.g. same sized words or longer words) by (e.g. simultaneously) considering said input information as being ambiguously entered.

- 1 precise word, others ambiguous
    - **Show the after that precise**
    - **Show the list**

After entering such input information and selecting one of the proposed words if the user provides additional input information (e.g. key interactions), according to one method the system may consider said additional input information as being ambiguously entered and/or precisely entered and may provide words correspondingly.

Note that, ambiguous input information preferably refers to input information wherein said information refers to at least one or more ambiguous characters even if said input information also refers to one or more precise characters. Preferably, the word list corresponding to proposed words/stems may include both stem(s)/word(s) that include the characters precisely entered and/or one or more words ambiguously corresponding to the provided input information. As an example, when the user taps on a key, the system may refer said tapping action to two scenarios.

A) According to a first scenario, the system refers said tapping action to an identified character on the key on which the tapping action was provided.
B) According to a second scenario, the system ambiguously refers said tapping action to any of the characters on said key. These matters have already been described before in detail.

- **Include special chars**

Providing short and/or long gliding actions in a predefined direction on/from a key/zone for entering two different characters (e.g. a letter and/or a special character, respectively, or vice versa) has been described before in previous patent applications filed by this inventor. According to a preferred embodiment of the invention, in addition to tapping precisely on the preferred letters on the keys, when the system is in the ambiguous mode, short gliding actions provided on an ambiguous key may correspond to entering precise characters/letters assigned to said key and longer gliding actions on/from said key may preferably correspond to entering special characters assigned to said key. Accordingly, a long pressing action on an ambiguous key may correspond to entering a special character, too. Preferably, after beginning a gliding action and/or providing a long pressing action on/from a key, the system may show the letters and special characters assigned to said key (e.g. including or excluding preferred characters as shown in Figure 440B) so that the user can see them while providing said gliding and/or long pressing actions. Figure 440A shows, as an example, the keypad of the invention in ambiguous mode before providing a gliding and/or long pressing action on/from any of the keys of the keypad. Figure 440B shows the keys of said keypad during providing a gliding action (e.g. short/long) and/or long pressing action, provided on any one of the keys of the keypad. A key of this keypad, in such a case, herein may be referred to as 'expanded key.' According to one method, only the key on which said gliding and/or gliding action is provided is expanded. According to another method, all of the keys may be expanded during providing of a gliding action and/or long pressing action on any key. In the example of the keypad of Figure 440B, the preferred character 'w' can, preferably, be entered by providing a tapping action on it or on a zone assigned to it. On the other hand, as shown in Figure 440B, said preferred character may also be entered precisely by providing a short gliding action 440212 in its direction (e.g. upward for 'w', downward for 'n', leftward/rightward for 'a'), this matter has already been described in detail before. On the other hand, providing a longer gliding action 440211 may

preferably correspond to entering the special '2'. In this example, a long-pressing action on the key 440202, without providing a gliding action, may correspond to entering a center character (e.g. the special character '5' in this example). Alternatively, a back and forth gliding action may correspond to entering a center character.
In such case, according to one method, the expanded keys of the keypad may not be shown to the user, while such interactions are provided. This may permit, may permit the user to type on invisible keys. Preferably the invisible keys, in ambiguous mode, may be presented/displayed only by a frame as described before.

- **Short and long press**
- **Center char long press**
- **Show the keys**
  - **Can include precise preferred letters**

- **additional key presses based on ambiguous or precise**
- **Grabbing a word**

According to one embodiment of the invention, the word already entered may be grabbed (for example, for editing) by providing a double tapping action on said word.
According to one embodiment of the invention, providing a (e.g. short) gliding action, corresponding to a letter, including a holding action may change the case of the letter (e.g. from lower case to upper case, or vice versa).
Preferably, when a user provides a long pressing action or short gliding action, the center of the corresponding expanded key may be located under the touching point under the user's finger.

- **Applies to any kb**
  - **QWERTY**
  - **User can type approximately**

As mentioned before, any of the principles, features, concept, aspects, etc., may be applied to /used with any type input method (e.g. keyboard, voice recognition, handwriting recognition, lip reading, etc.) for example a QWERTY keyboard. For example, in the embodiments above, after typing a the beginning of a word, the system may propose some candidate beginning with the beginning portion, and the user may interact with a proposed word so that the system propose additional words beginning with/based on the interacted word. According to one embodiment, after providing a beginning portion of a word, when the user interacts with a key of such keyboard, the system may also ambiguously correspond said interaction with the neighboring keys of the interacted key, and by considering said beginning portion and one or more such key interactions the system predicts corresponding one or more words. In this embodiment, because the beginning portion is entered precisely, an approximate interaction with the keys corresponding to one or more remaining characters of a corresponding desired word may be enough for predicting said word.

The principles, herein described, of swapping/replacing words/stems being selected and used as a fixed portion (e.g. preferably the beginning portion) of another word/stem (e.g. and if desired/needed) appending or deleting characters from the selected word establishes a new way of inputting (e.g. typing) by mixing interactions of keys/zones of a keyboard (e.g. having ambiguous and/or precise keys) and the presented/predicted/proposed words/stems to predict a (e.g. desired) word.

- **Korean**

The principles of using stems/words mixed with keyboard interactions and word/stem interactions described herein may be applied to any type of (e.g. alphabetic) language such as Roman based languages (e.g. English, Italian), Korean, Hindi, Arabic, Hebrew, etc.

Chinese/Japanese

The principles of swapping and/or selecting word(s)/stem(s) and preferably proposing/predicting longer word(s)/stem(s) including (e.g. beginning with) a selected word/stem as described throughout this application may be used for the entry of the phonetic transcription of a word/stem (e.g. hereafter may be referred to as or a phonetic word/stem) for languages such as Chinese or Japanese (e.g. hereafter, may be referred to as a phonetic alphabet). As an example, Chinese language uses Pinyin input method wherein the Chinese characters are represented by the Roman phonetic transcription. A word of a Chinese language may be constituted of one or more characters, each may be represented by a pinyin phonetic transcription (e.g. herein may be referred to as a pinyin representation of a word, or pinyin). According to one embodiment of the invention, a database of pinyin representations of words may be used by the data entry system of the invention. As such, a pinyin representation of a word having more than one syllable may be entered by providing the input information corresponding to said syllable. A word list that may include the corresponding pinyin representations of words may be presented to the user. If the presented word list does not include the desired pinyin, the user may provide a predefined interaction such as a gliding action as described for Roman-based languages (e.g. reject action or next options action), and the system may propose/present a new word list. If needed the user may repeat this procedure until the system proposes the desired word. The user may select a desired pinyin representation of a word within the/a corresponding word list as described earlier (e.g. by tapping on it). The system may preferably fix the characters of the selected pinyin representation of a word, and preferably, may propose longer pinyin representations of words beginning with the fixed characters, and preferably also show the corresponding hieroglyphic words preferably based on their frequency of use. And so on. According to one method, during proceeding to providing the input information corresponding to the next pinyin representation of the desired word, by considering the selected pinyin representation and said input information, the system may propose one or more corresponding pinyin representations of words wherein their first pinyin representation of a word is the selected one. Now, the user may either select one of the new proposed pinyin representations of words (e.g. as the desired pinyin representation of a word or as a stem of a longer pinyin representations of a words word) or he may continue typing the next one. And so on.
In the current embodiment, according to one method, at any moment (e.g. for each selected pinyin representation of a word) during the entry of a pinyin representation(s) of a word (e.g. after providing information corresponding to the beginning symbols of a word), the user may select its/their corresponding symbol(s) or the user may select all of the symbols of the user's desired word after all of the pinyin(s) of the desired pinyin-based word (e.g. phonetic word) is/are entered.
For the sake of clarity, in the embodiments relating to a hieroglyphic language such as the Chinese or Japanese languages as described herein, a phonetic representation of a word such as a pinyin representation (e.g. as one example for the Chinese language) of a word may be considered as equivalent to a stem of a word and/or a single word in a language with an alphabetic system (e.g. English). As such all principles of the data entry system of the invention may preferably be applied to the entry of input information of a phonetic language for entering phonetic chains of characters (e.g. phonetic words/stems) which may be represented by symbols in the corresponding hieroglyphic language.

- **Double list**

- **Next applies to both symb/character and pinyin**
  - **Sp applies to symb/character**
  - **Selects a character at any moment**

According to one embodiment, the pinyins corresponding to the input information provided by the user, may be presented on a first predefined location of a screen such as the right side of a screen and the corresponding hieroglyphic symbols may be presented on another predefined location of a screen such the left side of a screen.

According to one embodiment, when the user provides the input information corresponding to a hieroglyphic word, such as a Chinese word, the corresponding predicted phonetic words (e.g. having one or more pinyins in the case of the Chinese language) may be presented in a word list, for example, on the right side of the screen. When a user selects one of said presented phonetic words, by for example tapping on said word, the system may show the corresponding hieroglyphic words at, preferably, another location (e.g. on the left side of the screen). According to a preferred embodiment, a rejecting interaction before selecting a presented phonetic word may result in the system presenting more phonetic words. According to one embodiment, after selecting a phonetic word a same interaction may result in presenting more hieroglyphic words corresponding to the selected phonetic word.

Note that, according to a preferred embodiment, when a user inputs information corresponding to a desired word, the system may preferably show the corresponding phonetic word(s) and preferably show the hieroglyphic words corresponding to the phonetic word having the highest priority in the list. After selecting a phonetic word, the system may propose one or more longer phonetic words beginning with said selected phonetic word. Preferably, after the user selects another phonetic word (e.g. one of the longer phonetic words), the system may show the corresponding hieroglyphic word(s).

The principles of entering phonetic transcription of syllables/words using the data entry system of the invention as described throughout this application, may be applied to any hieroglyphic language such as the Japanese language wherein a phonetic representation of a word is constituted of one or more Kana(s) that may be entered through Roman characters (e.g. using the data entry system of the invention to enter text using the Romaji method).

Picture editing functions/application

- **For a current predicted word or after selecting an already entered word (by press and holding on it), then:**

<u>Methods and principles of editing a picture/image/photo/video have been described before in detail. According to a preferred embodiment of the invention, a method of applying functions to a word being entered (e.g. the current (e.g. predicted) word) or to a selected word which has been previously entered (e.g. an already previously entered word may be selected by providing a predefined interaction such as a long-pressing action on said word) (e.g. hereafter the current word and/or selected word may be referred to as target words) may be considered, such as:</u>

  - **A tap on the screen (e.g. outside the selected word, if any) brings the menu, another same tap hides the menu**
- In the case that a word being entered, a predefined action such as a tapping action (e.g. anywhere outside the keypad and/or corresponding broadly ambiguous zone) on the screen, may display a menu.
- In the case that a previous word is selected, a predefined action, such as a tapping action, may be preferably provided not on the selected word.
- In the case of a targeted word (e.g. a word being entered and/or a previous word being selected herein may be referred to as targeted word), a predefined action such as a tapping action (e.g. anywhere outside the keypad and/or corresponding broadly ambiguous zone) on the screen, may display a menu. Said predefined action may preferably not be provided on the selected word or on a zone assigned to the selected word.
- After the menu is displayed, an interaction with a function of the menu may apply to the targeted word. Preferably, said application of the function may be executed in real time so that the use can see effect of the function on the targeted word. As an example, said

function may be change of the color, font, size, font, shadow, style, etc. of the targeted word.

According to one method, functions other functions (e.g. such as those other than the functions relating to a menu) may be applied to a targeted word. For example, in the case of a targeted word on a touchscreen, providing a gesture in a direction may cause the system locate (e.g. relocate) the targeted word under the user's fingers in the direction of the gesture. Preferably, during providing such gesture, the system may show (e.g. on the fly/in real time) the corresponding word in the corresponding gesture trajectory so that the user can modify the trajectory if necessary.

Preferably, a press-and-holding action anywhere on the screen and a slide of a finger in a direction may cause to move the targeted word in said direction (e.g. preferably from the targeted words original location, or optionally under the user's finger) without changing the trajectory of the targeted word itself. Note that said press-and-holding action with gesture may also be provided on the targeted word itself.

With continuous description of the current embodiment, according to one method, a tapping action on a selected word unselects said selected word. Additionally, in case of a targeted word and during the display of a menu on the screen, according to one method, a predefined action (e.g. such as a tapping action anywhere on the screen (e.g. preferably not on the targeted word)) may hide the menu.

According to one method of the invention, a gliding action on the screen may cause the system to display the keyboard on the screen without a menu being displayed on the screen.

According to one method of the invention, when a gliding action is provided on the screen, the trajectory is shown to the user preferably in the form of a line. In the case of a targeted word, according to one method, in addition to said trajectory or in replacement of said trajectory, the targeted word is displayed.

According to one embodiment of the invention, a complex gliding action such as a sequence of continuous gliding actions may be provided on the screen before enter several words. After entering said several words, the system may preferably display said several words according to the trajectory of the complex gliding action on the screen. According to one method, the system may assign each of the gliding action trajectories of said complex gliding action to each word of said several words. Optionally, the system may assign trajectories to said to the whole of said complex gliding action, and adjust the trajectories of each word accordingly.

- **Menu for design**
- **Long-press to release the selected word**
    - **Tap anywhere including on the selected word for menu/keyboard**

According to one embodiment of the invention, a long pressing action on a selected text (e.g. one or more words) may preferably release (e.g. unselect) said text. According to this approach preferably a tapping action anywhere on the screen (e.g. preferably outside the broadly ambiguous zone, if a (e.g. corresponding such) keyboard is poped up one the screen) including on a selected text may correspond to displaying the/a menu and/or a/the keyboard. In this embodiment, a tapping action on the/a selected word may preferably not unselect said word.

Downwards, upwards, leftwards, rightwards

Next, previous, erase word from text (holding erases more words), undo

Gesture up/down on the word list

During the entry of a word, the system proposes/predicts words preferably in a word list. According to one embodiment of the invention, a predefined interaction such as a gliding action in a predefined direction such as downwards on/from a predefined location such as on the word list and/or on the zone between the split keys (e.g. on the broadly ambiguous zone), may result the system to propose additional/new words corresponding to the input information provided by the user. Accordingly, another predefined interaction such as a gliding action in a predefined direction such as upwards on/from a predefined location such as on the word list and/or on the zone between the split keys (e.g. on the broadly ambiguous zone), may result the system to propose the previous words (or vise versus, e.g. upwards, and downwards, respectively).

According to one embodiment, a predefined interaction such as a gliding action leftward in/from a predefined zone such as the zone between the split keys and/or on/from the (e.g. zone corresponding to the) word list may preferably correspond to deleting the word being entered and/or a word before the cursor in a corresponding text field. In this example, a gliding action including a holding action may result in deleting more words until the user lift his/her finger (e.g. from the touch screen). Accordingly, said interactions in an opposite direction may preferably correspond to an undo function to reviving of one or more deleted words.

According to one method, a predefined interaction such as a gliding action rightwards on/from (e.g. the zone corresponding to) a word in a/the word list may select and preferably enter said word in the text field. Preferably, the system may, automatically, insert a predefined character such as a space character after said entered word (e.g. at the cursor/caret position in the text). According to one method, a press-and-hold-and-dragging action on/from the word list my relocate the word list.

Multiple words, after fixing one or more words

- **Is an entry of the database**

As mentioned before, during this application, when an entry of a database may have an N-gram word (e.g. 1-gram, 2-gram, several words, phrase, paragraph, etc.) wherein N is equal and/or greater than 1. As such, after a user fixes a word/stem, the system may propose a (e.g. one or more) word of an entry of the dictionary having N-gram word, wherein they include the fixed stem/word preferably as the beginning characters of them. Additionally, after fixing/selecting a one of the N-gram words, the user may fix/select one of the N-gram words and/or proceed to appending/typing (e.g. and/or deleting) characters to (or from) so that the system may propose one or more longer N-gram word, and so on.

System decides which stems to propose

The principles of a data entry system based on a (e.g. semi-predictive) word prediction system have already been described in detail. According to one embodiment, in such a system (e.g. and/or in a fully predictive system), (e.g. preferably at some point) during the entry of a word, the system (e.g. automatically and/or based on user's demand) may present to the user stems (e.g. the beginning portion of a word) corresponding to at least some of the word (e.g. preferably, corresponding to all of the word) corresponding to the input information provided until then. Preferably, the length of the said stems is equal to the length of the characters corresponding to the input information provided until then. Preferably, said stems are shown in a display control (e.g. word list) to the user. Preferably, said stems are shown to the user if their number satisfies a predefined criterion/criteria (e.g. if their number does not exceed a predefined number such as the maximum number of the words allowed in the word list, or if their number equals a predefined number of words). Preferably, the stems are shown in the same display control (e.g. word list) location/zone that is used for proposing/displaying predicted words during the entry of a word.

With continuous description of the current embodiment, as an example, by considering the keypad of the fig. 447A, during the entry of a word using the semi-predictive system, after the user presses precisely on the letters "d", "e", "l", "i", and then taps one time on the broadly ambiguous zone between the keys so that said tapping action may ambiguously correspond to any of the characters assigned to said zone, the system may not be able to find a word in the database used by the system wherein its length and its characters correspond to the input information provided by the user. At this time, the system may look for the words where their (e.g. beginning) characters correspond to the input information provided by the user, and may preferably propose the (e.g. beginning) chain of characters (e.g. of the word) to the user. In this example, the corresponding chain of characters is preferably limited to a few characters such as

- "deliv" (e.g. beginning stem of the words, "deliver", "deliveryman", "delivers", etc.)
- "delib" (e.g. beginning stem of the words, "deliberate", "deliberately", "deliberation", etc.)
- "delic" (e.g. beginning stem of the words, "delicious", "delicate", "delicacy", etc.)
- "delim" (e.g. beginning stem of the words, "delimit", "delimiting", "delimited", etc.)
- "delig" (e.g. beginning stem of the words, "delight", "delightful", "delightfully", etc.)

The system may propose some (e.g. at least one) of the stems (e.g. in the word list) to the user. If the number of different corresponding stems is more than the maximum number of words permitted in the word list, then the system may show some (e.g. at least one) of the stems, and the system may present more stem(s)/option(s) when/if required. Note that, in a same word list the system may simultaneously, present words and/or stems corresponding to the input information provided until then. According to another method, the complete words and/or stems may be presented in two different display controls such as word lists (e.g. on different zones of a touch screen).

Figs. 447A-447C, show the keypad of the invention in different instances (e.g. respectively, semi-predictive mode, precise combined letter and symbol mode (e.g. activated when providing a gliding action on/from the semi-predictive keys), and precise letter mode) in the semi-precise mode. Preferably, the keypad of the invention in both, semi-predictive and fully predictive, modes have the same appearance. In the fully predictive mode, preferably, the user is allowed to (e.g. may) tap anywhere on the keys to enter ambiguous characters. In semi-predictive mode, preferably, the user is required to tap precisely on the letters of the keys. In any mode (e.g. semi-predictive mode and fully predictive mode), for the entry other characters (e.g. non-preferred characters) the user may tap on a predefined zone (e.g. broadly ambiguous zone) preferably between the keys. Zones assigned to the characters on a key in semi-predictive mode may be defined using various methods of assignment. For example, as shown in fig. 447A, the section/zones assigned to the letters on keys 447001 and 447002 are defined differently, as highlighted by the black lines on said keys.

Constructing a WALL

Id number for A PUZZLE

Constitutes a picture

Constitutes typing on a picture

Piece is missing

Writing is missing

On our server

Linear or non linearcpieces

Any other kind of picture

Drawing disappears after typing

Password

Manner of monetizing

Coupon

Paid by advertiser

Coca cola

diff size wall diff price

same type, mix

wall of pictures

on facebook, youtube, independent, a single webpage

According to one embodiment of the invention, the system may enable the user to identify/select one or more portion(s) of an image (e.g. whether edited or not) and share it with one or more party/parties. According to one method, the identified/selected portion(s) of the image, may be the only portion(s) enabled for editing (e.g. entering text/graphic elements, etc.). According to a second method, the identified/selected portion(s) may be the only portions of the image that are not enabled for editing. According to one embodiment, the principles just described may be used in an application (e.g. having the data entry system of the invention and) using a server that may be employed to control the said enablement/disablement of editing an image. According to another method, some portion(s) may be enabled for editing, and some (e.g. one or more) portions (e.g. of the same image) may be disabled for editing. According another method, any of enablement and/or disablement may be alternated/switched. According another method, more portion(s) may be added at any time, and any of exiting portion(s) may be removed.

As an example, Figure 441A shows an image 44100 wherein the portions 441001-441005 are selected by the user for editing purposes. The rest of the image are disable from an editing action. For selection/identification purposes, a means, preferably in a menu, may be available to the user so that by using said means the user may select said one or more portion(s) of the image. As an example, the user may draw may a shape/form (e.g. a square or other shape) as shown in Figure 441A to identify/select said portions. According to one method, said selection procedure may be provided without interacting with a means in a menu, while according to another method the user may interact with a means in a menu before providing shape/form. Said means in a menu may define enabling/disabling purpose of the selected portions. Preferably, for each of enabling and disabling purposes, a different means in a menu is designated. In the example of Figure 411A, the selected portion(s) are designated to be enabled for editing, and the rest of the image is disabled for editing. In figure 411B, the portions 441103, 441104, and 441105, which are edited, correspond to the selected portions 441003, 441004, and 441005 of Figure 441A, respectively. Other portions are not yet edited.

Figure 442A shows a selected portion 442001 of an image 442000 wherein said portion is disabled for editing. The rest of the image is enabled for editing. In this example, several comments/texts are edited into the image by one or more users. In this example, a split comment, having two portions 4421011 and 4421012, is a single comment that was typed on the image but was (e.g. manually or automatically) split because the portion 442001 prevented it from being printed in a continuous area where portion 442001 was located.

With continuous description of the current embodiment, note that in a preferred method, when a user shares an image having selected portions, said portions are marked by some means, for example, by a line/contour. After editing content in said portion(s), said marking means may disappear. According to a method, in order to have access to a selected portion (e.g. or the rest of the image if the selected portion is disabled for editing) for editing, the editing party (e.g. someone who receives said image) may require an access control means such as a login (e.g. username and/or password) to edit said portion(s)/image. For monetizing purposes, in some cases, the provision of said access control may require payment.

With continuous description of the current embodiment, any portion of an image may be shared separately from the rest of the image with a designated user, and access control may be applied to that portion. Such portion(s), after being edited by the designated user, may be transmitted to a (e.g. remote) server which may assemble the received portions into a (e.g. single) image(s). According to one method, the assembled image may not include the portions that may not yet be edited. While, according to another method, the assembled may also include the non-edited portion. Any of said assemble images, may at any moment be accessed by any user. According to one method, a user may identify themselves as the editor of any portion of an assembled image. Note that, one or more portion(s) of said image may be edited by the user who shares said image. According to one method, each of said portions may be auctioned (e.g. online) and preferably control by some access means. Figure 443A shows an image 443000 that is partitioned (e.g. manually by a user or automatically) into several portions (e.g. 443001, 443002, 443003, and others not numbered in the figure). In Figure 443B, the portions 443001 and 443003 are edited, while the remaining portions are not edited, but users can see the entire image at any moment. In figure 443C, only edited portions are shown to a user(s).

Note that, according to one embodiment, all the principles just described above concerning the selection and/or definition a/any portion of a content, such as an image, for example, for editing purposes, may be applied in such a way the user receiving said content. For example, a user that receives an image from another user (e.g. a sender that controls access), may define and/or request from the sender of the image to define a portion of the image to be edited by him. As mentioned before, for monetizing purposes, in some cases, the provision of said access control to a portion defined by a receiver of content may require payment.

Note that a selected portion of an image may include a part of the image, parts of an image, or the entire image.

Constructing a WALL

Virtual walls such as a facebook walls and/or feeds, are very popular today. In such so-called "walls" the content such as text and user identification pictures are provided on different text fields or other corresponding image backgrounds that have no relation with a wall that we are used to image. The image editing principles described in this application may allow typing on images in form of a wall and/or forming a wall. As an example, a user may post a subject (e.g.

including text) on an image and said image may be shared with others on a page such as a web-page. Other users may comment/respond to the posted subject on preferably similar image. The similar image may be provided by the user posting the subject by a third party such as a server sharing/providing images such as the server controlling the page. The image of the posted subject and/or the images including comments to the posted subject may be positioned next to each other on the shared page. Preferably, the posted subject and/comments may be positioned in a linear manner, preferably, vertically. In this case, as an example, they may form/construct at least a substantially single image. If each of said images is the image of a wall (e.g. China's, Berlin, or a building wall), the combination of said images on the shared page may form a single wall with many comments making it a pleasant and fun. It also may permit better visualation of the comments. According the one embodiment, any location on the constructed image (e.g. wall) may be accessed freely or by means of permission (e.g. as described before) for posting a comment.

Fig. 444 shows as an example, a "wall" in a current social application such as Facebook using the image editing principles/application as described. In this example, a user 444011 has typed a subject 444007 on an image 444001 such as the image of a wall and shared in his facebook page. In this example, the image of the user himself and/or his corresponding personal information are located outside the image (e.g. because Facebook application requires it). In this example, under said image, posts 444002, 444003, from other user 444012, 444013, responding to the posted subject image 444001, are positioned in a vertical manner. The overall page/wall substantially forms a single image/wall with a single debated subject with a small gap between each image.

In a preferred embodiment, the information corresponding to the poster of the subject and the responding users may be positioned/printed on their corresponding images so that to at least minimize the gap between images. In the example of Fig. 444A, each of the images 444101, 444102, and 444103, include information from its respective poster, 444111, 444112, or 444113. In this example, a very reduced gap separates the images, while in Fig. 444B, no gap is provided between image and they form a single image 444200.

According to one embodiment, the images posted by users may not resemble each other, but preferably may have common characteristic(s). In figure 445, a portion 445002 of the wall 445000 has the image of a wall which may be different from other portions (445001 and 445003) of the wall 445000.

The principles of commenting on a subject while constructing an image such as a wall may be used with/in any type of (e.g. social) application and/or platform/service such as Facebook, YouTube, etc.

Several (linear/vertical) pieces

According to one method, a single image may be divided into pieces, preferably linear (e.g. vertical or horizontal) pieces and the pieces may be shared with a number of users. Note that, preferably, each of said pieces may have a different portion of the image which may not necessarily resemble another portion of the image. Because a single image is divided into several portions, the number of portions is generally limited to fixed predefined number. In order to divide an image into several portions, a means such as those described before or some automatic means may be used. As an example, the user may divide the image by drawing lines on the image or the user may instruct the system to automatically divide in to a random number or desired number of portions.

According to one method, an admin user may share any of the portion(s) with other users by the admin user's control of the image, or the admin user may allow other users to select a portion

available (e.g. from an entire image and the corresponding portions that may be shown to a user, for example, on a web page) to edit, by preferably sharing the entire image.

According to one method, the portions of a divided image may be available in a linear sequential manner. Preferably, the first portion may be edit by the admin user or another user and the next (e.g. second) available portion is preferably the portion adjacent to the first portion, and the third available portion is preferably the portion adjacent to the second portion, and so on. As mentioned before, according to a preferred method, at least one of said portions may be available to a user by means of access control (e.g. that may be defined and/or granted based on monetary system such as a credit/point/reward system, or payment system). As such, advertisers, celebrities, corporations, consumers may use these principles to monetize and/or market and/or advertise their brands, products, services, etc. through images.

As an example, figure 446 shows an image 446000 divided into five portions by means of drawing lines such as the line 446001. The portion(s) of the image may be available to some users as described before. In this example, the first portion of the image is edited by the admin user. Figure 446A shows a comment/post on the second portion of image provided by a user acquiring control of the second portion. According to one method, the combined edited portions 446100 may be provided on a page, such as a web page, so as to be seen by others, as shown in figure 446A. In Figure 446B, a third comment/post provide by another user and the combined three portions 446200 are shown. In Figure 446C, the whole edited image 446300 including all of the portions including all the comments/posts provided by several users is shown.

Note that, as shown, the divided portions may have different size.

Messaging

- **Email, IM, SMS**

By using the methods/principles of providing information corresponding to the (e.g. related layered) graphical presentation of text (e.g. herein referred to as graphical text) and/or related content and meta data (e.g. such input information may herein be referred to as scene information) to provide text on a content (e.g. a picture/image, video, blank picture/form) described throughout this application, a new protocol/system/method of messaging/communicating (e.g. email, IM, SMS, etc.) may be developed. The advantage of such system is in that the user can express himself/herself (e.g. instantly) through a colorful text, various fonts, text in various directions, corresponding image(s) (e.g. if any) on which the text is to be presented/shown (e.g. anywhere on an image), etc. This preferably eliminates or at least may reduce the need of using text input controls which are mostly related to a restricted text manipulation/processing functionality. According to one method, a (e.g. remote) server may organize/manage/process the scene information relating to a user's activity received from a user (e.g. and other sources related to the user's activity). The server may also transmit/receive such information to/from a destination/source. According to one method, all information (e.g. scene information) such as the history of the messages (e.g. and/or user's activities related to said scene information) may be saved/recorded/stored in a (e.g. remote) server. Said information may be accessible by one or more user(s) upon predefined user interactions and/or (e.g. system) conditions.
According to one embodiment, such information may be transmitted from a user (e.g. fixed/mobile device) to another user (e.g. fixed/mobile device) without the use of a server (e.g. peer to peer).
Note that reference to server herein may refer to a network cluster of severs, whether centralized, distributed or otherwise configured.

The scene information, such as history of messages of a user, may be stored and/or accessed as text and processed (e.g. sorted) accordingly. The procedure of processing may be executed on a server and/or in a user's device.

In the current embodiment, according to one method, the graphical presentation of the scene information may include an attachment such as a picture, a textual document, other types of information, etc. According to a preferred method, the scene information may be printed/presented to a user in the form of a single document/presentation element (e.g. audio and/visual output). Note that the scene information may include one or more image(s). Any portion of a text (e.g. provided as such by a user) may be displayed on one or more of said image(s). Fig. 451 shows as an example of text/graphic messaging as just described above. In this example, on the screen 451000 of a (e.g. mobile) device text is present on/over an image (e.g. several texts are presented on/over several images may also be considered as forming a single image). In this example, the first message "Long time, no see? Where are you? Jack" is presented over an image 451001 that resembles a wall (e.g. note that the image is only an example, and any image may be used, whether from the sender, receiver or another source). The reply to this message is the second message 451002, which contains two sections (451002/1 and 451002/2). The section 451002/1 on which the message is "I'm having great time. See my new house! Tom" is presented on/over an image and attached image 451002/2 is presented, with text written over it, namely "I am here". The reply to this second message 451002 is "Love it! See you soon. Jack" where each part of this third message 451003 is presented at various positions and angles on/over the image of a wall (e.g. this is a exemplary image but it could be any other image as already described). Note that, in this example, all the messages together may be considered as a history of messages (e.g. a conversation). Also, note that, in this example, the wall/background image of Tom's message is the same as the image of Jack's messages, however, this is only optional, as a user (e.g. Tom, and or Jack) could select any image as a wall/background image for messages at any time.

According to another method, the attachment may be presented on/in a separate document.

The principles of providing scene information by a first party and/or presenting said scene information to a second party, as described throughout this application, may transform network, social, telecommunication protocols and systems such as email, instant messaging (e.g. Whatsapp, ICQ, MSN, AOL Messenger, Instagram, etc.), short message service (SMS), social networks (e.g. such as Facebook, Twitter, LinkedIn, Pinterest, etc.), etc. where a user can express themselves by eliminating/reducing text boxes and using graphical text and/or content, preferably provided on images.

- **Text in pictures may be considered as text information.**
- **Searching and sorting based on text in pictures**
- **<u>Target text to an image remote.</u>**

Preferably, at least a portion of text included in scene information may be treated as text (e.g. not graphical information). As such, functions such as text searching, text sorting, copy, paste, cut, select, etc. may be applied to such text.

According to one embodiment, a scene information (e.g. may exclude an image and) the presentation of at least a portion (e.g. at least a portion of a graphical text) of said scene information on a (e.g. remote) receiving device may be presented on/with a content (e.g. such as an image) on a (e.g. remote) receiving device (e.g. a mobile device, server, desktop, etc.).

According to one embodiment, preferably, the scene information may be contained/found on a (e.g. remote) server wherein at least some of said scene information may be processed (e.g. associated with other information, incorporated into a collage of other scene information, classified according to predefined and/or dynamic parameters and/or classification systems). According to one method, the server may provide at least a portion, preferable at least the last message sent by a user, to a destination. In such case, if the receiving destination desires to have more scene information, more information may be sent to the receiving destination on demand. According to one method, the receiving destination may process at least some of scene information.

<u>TYPE ON ANY CONTENT</u>

- **<u>VIDEO</u>**

With continuous description of the current embodiment, rendering information (e.g. transmitted to a destination), may by presented/displayed on and/or over any content such as an image, video, text box, email, etc.

Wrapping

According to one embodiment, in the picture editing application/embodiments, the system may include a means (e.g. from a menu) to define a zone of/on an image on which a text may be wrapped when typing a text. For example, the user may be allowed to define such a zone on the picture by drawing a zone after providing an interacting with a section of an appropriate menu relating to the activation of such function.

Signature

- **Starting point**
- **Ending point**
- **Speed of different portions**
- **Timing of different portions relating to each other**

According to one embodiment of the invention, a secured method of identification of the signature of a user may be created. When a user signs on a touch sensitive surface such as on a touch screen, his/her graphical signature may be considered/memorized by a system. When user provides a signature, the gliding action corresponding to the signature on said surface also provides a (e.g. complex) sound. Said graphical signature and said sound may be transmitted to a destination (e.g. another user's device, a server, etc.) for authentication. Said destination may already have stored a correct version both the graphical and sound of the user's signature. By comparing said the combined information with the stored information, the user's signature may be authenticated.

Note that, for the entry of text, no text box is used and/or required. The text provided as such may be presented over any content such as an image, a text box, video, etc. without necessarily being integrated with the content.

According to a preferred embodiment of the invention, the presentation of text on a (e.g. receiving) device may stop after a predefined lapse of time, or by instruction of the a user, or (in the case of a video) after a fixed number of frames. Optionally, said text may be saved (e.g. for several purposes such as reviewing content, for example, related to and/or including said text at a later time) on a remote/local server and/or on a receiving device.

According to one embodiment, a photo sharing/editing application such as the photo editing application of the invention may include a store (e.g. online store such as an Internet based store), where goods/contents such as fonts, photos, smileys, etc. may be presented for sale/rent to users. According to one embodiment, photos owned by a party may be proposed in the store to the users in a manner not be used more than a predefined number of times such as, preferably, one time. For such purpose, after a user selects/purchases a content such a photo, the photo may be presented with and/or amended by a security element such as a watermark (e.g. text and/or signature of some kind, preferably substantially visible). After a user edits a photo (e.g. types/writes at least a predefined number of characters on the photo, preferably at least a predefined number characters being entered in a location far from an edge of the photo, such that the photo may not be duplicated as an original), providing a predefined interaction such as for example saving or sharing the photo, may preferably result in removing said security element by the system and/or by a third party such as the provider/owner of the photo from the edited and shared/saved photo. According to another method, upon a predefined condition such as at after a user edits a photo (e.g. types/writes at least a predefined number of characters on the photo, preferably at least a predefined number characters being entered in a location far from an edge of the photo, such that the photo may not be duplicated as an original), the security element may be removed (e.g. by the system and/or by a third party such as the provider/owner of the image/photo) from the edited and shared/saved photo. Said security element may

preferably be inserted/added/put on/appended by the system on the presented and/or purchased photo. Note that in the example above, a content such as a photo was used in the example, it is understood that any other content such a video, music, etc. can be used through the principles just described. In the embodiment/principles as being described, the user preferably does not purchase a photo rather than a copy of it for use (e.g. editing such as texting on it) (e.g. herein may be referred to as the right of use). According to one method, the/a user may purchase the right of use (e.g. editing) of a (e.g. an original) picture for a predefined number of copies/times (e.g. 1, 2,5, 10, etc.) against payment. In this case, preferably, for each case/session/download of use, the user may preferably download a single copy of the picture/photo.

This manner of selling content allows the owner of the content to keep the original version of the content while monetizing said content through the store. In this case the photo is preferably presented/proposed at an inexpensive price.

The revenues of the store may be shared with the suppliers of content and the owner of the photo editing application.

Any keyboard

Note that, the principles of editing (such as typing text/comments) and sharing pictures/images as described throughout this application may use any type of keyboard such as the keyboard of the invention having few keys such as four keys (e.g. and zone outside of said keys) or a QWERTY-like keyboard.

Fig. 448A shows another type of configuration/assignment of letters to the keys 448001-448004 of the keypad of the invention. In this example, the letters on two adjacent keys are arranged such that to have at least vertically large distance from each other. To enhance the accuracy, the zones assigned to each letter (e.g. in a same row/column) are defined such that a portion of a zone of a first key (e.g. which is closer to a letter/character assigned to a second key/zone than to a letter which is assigned to a first key) may be assigned to a character of said second key/zone. In this example, the zones 448011, 448012, 448013, and 448014 are respectively assigned to the letters "S", "R", "T", and "N".

As mentioned before, instead of assigning several zones on a key to respectively each of several (e.g. preferred) characters, each of said characters may be assigned to a (e.g. an independent) key/zone on the screen. Fig. 449A shows a type of a keyboard including twelve independent keys/zones corresponding to preferred characters which in this example are split into two portions 449001 and 449002, and a zone 449007 (e.g. broadly ambiguous zone) outside said keys assigned to a (e.g. large) number of characters such as, for example, at least the non-preferred characters as described throughout this application. In this example, the letter keys constitute four columns.

Fig. 449B shows a keypad with similar principles wherein its letter keys form two (e.g. horizontal) rows of keys. In this example, the letter keys are split into two portions and a (e.g. broadly ambiguous) zone 449107 is positioned between the two portions of keys. Note that, as shown in the examples above and demonstrated in fig. 448A, a (e.g. zone assigned to a) letter (e.g. "A") of a first row 448021 adjacent to a second row 448022 may (e.g. also) preferably be arranged (e.g. located) such that to be between two (e.g. zones assigned to two) letters (e.g. "W", and "N") of the second row 448022. As such, preferably for better accuracy, interacting with a portion/zone 448115 of the second row between said two letters wherein said portion is closer to the letter of the first row, may preferably (e.g. also) be assigned/correspond to the letter of the first row. Other types of configuration of letters/characters (e.g. based on the principles described) on keys/zones may be considered by people skilled in the art.

NEW KEYS

Figs. 450A-C show other methods of assignment of characters/letters to different zones on the corresponding keys. In this example, the key 450001 is divided in three zones based on dividing an imaginary circle in three (e.g. equal) portions corresponding to the letters T, Y (e.g. portion 451011), and I. In this example, the key 451002 if divided in three portions as described earlier in this application.

Showing a word including a letter when a special character is selected during the entry of a word

According to one embodiment of the invention, when the user provides a gesture in a direction on/from a key wherein to said direction two characters (e.g. a letter and a special character) are assigned depending on the length of the gesture, the system may consider both characters and may present them, separately or within a corresponding word being entered, to the user. This may preferably avoid misentry of a desired precise characters if a user does not provide the gesture with the correspondingly correct length.

AUTO CORRECT

- **2 CONSONANTS**

According to one embodiment of the invention, (e.g. in precise and/or semi-predictive mode) the system may include an auto-correction method such that when the user touches a key on a location near the border between (e.g. zones corresponding to two or three) letters/characters, the system may consider all of said letters/characters, and preferably provide/predict different words accordingly.

Any type of letter arrangement

It must be noted that the keypad of the invention may have any number of (e.g. letter) keys, each key may have any number of characters/letters, and any other configuration of letters on the keys.

- **Anywhere on/closed to a letter includes the surrounding letters**
  - **One line**
  - **2/3 lines**
  - **On opposite sides on the screen**
    - **All chars**
    - **Include outside zone**
  - **Each zone assigned to spchars**
  - **2 line qwerty on opposite sides**
  - **Narrow qwerty**
- **Chars on the top of the finger**
- **Spchars not on the direction of letters**
- **Tap between the two keys may correspond to at least the neighboring characters of the two keys**

According to a first aspect of the invention, each of a plurality of (e.g. dynamically assigned) zones/keys on the screen may ambiguously represent a number of characters such as letters. When a user interacts (e.g. taps on) with a location between two (e.g. neighboring) zones/keys, at least some of the characters surrounding the location, preferably regardless of key(s)/zone(s) to which characters are/may be assigned, may be considered as an ambiguous input preferably corresponding to a plurality of said characters by the word predictive data entry system of the invention.

According to a second aspect of the invention, when a plurality of zones/keys on the screen each represent a (e.g. single) character such as a letter, when a user interacts (e.g. taps) on/near a zone/key, in addition to the character of the corresponding zone/key, the system may ambiguously consider at least some of the characters (preferably those characters close to the location of the interaction) corresponding to the neighboring keys/zones as input to the data entry system of the invention. Also, preferably, when the user interacts (e.g. taps on) on/near a zone/key which may also be related to an individual identified character such as a letter, the system may also consider said identified character as input to the data entry system of the invention. In both cases, the system may predict/propose words corresponding to a sequence of input signals

provided as such, wherein at least one of the input signals ambiguously corresponds to a plurality of characters.

The arrangement/assignment of (e.g. dynamic) zones and/or assignment of one or more characters to a zone may be of any kind. For example, the zones may constitute a single line of zone(s), a double line of zone(s) (e.g. parallel to each other, and/or located on opposite sides of a touch sensitive surface such as a touch screen), etc. The (e.g. dynamic) assignment of one or more characters to a zone may be based on alphabetical order, QWERTY-based order, or based on any of the principles of data entry system of the invention (e.g. preferred character(s) may be assigned to one or more row(s) of zone(s) and non-preferred character(s) may be assigned to one or more zone(s) outside said zone(s), etc.). As an example, the keypad of the invention may be a narrow full QWERTY keyboard (e.g. a QWERTY keyboard layout compressed in either the vertical or horizontal orientation, in a manner to preferably at least substantially maintain its QWERTY appearance but preferably such that said keypad may be useable (where said keypad may be used by the data entry of the invention (e.g. by considering a plurality of characters near an interaction on a zone of said keypad as input to the (e.g. predictive) data entry of the invention) in a manner to maintain the highest possible prediction accuracy). According to one method a (e.g. multiple-) split QWERTY keyboard wherein each of the split portions is narrow, as described, and preferably is located on an opposite side on the screen may be considered and used. In the current embodiment, the keyboard used with the word prediction system may also include one or, preferably, more special characters that may, at least, be included in words of a database, such as “’”, “_”, “/”, “-“, “.”, “&”, etc. Fig. 452 shows such a (e.g. compressed qwerty) keyboard 452200. In this example, characters “&” 452051, and “-“, “_” and “’” 452052.

Fig. 452A shows an exemplary (e.g. linear) one line keyboard of the invention in which some (e.g. preferably) preferred characters are arranged on a single row zone 452001. When a user interacts (e.g. taps, slides/glides, double taps, etc.) on a zone on said keypad, the system may consider at least some of the characters (e.g. displayed/located) near the impact of the user’s interaction (e.g. tapping action, sliding action, double tapping action, etc.) on the zone. A (e.g. one or more) predefined zone(s) (e.g. 452002) outside the (e.g. single row) zone may correspond to a broadly ambiguous zone(s) as described before. By providing at least a sequence of interactions (e.g. tapping actions) on the said single row zone and/or the broadly ambiguous zone(s), the word predictive system may predict/propose a word. Fig. 452B, shows, for example, another type of arrangement of preferred letters assigned to said first zone is shown. Other letter(s), configuration of letters on a zone, number of corresponding zone(s), arrangement of said zone(s) on a touch sensitive surface, etc., may be considered by people skilled in the art. As an example, fig. 452C shows the two zones 452201, and 452202, including the preferred letters, and a broadly ambiguous zone 452203.

In the event that each zone/key represents a single identified character, providing a predefined interaction such as a long pressing action or a gliding action (e.g. preferably) on a larger zone corresponding a group of such zones/keys may correspond to entering one of another group of characters such one of a group of special characters or one of a group of non-preferred characters assigned to said larger zone (e.g. 452002 of Fig 452A).

According to one embodiment of the invention, providing short gliding action(s) or providing long gliding action(s) from/on a zone/key in a predefined direction may correspond to two different symbols such as two special characters and/or functions, and providing a predefined interaction such as a gliding action with any length in a (e.g. another) predefined direction may preferably correspond to a single character such as, preferably, a non-preferred character/letter.

According to one method, upon providing a predefined interaction such as a gliding action and/or a long pressing action with such a larger zone or with a zone/key of the keypad having at least one plurality of preferred characters, the corresponding other characters may be shown near the user’s finger such that, preferably, substantially all of them may be visible to the user.

According to one embodiment, when the user switches to the precise letter mode, the system may show the non-preferred characters in one or more rows, based on any order, preferably, based on an alphabetic order.

According to one embodiment of the invention, preferably in the semi-predictive mode, if a word being entered (e.g. or already entered and then grabbed by a predefined interaction, for example by (e.g. single or

double) tapping on it) is not in the dictionary, the user may switch the system into the precise letter mode. In this case, the user may tap on the (e.g. zone(s) corresponding to non-preferred) characters to replace at least some of (e.g. preferably all of) the (e.g. non-preferred) characters of the word. According to one embodiment of the invention, upon providing a predefined interaction such as a gliding action (in a predefined direction or trajectory) or, for example, a long pressing action from/on a (e.g. dynamic) zone anywhere on a (e.g. one line) keyboard and/or on a predefined location such as on/from a character such as a letter, may correspond to (e.g. precisely) enter a predefined character (e.g. a non-preferred or preferred character), (e.g. either alone or from a group of characters presented to the user).

Note that in the embodiments/principles described herein, zone(s) relating to one or more character(s) may preferably be considered by the system as part of a larger zone (e.g. the keypad/letters keys of the invention).

Note that, through this application, although the word 'zone' and/or 'key' is used to describe the relationship (e.g. relative distance) between two or more characters (e.g. preferred characters) to assign one or more characters to a corresponding input signal related to a user interaction with the keypad (e.g. the larger zone) of the invention, it is understood that different other parameter(s)/object(s) of description such as the distance between points/areas/characters/locations may be used to assign one or more characters to an interaction with the larger zone (e.g. including characters) providing an input signal to the system.

Fig 452D show another type of assignment/arrangement of letters to a (e.g. a larger) zone(s). In this example, the letters are arranged in two groups such that to have a (e.g. significant) space/gap 452302 anywhere between the groups. In this example, the space/gap 452302 relates to a broadly ambiguous zone as described herein.

According to one embodiment of the invention, by providing a predefined interaction, the system may enter into the precise character (e.g. letter) mode wherein the non-preferred characters and/or special characters/functions may be shown (e.g. on different zones) to the user, preferably in a straight line. The (e.g. non-preferred) characters may preferably be arranged in alphabetical order. An interaction with a zone corresponding to a character may enter said character precisely.

INCLUDES SPCHARS in qwerty squeezed

key arrangement

2 long keys on each side

Sp, bs, under/above/between them

Fig. 453A shows another method of arrangement of keys of the keypad of the invention, in this example, the keypad having the letter keys 453001 to 453004 (e.g. being split in to two groups and located on opposite edges of the display 453009 (e.g. touch sensitive screen of a device)). In this example, the space and backspace keys are grouped with the letters keys of each side (e.g. such as to form a row/column of keys). Note that, in this example, the boarder of the space and backspace keys are not shown. The space and backspace keys may be located above the letter keys, between the letter keys, under the letter keys, or beside the letter keys. In this example, the broadly ambiguous zone is located between the split keys.

Main method

Different methods of entering precise characters through the data entry system of the invention have been described before. According to one embodiment of the invention, when user interacts with a zone assigned to a or related to a preferred character, in addition to entering said/a preferred character, the system may show in a location of the screen the non-preferred character(s) related to said key. As an example, as shown in Fig. 452A, if the user interacts with any zone related to a letter of a key (interacting with a zone relating to a letter of a key may herein be referred to as interacting with a letter on a key) such as the key 453004, the system may show the corresponding non-preferred characters BPQ (e.g. at a location 453011) on the screen 453009 of the device 453000. To each of said non-preferred characters a predefined zone (e.g. on the screen) is defined such that an interaction such as a tapping action on the zone relating to a non-preferred character may preferably enter said character precisely preferably by replacing

the entered precise character. Note that, according to one method, the non-preferred characters relating to each key may preferably be printed next to the key, or close/on the key. The current embodiment of entering precise characters may be used/integrated with any of the methods of entering words such as Semi-predicted Mode and/or the Fully-predictive Mode of the invention.

According to one embodiment of the invention, when the user touches anywhere on the key all of the (e.g. preferred and/or non-preferred) characters related to said key may be shown on a location on the screen as described immediately above and interacted with as described immediately above. Fig. 453B shows an example of this embodiment wherein by providing a tapping action anywhere on the key 453004 the system has printed/displayed all the characters related to said key on the location 453111.

According to another embodiment, the system may include a means, for example, such as providing a predefined gliding action on/from a key so that to present/display all of the non-preferred characters (e.g. in a location) on the screen. In this case, interacting with a zone corresponding to a preferred and/or a non-preferred character may enter said character precisely. Fig. 453C shows an example of such an embodiment wherein the non-preferred characters 453301 are display (e.g. on a screen) for a given predefined interaction. Now the user can tap on any of the characters (e.g. letters) on the screen to enter said character(s) precisely.

Note that in the embodiments above, any of the preferred and/or non-preferred characters relating to a keys/zone of the keypad of the invention may include one or more of the commonly used special characters (e.g. such as "'" is included in a word such as "it's").

[one line dynamic, can be place anywhere, any portion is dynamic]

As mentioned before, the (e.g. preferred and/or non-preferred) characters (e.g. letters) of the invention may be grouped in various groups and assigned to various zone(s)/key(s) on a touch sensitive surface to for a keypad of the invention or said (e.g. preferred and/or non-preferred) characters may form a continuous sequence of characters on the surface (e.g. preferably a linear sequence) and wherein an interaction with any location of said sequence of characters may dynamically define a key/zone of the keypad of the invention, including the characters close to the touch impact on said sequence of characters. Said group of characters may be considered as an ambiguous key(s)/zone(s) of the invention. By receiving a sequence of one or more such ambiguous dynamic zone or key interactions the data entry system of the invention may predict one or more words accordingly. Accordingly, each of the considered ambiguous characters of such interaction may be printed/displayed on a screen in a separate zone such that an interaction with a zone corresponding to a character enters said character precisely (e.g. as described above).

Fig. 454A shows an example of the keypad of the invention, in this example, the limits of the borders of the Space and Backspace keys are demarked in the figure, but are not shown on the screen and/or keypad of the invention. As described throughout this application, gliding actions in predefined directions on/from the Space and/or Backspace key may be related to symbols such as functions and/or special characters, letters such as, for example, accented letters, etc. In this example, said gliding actions are preferably provided on/from said key(s) towards preferably a plurality of preferred gestures (e.g. such as gliding actions) departing preferably anywhere on/from said key(s) in a direction such as left, upper-left, up, upper-right, and right.

Another method of entering precise characters may be considered. According to one embodiment of the invention, in order to entry a non-preferred character precisely, by considering the exemplary keypad of Fig. 454A, (e.g. during the entry of a word) when a user interacts with a (e.g. preferred) character (e.g. letter) on a key, said character may be printed/displayed in a corresponding word(s) in the word list proposed by the system. The user may then interact (e.g. tap) with said word and the system may propose/predict a new list of word(s) wherein all of their characters (e.g. zero of more characters) except the last character of the word resemble the corresponding characters of the interacted word and wherein the last character of said word(s) each include one of the non-preferred characters relating to the interacted key. Note that, said word list may also include word(s) other than those described immediately above.

Fig. 455 shows and example of the principles just described above, with a semi-predictive mode of the invention. In this example, in order to enter the word "AZARENKA" letter-by-letter precisely, a user may tap on the letter "A" then tap, for example, on the letter "S" of the key 455005. The system may propose a word list 455201 of a number of words including the word/precise-chain-of-characters "AS" (e.g. hereafter may be referred to as non-definite precise stem) and preferably some other words beginning with the letters "AS". In order to replace the letter "S" by the desired letter "Z", the user may tap on the word/chain-of-characters "AS" in the word list. Consequently, preferably, the system may propose a new word list 455202 including a number of words/chain of characters (e.g. "AC", "AG", "AU", and "AZ") (e.g. that herein may be referred to as "suggested chains of precise characters") each beginning with the letter "A" (e.g. the first letter of the non-desired word "AS") and each ending with a different one of the non-preferred characters corresponding to the key 455003 and wherein said words (e.g. preferably) have the same length as the non-desired word (e.g. such) (e.g. Note that the system may also propose additional words (e.g. "ASK") beginning with the chain of characters "AS" in said word list). The user now may interact (e.g. tap) on the desired chain of characters (e.g. word) "AZ" to select it, and continue to tap on the characters "A", "R", "E", and "N" so that the system presents at least the chain of characters "AZAREN" in a word list 455203. Now, in order to enter the letter "K", the user taps on a letter such as the letter "N" on the key 455002. The system may propose the word/chain-of-characters "AZARENN" – this is not the desired chain of characters. The user may tap on said word and the system may propose a new word list 455204 including a number of words having the same number of characters as the word "AZARENN" and where in each of said words start with the chain-of-characters "AZAREN" and where in each of said words end with one of the non-preferred characters (e.g. "C", "G", "U", and "Z") corresponding to the key 455003. Now the user selects the word "AZARENK" in the word list 455304 and type on the letter "A" on the key 455002 to complete the desired word (e.g. letter-by-letter precisely).

Fig 456 shows the principles of this embodiment used with the fully predictive mode of the data entry system of the invention. In this example, in order to enter the word "AZARENKA" the user first interacts (e.g. taps) with the letter "A" and then interacts with the letter "L" of the key 454002. The system proposes the ambiguous word "AS" and the precise chain of characters "AL" in a word list 456301 that also includes at least one more word (e.g. "NET") preferably (e.g. ambiguous) related to the interactions with the keys 454002 and 454003. The precise characters "AL" is are not desired by the user. The user interacts with said precise chain of characters "AL". Consequently, preferably, the system may propose a new word list 456302 including a number of words each beginning with the letter "A" (e.g. the first letter of the non-desired word "AL") and each ending with a different one of the non-preferred characters corresponding to the key 455003 and wherein said words (e.g. preferably) have the same length as the non-desired word (e.g. Note that according to a first method, the system may also propose additional words (e.g. "ALBERT") beginning with the selected chain-of-characters "AL", and that according to a second method, the system may propose additional words by considering the key interactions as ambiguously corresponding to any of the characters of the corresponding keys). The user now selects the chain-of-characters "AZ" and continues to enter the rest of the characters as described in the example of semi-predictive mode.

Note that, according to a preferred method, preferred and non-preferred characters related to the keys of the keypad of the invention having four letter keys are grouped such that letters the key 454001 stand on one point, and letters on the key 454002 stand on two points, and letter on the key 454003 stand on a wide base, and letters on the key 454004 containing substantially a closed circle, as described before and in previous applications filed by this inventor.

Note that, according to one method, the keypad of the invention may preferably have a broadly ambiguous zone as described throughout this application. According to another method, all of the preferred and non-preferred characters related to the keys (e.g. four keys) of the keypad of the invention, as described, may be considered as preferred characters. Such keypad may preferably, not include a broadly ambiguous zone and may be used with the word predictive data entry system and use the methods of entering precise characters as described throughout this and previous applications filed by this inventor. As an example, in the examples of Fig. 453B, each of the keys 453001 – 452004 may be assign to all of the preferred and non-preferred characters related to any of said keys as display on and near each key. All of said ambiguous keys may be used by the word predictive system of the invention. Additionally, for example, according to a

preferred method, when the user interacts with the key 453002 all of the characters assigned to said key may be shown in a location on a screen where interacting with any of said characters may enter said character precisely as described before.

According to one embodiment of the invention, each of the preferred letters/characters may correspond to some non-preferred letters/characters. Fig. 457A shows four different types of relationships between the preferred and non-preferred letters/characters (e.g. such as the relationship shown in the line 457301 and its corresponding key configuration as shown in Fig. 457B. In this example, the non-preferred characters "BC" are related to the preferred character "A", the preferred character "D" has no relationship with any non-preferred character, and so on.). Such relationship is shown in the example of Fig. 457B in such a way that, for example, for the group of characters "E,F,G,H" the preferred character "E" is displayed on the key and the last non-preferred character of the group is shown preferably outside the key, near said preferred character "E". In this example, the preferred character "S", "R", "N", "D", have no group relationship. The above principles may be used for entering precise characters.

In the examples of Fig. 454A to 456, when a user interacts with any preferred character, the corresponding non-preferred characters are a similar group of characters, while in the immediate example above, interacting with each of the preferred characters corresponds to a different group (e.g. of one or more) of non-preferred characters, if any. The principle of entry of precise characters related as such may be similar to those described from Fig. 455 through to Fig. 456 with the difference that here the related non-preferred characters used for entering characters precisely are those characters assigned/related to said preferred characters.

The assignment of non-preferred characters to preferred characters, in the current embodiment, may be of any kind such as alphabetical order, QWERTY order (e.g. "Q" assigned/related to "W" and e.g. "M", "V", "B" assigned/related to "N"), shape order (e.g. "K", "H", "X" assigned/related to the preferred character "A"), etc. Note that in the current embodiment any other type (e.g. arbitrary) assignment/relationship between a preferred and corresponding non-preferred character(s), if any, may be considered by those skilled in the art.

In the embodiments above, for entering characters precisely by using the non-preferred characters assigned to a preferred character, according to one method, when the user interacts with a chain-of-characters corresponding to the non-definite precise stem, the system may replace the last character of the non-definite precise stem by the first related/assign non-preferred character and so on, until the system replaces set character with the desired non-preferred character corresponding to the preferred character. After entering precisely the preferred character "A", if the user interacts with the character "E", the system may show the stem "AE". If the user taps one time on that stem in the word list, the system may propose the stem "EF". If the user interacts (e.g. taps) with the stem "EF" the system may propose the stem "EG". Interacting with the stem "EG" will cause the system to provide "EH" wherein "H" is the last non-preferred character relating to the preferred character "E". As such, any non-preferred character corresponding to a preferred character may be entered using this method of multi-tapping on a proposed stem and may be used for entering characters precisely, letter-by-letter and mentioned before in various embodiments.

Figs. 458A to 459B show various examples of entering characters precisely during the entry of words and the corresponding words proposed by the system.

applies to fully predictive and semi predictive

on the keys show the first and the last char of each key (if alphabetic)

LETTERS SHAPES

Manually - include spchars as non-preferred choices

According to one embodiment, the non-preferred may be hidden or shown (displayed) next to the keys based on the uses manual interaction, or automatically according some system criterion/criteria.

show different possibilities of alpha order

tap on precise word 1 time

- show candidates

- change the precise to the next letter

non preferred can be alphabetic

qwerty

4k

include spchar in qwerty

gestures for symbol

long press to show all symbols

any number of keys

- with/without zone

show/hide non-preferred chars

a word is entered

10 keys x2 2k x 3 used with fully predictive/semi predictive

Note that the keypad of the invention may be of any kind configuration of keys/zones and various assignments of characters to said keys/zones. As an example, the keypad of the invention may have 10 keys each having one preferred character related/assigned to one non-preferred character, and 2 more keys each having one preferred character related/assigned to two non-preferred characters, wherein preferably one of the non-preferred characters of said two non-preferred characters is the one that is used

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less often (e.g. has lowest frequency of use among the letters of a language, e.g. 'Z' and 'X' in a Roman based language).

kp can include , -

Note that the non-preferred characters may including special characters too.

provide a gesture on a key for other letters to be shown

choice of letter always anywhere on the screen

- **First**
- **Current**

According to one correction embodiment, after the user provides interaction with a key, the system may preferably show at least the corresponding non-preferred characters (e.g. the system may show all/any of the non-preferred characters too) on a location of the screen for entering any of the characters precisely, as described before. According to one embodiment of the invention, when the user continues to interact with the key(s), the non-preferred characters shown as such corresponding to the first key interaction may remain on the screen. As an example, after providing the input information corresponding to a desired word, if the user's word is not in the dictionary, the user may proceed to correct the entered chain-of-characters. For that, if the first character of the desired word is a non-preferred character, the user may tap on a desired letter of the group of non-preferred characters corresponding to the key of the first key interaction which is shown on the screen, if not, the user may, for example, tap on the desired preferred character. Now the system may show the non-preferred characters corresponding to the following key interaction of the user, and so on.

Tap on a group of non-preferred chars to open them

Press-and-hold on a letter key to open the none-preferred chars

- **Open them in/closed-to the wordlist**

According to one embodiment of the invention, (e.g. each of) a group of non-preferred characters may have its own corresponding zone on a/the touch sensitive surface, and wherein interacting with said zone may enlarge said zone or may result to show the (e.g. enlarged) corresponding characters on a location on the screen as described before (e.g. the zone corresponding to the enlarged non-preferred characters may herein be referred to as the non-preferred characters' enlarged zone). As an example, Fig. 460A, a tapping on (e.g. the zone corresponding to) the non-preferred characters 460021 may result to proposing the enlarged corresponding non-preferred characters in a zone 460022 near the word list 460011 on the screen 460009 of a device 460000.

Non-preferred chars have Alphabetical order

Note that the non-preferred characters may be grouped according to any type of arrangement such as for example alphabetical arrangement. In the exemplary Fig. 460B, the non-preferred characters are arranged in four (e.g. separate) groups in 460111-460114 in an alphabetical order.

Press-and-hold on/gesture from a preferred letter for a non-preferred letter

According to one embodiment, each (e.g. of the preferred) letters/characters may have at least one related character/letter such as a non-preferred character. By providing a predefined interaction such as a gliding/long-pressing action with a (e.g. zone corresponding to a preferred) character/letter, the system may enter the corresponding (e.g. non-preferred) character (e.g. preferably, precisely). As an example, in Fig. 460C, a long pressing action or a gliding action from/on the (e.g. zone corresponding to the) letter "S" may correspond to entering the letter "Z". Accordingly, a gliding action upward from/on the (e.g. zone

corresponding to the) letter "L" may correspond to entering the letter "C", and a gliding action downward from/on the (e.g. zone corresponding to the) letter "L" may correspond to entering the letter "U".

Each of the None-preferred chars can have its own key

Note that other types of arrangement of non-preferred characters and other methods of entering a non-preferred character may be considered. As an example, according to another method, each of the non-preferred characters may have its own zone, wherein upon interacting with one of said zones the system may preferably enter the corresponding character precisely.

2 times tapping on non-preferred chars:

- **Is not possible, because after the 1st tap they disappear**
- **1 correction + 1 insertion**
- **2 corrections on a same letter position**

When selecting a first non-preferred char the relating (non-preferred/preferred) char appears (e.g. bh ch ck gh kh ph qu xx zh ex:c-->h for ch)

According to one embodiment of the invention, according to a first method, after the user selects a non-preferred character in the non-preferred characters' enlarged zone, said non-preferred character replaces the corresponding preferred character and said zone disappears.

According to a second method, after said selection of said non-preferred character, said zone remains displayed on the screen and subsequently selecting another character from said zone, replaces the previously selected non-preferred character.

According to a second method, after said selection of said non-preferred character, said zone remains displayed on the screen and subsequently selecting another character from said zone, appends the corresponding selected character to the previously selected non-preferred character.

According to one embodiment, a (e.g. non-preferred) character may be related to one or more (e.g. pre-defined) corresponding (e.g. non-preferred) characters. According to one method, after said selection of a (e.g. non-preferred) character from the non-preferred characters' enlarged zone, said one or more (e.g. pre-defined) corresponding (e.g. non-preferred) characters are displayed in the non-preferred characters' enlarged zone and available for selection to be preferably be appended to the previously selected non-preferred character. As an example, after selecting the letter 'C' from the non-preferred characters' enlarged zone, the system may show the corresponding related characters (e.g. 'K', 'H', etc.) and the user may select a related character to, for example, enter (e.g. two) consecutive (e.g. non-preferred) characters (e.g. 'CK').

  - **All in predictive**
  - **Non-preferred in precise**
- **Press and hold a key for it's symbols or for all symbols. then tap**

  According to one embodiment of the invention, a press-and-holding action on a key/zone may bring up (e.g. display) the corresponding symbols (e.g. such as special characters of at least said key). According to one method, the user may interact (e.g. tap) any of the symbols to enter said symbol. According to another embodiment, a predefined gliding action provided on any key may enter a corresponding symbol (e.g. such as a special character or function) of said key.

Preferred/non preferred Char can include spchars

- **Can be any number of characters relating to a key/zone**
- **zone can be dynamically defined**
  - **chars can constitute one/two/more lines**
    - **(no predefined in several keys)**

- **Can belong to several groups depending on where the user interacts/taps**

Note that in the embodiments described throughout this application, a zone/key described may be dynamically defined based on the location of interaction with the keypad (e.g. including preferred characters) of the invention as described before. In this case, according to one method, the relationship/assignment of the non-preferred characters corresponding to one or more preferred characters that are considered by the system based on such an interaction(s) may also be dynamically defined.

Enter the beginning and the last portion of a word to enter it

- **Inform by a gesture**

According to one embodiment of the invention, during the entry of the input information corresponding to a word, a user may provide a predefined interaction, such as a gliding action in the broadly ambiguous zone, to inform the system that the input information corresponding to a next portion of a word will not be provided by the user, hereafter referred to as the 'skipped portion'. After said interaction, if the user provides input information, the system relates said input information to a next portion of the desired word. The length and/or the corresponding characters of the skipped portion may be dynamically defined by the system, by considering the a predefined criterion and/or by considering the contents of a dictionary/word database, by, for example, finding words that match, preferably, all the/said input information relating to the entry of a word.

As an example, the user may enter a beginning and a last portion of a word, and the system may accordingly propose corresponding words that begin and end with said portions of a word.

Threshold to make search

According to one embodiment of the invention, after a predefined time interval, starting from the end or beginning of the user's last interaction (e.g. pressing on a key), the system may preferably begin to process the input information, by, for example, searching a dictionary/word database and may select words for proposal to the user.

Threshold to show the word list

According to one embodiment of the invention, after a predefined time interval, starting from the end or beginning of the user's last interaction (e.g. pressing on a key), the system may preferably display/propose word(s) (e.g. in the form of a word list) to the user.

Show all new keymaps

Fig. 461A shows another type of assignment of special characters to the keys of the keypad of the invention. Fig. 461B shows another type of assignment of special character and functions to the keys such as the Space and the Backspace keys of the keypad. In this example, up to eight gliding actions in various directions may each correspond to a predefined character or function. Optionally, two gliding actions, each having a different length, provided in a same direction, may each correspond to a different character. For example, a short and long gliding action in the direction 461011 may correspond respectively correspond to a first and second character (e.g. '?' and '¿').

Picture Editing

Reserved location on a picture offered by a buyer

Before or after others

Horizontal gesture for other actions (e.g. navigate in the history of that pic)

According to one embodiment of the invention, providing (e.g. first predefined) gesture(s) to the system, in a (e.g. horizontal) plane may preferably control the display and/or access to information of the history relating to the content (e.g. message/image which is one content in a discussion/channel/topic/thread) on which the user provides said gestures. Such gestures can, for example, be leftwards and rightwards gliding gestures. For example, if the user glides to the left on an image, the system may display a previous/initial/earlier content relating to said image given the present content displayed at that time. If the user glides to the right on an image, the system may display a next/last/later content relating to said image given the present content display at that time.

Vertical gesture for all subjects history

Preferably, providing (e.g. second predefined) gesture(s) to the system, in a (e.g. vertical) plane may preferably control the display and/or access to information of the history relating to the sequence of content (e.g. message(s)/image(s)) in a discussion/channel/topic/thread on which the user provides said gestures. Such gestures can, for example, be upwards and downwards gliding gestures. For example, if the user glides upwards on a discussion/channel, the system may display a previous/initial/earlier message content (e.g. in some predefined rendering state) relating to said discussion/channel given the present message content displayed at that time. If the user glides downwards on a discussion/channel, the system may display a next/last/later message content (e.g. in some predefined rendering state) relating to said discussion/channel given the present message content displayed at that time.

- **Public**

According to one embodiment of the invention, the public sequence of content (e.g. message(s)/image(s)) in a discussion/channel/topic/thread may be controlled by access control mechanisms (e.g. such as allowing unauthenticated users) to view and manipulate (e.g. add, modify, etc.) new and/or existing content(s) in a sequence of content. Such access controls may, preferably, be setup/controlled/manipulated by one or more authenticated users, and at least, initially, by the initial user or group of users who established (e.g. setup and enabled access to) the said sequence of content.

- **Private group**

According to one embodiment of the invention, the private sequence of content (e.g. message(s)/image(s)) in a discussion/channel/topic/thread may be controlled by access control mechanisms (e.g. such as allowing to only identified and authenticated users or groups of user) to view and manipulate (e.g. add, modify, etc.) new and/or existing content(s) in a sequence of content. Such access controls may, preferably, be setup/controlled/manipulated by one or more authenticated users, and at least, initially, by the initial user or group of users who established (e.g. setup and enabled access to) the said sequence of content.

- **Person to person**

According to one embodiment of the invention, the person-to-person sequence of content (e.g. message(s)/image(s)) in a discussion/channel/topic/thread may be controlled by access control mechanisms (e.g. such as allowing only two identified and authenticated users) to view and manipulate (e.g. add, modify, etc.) new and/or existing content(s) in a sequence of content. Such access controls may, preferably, be setup/controlled/manipulated by the (e.g. two) authenticated users who established (e.g. setup and enabled access to) the said sequence of content.

Press and hold to see the pic without text

According to one embodiment of the invention, providing an interaction, preferably a pressing-and-holding action on a content, such as an image, may preferably display said content without any additional content such as said text (e.g. on it).

Gesture to see/write more comments on the back

According to one embodiment of the invention, providing an interaction, preferably such as a gliding action on a content (e.g. such as an image), may preferably display additional content relating to said content (e.g. image). Said additional content may be one and/or a combination of other contents such as: images, text, hypertext links, audio, link(s) to other content(s), or a link(s) to another sequence of content.

EyeFreeDial

A method of entering (e.g. dialing) (e.g. telephone) numbers is described hereafter:

According to one embodiment of the invention, supported by the exemplary Fig. 462, an input system using a virtual dynamic keypad in the form of a telephone type keypad may be used for entering numbers. Preferably, the input interface of the system the input interface of said system may include substantially the whole touch sensitive surface used by the system, such as a (e.g. touch sensitive) screen (e.g. touch screen 462009) of a device. When the user touches the input interface, the system may dynamically locate said virtual dynamic keypad under the finger of the user such that the key (e.g. 462005) corresponding to the character '5' (herein referred as the key '5') of such keypad may be located at the impact point of the touching action. If the user removes his finger from the touch sensitive surface, the system enters the character '5'. Alternatively, after touching the screen and relating the said impact point to the key '5', the user may provide a sliding action towards another key of the virtual keypad model. Note that the user does not have to a specific location, but rather slide in a specific direction of a corresponding key. For example, to enter the character '3', the user touches the screen and slides towards the upper-right. For example, preferably to enter the character '8', the user touches the screen and slides (e.g. not a long gesture) downwards. To enter the character '0', the user slides a long gesture downwards. These matters have already been described in detail through various patent applications filed by this inventor.

With continuous description of the current embodiment, after entering a sequence of digits corresponding to a telephone number, a predefined interaction such as a gliding action including a press-and-holding action towards a predefined direction, such as rightward, on a touch sensitive surface may preferably dial the corresponding number. Note that, providing said interaction at any moment, may preferably relate to dialing the last entered number (e.g. may be used to redial a number). After dialing a number, a predefined interaction such as a tapping action on the touch sensitive surface may preferably terminating the call or dialing process. A predefined interaction such as a long-pressing action on the touch sensitive surface may preferably delete a previously entered character. A predefined interaction such as a press-and-holding action towards a predefined direction, such as leftward, on a touch sensitive surface may preferably delete all previously entered characters.

Accordingly, for star (*) or pound sign (#), after touching the touch sensitive surface, the user may provide a long slide in the direction corresponding to any of them.

According to one embodiment of the invention, the system may store predefined (e.g. telephone) number(s). Such (e.g. telephone) number(s) may be related/associated by the system to predefined directions or gestures on a touch sensitive surface. A predefined interaction/gesture, such as a slide-and-hold action, in a said predefined direction on the touch sensitive surface, may preferably dial said predefined (telephone) number. The minimum length/lapse of time corresponding to the hold portion of the slide-and-hold interaction/gesture may be predefined. The minimum length of the interaction/gesture may be predefined. These minimum length parameters may be adjusted by the user and/or the system according to an arbitrary requirement(s). Instead of the slide-and-hold action immediately above, a predefined interaction/gesture, such as a slide with two fingers (e.g. without holding), in a predefined direction on the touch sensitive surface, may preferably dial said predefined (telephone) number.

With continuous description of the current embodiment and previous embodiment of the invention, after entering a sequence of digits corresponding to a (e.g. telephone) number by predefined interactions, as already described above, a predefined interaction, such as a particular predefined gesture that causes the system to dial a (e.g. telephone) number, may preferably cause the system to store (e.g. for later use/retrieval) and relate/associate said sequence of digits with said particular predefined gesture for (e.g. speed) dialing.

Speed Dial

1st choice – from a/the telephone book/contact list (of the device)

- **Enter a digit from 0-9 by gesture**
- **Provide the predefined Dialing gesture**
  With continuous description of the current embodiment, the dialing system may include a means (e.g. a predefined gliding action) for dialing a phone number by selecting it from a list (e.g. of phone numbers). In this case, the user may enter the entry number of the list that corresponds to the desired number. The entry number may be entered by entering said number using the gesture/gliding action(s) to enter digits as described. After entering the desired entry number, the user may provide a predefined interaction such as a gliding action including a press-and-holding action (e.g. for example, a glide-and-holding action rightward on the touch sensitive surface) to select entry number from the list and dial said entry number.

According to one method, said list may be a list such as the contact list of the device, a select/speed-dialing list (e.g. native of the device, or created through the dialing system of the invention).

Speed Dial a number

- Slide and hold or slide with two finger, towards a number

Note that in the virtual dynamic keypad may not be shown on the screen (e.g. at least) during user's interaction on the screen for entering a number and other corresponding functions described above.

Alphabetical order

As mentioned before the, the letters (e.g. all of the letters, preferred and/or non-preferred letters, etc.) of the keypad may be arranged in alphabetical order. Fig. 462A shows, as an example, the keypad of the invention having a plurality (e.g. four) of letter keys (e.g. 462001 to 642004) on and/or next to which the preferred and non-preferred characters are arranged/presented in alphabetical order. In this example, the preferred characters are shown on the keys (e.g. TWY on the key 462004), and the non-preferred characters are shown outside the keys (e.g. letters UVXZ 462021 on the key 462004). Such a keypad may be used with a data entry system such as the word predictive (e.g. fully-predictive and/or semi-predictive) data entry system of the invention. As an example, for a preferred letter, the user may preferably tap on a key, and for a non-preferred character the user may preferably tap on the broadly ambiguous zone 462007 between the keys. The use of preferred and non-preferred characters by a data entry system such as a word predictive system to predict words has already been described in detail.

In this example, the keypad may also include additional key(s) such as a Space key (462005) and/or a Backspace key (462006), which may also include additional function(s).

Note that, In the current embodiment, the preferred characters and/or the non-preferred characters, may be defined/modified based on the parameters such as thr accuracy of prediction in different languages while keeping the alphabetical order. Fig. 462B shows, as an example, an arrangement of letters on a keypad. In this example, the definition of the non-preferred characters and preferred characters of Fig. 462A are slightly modified, and are shown on the keys (462101 to 462104) of the keypad in small font, and the preferred characters are printed in a large font. In this example, the keypad may preferably include at least a broadly ambiguous zone (462107). Note that, the number of preferred characters assigned to a key are shown as an example and may vary.

Note that all of the letters of an alphabet may be assigned to the keys of a keypad as preferred characters. In this case the keypad may not include a broadly ambiguous zone. For example, in the examples above, all of the letters may be assigned to the (e.g. four) keys in alphabetical order.

With continuous description of the current embodiments, according to a first method, for a key interaction, the system may present the non-preferred characters (e.g 462021) in an enlarged format (e.g. 462022) (e.g.

so that the user can precisely enter a non-preferred character by tapping on it) as described before. According to a second method, for a key interaction, the system may present all of the character of said key in an enlarged format preferably so that the user can precisely enter a character. According to a third method, for a key interaction, the system may present any number of predefined characters (e.g. in an enlarged format) preferably so that the user can precisely enter a character.

Fig. 465 shows a preferred arrangement of preferred characters (e.g. shown in large font) on the keys/zones of the keypad of the invention. In this example, the non-preferred characters (e.g. shown in small font) are also shown on the keys, but preferably, as mentioned before, according to a preferred method the non-preferred characters may be assigned to the broadly ambiguous zone 465007. Note that, as mentioned before, the broadly ambiguous zone is preferably part of the keypad of the invention.

Fig. 465A shows another preferred arrangement/assignment of the preferred and non-preferred characters of the keypad of the invention.

Fig. 465B shows an example of a linear arrangement of the keys and the arrangement/assignment of preferred and non-preferred characters of the keypad of the invention. In this example, a zone (e.g. not shown) outside said keys may be considered by the system as a broadly ambiguous zone of the keypad of the invention.

Fig. 465C shows an example of a linear arrangement/assignment of the preferred and non-preferred characters of the keypad of the invention. As mentioned before, when a user interacts with a zone on such a keypad, the systems considers/relates (e.g. ambiguously and/or precisely) a number of characters near the impact point of the user's interaction. In this example, the preferred characters that are shown in large font, are printed on the keypad (e.g. zone) such that the user may enter (e.g. precisely) the preferred characters by interacting with them. According to one method the system may (e.g. also and preferably simultaneously) consider said preferred character and the nearby characters as ambiguous characters. According to one method, if the user interacts with (e.g. a zone corresponding to) non-preferred character(s), the system may consider the nearby non-preferred characters as ambiguous characters. According to one method, after such interaction, the system may also enlarge said characters and optionally the nearby preferred characters, so that the user can enter any of said considered characters precisely. Note that a sequence of such ambiguously entered characters and optionally the precisely entered characters, may be considered by the word predictive system to predict word(s).

Fig. 465D shows another type of keyboard similar to keyboard 465300 of Fig. 465C where in this example, all the characters (e.g. preferred and non-preferred characters) are arranged close to each other to reduce the size of the keypad.

QWERTY order

As mentioned before the, the letters (e.g. all of the letters, preferred and/or non-preferred letters, etc.) of the keypad may be arranged in the order of a standard (e.g. QWERTY) keyboard. Fig. 463A shows, as an example, a keypad of the invention including a plurality (e.g. four) of letter keys (463001 to 463004). The preferred characters (e.g. 463011) are shown in large font and non-preferred characters (e.g. 463012) are shown in small font on the keys of the keypad. According to one method, for preferred characters, the user may tap on the keys and for non-preferred characters the user may tap on a broadly ambiguous zone (not shown) outside said keys. Preferably the keys of the keypad may have different forms so that together, they constitute a QWERTY-like keyboard. In this example, the boarders between keys are shown by lines (463021 to 463023). Such keyboard may also be used with a data entry system as mentioned before. Note that, the preferred characters assigned to a key are shown as an example and may vary. For example, in Fig. 463A, the character 'N' was presented as a preferred character (e.g. shown in large font) and the character 'M' was presented as a non-preferred charater, and in Fig. 463B, the character 'M' 463111 is presented as a preferred character, and 'N' 463112 is presented as a non-preferred character. Also note that the number of preferred characters may vary, accordingly as required.

It must be noted, that a keypad of the system having a QWERTY arrangement, may have any number of keys.

Fig. 463C shows the keypad 463B in a split configuration having two portions each have two keys. In this example, the keys 463201 and 463202 form a first portion of the keypad and the keys 463203 and 463204 form a second protion of the keypad. Said portions are separated by a broodingly ambiguous zone 463207.

The keypad of the invention, as described above, may be resized, for example, to be in large format and.or in compact format. Fig. 463D shows a preferred embodiment of the invention, in this example, the keypad 463C is shown in a (e.g. vertically) compact format. In this example, the keypad includes additionally keys 463305 and 463306 relating to, for example, Space and Backspace as described throughout this application by the inventor. When a user touched a key, the non-preferred characters related to said key (e.g. 463304), may be shown in an enlarged format (e.g. 463332) so that the user may be able to enter at least one of them precisely. In this example, a word list 463331 presenting words corresponding to the input information provided by the user is also shown.

Note that all of the letters of an QWERTY-like keypad may be assigned to the keys of a keypad as preferred characters. In this case the keypad may not include a broadly ambiguous zone. For example, in the examples above, all of the letters may be assigned to the (e.g. four) keys in QWERTY-like keypads.

Note that letter arrangements other than Alphabetical and/or QWERTY-like keyboard arrangements may be consider by people skilled in the art based on the principles described above.

Such a keypad may be used with a data entry system such as the word predictive (e.g. fully-predictive and/or semi-predictive) data entry system of the invention. The use of preferred and non-preferred characters by a data entry system such as a word predictive system to predict words has already been described in detail.

It must be noted that in examples above, that although these embodiments, methods, principles, and examples refer to the use of keys, such keys are preferably zones on a touch sensitive surface such as a touchscreen.

It is understood that instead of a QWERTY-like keyboard, any other keyboard having any number of keys any character assignment, etc. may be used.

Dynamic/Half dynamic

- **Based on all / based on preferred**

As mentioned before, the data entry system of the invention may use a keyboard such as an on-screen (e.g. Alphabetically ordered, QWERTY-like, etc.) keyboard on a touch sensitive screen relating to an electronic device. As mentioned before, when user interacts with the keys, he may tap in an area of the keyboard being close to the character that the user intended to enter. The system may consider at least some of the neighboring character relating (e.g. near, around, or corresponding predefined characters) to the pressed area (e.g. zone). This may provide a set of ambiguous characters for each interation with the keyboard. By providing a sequence of such interactions, the user may dynamically provide an ambiguous input information to the data entry system (i.e. each of the number of such interactions with the keyboard may be related to at least one character such as a letter, such as to duplicate a virtual key interaction corresponding ambiguously corresponding to one or more characters). Note that, even if there are non-preferred characters presented on the keyboard, according to a preferred method, the system may consider only the preferred characters relating (e.g. near, around, or corresponding predefined characters) to the interaction with the keyboard. As an example, by considering Fig. 464A, when a user interacts with the keyboard at the touching/interaction point 464011, the system considers at least the letters 'E', 'R', and 'D' as ambiguously corresponding to said interaction. These matters have already been described in detail.

The advantage of Preferred Characters in a Word Predictive System

Preferred characters, in general, constitute about 70-80 percent of the characters that are typed. By considering that a that a good quality database may include 99% of the words used by an average user, and also by considering that an average word (e.g. in the English language has 4.5 letters), an average user may only be required to precisely enter about 1 non-preferred letter for 400-500 key interactions on average while using a (e.g. word predictive) data entry system based on preferred- and non-preferred character principles (e.g. as described above through this and other patent applications filed by this inventor). This permits a simplified and reduced user interface (e.g. keyboard) while maintaining high prediction accuracy of data entry. For devices (e.g. mobile phones, tablet computers, etc.) that include small screens, such a reduced keyboard is essential.

After select

- **cands**

reverses kb

- **replaces char**
    - **cands**
- **replaces until end**

According to one embodiment, during the entry of a word, the letters of one of the words presented in the word list may be those letters that the user has tapped on them on the corresponding keys, and the remaining one or more characters of said word corresponding to user's interaction with the broadly ambiguous zone may be presented by a predefined character such as a blank character (e.g. such word may hereafter be referred to as an incomplete word). According to one method, if the user selects said incomplete word, it may become the current predicted word and the system may enter into a correction procedure by switching the keypad into another layer wherein the non-preferred characters may preferably be enlarged (e.g. and the preferred characters may preferably be shown in reduced size or not shown) so as to be easily accessible to the user interaction with them. In this case, an interaction such as a tapping action on a (e.g. enlarged) non-preferred character (e.g. on a key) may replace a (e.g. preferably, the first) corresponding predefined character(s) of the (e.g. current (e.g. note that after each replacement the next predefined character of the incomplete word becomes the first predefined character of that word)) incomplete word by said non-preferred character. This procedure may be repeated to replace more (e.g. all of) said predefined characters by non-preferred characters. Note that, each time the user replaces a predefined character (e.g. by a non-preferred character), the system may propose one or more words from the database used by the system corresponding to the input information provided until then. As an example, in Fig. 466A, the system is in fully-predictive mode. In this example, the user desires to enter the word "wooter" which is not in the dictionary. After tapping outside the keys for the letter 'w' and tapping precisely the letters: 'o', 'o', and 't' and then tapping outside the keys for the letter 'e' and finally tapping on the letter 'r', in addition to predicting some words, as shown in the word list 466011, the word list may include an incomplete word 466021, wherein the letters 'w' and 'e' corresponding to the user's taps outside the keys are missing and each of them is preferably represented by a blank (e.g. space) character. Fig. 466B shows a similar approach when the system is in semi-predictive mode. In this example, the predicted words in the word list 466111 include the precise letters entered by the user. (e.g. For any of said modes) If the user selects an incomplete word 466121 (e.g. by tapping on it), said incomplete word is preferably selected as the current predicted word. At this time, as shown in Fig. 466C, the system (e.g. the keypad) may preferably automatically be switched to the non-preferred mode/keypad (e.g. having letter keys 466201 to 466204 that include enlarged non-preferred characters) as described above (e.g. Note that preferably, tapping on any zone of the keypad in the non-preferred mode, may preferably correspond to precisely entering a non-preferred character and preferably not correspond to a preferred character which preferably is shown in a

small font). Now the user may tap on the letters 'w' and 'e' to respectively replace the first and second predefined (e.g. blank, an unusual character, etc.) characters of the incomplete word to provide the word "wooter" 466131. Preferably after the word is completed, the system (e.g. the keypad) switches back to the preferred mode, so that the user may be able to append characters, if desired. Note that after the selection of an incomplete word, the system may propose additional one or more words that preferably include the (e.g. at least some, preferably all, of the) corresponding precise/identified character(s) of the incomplete word. Such proposed words may preferably be of any length (e.g. words with the same length of the incomplete word and/or longer words). According to one method, each consecutive interaction (e.g. taping action(s) on) an incomplete word may result in presenting additional one or more words that their corresponding precise/identified one or character(s) correspond to (e.g. are the same as) those precise/identified characters of the incomplete word. Preferably, additionally, after a predefined (e.g. blank) character of an incomplete word is replaced by a precise character, the system may predict/propose additional words that may preferably include all of the precise characters of the incomplete word. According to one method, before selecting an incomplete word, the user may activate a next function (e.g. by sliding down on a word list) so that the system proposes more words, if any, corresponding to the input information provided by the user until then. Preferably, after the activation of the next function, the system may preferably still include the incomplete word in the new (e.g. updated) word list. Note that the precise/identified characters of an incomplete word may be one or more consecutive precise/identified characters and/or at least some of said precise/identified characters may not be consecutive characters. After interacting with an incomplete word, if a corresponding proposed word is longer than the incomplete word, preferably the identified characters of the incomplete word are related the corresponding characters of the beginning portion of the proposed word.

The use of an incomplete word(s) and its completion may preferably be used to enter words that are not in the dictionary and/or accelerate the entry of uncommon words that are in the dictionary.

According to another embodiment of the invention, preferably when the system is in the fully-predictive mode (e.g. this embodiment may also be applied to semi-predictive mode), any (e.g. all) of the character(s) of an incomplete word (e.g. including the predefined (e.g. blank) character) may be considered by the system as requiring correction. In the current embodiment, after the user selects an incomplete word, for each of its characters the system may show the keypad in the mode (e.g. preferred and non-preferred) of the corresponding letter. In this case the user may enter each of the characters of the incomplete word one by one. Accordingly, if a to-be-replaced character of the incomplete word is the desired character (of the user), then the user may provide a predefined interaction (e.g. by tapping between the keys) to skip said character, except in the case of a blank character. In this embodiment, even if a precise character is mis-entered (e.g. to-be-replaced character), when the system is in the preferred character mode, tapping on any character of any key/zone may replace said to-be-replaced character.

New letter arrangement

Fig. 467A shows another method of (e.g. alphabetic) arrangement of letters of a keypad of the invention having four keys 467001-467004 and a broadly ambiguous zone 467007. Different scenarios may be considered, such as:

(1) According to one embodiment (e.g. hereafter may be referred to as the preferred scenario)(e.g. preferably, in the fully ambiguous mode), each of the keys represents the letters displayed on it,. The remaining letters are (e.g. t, u, v, w, x, y, z, not shown) represented by the broadly ambiguous zone 467007. According to one method, in this example, in order to enter a word, and interaction such as a tapping action on a key/zone may ambiguously correspond to any of the letters on said key/zone. As such, a sequence of interactions with key(s)/zone(s) may correspond to one or more

words of a database used by the system. Note that according to one embodiment, the characters/letters assigned to the broadly ambiguous zone may be displayed on said zone or anywhere on the screen. Note that, according to one embodiment, the boarders of the broadly ambiguous zone may be displayed on the screen. In the example Fig. 467A, the broadly ambiguous zone 467007 is the zone preferrably between the letter keys and the space and backspace keys. In this example, the borders of the broadly ambiguous zone are not displayed.

(2) According to one embodiment, (e.g. preferably, in the semi-predictive mode), interacting with a key, may correspond to any of the preferred characters assigned to said key (e.g. in this example, the preferred letters displayed on a key are shown in large font, while the non-preferred letters are shown in small font). Interacting with the broadly ambiguous zone 467007 may preferably correspond to any of the non-preferred letters (e.g. small) shown on the keys (e.g. b, g, j, k, m, p, q) and the rest of the letters of the language that are not shown (e.g. t, u, v, w, x, y, z).

(e.g. In the embodiments above) optionally, according to one method, a predefined interaction such as tapping on any of the letters of a key may identify said letter and entering it (e.g. here in may be referred to as precisely entering a character/letter). According to a second method, a predefined interaction such as a tapping action on any preferred letter may precisely enter said letter. Accordingly, another type of interaction such as a (e.g. short) gliding action from a preferred character towards a non-preferred character may precisely enter said non-preferred character.

As an example, in Fig. 467A, a tapping action on the letter C may precisely enter said letter and a gliding action 467011 from the letter 'C' (e.g. or from the letter 'A') towards the letter 'B'may precisely enter said letter. Note that: a single preferred character may be related to two or more non-preferred characters from entering said non-preferred character precisely. Aslo note that a single non-preferred character may be related to two or more preferred characters to precisely enter said non-preferred character. As an example, from a single preferred character providing two gliding actions in two different directions may correspond to precisely entering two different characters. As an example, providing a gliding action 467021 from the letter L towards the letter K may correspond to precisely entering the letter K and providing a gliding action 467022 from the letter L towards the letter M, may correspond to precisely enter the letter M. Respectively, as an example, a single non-preferred character may be entered by each of two gliding actions provided from a different direction towards non-preferred character. As an example, the letter M may also be precisely enter my providing a gliding action 467023 from the letter N towards the letter M (e.g.) on the key (e.g. 567003). Preferably, the gliding action is provided from a non-preferred character to the adjacent non-preferred character to precisely enter said non-preferred character. As an example, in order to precisely enter the letter J, on the key 467003, the user may provide a gliding action 467031 from the letter I towards the letter J.

Note that, in addition to the letters, each of the keys and/or broadly ambiguous zone may also include one or more special characters as preferred and/or non-preferred characters.

Preferably, the gesture for precisely entering an identified character may be a short gesture. A longer gesture from a key may preferably be used for entering a corresponding special character assigned to said key. Note that, as mentioned before, each of the keys of the keypad may represent a group of special characters as described before.

The system may include a precise mode wherein a predefined interaction such as a gliding action such the Space 467006 or Backspace key 467005 in a predefined direction may enter the system into said precise more where the user can precisely enter (e.g. any) characters. Fig. 467B shows, as an example, a keypad 467100 of the invention in a precise mode. In this example, the letters are arranged in alphabetic order. Note that, although the letters can be presented in a continuous manner, in Fig. 467B they are shown as being assigned to five keys, 467101 to 467104, and the key 467106, this is because each of said key also represents a group of special characters as describes throughout this application. According to one method, said special character may be entered by providing an interaction from a corresponding key. In this example, the key 467107 is located between the Space and Backspace keys.

In this examples, an interaction such as a tapping action on a (e.g. zone assigned to a) letter may precisely enter said character.

Fig. 467C shows another type of keypad of the invention in precise mode

Another method of assignment of letters of a language to a keypad of the invention is described using Fig 468. In this example, in addition to the keys 468001 to 468004 two broadly ambiguous zones 468007 and 468008 are considered. Interacting with the broadly ambiguous zone 468007 may ambiguously correspond to any of the none preferred characters shown/displayed on the keys 468001 to 468004 (e.g. the letters b, g, j, k, m, p, q) and interacting with the zone 468008 may correspond to the remaining characters of the language (e.g. the non-preferred characters t, u, v, w, x, y, z). Alternatively, a predefined interaction such as interacting near a key may (e.g. ambiguously) correspond to the non-preferred character(s) displayed on said key.

- **Alphabetical order**
- **Fully predictives**
  Semi predictive

  - **Broadly ambiguous includes small and non-shown chars**
  - **Can include some special chars too**

Can enter precise chars/word

  - **A character can have related char**
  - **When tapping on it, related is also considered for prediction**

- **Gesture from a letter towards neighbor letter (left or right) a single (non-prefreed) letter can be related to 2 (preferred) letters**

Precise mode

- **2 lines**
- **3 lines**

THE RESE BETWEEN SP AND BACK

1- **TAP ON A LARGE LETTR FOR ALL AROUND**
2- **TAP ON THE LARGE LETTERS FOR PRECISE, ON THE TOP FOR OTHERS**
3- **TAP ANYWHERE ABOBE/UNDER FOR SMALLS**
4- **GESTURE FOR PREC SMALLS**

Current is the one with highest accuracy

The precise/semi precise word

- **If it is in the database and its freq meets a requirement, then it becomes current, if not**
  - **The current is the word with highest priority with the same length or longer**

On tap on a precise/prefrerred letter, the related letter is also considered to propose a (one or more) recise word(s)

All fully precise mode or fully ambiguous mode

- **Broadly amb zone may be related to all letters**

In fully pred.

- **Tap anywhere on a key also consideres as precise taps**
-

As mentioned before, during interaction with a key/zone, such as tapping on a key, in addition to relating said interaction to an ambiguous input signal, the system may also relate said interaction to a precise character, preferably the character with which the user interacts (e.g. taps on).
As such, when the user provides the input information corresponding to a word, the system may consider/propose two types of corresponding words. A first type may include one or more words corresponding to ambiguous input signals and the second type may include one or more words that include one, more, or all of the precisely identified characters considered by system. Note that in some cases, the precisely identified characters may comprise all of the characters of a word. As an example, the table immediately below shows the words corresponding to interacting with the keys 467002, 467001, and the zone 467007. If the user types anywhere on said keys and the broadly ambiguous zone, the system may propose one or more words of the first type such as the words "eat", "fat", "hat" (herein may be referred to as ambiguous words), and "gay". Additionally, if the user precisely taps on the letter F, then taps on the letter A, and finally taps on the zone 467007, the system may also propose the word "fat". Similarly, for interacting with the letter H instead of the letter F, the same may apply to the word "hat". By using this method the user may enter a desired word from a number of ambiguous words.
According to on method, the system proposes a (e.g. one or more) word of a second type only if said word, only if said word contains a (e.g. one or more) criterion such as having at least a predefined minimum frequency of use/occurance. Said frequency of use/occurance may be predefined number or a dynamically defined number, such as the relationship of frequency of said word and the frequency of an ambiguous word(s) wherein both types of words correspond to a same sequence of input signal(s). Note that in some cases, said second type of word may even become the current predicted word so that a predefined interaction such as tapping on the Space key may enter said word. ACCORDING TO ONE METHOD, IF THE USER SELECTS SECOND TYPE OF WORD, THE SYSTEM MAY PROPOSE OTHER WORDS (E.G. HAVING THE SAME LENGTH OR LONGER) CORRESPONDING TO THE INPUT INFORMATION PROVIDED BY THE USER CORRESPONDING TO SAID SECOND TYPE OF WORD.

217	eat	7556
217	fat	4614
217	hat	3141
217	gay	1886

According to one method, all of the characters/letters displayed on a key may be entered precisely by providing an interaction such as the tapping action on them. According to another method, when the user provides an interaction with a character displayed on a key to enter it precisely, the system may also consider a related (e.g. non-preferred) character/letter or one or more characters near said character, and based on these characters and additional input information provided during the entry of a word, the system may propose one or more corresponding words.

Four groups of symbols

1 line

THE REST BETWEEN SP AND BACK

FOUR ZOES FOR SP CHARS

CAN TAP EVEN SOME (BRAODLY ZONE CORRESPONDS TO ALL)

Fig. 470 shows a one line (e.g. linear) alphabetically ordered keypad. Several methods of entering text using this keyboard may be considered.

- According to a first method, interacting with a zone corresponding to a character (e.g. where the zone does not necessarily have to be over said character) may ambiguously correspond to said character and a number of characters near said character.
- According to a second method, interacting with a zone corresponding to a preferred character (e.g. shown in large font) (e.g. where the zone does not necessarily have to be over said character) may ambiguously correspond to said character and a number of preferred characters near said character.
- According to a third method, interacting with a zone corresponding to a (e.g.preferably preferred) character (e.g. shown in large font) (e.g. where the zone does not necessarily have to be over said character) may ambiguously correspond to said character.

In the methods just described above, a tapping action on a broadly ambiguous zone 470207 preferably may either correspond to any of the characters (e.g. letters/symbols) of the corresponding alphabet or to the non-preferred characters.

In the example of Fig. 470, a predefined action such as a tapping action on a preferred character may enter said character precisely and a gliding action, as described in Fig. 467A, may correspond to entering a non-preferred character precisely. For example, the gliding action 470212 provided from the letter E to the letter F, may correspond to precisely entering the letter F. Similarly, providing the gliding action 470211 may correspond to entering the character G. Also, as an example, providing any of the gliding actions 470213 or 470214 may correspond to precisely entering the character X. According to another method, a gliding action provided from a (e.g. preferred) character, may correspond to precisely entering another (e.g. preferred) character. Note that, in Fig. 470, the broadly ambiguous zone 470207 is, as an example, preferably located between the Backspace key 470205 and the Space key 470206.

Note that each of a group of characters of such a keypad may have a common zone from which providing an interaction, such as a long gliding action, may correspond to precisely entering a symbol such as a function or special character. Fig. 469B shows, as an example, the letters of the keypad 470000 of Fig. 470, may be divided into four zones wherein each zone may also correspond to a different group of special characters as shown and described before and throughout this application.

Fig. 469A shows another type of linear keypad having alphabetic order. In this example only the preferred characters are displayed and the rest of the characters are assigned to the broadly ambiguous zone 469107. As described before, interacting with a zone relating to a character, may correspond to either said character or to said characters and the characters near said character, depending on the method used as described above. Fig. 469B shows said keypad wherein the preferred characters are grouped in four different zones 469101 to 469104, wherein each zone also corresponds to a different group of symbols such as special characters.

Note that in the embodiments described throughout this application, according to one method, the broadly ambiguous zone may correspond to all of the letters of the corresponding alphabet. As an example, in embodiment corresponding to Fig. 469A or Fig. 467A, a user may provide the interaction corresponding to a partial number of (e.g. preferably preferred) characters corresponding to a desired word and, for the rest of the characters (e.g. preferred and/or non-preferred) of the desired word, the user may interact with (e.g. tap on) the broadly ambiguous zone. This matter has already been described in detail by this inventor.

SWIPING

In the embodiments described throughout this application, instead of using tapping actions corresponding to a sequence of (e.g. ambiguous and/or precise) characters, a gliding action interaction representing said sequence of characters my be used. To enter a word, according to one method a mixture of (e.g. one or more) such a gliding action and (e.g. one or more) other interactions such as tapping interactions may be used. These matters have already been described in detail before by this inventor.

Can be Qwerty

Note that in any of the embodiment throughout this application, any other letter arrangement may be considered by people skilled in the art to be used with the principles of data entry as described. For example, said letter arrangement may (e.g. partially or fully) resemble a qwerty arrangement.

According to one method, the current predicted word may be a word having the highest priority corresponding to the input information provided by the user, even if said input information corresponds to the portion of said word such as its beginning portion.

On tap 5th k

- **U as amb**
- **T as prec.**

5th key to display

With continuous description of the preferred scenario, as presented in Fig. 467A, according to one method, as shown in Fig. 471A when a user interacts (e.g. taps on) with the broadly ambiguous zone 471007, in addition to ambiguously relating said interaction to any character of a group of characters assigned to said zone (e.g. T, U, V, W, X, Y, Z, and preferably some special characters), the system may also relate said interaction to a predefined identified character (e.g. the character 'T') precisely, such as preferably based on the frequency of said groups of character.
With continuous description of the current embodiment, the letters assigned to a key may be presented to a user in two manners; a first group may be displayed in a first manner (e.g. a color, font, size, weight, etc.) and the rest of the characters of said key may be presented in a second manners (e.g. another color, font, style, size, weight, etc.). As such, according to one method, when a user interacts (e.g. taps on) with the a key, in addition to ambiguously relating said interaction to any character of a group of characters assigned to said key, the system may also relate said interaction to an identified character displayed in said first manner on/near which the user provides said interaction on said key. Said character may be presented in a word list. According to one method, preferably upon an/said interaction with a key, the system may present the characters displayed in the second manner on a location (e.g. preferably under/near the word list (e.g. on the screen)). If the user interacts with one of said characters, the system may replace said identified character. Note that selecting an identified character as such preferably resembles a similar procedure (as described before, in detail) to replace an identified (e.g. preferred) character by another identified (e.g. non-preferred) character. According to one method, same procedure may be applied to entering any character of the groups of (e.g. non-preferred) characters assigned to the broadly ambiguous zone of Fig. 467A. For example, as shown in Fig. 471A, when a user interacts with the zone 471007 the system may ambiguously relate said interaction to a character of the group of (e.g. non-preferred) characters (e.g. T, U, V, W, X, Y, Z) assigned to the broadly ambiguous zone and display it in a word list (e.g. the letter 'u' 471011). Additionally, the system may relate said interaction to a predefined identified character (e.g. 'T' 471012) of said group of characters. In addition to said characters, the system may also propose additional corresponding (e.g. longer) words from the word database used by the system. As such, by providing a sequence of such interactions, in addition to predicting words corresponding to said sequence of interactions, the system may also present a word wherein all of its characters are identified characters. According to a preferred method, all of said words are presented in a same word list. Note that in this embodiment, all of the characters assigned to a key are preferably considered by the system as preferred characters (e.g. irrespective of the manner of display). As an example, the characters I, K,

L, M, N assigned to the key 4671003 are all considered as preferred characters wherein some of the characters I, L, N are displayed in a first manner (e.g. large black font), while the other characters J, K, M are displayed in a second manner (e.g. small grey font). As an example, the user can enter any of the characters I, L, N (e.g. L) precisely by tapping on it. When such tapping action is provided, the system may also provide the characters displayed in the second manner J, K, M in a location on the screen. If the user taps on any (e.g. M) one of said characters displayed in said location, the system may preferably replace the entered character (e.g. L) by said character (e.g. M). Note that according to one embodiment the characters assigned to the broadly ambiguous zone may also be display in said zone. Fig. 471B shows, as an example, the keypad of the invention having four keys and a broadly ambiguous zone wherein the characters are respectively arranged in alphabetic manner on the four keys and in the broadly ambiguous zone. According to one embodiment, the principles of entering precise/identified characters of a key may also apply to the characters assigned to the broadly ambiguous zone. As an example, as shown in Fig. 471B, the characters T, U, V, X, Y, Z assigned to the zone 471107 are displayed in two different manners as described before. As such, as an example, in addition to ambiguously relating an interaction such as a tapping action on the broadly ambiguous zone 471107, the system may also relate said interaction to an identified character (e.g. one of the characters T, W, and Y) as described above. Upon said interaction, the system may also display, for example in a zone 471131 (e.g. near the word list), the characters (e.g. U, V, X, Z) displayed in the second manner on the broadly ambiguous zone 471107 so that the user can enter any of said characters precisely as described above for the keys.
Note that a group of characters assigned to a key of the keypad may include letters and/or special characters.

All precise letters from keys
5th key to display
According to another embodiment, preferably, in the fully ambiguous mode, all of the characters (e.g. letters) assigned to a key and/or to the broadly ambiguous zone(s), may preferably be displayed on said key(s)/zone(s) in a same manner (e.g. color, font, style, etc.). As such when a user interacts with (e.g. taps on) a key and/or a broadly ambiguous zone, in addition to ambiguously relating said interaction to any character of a group of characters (e.g. letters and/or special characters) assigned to said key/zone (e.g. herein may be referred to as an ambiguous input signal and/or ambiguous interaction), the system may also relate said interaction to a predefined identified character on/near which the user provides said interaction on said key (e.g. herein may be referred to as a precise input signal and/or precise interaction). Said character may be presented in a word list. When a user enters input information, by providing a sequence of such interactions the system may present two types of words to the user. A first type of one or more words by relating said key/zone interactions to ambiguous input signals, and a second type of one or more words (e.g. the length of one of the words corresponds to the number of key and/or zone interactions, and the additional words may be longer words, for example wherein their beginning characters correspond to said key/zone interactions) by relating said key interactions to precise input signals. Note that, according to one method, the input information provided by the user may be a mixture of ambiguous and precise input signals as described throughout this and other patent applications filed by this inventor. As an example, if the user uses another method (e.g. such as a gliding action) for entering a precise character, the system may predict one or more words by considering said precise character and relating the rest of the key and/or zone interactions provided by the user to ambiguous signal(s). With continuous description of the current embodiment, Fig. 472A shows an exemplary keypad of the invention based on the description of this embodiment. As an example, when the user taps on the letter 'y' in zone 472107 the system may relate said interaction to the precise character 'y' and display it 472112 in a word list, while on the other hand, the system may also relate said interaction to an ambiguous character 'u' that is assigned to said zone (e.g. also shown

472111 in the word list). Note that, according to one method, if the user does not taps anywhere on said zone 472107 but not on any of the characters, according to a first method, the system may relate said interaction to a predefined character (e.g. 't') assigned to said zone. In this case, preferably the letter t is not displayed on said zone. According to a second method, upon such interaction, none of the characters that are assigned to said zone are selected by the system as an identified character. In this case, all of the characters assigned to said zone may preferably be displayed in said zone. Similarly, an interaction (e.g. such as tapping) on a character on a key may be, both, related by the system to a precise character, on or near said interaction and ambiguously related to any of the characters assigned to said key. As shown, in this example, the letters 'A' to 'D' are assigned to the key 472001, the letters 'E' to 'H' are assigned to the key 472002, the letters 'I' to 'N' are assigned to the key 472003, the letters 'O' to 'S' are assigned to the key 472004, and the letters 'T' to 'Z' are assigned to the broadly ambiguous zone 472107. Note that, in this arrangement, by dispatching each of the vowels 'A', 'E', 'I', 'O', and 'U' to a separate key/zone while keeping an alphabetic order on the keypad, and preferably also separating the letters S and T (e.g. by assigning the letter T to the broadly ambiguous zone) a familiar and highly accurate word prediction system is provided. In addition, having only four keys (e.g. an preferably an invisible zone between them) allows the user to type extremely fast. Additionally, by starting each of the groups of letters assigned to a different key/zone by a VOWEL (e.g. Abcd, Efgh, Ijklmn, Opqrs) and wherein the rest of the letters being assigned to a broadly ambiguous zone (as described before, a broadly ambiguous zone is preferably an invisible zone having a group of at least one character (e.g. letter), wherein said zone is preferably located so that to be easily/blindly accessible (e.g. a large zone between the split keys of the invention). According to a preferred method, broadly ambiguous zone is always invisible wherein/while the letter keys may be visible and/or invisible (e.g. by using a switching means to switch them form a visible mode to an invisible mode and vise versa))), a highly intuitive blind typing text entry system from the start for a novice user may be provided. Note that by locating two pairs of letter keys on opposite sides (e.g. of the screen) of a device and locating two letters keys only under a user's thumb, the user's thumb has only two positions (e.g. up-down, or left-right, depending on the keys being respectively positioned in vertically or horizontally) during entering a word and the rest of the letters being preferably between said zone, any user is enabled to type blindly form the beginning.

It must be noted, that the embodiments shown/described throughout this application are shown as examples. Other types of keypad having a different number of keys and/or zones, different arrangement of characters on said keys/zone, different types of interaction(s) with said keys/zones may be considered by those skilled in the art. For example, the keyboard of the invention may have a total number keys and/or zones (e.g. 1 to 8, or more). Preferably, the broadly ambiguous zone(s) are located between any number of keys, and preferably its borders are not displayed on the screen. As an example, fig. 472B shows a keypad of the invention having four letter keys 472201-472204, wherein the each of said keys is assigned-to/represents a number of letters, and wherein the letters assigned to the keys are printed on the corresponding keys such that to form an alphabetically arranged keypad. In this example, according to one method, the principles of text entry similar to those described above and shown through fig. 472A may be considered. For example, when a user interacts (e.g. taps on) with a key, in addition to ambiguously relating said interaction to any character of a group of characters assigned to said key/zone, the system may also relate said interaction to a predefined identified character on/near which the user provides said interaction on said key. Said character may be presented in a word list. When a user enters input information, by providing a sequence of such interactions the system may present two types of words to the user. A first type of one or more words by relating said key/zone interactions to ambiguous input signals, and a second type of one or more words (e.g. the length of one of the words corresponds to the number of key and/or zone interactions, and the additional words may be longer words, for example wherein their beginning characters correspond to said key/zone interactions) by relating said key interactions to precise input signals.

In the embodiments above, in addition to the letters, a group of (e.g. ambiguously) characters assigned to a key may also include one or more symbols such as special characters. As show in fig. 472B, as an example, the key 472203 includes an apostrophe that may be included in some of the words of the database used by the system.
Note that other types of assignment of the letters (e.g. in alphabetical order) to the keys of the keypad may be considered. For example, fig. 472C shows another alphabetical keypad having four keys.
In some of the embodiments (e.g. in the embodiments above) or all of the embodiments of the invention, a broadly ambiguous zone (e.g. the zone, 427207 of fig. 427B) may represent some or all of the characters assigned to the keys or all of the characters/letters of a language (e.g. even if the keys (e.g. the four letter keys) of the keypad together represent all of the characters/letters of a language). According to one method, at any moment during the entry of a word, the user may interact with (e.g. tap on) the broadly ambiguous zone for a character/letter of his desired word. As such, when the user provides a sequence of interactions including interactions with the letter keys and/or the broadly ambiguous zone, the system predicts one or more word corresponding to said interactions. This matter has already been described in detail before in this and in the previous patent applications filed by this inventor.

According to one method, in order to enter a word, an interaction such as a tapping action on a key/zone may ambiguously correspond to any of the letters on said key/zone. As such, a sequence of interactions with key(s)/zone(s) may correspond to one or more words of a database used by the system. Note that according to one embodiment, the characters/letters assigned to the broadly ambiguous zone may be displayed on said zone or anywhere on the screen. Note that, according to one embodiment, the boarders of the broadly ambiguous zone may be displayed on the screen. In the example Fig. 467A, the broadly ambiguous zone 467007 is the zone preferrably between the letter keys and the space and backspace keys. In this example, the borders of the broadly ambiguous zone are not displayed.

Note that selecting an identified character as such preferably resembles a similar procedure (as described before, in detail) to replace an identified (e.g. preferred) character by another identified (e.g. non-preferred) character. According to one method, same procedure may be applied to entering any character of the groups of (e.g. non-preferred) characters assigned to the broadly ambiguous zone of Fig. 467A. For example, as shown in Fig. 471A, when a user interacts with the zone 471007 the system may ambiguously relate said interaction to a character of the group of (e.g. non-preferred) characters (e.g. T, U, V, W, X, Y, Z) assigned to the broadly ambiguous zone and display it in a word list (e.g. the letter 'u' 471011). Additionally, the system may relate said interaction to a predefined identified character (e.g. 'T' 471012) of said group of characters. In addition to said characters, the system may also propose additional corresponding (e.g. longer) words from the word database used by the system. As such, by providing a sequence of such interactions, in addition to predicting words corresponding to said sequence of interactions, the system may also present a word wherein all of its characters are identified characters. According to a preferred method, all of said words are presented in a same word list. Note that in this embodiment, all of the characters assigned to a key are preferably considered by the system as preferred characters (e.g. irrespective of the manner of display). As an example, the characters I, K, L, M, N assigned to the key 4671003 are all considered as preferred characters wherein some of the characters I, L, N are displayed in a first manner (e.g. large black font), while the other characters J, K, M are displayed in a second manner (e.g. small grey font). As an example, the user can enter

any of the characters I, L, N (e.g. L) precisely by tapping on it. When such tapping action is provided, the system may also provide the characters displayed in the second manner J, K, M in a location on the screen. If the user taps on any (e.g. M) one of said characters displayed in said location, the system may preferably replace the entered character (e.g. L) by said character (e.g. M). Note that according to one embodiment the characters assigned to the broadly ambiguous zone may also be display in said zone. Fig. 471B shows, as an example, the keypad of the invention having four keys and a broadly ambiguous zone wherein the characters are respectively arranged in alphabetic manner on the four keys and in the broadly ambiguous zone. According to one embodiment, the principles of entering precise/identified characters of a key may also apply to the characters assigned to the broadly ambiguous zone. As an example, as shown in Fig. 471B, the characters T, U, V, X, Y, Z assigned to the zone 471107 are displayed in two different manners as described before. As such, as an example, in addition to ambiguously relating an interaction such as a tapping action on the broadly ambiguous zone 471107, the system may also relate said interaction to an identified character (e.g. one of the characters T, W, and Y) as described above. Upon said interaction, the system may also display, for example in a zone 471131 (e.g. near the word list), the characters (e.g. U, V, X, Z) displayed in the second manner on the broadly ambiguous zone 471107 so that the user can enter any of said characters precisely as described above for the keys.
Note that a group of characters assigned to a key of the keypad may include letters and/or special characters.

zone fully predictive

5-6 keys

symbols from full keyboard

Note that according to one method, each group of several characters may be assigned to a separate zone which is preferably also assigned to a different groups of special characters, as described throughout this application. For example, in fig. 467B, providing gliding action on/from, respectively, the zones, 467101-467104, may correspond to entering special characters from four different groups of characters as described throughout this application, and providing gliding action on/from the zone 467105 may correspond to entering mouse functions as described before.
Also for example, in fig. 467C, providing gliding action on/from, respectively, the zones, 467201-467204, may correspond to entering special characters from four different groups of characters as described throughout this application.

- **Based on text characteristics**
    - **Color**
    - **Font**
    - **Size**
    - **Direction of words**
    - **Relationship of words between each other**
    - **Shadow**
- **Background**

Entering text with many different characteristics such as different colors, fonts, sizes, text location (e.g. on/in a document such as on an image), directions, text orientation, and/or in/on different context (e.g. backgrounds such as an image, background color of the image, etc.), audio, video, application, communication channel, etc. may be used in an application/function such as a search application/function to provide additional information to said application/function for faster and more accurate/relevant search results. As such, databases used by such a search application/function, may preferably include text and at least some of such different characteristics. As an example, if desired information such as a document (e.g. picture that includes a color text with words displayed in different directions, Internet web page, Internet website, an x-ray scan including text), it may be searched by providing a keyword(s) that may include one or more words of the text printed in the relevant, one or more colors, one or more directions, one or more fonts,

one or more sizes, etc. According to one method, said search may also include an image (e.g. used as a background image to the keyword). Note that the relationship between the location and/or characteristics the word(s) in the keyword may define the search criterion(a). According to one method, the relationship (e.g. coefficient, etc.) of the characteristics of a (e.g. text) keyword(s) between each other, and the relationship of the (e.g. text) characteristics between each other of the corresponding result may preferably define the result.

Note that in a search, one or more of the characteristics as described above may provide sufficient information for a desired result. Also, note that, the characteristics provided for a search may be approximate (e.g. near) to the exact characteristics. For example, typing a word included in a keyword may result in searching any corresponding data/document that includes any corresponding word that is written in any kind of yellow color. Accordingly, as an example, if the keyword includes as word written at an angle (e.g. on a slope, such as 60 degrees) the system may search the corresponding words written in a predefined slope close to said angle (e.g. 50 degrees to 70 degrees).
As an example, fig. 473 shows a search input (e.g. keyword) as described above. In this example, preferably the keyword 473000 provided relates to searching for a corresponding image. The keyword is preferably in the form of an image having a Yellow background color 473008 that indicates the approximate background color characteristic (e.g. color, average color, most of the image having said color, indicating the general color, etc.) of the corresponding image to be searched. The image to be search also preferably includes:

- the text 473001;
- said text is preferably written in the color Red;
- said text is preferably located in the (e.g. approximate) location in the image as indicated in the keyword 473000;
- said text is preferably written at the (e.g. approximate) angle in the keyword 473000; and
- the relative size of said text in the image to be searched is preferably similar to the relation of the size of the text 473001 to the size of the keyword 473000, etc.

Note that, preferably, the results of the search may include from all to at least one of the characteristics described/shown in the keyword.

Pics

Search box shape conform to the pic

- **Round, sq, etc.**

According to one embodiment of the invention, the search box (e.g. field) may have the form (e.g. square, round, rectangular, oval, etc.) of the frame and/or the main object (e.g. person, hand, a type of animal, a tree, etc.) of the content (e.g. the photo) to be searched. Said search box may be drawn by a user and/or it may be provided by the searching system/application. for example, a search application may presented to the user different such templates as the search box.**Each key/zone includes a number of sub-zones representing an identified chars**

1st letter is a vowel

Any number of subzones

Four sub-group make it generalized

T is default

short gesture

long press

extra button

show the non-freq used chars and tap on them

gesture or long press for non-freq chars

The fully ambiguous mode of the invention has already been described in detail. The following described and shown keypad (e.g. 474A to 474F, and 475A) may preferably be used with the fully ambiguous version of the invention (e.g. although they can also be used with the semi-predictive mode as being described later in this application). Fig. 474A shows a keypad of the invention

having an alphabetical order. The letters A-D are assigned to the key 474001, the letters E-H are assigned to the key 474002, the letters I-N are assigned to the key 474003, the letters O-S are assigned to the key 474004, and the letters T-Z are assigned to the zone/key 474007. In this example, the letters U-Z are shown on the zone 474007 (e.g. the letter T is preferably not shown). As described before, when a user interacts with a key/zone, the system may preferably (e.g. simultaneously) relate said interaction to two types of interaction: ambiguous interaction and precise interaction. To enter precisely a character/letter, the user may use precise interaction as described earlier. As described an shown before, a key/zone of the keypad may include several sub-zones (e.g. herein may be referred to as subzone) such that interacting with a subzone may enter precisely the character/letter assigned to said sub-zone. According to a preferred method, as shown in this example, any of the keys/zone(s) of the keypad may preferably include four sub-zones, wherein interacting with a subzone may preferably provide an ambiguous input signal and a precise input signal corresponding to an identified character assigned to said sub-zone. If more than four characters/letters are assigned to a key, then preferably, said four sub-zones represent four letters having the highest frequency of use among the group of characters assigned to said key.
As an example, in fig. 474A, the key 474001 is divided in four sub-zones each representing a different letter, respectively, the letters A, B, C, and D. Same is applied to the key 474002, wherein four subzones respectively represent the letters E, F, G, and H. The key 474003 is also divided in four sub-zones that respectively represent the letters I, L, M, and N, that in most languages (e.g. English, French) have higher frequency than the remaining letters (e.g. J, and K) assigned to said key (e.g. herein may be referred to as low frequency letters of a key). The key 474004 is also divided in four sub-zones that respectively represent the letters O, P, R, and S, that have higher frequency of use than the letter Q (e.g. the low frequency letter of said key) which is also assigned to said key. In the broadly ambiguous zone 474007, there are also four subzones 474017 respectively representing the letters U, V, W, and Y, which in the English language have higher priority than the low frequency letters X, and Z. In this example, interacting anywhere outside said four-subzones in the zone 474007 may correspond to an ambiguous input signal, and a precise input signal representing the letter T.
Note that the low frequency letters mentioned in this embodiment are user between 0.5 to 1.6 percent of times in most western languages. To enter precisely any of the low frequency letters, different methods such as those described earlier (e.g. long pressing on it, a (e.g. short/long) gesture in a predefined direction, a (e.g. short/long) gesture including a long pressing action, on tap on a key showing the low-frequency letters of the key in an enlarged manner to tap on it, etc.) may be used.
Note that in this example, the subzones of each of the keys and the broadly ambiguous zone begins with a vowel. This permits the user to easily remember the letters assigned to a key/zone.
Figs. 474A to 474F show, respectively, the preferred types of assignment of letters to the keys and/or corresponding subzones for the languages, English, Spanish, German, French/Portuguese, and Chinese (e.g. using Pinyins). The preferred type for Italian may be any of the figs. 474C or 474D (e.g. the Italian language does not have words including the letters W,X,Y, unless the Italian database includes words from other languages. In these examples, the low frequency letters of each key is shown in a different color (e.g. red), and the higher frequency letters are shown in black.

In the examples above, note that a first type of subzone (e.g. 474010, or 474020) may represent one character. In this case, interacting with a such subzone may preferably enter the corresponding character/letter precisely (e.g. said interaction may preferably also correspond to an ambiguous input signal). Another type of subzone (e.g. 474011, 474012, 474013, 474014, 474015) may represent or looks like representing more than one (e.g. preferably not more than two) characters. In this case, a first character (e.g. herein may be referred to as the main character (e.g. printed in black)) may be entered precisely by a first predefined type of method such as interacting with (e.g. tapping on) said subzone (e.g. said interaction may preferably also correspond to an ambiguous

input signal), and a second character (e.g. the secondary character printed in red) of said subzone may precisely be entered by a second type of method such as:

- by providing another type of interaction such as providing another type of interaction (e.g. a gliding action in a predefined direction) with/from said subzone and/or with/from anywhere on the corresponding key or the corresponding broadly ambiguous zone.
- or upon tapping/interacting on a such subzone or anywhere on the corresponding key/broadly ambiguous zone, the system may present/display the secondary character(s)/letter(s) of said key/zone in a location on the screen so that preferably being easily accessible so that the user can interact with a secondary character to enter it precisely.
- Or upon touching/interacting with a zone, the system may show the secondary character in a large zone (e.g. large enough to be separately accessible) such that if the user removes his finger from the screen without providing a gliding action, the system enters the main character precisely. On the other hand, after upon touching/interacting with said zone if the user provides a gliding action towards said large zone relating to the secondary character, the system enters said secondary character precisely.
- Etc.

Note that the methods of entering secondary characters precisely may be resemble to those regarding the entry of none-preferred characters precisely as described throughout this application and the previous patent applications filed by this inventor. Such methods may be applied to any of, fully predictive mode, and semi-predictive mode. According to one method, a word may be entered character by character precisely using this system of entering precise characters.

Note that the embodiments above are related to a keypad having a reduced size interface so that on devices with small screens, the user can enter text quickly by tapping anywhere on the keys and/or the broadly ambiguous zone when the user thinks the word is in the dictionary, and to enter precise characters easily (e.g. when the user thinks that) the word is not in the dictionary (herein such keypad may be referred to as compact keypad). Regarding the devices with, preferably, large screens, the keys and the broadly ambiguous zone of the keypad may be large enough such that the users can have easy direct access to any of the characters on the key/zone to enter it precisely. In this case, each of the sub-zones may be large enough for such access and wherein and preferably, each of such subzones represents a single identified character/letter (herein such keypad may be referred to as enlarged keypad). An example of such keypad is shown in Fig. 472A. According to one method (e.g. preferably depending on the size of the screen), the system automatically or the user manually may switch between the compact keypad and the enlarged keypad.

According to another method of precisely entering secondary characters, for all of the characters of a word (e.g. main character and/or secondary character) the user may preferably interact with (e.g. tap on) corresponding sub-zones, and the system preferably, for each such interaction, provides/presents the corresponding main character. If the corresponding provided/presented word, entered as such is not the desired word, the user may select said word by, for example tapping on it, and the system preferably enlarges said word such that the user can preferably have an easy access to each of its characters. At this time, the user may interact with (e.g. tap on) a main character and the system may change said main character to a corresponding secondary character. As such the user may easily change (e.g. correct) the presented word. Note that, because the likelihood of having (e.g. which is not in the dictionary) and including a secondary character is very low (e.g. with a good dictionary this likelihood is 1.5 out of 10000 characters, in the example of the English language), the likelihood of being required to correct two characters in a word is extremely low.

Note that according to a preferred method, when a user selects a word (e.g. an entered word as just described or any other word in a corresponding word list), the system may also propose/predict/present longer words beginning with the selected word.

By considering this likelihood just described, according to another method after the user enters and selects a word, entered precisely character-by-character as described above, the system may propose some (e.g. preferably those related/corresponding words that are not in the dictionary) or all of the possible words (e.g. preferably with the same length) for such precise character-by-character data entry system for entry of a word. By using this method, the words that are not in a database of words used by the system, may be entered quickly and easily.
Note that, according to a preferred type of arrangement, the main character related to a secondary character may not have a high frequency of use. As an example, rather than relating characters 'Q' and 'R' (e.g. 'R' has a high frequency of use), as was shown in Fig. 474A, to a same sub-zone (e.g. 474013), the secondary character 'Q' may preferably be related to the main character 'P' and both be represented by a same sub-group (e.g. not shown).

5th key + zone
zone includes key (Key in zone: tap on 5th key also consideres as tap on 5th zone)
Anywhere in the zone
t included/excluded in sub-zones (or any other 1 char)
show/not-show letters
do not show zone/sp/bs
Invisible
show with or w/o T
Gestures for all/some letters
- **Premits having small keys**

Regarding the broadly ambiguous zone, different scenarios of presentation and/or interaction for input may be considered such as:
- Scenario 1: the broadly ambiguous zone may be a single (e.g. additional) key/zone (e.g. having several subzones) resembling to any of the letter keys such keys 474001 to 474004 of fig. 474A.
- Scenario 2: the broadly ambiguous zone may be a separate/additional zone relating to any of the keys of the keypad (e.g. including the (e.g. additional) key/zone of scenario 1).
- Scenario 3 (preferred): the broadly ambiguous zone (e.g. 474007) may be a large zone that also includes the subzones (e.g. 474017) of scenario 1. In this case, according to a preferred method, tapping anywhere on the broadly ambiguous zone (e.g. including tapping on the subzones 474017) may preferably correspond to, both, an ambiguous and a corresponding precise input signal (e.g. corresponding to an identified letter/character). According to a first method, one of the letters/characters (e.g. T) assigned to the broadly ambiguous zone may be entered precisely by default when the user interacts with (e.g. taps on) a location outside the subzones (e.g. 474017) in the broadly ambiguous zone (e.g. 474007). In this case, said letter (e.g. T) may preferably not be printed anywhere in the broadly ambiguous zone (e.g. including in its included subzones) as shown in figs. 474A-F.
  According to another method, such default letter/characters is not considered when the user interacts outside the subzones in the broadly ambiguous zone. In this case, as shown in fig. 474F, such letter (e.g. T) may preferably be assigned/printed to/on one of the corresponding subzones.

It must be noted that, at any moment the user may be allowed to hide the letters/subzones assigned to the broadly ambiguous zone. As such, preferably, the icons and/or borders relating to the space and backspace keys may also be hidden, so that to reduce the visible portion of the keypad. Also, the user may be allowed to reduce the size of the letter keys. In this case, according to one method, interacting with a key/zone may correspond to an ambiguous input signal assigne to said key, and to enter precise character, the user may use other methods (e.g. providing gliding actions in different direction on/from said key, each corresponding to a different letter/character assigned to said key) as described throughout this and the previous patent application filed by this inventor. Note that

according to one method, the user may be enabled to make the letter keys invisible or just shoe the borders of them.

A keys/zone represents some letters, or all of letters depending on the instance (e.g. spell help mode)

Although called broad may not be broad

Note that, as mentioned before, a broadly ambiguous zone may represent some or all of the letters of a language. According to one method, this may depend on a condition such as for example if the system, respectively, is not in a spelling help mode or the system is in a spelling help mode, as described before in detail. note that not only a zone outside the keys of the keypad can act as a broadly ambiguous zone, but also any of the (e.g. four) keys of the keypad can act as a broadly ambiguous zone. Also note that a broadly ambiguous zone can have any number of characters/letter and may not be restricted to having significantly larger number of characters relating to the other keys/zone of the ketypad.

When the system knows that a precise letter is entered, it may preferably apply it to all predicted words too

Note that, when the system identifies an entered character as a precise character, the system preferably proposes/predicts words that include said identified character in the corresponding character position within the words.

Ergonomic keys/zones

Note that the keys of the keypad may have any arrangement. Fig. 475A, shows as an example, a keypad of the invention wherein its letter keys 475001 to 475004 are disposed diagonally so that the precise letter can be entered easier. The fig. also shows the broadly ambiguous zone 475007 which in this case is located between keys that includes a large zone wherein a portion of the zone is occupied by the sub-zones as described above,

4 sub-zones for semi predictive

Different keypads corresponding to the semi-predictive mode of the invention have been described and shown before. According to one embodiment, each of the keys of such keypad may have a number of zones such as four subzones. Fig. 476A shows an exemplary such keypad. In this example, the preferred characters on each key are shown in black font and the none-preferred characters are printed in red. Note that as described before in detail, in the semi-precise mode, for the preferred characters the user may interact such as tap on said characters or on a zone relating to said characters, and for the none-preferred characters the user may preferably interacts with the broadly ambiguous zone (e.g. 476007). By receiving a sequence of one or more such interactions the system may predict one or more words. This and the relating matters have already been described in detail before.

A keypad of the invention used by the semi-predictive mode of the invention may have any type of key and/or letter arrangements. As an example, such keypad may have any of the arrangements of the keypads of figs. 474A to 474F, and 475A. As an example, the letters printed in black font on the (e.g. four) letter keys may be considered as preferred characters, and the letters printed in red may be considered as non-preferred characters. Additionally the letters assigned to a broadly ambiguous zone (e.g. or any of the four keys) may also be considered as non-preferred characters. As such, as an example, in order to enter a word, for a preferred character/letter the user may interact with (e.g. tap on) a corresponding character/letter (e.g. printed in black) or with the subzone (e.g. in this example each key has four subzones each representing one of the preferred characters assigned to said key) corresponding to said character/letter. For all other characters (e.g. characters/letters printed in red on a key and the non-preferred characters (e.g. letters and/or special characters that words may include) assigned to the broadly ambiguous zone, the user may provide a predefined

interaction such as tapping on the broadly ambiguous zone. This matter (e.g. semi-predictive mode) has already been described before in detail.

Subzones can be different on each key/zone
Note that the number of subzones may be different on each key and/or a broadly ambiguous zone.

On Screen keys
Note that a key can be a zone on a touch sensitive surface such as a touch screen

Applies to any language
Chinese, Japanese, Arabic
Note that any of all of the features, concepts, principles, embodiments, drawing of keypads, descriptions, etc., may be applied to any type of language /character set, such as for example, Roman alphabetical based language, phonetic based languages (e.g. (Pinyin-based) Chinese, Japanese), etc., as described before in detail.
Can enlarge
- **All precise**
- **Some precise**
- **Only pred.**

Invisible mode
Fig. 477A shown another example of the keypad of the invention on the screen 474009 of an electronic device. In this example, the letters are arranged in alphabetical order on four keys 477001-477004, and the broadly ambiguous zone 474007 (e.g. in this example, may be considered as a key).

The fully ambiguous mode of the invention has already been described in detail. The above keypad may preferably be used with the fully ambiguous version of the invention. In this example, The letters A to D are assigned to the key 477001, the letters E to H are assigned to the key 474003, the letters I to N are assigned to the key 477003, the letters O to S are assigned to the key 477004, and the letters T to Z are assigned to the zone/key 477007. As described before, when a user interacts with a key/zone, the system may preferably (e.g. simultaneously) relate said interaction to two types of interaction: ambiguous interaction and precise interaction. To enter precisely a character/letter, the user may use precise interaction as described earlier. As described an shown before, a key/zone of the keypad may include several sub-zones (e.g. herein may be referred to as subzone) such that interacting with a subzone may enter precisely the character/letter assigned to said sub-zone. According to a preferred method, as shown in this example, any of the keys/zone(s) of the keypad may preferably include a sub-zone corresponding to a different single letter (e.g. and or any special character (e.g. ambiguously assigned to said key). As such different keys of the keypad may have different numbers of subzones and therefore their size may vary. For example, the key 477001 has four subzones each relating to a different single letter of the group of letters assigned to said key. As such, the key 477002 has six subzones, the key 477003 has four subzones, the key 477004 has five subzones, and the broadly ambiguous zone/key 477007 has preferably seven subzones. In this embodiment, interacting with a subzone may preferably provide an ambiguous input signal corresponding to any of the letters assigned to said key, and a precise input signal corresponding to an identified character assigned to said sub-zone. As such at any moment, the user may be able to enter both predictive and/or precise input information (e.g. the user may enter a word ambiguously by tapping anywhere on the keys and/or zone, or enter a chain of characters letter by letter precisely. Note that in this example, the characters/letters A-H are assigned to the left keys, and the characters/letters I to N are assigned to the right keys. This is beneficial specially in devices such as tablets because the user can faster remember and/or scan the alphabetically ordered letters.

According to one embodiment, the system may have a switching method so that to reduce the size of the/a keypad for example such as the keypad of fig. 477A. As such, as shown in fig. 477B, after switching the keypad to such a mode,. In this example, the size of the keys 477001 to 477004 are reduced, and the key/zone 477007 is replaced by the broadly ambiguous zone 477107. Now, interacting anywhere on the zone 477107 is preferably ambiguously related to any of the letters T to Z. according to one method, in this example, the number of subzones may be reduced such that to correspond to the main letters/characters, and the secondary characters may be entered as described before or in any other manner known by people skilled in the art.
According to one method, the size of the keypad/keyboard may be reduced into several predefined reduced sizes, for example, depending on the user's desire/needs. As such, after switching the keypad to one of the predefined sizes, the number of the subzones on a key may be reduced accordingly. In this case, each of the subzones may correspond to an identified predefined main character on the corresponding key in a corresponding reduced size keypad. The secondary characters may preferably be shown in a different manner relating to the main character on the keys/zone(s) or they may not be shown.

As an example, Fig. 477C shows the (e.g. large size/mode) keypad of fig. 477A in a first reduced size (e.g. middle size/mode). In this example, each of the keys/zones of the keypad includes four subzones. Each of the subzones preferably represents a single identified character which in this example is printed in black. The secondary characters are printed in another color (e.g. red, gray). Also as an example, Fig. 477D shows the (e.g. large size) keypad of fig. 477A in a second reduced size (e.g. middle) size/mode. In this example, each of the keys/zoned of the keypad include three subzones. Each of the subzones represents a single identified character which in this example is printed in black. The secondary characters are printed in color (e.g. red/gray).

According to one method, the subzones of a key/zone may not be equal in size or form. As an example, in Fig. 477C the broadly ambiguous zone 477207 includes four subzones 477217 related to the main characters UVWY which in this example are printed in black, and a large subzone 477227 (e.g. outside the subzones 422217 within the zone 422207) corresponding to an identified character which in this example is the letter T which preferably is not printed in said subzone. Note that as mentioned before, interacting with any of said subzones may correspond to, both, the corresponding identified character and to a corresponding ambiguous input signal.

Note that, the borders of the subzones may or may not be shown/printed.

1 of the proposed word is with precise letters or empty characters
Gestures for letters can be in any direction

- **Clockwise**
- **Tap for default**
- **Only gesture**

According to one embodiment of the invention, preferably in the fully ambiguous mode, when the user taps on a letter key and or the/a broadly ambiguous zone, in addition to relating said tapping action to an ambiguous character, the system may relate said tapping action to a predefined identified character (e.g. a vowel/consonant, a blank character, a visible character representing a blank character, etc.). According to one method, each key may have a different default character, while according to another method, all of the keys/zone may have a same default character. As such, when a user provides a sequence of one or more tapping action on the keys and/or the boadly ambiguous zone, one of the proposed words may preferably be constituted from the corresponding default characters (e.g. said word may herein be referred to as the default word). According to one method, if the user interacts with said/the default word, the system may preferably switch into the precise letter mode, wherein for each interaction with a key of the keyboard, the system may

preferably replace the corresponding default character in the default word by the precise letter corresponding to the key of the precise keypad being interacted. By using this method, uncommon words and/or the words that are not included in the database of words used by the system may be entered character by character precisely. According to a preferred method, when the user interacts with a default word, the system may also propose more words (e.g. if any) corresponding to the input information provided by the user until then. Each additional interaction with the default word may result in proposing more corresponding words. Preferably, at least at first, the system proposes the corresponding words with the length of the default word, and preferably then, the system proposes the words that a (e.g. the beginning) portion of them corresponds to the input information provided by the user.

According to one embodiment of the invention, providing gestures from anywhere on a key in several predefined directions may provide corresponding several identified character (e.g. letters) ambiguously assigned to said key. Preferably the order of the gestures directions may correspond to alphabetical order of the corresponding identified characters/letters. As an example, figs. 477E to 477G show a keypad of the invention (e.g. similar to that of the fig. 477B wherein the letters on the keys are printed such that to permit to have small keys) using an exemplary method of entering precise characters/letters (e.g. note that this method of entering precise characters/letters may be used in addition or in replacement to the methods of entering precise characters as described before such as through the figs. 477A to 477D. In this example, the default character of each key/zone may preferably be the first character of the corresponding ambiguous characters in alphabetical order (e.g. respectively, A, E, I, O, and T). The other characters of each key/zone may preferably be entered precisely according to their alphabetical order on the corresponding key, preferably according to gestures in corresponding predefined directions (e.g. clockwise order or opposite clockwise order).
For example, as shown in fig. 477E, providing gliding actions on/from the key 477701 towards up, upper-right, and right, may respectively correspond to entering precisely the letters, B, C, and D, and providing gliding actions on/from the key 477702 towards up, upper-left, left, lower-left, and down, may respectively correspond to entering precisely the letters, J, K, L, M, and N.

Also, for example, as shown in fig. 477F, providing gliding actions on/from the key 477703 towards up, upper-right, and right, may respectively correspond to entering precisely the letters, F, G, and H, and providing gliding actions on/from the key 477704 towards up, upper-left, left, and lower-left, may respectively correspond to entering precisely the letters, P, Q, R, and S.

Also, for example, as shown in fig. 477M, providing gliding actions on/from the broadly ambiguous zone/key 477707 towards up, upper-right, right, lower-right, down, and lower-left, may respectively correspond to entering precisely the letters, U, V, W, X, Y, and Z.

Note that in this example, providing a tapping action on the keys/zones 477701, 477703, 477702, 477704, and 477707, are preferably correspond to respectively, the default letters A, E, I, O, and T. Note that this is only as example to demonstrate the principles of entering intuitively/blindly precise character/letters. Other methods may be considered for the same purpose. For example, interacting such as a tapping action on a key may not correspond/provide a letter, but (e.g. a symbol representing) a blank character. In this case, according to one method, any (e.g. of some or all) of the characters (e.g. ambiguously) assigned to a key may be precisely entered by providing a gliding action towards a predefined direction. As an example, providing gliding actions on/from the key 477701 towards up, upper-right, right, and lower-right, may respectively correspond to entering precisely the letters, A, B, C, and D. Same rule may be applied to other keys/zones.
Note that in the embodiment above, the order (e.g. of gestures in different direction (e.g. such as up to eight different directions from a key) described for entering precise character is alphabetic. Other

orders such as for example QWERTY order may be used. Note that according to principles described above, a user may enter a text blindly, both, in precise mode and in ambiguous mode. According to one embodiment of the invention, as described throughout different patent applications filed by this inventor, gliding actions including a press-and-holding-action in different directions such as in up to eight directions as described above may be used for entering special characters assigned to a key. As described before in detail, each key may represent a group of characters having a common characteristic. For example, press-and-holding-and gliding actions in different predefined directions such as eight different directions on a key, may provide up to eight different special characters assigned to said key. A long pressing action on said key and removing the finger (e.g. without providing a gesture) may be related to entering another special character assigned to said key.

Fig. 477H shows the keypad of fig. 477E wherein the letters represented by the keys are shown in a simplified reduced manner to permit having extremely small ambiguous keys. For example, the letter IJKLMN assigned to the key 477802 are shown/printed as I-N. In this example, the letters assigned to the broadly ambiguous zone 477807 are displayed as T-Z in a (e.g. small) location 477817 on said (e.g. large) 477807 zone.
Note that, the keypads/keyboards shown in the patent applications such as this patent application filed by this inventor are shown as example to demonstrate the principles of the data entry system of the invention. Major or minor modifications may be considered. For example, in the examples of figs. 477A to 477D, rather than assigning the letter T to the/a broadly ambiguous zone (e.g. 477007 of figs. 477A and/or 477107 of fig. 477B), the letter T may be combined with/included in the group of character O to S, and be assigned to a corresponding key/zone (e.g. the key 477004 of fig. 477A and/or the key 477004 of fig. 477B).
According to one embodiment, the arrangement of letters on different keys may vary based on parameters such as the type of language used with the/a keyboard. For example, in English language, the letters O to T may be assigned to the key 477004 (e.g. although this may also cause a decrease of prediction accuracy because the letters S and T have both high frequency of use), and the letters U to Z may be assigned to the broadly ambiguous zone 477007 and/or 477107, while in French language the letters O to S may be assigned to the key 477004, and the letters T to Z may be assigned to the broadly ambiguous zone 477007 and/or 477107. This is because for example in English language the letters T and W are used often and according to one method it may be preferable to assign them to different/separate keys/zones, while in French language the letter W is not often used and therefore the letters W and T may be included in the/a same group and be assigned to a same key/zone.

According to a preferred method, in (e.g. substantially) all of the Roman based languages (e.g. English, French, Spanish, Italian), the arrangement/assignment of letters an/to the keyboard/keypad of the invention may be similar (e.g. the letters O to S are preferably assigned to the key 477004, and the letters T to Z are preferably assigned to the broadly ambiguous zone 477007 and/or 477017). This may provide an intuitive and easy method of text entry in several languages (e.g. simultaneously) because the user does not have to learn (e.g. two) different letters layouts.

Automatic resizing

According to one embodiment, the system may include an automatic method of resizing the keypad based on user's way of interaction, for example, either when he/she begins to type a text/data or in real time while entering text/data. For example, during typing a portion of a text such as a word, if the user taps several (e.g. consecutive) times on a same location on a key, then the system may assume that the user is entering a word ambiguously. In this case, the system may automatically reduce the size of the keypad. On the other hand, as an example, during typing a portion of a text such as a word, if the user taps several (e.g. consecutive) times on different locations on a key, then the system my assume that the user is entering a word precisely. In this case, the system may automatically expand the size of the keypad.

1/2-line kb
As mentioned before, based on the principles of data entry described by this inventor, many other configuration of letters on/and/or many other key/zone arrangements may be considered by people skilled in the art. As an example, keyboards constitute of or including one line or two line keys such as or substantially similar to those shown in fig. 478A to 478C may be considered. In fig. 478A, the space key 478006 and the backspace key 478005 of the invention are located in a same line than the letter keys 478001 to 478005. In fig. 478B, the space and backspace key are located in a separate line relating to the line of letter keys, and in Fig. 478C, the key/zone 478007 and the space and backspace keys form a line separately from the line of keys 478001 to 478004. Keypad of fig. 478D is similar to that of the 478B with the different that this keypad has a single character/letter zone 478101. Note that in these example(s), any of the lines of keys/zones may be horizontal and/or vertical, and/or diagonal, etc.

QWERTY
Fig. 479A, shows another example of a keyboard of the invention having a QWERTY letter arrangement. In this example, the first/top line of letters of a QWERTY keyboard are divided into two separate groups wherein each group is assigned to a separate key. In this example, the letters QWERT are assigned to the key 479001 and the letters YUIOP are assigned to the key 479002. Accordingly, the second/middle line of letters of a QWERTY keyboard are divided into two separate groups wherein each group is assigned to a separate key. In this example, the letters ASDF are assigned to the key 479003 and the letters GHJKL are assigned to the key 479004. Finally, the letters, ZXCVBNM are assigned to a/the broadly ambiguous zone/key 479007. Note that, this is an example, and therefore, major or minor modifications may be considered. For example, the letter G may be assigned to the key 479003 rather than being assigned to the key 479004. Also for example, as shown in Fig. 479B, (e.g. for better accuracy) the order of assignment of the letters J and I may be swapped such that to respectively corresponding keys 479002 and 479004. Note that the exemplary keypads of Figs. 479A and 479B resemble to the keypad of fig. 477A with a different letter arrangement.
Other characters may be considered
In the current example, any of the keys/zones may also ambiguously (e.g. through a first type of interaction) and/or precisely (e.g. through a second type of interaction) represent a special character assigned to said key. Such special character(s) may be part of the group of letters assigned to said / corresponding key/zone.

Spec. chars may amb. assigned to their corresponding keys.
According to one method, the special characters assigned to a key in the corresponding special character mode instance, may also ambiguously being assigned to a predefined interaction such as a predefined interaction with the corresponding key. According to one method, said special characters assigned to a key and the letters assigned to a preferably same key may constitute a single group og characters ambiguously assigned to a predefined interaction such as a tapping action on the corresponding key. As a first example, when the user provides a tapping action on the key 479002, said interaction may ambiguously correspond to any of the letters and special characters (e.g. in this example, digits 1-9) assigned to said key. As a second example, a tapping action on the key 479002 may ambiguously correspond to any of the letters assigned to said key, and a long pressing action on said key 479002 may ambiguously correspond to any of the digits 1-9 assigned to said key. It is understood that another type of first and/or second types of interactions may correspond to entering precisely any of the letters and/or special characters assigned to a key. These matters have already been described by this inventor.

With continuous description of the current embodiment, Fig. 479B shows the keyboard of the fig. 479C in another (e.g. reduced) mode resembling to the keypad of fig. 477B.

As mentioned, the exemplary keypads of figs. 479A to 479B, and the keypad of 479C of the current embodiment respectively resemble to the exemplary keypads of figs. 477A and 477B with a different letter arrangement, therefore preferably, the principles of data entry described in the embodiment relating to the exemplary keypads 477A to 477B may apply to the keypads of the current embodiment. As an example, Fig. 479D, shows the keypad of fig. 479A and B in a predefined reduced size including main and secondary characters as described before.

Zone between the keys (e.g. in example of 477A)

- **T can be considered precisely by both fully and semi predictive data entry systems**

In the embodiments above described and shown through the exemplary keypads 477A, interacting with a predefined zone 477007 outside/between the keys may precisely correspond to entering an identified character such as the character T. This character may preferably be used (e.g. considered in the input information provided by a user to enter a word) by the semi-predictive, fully predictive, (e.g. and fully precise) modes of the data entry system of the invention to predict/present corresponding words.

One tap selects a word

- **tap again on the selected word to enter it**
- **remains at the same location**

current word is the word with highest priority

- **Sp enters it**
- **To enter the Current word, it is first selected, and/or entered with another type of interaction**

As mentioned before, according to one method, after the user selects a word in the word list presented by the system, the system may propose one or more longer words. If the selected word was not the current predicted word, then said word selected word may preferably become the current predicted word. According to one embodiment, providing a second tapping action on the selected word may enter said word. According to one method, after selecting it, the selected word preferably remains in its location within the word list (i.e. its location does not change) so that to permit a desired word in the wordlist by providing a double-tapping action on it.

On space, show some special chars

- **After selection, remove them**
- **May include one icon**
    - **Interacting with is opens up the special chars mode**

- **All chars/functions**
- **Show Enter after sp char**

Remove button

- **after starting to type**
- **after sp or enter a text**

According to one embodiment, after the user provides an end-of-the-word signal such as a space character, the system may propose one or more symbols (e.g. commonly used symbols such as !?.,) such as (e.g. special) characters and/or functions (e.g. Enter function, switching to another mode (e.g. special character mode) each preferably being assigned to different zone on a/the touch sensitive surface/screen (e.g. herein may be referred to as preferred symbols zones) such that interaction with one of said zones may preferably selects/enter the corresponding character/function. After such interaction several scenarios may be considered:
- According to a first scenario, preferably the presented preferred symbols zones are removed from the touch sensitive surface.

- According to a second scenario, the presented preferred symbols zones remain on the touch sensitive surface so that for example the user can enter more of said special characters and or functions. In this case, according to one aspect, providing a predefined interaction such as pressing on the space character, proceeding to entering a next word (e.g. tapping on a letter key), etc., may preferably remove the presented preferred symbols zones from the touch sensitive surface/screen.

According to one method, a predefined interaction such as a press-and-holding action on a such zone may correspond to repeating to enter the corresponding character until the user ends said interaction (e.g. removes his/finger from the touch sensitive surface). As mentioned, one or more of the zones may correspond to function(s). As an example, interacting with one of the preferred symbols zones may correspond to entering the system into the/a (e.g. precise) special character mode (e.g. hereafter may be referred to as symbol mode) of the invention where more zones corresponding to more special characters are preferably presented to the user. In this case, according to one method, at least the presented zone of the preferred symbols zones corresponding to the switching action may remain on the screen so that the user for example the user can switch back to the previous (e.g. letter) mode.
According to one method, after said (e.g. a first) preferred symbols zones are removed from the screen, another group of one or more preferred symbols zones may be presented on the screen. For example, the said another group may include a zone corresponding to activation of the Enter function. Note that said another group may include one or more zones of the previous (e.g. the first) preferred symbols zones. Fig. 479E shows as an example wherein after typing the "How", the user has pressed the space key 479406. In this case, the system preferably shows on a location 479411 (e.g. herein may be referred to as few/preferred symbols button/zone) a number of preferred symbols zones each corresponding to for example a symbol such as special characters or a functions. Providing a predefined interaction such as a tapping action on such a zone may enter/activate said symbol. In this example, the zones 479421 and 479426, respectively correspond to entering the character "?" and to switching the system into the precise symbols mode. Note that the few symbols button may be displayed diagonally or vertically preferably on/close to the/an edge of the screen. According to one method, the few symbols button may include more/other symbols/functions (e.g. Shift, CapsLock, Tab, Settings, Switching language, Remove keyboard from the screen, etc.). According to one aspect, (e.g. when the few symbols button is presented on the screen) all of the symbols assigned to the few symbols button may simultaneously be shown/available to a user, while according to another aspect, the few symbols button may have a means (e.g. a predefined zone to tap on, a sliding function over the few symbols button, etc.) so that the user can scroll between different layers of the few symbols button wherein each layer presents a number of (e.g. different) symbols/functions.
Note that the preferred symbols zones and their corresponding symbols shown in these examples are exemplary and they may vary. Other groups of one or more preferred symbols zones may be considered and their location on the screen may vary. Fig. 479F shows as an example, having three symbol zones 479511 and being located on the left of the screen.
According to one method, the at least one (e.g. preferably all of the) preferred symbols zones may preferably at least most of the time remain/displayed on the screen (e.g. herein may be referred to as permanent preferred symbol zone(s)) so that substantially always being available to the user. As an example, fig. 479G shows the keypad of the invention in for example the semi-predictive or fully predictive mode/instance 479001 (e.g. hereafter may be referred to as the original mode) and wherein a permanent preferred symbol zone/key 479011 relating to switching the system into symbol mode/instance is printed on the screen. According to a preferred mothod, after the user interacts (e.g. taps) on the zone/key 479011, the system may preferably switch to the symbol instance/mode 479012, wherein the symbols are shown/grouped in four different zones 479651 to 479654 based on their common characteristics as described throughout this and previous patent applications filed by this inventor. Note that in this example, on each zone, the symbols are arranged in two lines.

After the system enters into the symbol mode, preferably, the permanent preferred symbol zone 479011 may change its appearance 479012 and/or function. In this example interacting with the zone/key 479012 may switch the system into the precise letter mode 479003. Now, preferably, the permanent preferred symbol zone/key 479012 may change its appearance and/or function to 479013 (e.g. in this example, similar to 479011) so that interacting with the zone/key 479012 may switch the system into the corresponding mode (e.g. in this example to symbol mode 479003.).

According to one method, in any of the modes (e.g. the symbol mode, the precise letter mode) if the user presses the space key 479606, the system preferably switches back to the original mode 479001.

According a one embodiment, the system may include both:

- a first type of preferred symbol zone(s) that may not always be shown on the screen (e.g. such as the zone(s) 479411 of fig. 479E which is preferably shown after typing a character/letter/word (e.g. a text) and pressing the space key, and the disappears upon providing a predefined interaction such as starting to type a next text (e.g. herein may be referred to as temporary preferred symbol zone); and/or
- a the permanent preferred symbol zones(s)/key(s).

Fig. 479H shows the keypad of the invention of fig. 479G in an exemplary instance after typing the word "what" 479121 and pressing the space key. In this example, both, the permanent preferred symbol zone/key 479711, and the temporary preferred symbol zone/key 479712 are presented on the screen 479409.
Note that, both, the number of temporary and/or the permanent preferred symbol zone(s) may vary. For example, the two permanent preferred symbol zones/keys may be shown on the screen, wherein a first one corresponds to the symbol mode, and the second one may relate to precise letter mode. According to one method, when the system is in the original mode/instance, interacting with a/the permanent preferred symbol zone/key may correspond to entering the system into the precise letter made. Another interaction with said preferred symbol zone may enter the system into the symbol mode, and vise versa.
As mentioned before, the/a broadly ambiguous zone of a keypad of the invention may be located anywhere on the screen and preferably is invisible/transparent. Fig. 479I to 579K, show some examples of the keypad of the invention and the (e.g. their corresponding) broadly ambiguous zones. Fig. 479I shows an exemplary keypad of the invention with QWERTY letter arrangement as described before. Here the broadly ambiguous zone 479707 (e.g. corresponding to the letters ZXCVBNM) is the zone between the space key 579706 and the backspace key 479705. In this example, the zone 479717 between the letter keys is accessible to a user so that for example he/she may be able to (directly) interact with content on the screen in that zone.
Fig. 479J shows another exemplary keypad of the invention with alphabetic letter arrangement as described before. Here the broadly ambiguous zone 479807 (e.g. corresponding to the letters TUVWXYZ) is the zone between the space key 579806 and the backspace key 479805. In this example, the zone 479817 between the letter keys is accessible to a user so that for example he/she may be able to (directly) interact with a content on the screen on that zone. According to another example, the broadly ambiguous zone may be located (e.g. location/zone 478008) next-to/near one of the (e.g. groups of the) keys of the keypad so that the whole middle of the screen being (e.g. directly) accessible. Note that in this example, the letter keys are designed to be very narrow so that to maximize the screen real state for viewing a content on the screen. According to other concepts, the letter keys may be displayed vertically of they may be small squares having alphabetical order (e.g. each key may have two or more lines of alphabetically ordered letters).
Note that in the examples of the keypads of Figs. 479I and 479J, all of the letters/characters on their respective keys 479701 to 479704, and 478801 to 478804, are preferably considered as preferred letters/characters, and the letters assigned to the respective broadly ambiguous zones may be considered as none-preferred letters/characters.

Show FIG NUMBERS
Fig. 479L shows another exemplary keypad of the invention, for example (e.g. in the precise letter mode) resembling to the keypad of Fig. 477A with the difference being that here the keypad also includes the characters "." 479881 and "@" 479882 so that the user can enter an email address without switching to another mode such as, for example, a symbol mode.
Fig. 479M shows another exemplary keypad of the invention with a QWERTY letter arrangement. Here the broadly ambiguous zone 4791107 (e.g. corresponding to the letters "Z", "X", "C", "V", "B", "N", "M") is the zone between the space key 4791106 and the backspace key 4791105. In this example, the letters are dispatched on four keys and the broadly ambiguous zone such that to provide high accuracy prediction.
Fig. 479N shows another exemplary keypad of the invention with a substantially similar QWERTY letter arrangement. Here the broadly ambiguous zone 4791207 (e.g. corresponding to the letters "Z", "X", "C", "V", "B", "N", "M") is the zone between the space key 4791206 and the backspace key 4791205.
In this example, the letters "O" and "L" that are in the QWERTY order have been swapped to provide very high accuracy of prediction.
Fig. 479O shows an enlarged exemplary keypad of the invention having a QWERTY-like arrangement. In this example, the keypad is preferably in precise mode.

According to one embodiment, when the/a keypad/keyboard is in ambiguous mode (e.g. fig. 479M) at some point during enlarging at least some of the keys of said keypad/keyboard, said keypad/keyboard may switch to the/a corresponding keypad/keyboard (e.g. 479O) of the precise mode. According to one embodiment, when the/a keypad/keyboard is in precise mode (e.g. fig. 479O) at some point during shrinking at least some of the keys of said keypad/keyboard, said keypad/keyboard may switch to the/a corresponding keypad/keyboard (e.g. 479M) of the ambiguous mode.

Note that any means such as a slider, pinching action, etc. may be used to enlarge/shrink the/a keypad/keyboard.

Note that, when the system (e.g. and the corresponding keypad) is in the ambiguous mode, the characters (e.g. letters) assigned to the/a broadly ambiguous zone of the ambiguous keypad may be shown/printed in said zone.

Note that such a keypad may be of any kind such as those shown in Fig. 479A and Fig. 479M, or a keypad having any number of keys. For example, said keypad may have six letter keys, preferably arranged in two rows (e.g. columns) wherein the letters are arranged in a predefined order such as an alphabetic order, a qwerty type order (e.g. fig. 479P1), etc.

Fig. 479P shows an exemplary keypad of the invention (e.g. in its precise mode) for German language with a substantially similar QWERTZ letter arrangement with (minor) modification (e.g. letters L and O are swapped). Fig. 479Q shows the keypad of Fig. 479P in its ambiguous mode. Here the broadly ambiguous zone 4792107 ambiguously corresponds to the letters include "Y", "X", "C", "V", "B", "N", and "M".
Fig. 479R shows an exemplary keypad of the invention (e.g. in its precise mode) for French language with a substantially similar AZERTY letter arrangement with (minor) modification (e.g. letters L and O are swapped, and the letters Q and A are swapped). Fig. 479S shows another exemplary keypad of the invention (e.g. in its precise mode) for French language with a substantially similar AZERTY letter arrangement with (minor) modification (e.g. letters D and E are swapped, and the letters I and J are swapped). In these examples the corresponding ambiguous keypads are not shown but they resemble to that of fig. 479Q with these letter arrangements including modifications of swapped letters.

In the examples above modifications may be considered by people skilled in the art.

Methods of the entry of phonetic-based words/chains of characters (e.g. and thereafter the Hieroglyphic characters/words) using the data entry system of the invention has been described in different patent applications filed by this inventor. The data entry system of the invention having a keyboard having few (e.g. four) keys and one or more (e.g. preferably one) broadly ambiguous zone as described herein or in the previous patent applications may be used for such purpose. For example an alphabetical keyboard of the invention or a (e.g. slightly modified) qwerty-based keypad of the invention may be used for entering Pinyins and/or (thereafter) Chinese characters/words as described in detail before.

Fig. 479K shows another exemplary keypad of the invention with alphabetic letter arrangement as described before. Here the broadly ambiguous zone 479807 (e.g. corresponding to the letters (e.g. bcfghjkmpquvxz) printed in small) is the zone between the space key 579906 and the backspace key 479905. In this example, the zone 479917 between the letter keys is accessible to a user so that for example he/she may be able to (directly) interact with a content on the screen in that zone.

Note that in this example, the letters/characters printed in large font on the keys 479801 to 479804 are preferably considered as preferred letters/characters, and the letters printed in small font on said keys are preferably assigned-to and/or represented-by the broadly ambiguous zone 479907 and are preferably considered as none-preferred letters/characters (e.g. the small letters are printed on the keys 479901 to 479904 so that to remind at least the alphabetical order of the large letters and/or to provide a method of entering (e.g. any of) the letters precisely.

Note that as mentioned and shown before, the mouse functions may preferably be provided from a predefined zone such as for example a broadly ambiguous zone.

All kb

- **Gesture towards the neighboring char**

Different methods of arrangement of characters on the zones/keys for entering a character precisely (e.g. in the precise character mode of the invention) may be considered. Also different methods of interaction with a such zone/key may be considered. Figs. 480A to 480G show some examples. Fig. 480A shows the system in the/a special character mode. In this example, each group of characters with a common characteristic is-arranged/form a separate line of characters. The characters on the line 480002 are mainly digits 0 to 9. The characters on the line 480001 are mainly punctuation marks. The characters on the line 480003 are mainly arithmetic characters. Characters on the line 480004 are mainly open/close characters.

The keypad of fig. 480B is similar to the keypad of fig. 480A with the difference that in this example, the space 480006 and backspace 480005 input means/keys are respectively situated on the right side and the left side of the open/close characters 480004.

Figs. 480C, 480D, and 480G show different types of keypads of the invention in preferably the precise character mode. In these examples, the keypad includes special characters and letters.

Figs 480E and 480F show exemplary keypads of the invention in precise symbol modes. These may preferably be used in landscape mode in small devices such as smartphones, or in landscape and portrait modes in devices with large screen such as tablets.

Note that in the example above, according to one method, each identified character may be assigned to or represented by a zone/key.

According to one embodiment, the zones corresponding to identified characters may be considered a subzones and being divided in several groups and wherein each group of subzones being considered to form (e.g. or being part of) a larger key/zone (e.g. zones 480111 to 480114, and 480117), as described throughout this and previous patent applications filed by this inventor. According to one embodiment, in the precise mode, in addition to relating an interaction with a subzone to the corresponding identified character, the system may preferably also (e.g. simultaneously) ambiguously relate said interaction to any of a characters of the/a group of characters assigned to the corresponding key/zone and wherein upon receiving a sequence of such interactions the system may predict one or more corresponding words.
Note that in any of the precise modes of the system, according to one method, when the user interacts with a zone/key relating to an identified character, the system may preferably relate said interaction to, both, a corresponding precise input signal/interaction and an ambiguous input signal/interaction.

Sentence/chain of words, forming and prediction

Forming and saving chain of words (e.g. phrases, sentences, etc.) in a database used by the system has been described before in previous patent applications filed by this inventor. According to one embodiment, after typing/providing the input information corresponding to a word, a predefined interaction (e.g. such as a gliding action preferably in a predefined direction) for entering a proposed/predicted word (e.g. in a word list) may preferably enter said word and/or attach said word to a previous word (e.g. which is already entered) and/or to a next word (e.g. to be entered). Preferably the attached words may include (e.g. by the system or manually) a delimiter such as a space character and/or another predefined character. The attached words as such may be added to a dictionary. By entering the input information corresponding to at least the portion such as the beginning portion of a chain of words formed and/or saved as such, the system may predict and/or propose a portion or the whole of said cjain of characters. Preferably, when providing the input information corresponding to a word of such chain of words, the user may also enter the corresponding delimiter. In this case, according to one method, the system assumes that the information provided by the user is preferably corresponding to a word of a chain of words in the database, wherein said word may preferably be any of the words of the words of said chain of woeds. Accordingly, the system may propose one or more chain of words that include said word. Note that the user may provide more than one word as such corresponding to a chain of words.Note that, according to one method, words entered as such may preferably correspond to the beginning words of the corresponding chain of words.

A gesture to switch the word list from vertical to horizontal

As mentioned and shown before, the words in the/a word list of the invention may be arranged in different manner such as vertically (e.g. herein may be referred to as vertical word list), and/or horizontally (e.g. herein may be referred to as horizontal word list), and/or in another manner. According to one embodiment of the invention, a switching method may be used to (e.g. dynamically) switch the word list from a first manner to a second manner. For example a predefined interaction such as a gesture provided on/from a vertical word list in preferably a predefined direction may switch said word list to horizontal (e.g. and/or vise versa).

Any key can be broadly amb. zone

- **It can be anywhere on the screen**
- **It is preferably inbisible**

It must be noted that a broadly ambiguous zone of a keypad as described throughout this and previous patent applications filed by this inventor, is preferably referred to an invisible zone displayed on the screen to which a number of one or more characters such as at least one letter is assigned. Said zone may be located anywhere on the screen preferably outside the visible zones/keys of the keypad. Preferably, the said broadly ambiguous zone (e.g. herein may also be

referred to as invisible zone) may be/is located between the two groups of keys of the invention as described and shown before throughout different patent applications filed by this inventor. According to another method, the invisible zone may be located next to (e.g. above, below, on the right/left side) a key of one of the groups of keys of the keypad. Note that as mentioned before, more than one invisible zone may be considered in a keypad of the invention. Not that according to one method, the borders and/or the characters of an invisible zone (e.g. a broadly ambiguous zone) may be shown on the screen.

Additional features/function for the image editing application (e.g. texting on an image)
The system permits to post comments before anyone else or the author

- **Not bease on date (data free) – can enter his message anywhere in the history**
- **Can add a post on an existing image or on a new pic and insert/collage in between**
- **Can modify/cut a portion of the picture or append a portion**

(e.g. Contrary to the traditional messaging systems,) the image editing system of the invention permits to type a message, post comments, include contents such as tags, user's identification (e.g. name, small icon/picture), etc. at any location within a massaging history regardless of some constraints (e.g. the date of a previous posted message). This is possible the background of the history of the messaging between one or more people may be graphical visible surface (e.g. an image) or an invisible/transparent window/surface (e.g. such background/window may herein be referred to as graphical surface). As described and shown before, a new message/text typed on an image may be written on the top of a graphical surface such that a user viewing said graphical surface may first see said message before seeing the other message(s) written below the new message on said graphical surface but being written prior to said new message.
According to one method, the system may permit a user (e.g. to type a new message on a new graphical surface/image and) to insert a (e.g. the edited) new graphical surface within an already existed graphical surface/image. According to one method, said inserted graphical surface/image may split or not split the original graphical surface/image

Preferred methods of interaction in the picture/image editing applications
On tap if menu up -> menu down

- **Keyboard up**

On tap if menu down-> menu up,

- **Keyboard down**

On Gesture keyboard up

- **Menu up (e.g. unless it covers a beg. portion of the gesture provided after it's up)**

On type menu down
Tap does not affect the current/last direction/gesture
In all cases regarding popping/removine meny, cw/selected w remains as is
All above may appliy to cw and/or selected w
Any kb
-Can be on any surface using any type of interaction emulating a similar/corresponding interaction on a touch screen

Different methods of interaction in the image/photo/video/etc. editing (e.g. texting on an image) application/system (e.g. herein may be referred to as image editing system/application) have been described before. According to a preferred embodiment, an/the image editing system may preferably use at least one (e.g. preferably all) of the following principles (e.g. when an image is being edited, on for example a touch screen):

- Upon providing a predefined interaction such as a tapping action on an image (e.g. on a touch screen), different scenarios may be considered such as:
  Scenario 1: if the menu is displayed (e.g. shown) on the screen, preferably after providing said tapping action the menu will/may be removed (e.g. or hidden) (e.g. by the system) from the screen. Also preferably, if the keyboard is NOT displayed on the screen, after providing said

tapping action the keyboard will/may preferably be displayed on the screen (e.g. upon said tapping action, if the keyboard is displayed on the screen it will remain on the screen). Scenario 2: if the menu is NOT displayed on the screen, after providing said tapping action the menu will/may preferably be displayed on the screen. Also preferably, if the keyboard is displayed on the screen, after providing said tapping action the keyboard will/may preferably be removed (e.g. or hidden) from the screen.

- Upon providing a predefined interaction such as a gliding/gesture action (e.g. corresponding to a word to be entered, or to a word which is being entered, or to a selected word (e.g. for relocating said selected word (e.g. on the/a touch screen), etc.) on the (e.g. touch) screen, different scenarios may be considered such as:
    - If the/a keyboard is not displayed on the screen, the keyboard will/may preferably be displayed on the screen. And/or
    - If the/a menu is not displayed on the screen:
        - According to a first method, the menu will/may preferably be displayed on the screen. (e.g. upon said tapping action, if the keyboard is not displayed on the screen, it will remains not displayed).
        - According to a second method, the menu will/may preferably be displayed on the screen unless if the menu will/may cover at least a (e.g. predefined) portion (e.g. a/the beginning portion) of the gliding/gesture action.
- Preferably in all cases, if the/a menu is displayed on the screen and the user start to type a text (e.g. a character, a word), the menu will/may preferably be disappeared/removed/hidden from the screen.

Note that a predefined interaction such as a tapping action (e.g. relating to displaying the menu on or removing the menu from the screen) may not affect the location and/or direction of the current (e.g. last) gliding action (e.g. and the corresponding word/text) provided/shown on the screen.

If an interaction such as a tapping action regarding displaying or removing the/a menu from the screen is provided when a current word is being typed/entered or when a (e.g. previous) word is selected, preferably, said word may remain on the screen and may preferably keep at least some, preferably all, of its characteristics (direction, color, etc.).

Note that principles of functions and/or interactions in an image editing system such as the principles described above may be used with any keyboard such as a keyboard of the invention, a QWERTY keyboard, etc. As an example, the keys/zones of a keyboard used by the system may (e.g. mainly) from one, two, three, or four rows of keys/zones respectively located next/closed to one, two, three, or four edge(s) of the surface of the/a corresponding touch sensitive/screen used by the system. The keys/zones of such rows may be of any kind. For example, a zone may correspond to one identified character or it may ambiguously correspond to any of a plurality of characters. A zone may be a fixed zone, or it may be a dynamic zone as described in detail before. As an example, the system may have two rows of zones, each representing several characters and wherein being located on opposite sides on the corresponding screen. according to another example, the keyboard may form only one line of zone (e.g. including or excluding the space and/or the backspace keys) and being located on one edge of the screen for example on the edge opposite to te menu bar. Different methods of arrangements of letters on keys/zone and /or different mays of arrangements of said keys/zone have been described throughout this and previous paten applications filed by this inventor, Many others may be considered by people skilled in the art. Said keyboards may be used by the image editing system of the invention and be located on the screen according to principles described or according to appropriate manners preferably in a manner to minimize the interference with the image to be edited and/or with the menu, etc.
As an example, figs. 481A to 481C show three exemplary such keyboards. In fig. 481A, shows a keypad of the invention in alphabetic order as was shown before, but wherein here the letter keys

481001 to 481004 are split in two groups and displayed on opposite sides closed to/adjacent to the edges of the touch screen 481009. In this example, the space key 481006 and the backspace key 481005 are also on opposite sides of the screen. The keys are arranged such that when the menu 481011 is displayed on the screen, the keypad and the menu preferably do not cover each other. In this example, the broadly ambiguous zone include is shown in two locations 481007 and 481017 (e.g. although it may be made of a single (e.g. continuous) zone, or three or more zones).In the example of fig. 481B, the keyboard is made of a single line/zone 481101. This keyboard may be a precise keyboard wherein an interaction on a (zone corresponding to a) letter/character may enter ir precisely and/or it may be a dynamic keyboard as described before (e.g. an interaction with a zone of yje keypad may ambiguously correspond to several (e.g. neighboring) characters/letters.
In the example of fig. 481C, a keyboard having three portions 481201 to 481203. The interaction with the keyboard may be based on the principles described regarding to the keyboard 481B.
As mentioned before, these keyboard when used with the image editing (e.g. texting) systems may give them a lot of advantages by minimizing the interference with the image, menu, etc.
It must be noted that these are only exemplary keyboards and methods of interaction and/behavior of the system relating to such interaction. (e.g. based on the principles described) Other types of keyboard, other types of arrangement of characters (e.g QWERTY), other types of the behavior of the system regarding the interaction may be considered. Some of have been described throughout this and previous patent applications filed by this inventor.
Note that according to one embodiment, when the user desires to enter identified characters, the system may show the character/letters aroung the screen (e.g. near the edge of the screen).
According to one aspect, when the system is in ambiguous mode, the keypad may be a keypad having four ambiguous letter keys/zone, and when the system is in precise mode, the keypad may be a keypad wherein at least each of its letter keys represent a signle character and the keys are arranged around the screen (e.g. the keypad of fig. 482A).

In the air

Note that although in many embodiments interactions (e.g. tapping, gliding) with a (e.g. touch sensitive/screen) surface are being used to describe the principles of data entry of the invention, it is understood that said interactions and said surface may be of any kind. For example, said interactions may be provided in the air/space and said surface may be a remote surface of any kind. According to one method a remote detecting means such as a camera, sensor, etc., may be used to detect the user's interactions (e.g. tapping, gliding, etc.). In this case, according to one method, a surface may not be needed.

Example: under the keys

The principles described above may provide an extremely user-friendly method of interaction for editing (e.g. typing on) a picture. As an example, while a keyboard is covering at least a portion of an image, if a user desires to type a text under the keyboard, or if he desired to relocate a text being typed/selected under the keyboard, when/if the menu is not displayed on the screen (e.g. if the menu is displayed on the screen, the user may remove it by providing a tapping action on a predefined location such as outside the keyboard (e.g. on the screen)) the user may provide a tapping action on a predefined location such as outside the keyboard (on the screen). As described before, in this case, the system may preferably remove the keyboard from the screen (e.g. and preferably the menu pops up). Now, the user may provide a gliding action from a desired location (e.g. in s desired direction) on the portion of the screen that the removed keyboard was covering. Upon providing such a gliding action (other) different scenarios may be considered such as:

- 1st scenario: if a word/text is being typed/selected, upon providing a gliding action (e.g. anywhere on the screen), said word/text may preferably be relocated on the screen according to said provided gliding action (e.g. location, direction).

- 2nd scenario: if a word/text is NOT being typed/selected, upon providing a gliding action (e.g. anywhere on the screen), said gliding action may preferably define the location and direction of the/a next/new word/text to be entered.

Note that, after providing the/said gliding action the keyboard may be re-displayed on the screen and the user can/may be able to, respectively, start modifying (e.g. appending characters, deleting characters, changing the color, etc.) of the word being entered/selected and/or he may type a new word/text, under the displayed keyboard according to the provided gesture.

Note that in at least some (e.g. preferably, all) of the embodiments/descriptions of the invention regarding an image editing application/system, the principles corresponding to a word being entered may preferably also be applied to a word being selected, and/or vise versa.

-Not only an image. The priciples may apply to any surface/application such as the screen itself, a text box, etc.

It must be noted that principles described above (e.g. regarding displaying/removing a menu and/or a keyboard, typing, keyboard usages, menu usage, etc.), may be applied to and/or used with any content printed on a screen (e.g. and not only to an image). For example, said content may be a text box, a video being played on a screen, an invisible content displayed on the screen, etc. according to one method, the screen on which the image editing system is used may have no content (e.g. except a keyboard and/or menu that may be displayed or removed). In this case, for example, a text being typed/created as such may (e.g. be saved and) be printed on any content, such as for example, on a remote content or on a content that may be displayed later on a/the screen.

It must be noted that the descriptions and drawings provided throughout this application are brought up to describe and/or demonstrate the principles of the data entry system and/or the image editing application of the invention. Other descriptions, examples, modifications, etc., may be provided by people skilled in the art based on the principles of the data entry of the invention. For example, instead of or in addition to a keyboard, any other input systems (e.g. voice recognition, lip reading recognition, handwriting, handwriting recognition, (e.g. gesture) interactions in the air, etc.) may be used/combined with the picture editing system and/or its principles (e.g. a user may provide a gliding action in a direction on a photo (e.g. printed on a touch screen) and (e.g. then) speak a text. In this case, the spoken text may preferably printed on the photo according to said gliding (e.g. preferably starting at the beginning of the gliding action and/or according to the direction of the gliding action)), and the data entry systems of the invention, as described throughout this and previous patent applications.

According to one embodiment, some predefined texts (e.g. word(s), phrases, sentences, paragraphs, etc.) may be pre-stored in the database used by the system. They may be entered by using the data entry system of the invention by using any of the input means used by the system. For example, they may be entered by using the word/sentence predictive system of the invention or by using a speech (e.g. voice) recognition (e.g. command-and-control) system. According to one method, the user may be enabled to add her/his own such text(s) to the database used by the system.

(In image editing system)
Include/relate a content in an (edited) picture
(audio, video, Speech, etc.) on slide w by w / all
From a button (e.g. for all)
different Speed based on finger intteration
Speech/video/audio not related to the text

According to one embodiment, at least in the image editing system, a user may be enabled to relate-to and/or include a content such as an edited image (e.g. that includes a text (e.g. preferably entered by a user)). Said content may be of any kind such as a audio (e.g. music), a video, a text, a list of information, etc. By providing a predefined interaction such as for example a tapping action on a

location on said image, said content may be activated and/or become available. As an example, when a user edits a picture by typing a text on it, he may speak (e.g. what he types) and/or he may add a music. Said speech and/or music may be played by an interaction with the image locally or remotely. As an example, after an editor of an image (e.g. hereafter may be referred to a s editor) shares the image with a friend or others, the receiving party may provide a predefined interaction such as for example, touching a/the (e.g. portion of the) text written on the edited picture to listen to the speech and/or music and/or video that the editor of the image has been included or related to. Different other methods may be considered. According to one method, a predefined interaction such as a sliding action over at least a portion of a text (e.g. one or more words) may result in playing the audio corresponding to said portion or to all of the related text. The speed of the audio may be related to the speed of the sliding action.

Note that the content combined and/related to an edited image may be or may not be related to, a text typed/included/corresponding to an edited image.

Several users chatting listening viewing

According to one embodiment of the invention, users can share a content/background such as an (e.g. remote) image (e.g. including relating contents such as audio, speech, video, etc.), a video (e.g. streaming/being played, etc.), a textbox, an invisible/virtual background/surface (e.g. on a screen) etc., and edit it (e.g. type text (e.g. in deferent location(s) and/or direction(s) on it) preferably, at least substantially, simultaneously, preferably, by using the principles of the data entry system of the invention and/or the principles of the image editing application of the invention.

According to one embodiment of the invention, each interaction (e.g. taping action) with a location on a zone having a number of characters such as letters (e.g. a zone may include all of the letters of a language (e.g. zone 478101 of the keypad of fig. 478D) or it may have some of the letters of a language (e.g. zone/key 479001 of the keypad of fig. 479A having five/keys zones) a/the word predictive data entry system of the invention may dynamically relate some (e.g. one or more) of the characters/letters related to (e.g. an example of related characters is described in this application) and/or closed to the interaction location (e.g. tapping impact on the zone) and upon receiving one or more of such interactions the system may preferably predict one or more words from a database used by the system. This method of word predictive system may be used by any keyboard/keypad such as those described and shown in this and previous patent applications filed by this inventor. This matter has already been described in detail.

Select a char, word(s), line, whole

According to one embodiment of the invention, a first predefined interaction such as short gliding action may preferably select a predefined portion of an already entered text such as a word (e.g. a consecutive number of characters), and a second predefined interaction such as a longer gliding action may select another predefined portion of a text (e.g. a character, a line of text (e.g. corresponding to a/the corresponding gliding action, a paragraph, the whole already entered text, etc.)

Adjust to previous degree on Enter/Return

According to one embodiment of the invention, at any moment during the entry or editing of a text providing a predefined interaction such as activating the Enter/Return key (e.g. by providing a predefined interaction) results in locating at least the next line of the corresponding text (e.g. already typed and/or being typed and/or to be typed) in a direction parallel to the direction of the gesture (e.g. that was) provided on the screen/image corresponding/relating to a predefined line of the corresponding text (e.g. the next line of text will be show/displayed parallel to the gesture corresponding to the first line of the corresponding text). Note that the/said corresponding text may be a block of text such as a phrase, paragraph, whole text of a text field, etc.

According to one embodiment of the invention, the system may include a means such providing a predefined interaction, wherein after providing a gliding action corresponding to the direction of a

text, providing said means, the system preferably adjusts the direction of said gliding action to a predefined degree on the screen (e.g. the closest 45 degree).
According to one embodiment, the photo/image editing application may include a means such as a button such that to enable the user to share said photo with/in another social application.

External device
According to one embodiment of the invention, the data entry system of the invention may be implemented in an external means/hardware and be (e.g. wirelessly and/or by wire) connected to the corresponding device such as a handset, tablet, TV, etc. As an example, the data entry system of the invention may be implemented in a wristwatch, a bracelet (e.g. of a wrist watch), an external device attached to the/said corresponding device, etc.

As an example, the keypad of the invention may be implemented within/on a touchscreen of a (e.g. an electronic) wristwatch. The wristwatch may include the data entry system of the invention, and transmitting and receiving means so that to transmit information such as text provided through data entry system of the invention to a remote destination. Fig. 483A shows an exemplary illustration of the keypad of the invention in precise mode printed on the (touch) screen of the watch. Fig. 483B shows the keypad of the invention in ambiguous mode. In these example, the button/zone 483011 is for example used to switch the system into different modes (e.g. precise mode, ambiguous mode, symbol mode, etc.
According to one embodiment, the input provided by the system within the wristwatch and/or the corresponding output may be transmitted to another device cush as mobile phone, tablet, TV, etc. In this case, the screen of the corresponding device may print said output.

By using the approach of using an external input units/device, the screen of the devices such as mobile phones may be freed from displaying input interfaces and preferablty be used for the output at least most of the time.

Upward and downward to move the keypad

According to one embodiment of the invention, a predefined interaction such as a gliding action (e.g. including or excluding a long pressing action) in a predefined direction on/from a zone such as for example, the backspace zone/key, between the keys, etc., may relocate at least one of the portions (e.g. preferably, all) of the keypad in a direction such as the corresponding direction. After the user removes the finger from the screen the keypad may preferably stay at the last location. As an example, providing a gliding action upward or downward on/from the backspace key may relocated the keypad of the invention respectively upward or downward.

Device is a phone, tablet, computer, TV, etc.
It must be noted that in different paragraphs in the descrioption of the application the word device using the data entry system of the invention may have been used. Said device may be any type of device such as a handset, (mobile) phone, TV, PC, tablet, etc.

Methods for enhancing usability

show invisible zone/visible zone
why up in the real k zone
- 2 eaxmples of curved si
- ergonomic
- narrow/fat
- does not hide the screen
- speed of typing
- viewing the content/text on k

- 3 line qwerty
- split curved qwerty
- key may not have an invisible zone
- diagonal keys can be hard keys

Fig. 484A shows a exemplary (e.g. narrow) key 484001 of the keypad of the invention having (e.g. extremely) narrow keys so that to minimize the size of the keypad and maximize the visibility of a content on the screen. In order to make a key of the invention as small (e.g. narrow) as possible (e.g. in appearance) but still being able to easily interact with said key, such key may preferably be designed/created such that to be a made of a zone being enough large to easily be interacted, but said zone being made of at least two sub-zones. A first subzone may preferably be the visible portion of said key/zone and the second subzone may preferably be the invisible portion of said key/zone (e.g. a key having a visible zone and an invisible zone may herein be referred to as a complex (e.g. letter) key). Fig. 484B shows an exemplary key 484001 of the invention being made of two portions. The first portion 4840011 is preferably the visible portion and the portion 4840012 is the invisible portion of said key. Interacting with any portions of said key is preferably considered as an interaction with said key. Note that preferably the visible subzone is (e.g. slightly) situated in the upper side of the zone 484002. This is because when the user used his/her thumb to press a key, he/she usually touches a key slightly lower than he/she believes that he/she is touching. Therefore in order to avoid mistyping (e.g. interacting with another key/zone situated under the target key) this solution may preferably be used.

According to one embodiment of the invention, the keys of the keypad used by the system may be designed to be (e.g. preferably slightly) diagonal. This gives several usability advantages such as:

- Ergonomic – when the used holds a device with two hands and types using his/her two thumbs, he is more comfortable if the location and/or position of the keys of each side on the screen/device correspond to the movements of the user's thumb typing on the screen while holding the corresponding device.
- Speed of typing – because access to any (e.g. portion of a) key becomes easier the speed of typing improves significantly.
- Text viewing – because the keys are narrow and diagonally disposed, they barely overlay a line of text on the screen. the user may easier read the text on the screen under the keys.

Fig. 484C shows a keypad of the invention having four complex letter keys 484101 to 484104 each having a visible zone (e.g. 4841011) and an invisible zone (e.g. 4841012). In this example, the complex letter keys are split in two opposite portions wherein the keys of each portion are diagonally disposed according to the movements of the corresponding user's thumb on the screen. for example, the keys 481101 and 481103 of the first portion situated on the left side of the screen (e.g. not shown) are inclined towards bottom on their right side, and the keys 481102 and 481104 of the second portion situated on the right side of the screen (e.g. not shown) are inclined towards bottom on their left side. In this example, the complex keys are entirely (e.g. both, the visible portion and the invisible portions) inclined. In this example, the input interface/keypad also include a broadly ambiguous zone 484107.

According to another method, the visible potion of a complex key may preferably be inclined and the invisible portion may preferably not inclined. This may permit an easier software programming procedure. Fig. 484D shows an example of such keyboard having four letter keys 484101 to 484104 wherein the invisible portions (e.g. 48420012) of the complex keys (e.g. key 484201) are not inclined and the visible portions (e.g. 48420011) of the complex keys are inclined according to principles described. In this example, the input interface/keypad also include a broadly ambiguous zone 484207,

Fig. 485A shows a keypad of the invention based on the principles described before and resembling to the keypad of fig. 484D, wherein in this example the visible portions (e.g. 4850011) of the complex letter keys 485001 to 485004 are designed to be extremely narrow without diminishing the ease of the usability. This is because the size of the complex keys are large enough (e.g. they are the size of the keys the keypad of fig. 484D). In this example, the input interface/keypad also include a broadly ambiguous zone 485007, a space key 485006, and a backspace key 485005.

Fig. 485B shows an exemplary demonstration of a keypad of the invention (e.g. such as the keypad of fig. 485A) on the screen 485009 of a small device such as a smartphone. As shown, while the keys are on the screen, the user can see and/or read the content/text which is displayed on the screen because the (e.g. the visible portion of the) keys are narrow and/or in diagonal/inclined position. In this example, two degrees of inclinement are demonstrated respectively on the left side and on the right side of the screen 485009.

Note that in the example above, each of the keys/zones are being shown to include several characters. It must be noted that as described throughout this application and the previous patent applications by this inventor, different types of response of the system to an interaction with a key may be considered. For example, according to a first method, an interaction with a key may ambiguously correspond to a number of characters assigned to said key. According to a second method, an interaction with a location (e.g. on and/or near a character) on a key may correspond to said/a character and/or the neighboring characters, etc.

Note that in the embodiment above or in any embodiment, the diagonal/inclined keys as described may not include an invisible portion (e.g. they may have only a (e.g. narrow) visible portion).

Note that in the example above although keys/zones are being shown to include several characters and/or several subzone/sub-keys each corresponding to a (e.g. preferably one) character, the principles of having inclined and/or narrow keys may be applied to a line of individual keys forming a line of keys. as an example, such principles may be applied to the keys of a full keyboard (e.g. a keyboard wherein a predefined interaction such as a tapping action on each of at least its letter keys provides a single letter (e.g. such as a QWERTY) keyboard.)

Fig. 486A shows as an example, an on-screen keyboard having QWERTY keyboard letter arrangement. In this example, the keyboard has three lines of complex keys/zone 886001 to 486003 wherein each zone is created of at least two subzones: a visible zone and at least one invisible zone. In this example, each of the complex zones/keys are includes three zones. For example, the complex zone/key 486001 comprises a visible zone 4860011 and two invisible zones 4860012 and 4860013.

According to another example, fig. 486B shows a split QWERTY keyboard, having six complex letter-zone/key 486011, 486011, 486002, 486012, 486003, 486013. In this example the zones 486011, 488012 and 486013 form the right portion of the keyboard and are inclines correspondingly as described in the example of the Fig. 484C to 484D, etc. Also, the zones 486001, 488002 and 486003 form the left portion of the keyboard and are inclines correspondingly as described in the example of the Fig. 484C to 484D, etc. Note that in this example, each of the complex letter zones (e.g. the zone 486001) has a visible zone (e.g. 4860011) and an invisible zone (e.g. 4860012). Note that as described before, each of the complex zones may have subzones each corresponding to a single letter/character. Acording to another method, a complex zone may be formed of several individual zones/keys (e.g. each individual zone/key corresponding to a letter). Note that as also in this embodiment, as mentioned/described before, any of the keys/zone of the keypad may exclude an/the invisible zone.

By using such a (e.g. QWERTY) keyboard as described, the user may be able to benefit from many advantages such as those described earlier.

Note that the embodiments above, preferably are used with touch sensitive surfaces such as touch-screens.

123
- shift
- caps lk
- remv
- back to pred
- language
- settings

A button for switching the system fron a mode to another mode have been described an shown before. Accappinf to one embodiment, in addition to the tapping actions as described before, gliding actions provided from/on said button in different directions may be assigned to different functions. Preferably at least a majority of said functions may be related to keyboard modes functions such a Shift, CapsLock, removing the keyboard from the screen, etc. fig. 487A shows a such button 487008 preferably always available on the screen. As shown in the enlarged portion 487011, a gliding action upward, towards upper-right, rightward, towards lower-right, and downward may respectively correspond to the functions, Shift, CapsLock, switching to ambiguous mode, changing languages, and removing the keyboard from the screen.

1 of the proposed word is with precise letters or empty characters
Gestures for letters can be in any direction

- **Clockwise**
- **Tap for default**
- **Only gesture**

According to one embodiment of the invention, preferably in the fully ambiguous mode, when the user taps on a letter key and or the/a broadly ambiguous zone, in addition to relating said tapping action to an ambiguous character, the system may relate said tapping action to a predefined identified character (e.g. a vowel/consonant, a blank character, a visible character representing a blank character, etc.). According to one method, each key may have a different default character, while according to another method, all of the keys/zone may have a same default character. As such, when a user provides a sequence of one or more tapping action on the keys and/or the boadly ambiguous zone, one of the proposed words may preferably be constituted from the corresponding default characters (e.g. said word may herein be referred to as the default word). According to one method, if the user interacts with said/the default word, the system may preferably switch into the precise letter mode, wherein for each interaction with a key of the keyboard, the system may preferably replace the corresponding default character in the default word by the precise letter corresponding to the key of the precise keypad being interacted. By using this method, uncommon words and/or the words that are not included in the database of words used by the system may be entered character by character precisely. According to a preferred method, when the user interacts with a default word, the system may also propose more words (e.g. if any) corresponding to the input information provided by the user until then. Each additional interaction with the default word may result in proposing more corresponding words. Preferaby, at least at first, the system proposes the corresponding words with the length of the default word, and preferably then, the system proposes the words that a (e.g. the beginning) portion of them corresponds to the input information provided by the user.

According to one embodiment of the invention, providing gesture(s) from anywhere on a key in at least one direction of a plurality of predefined directions may provide corresponding at least on character of a plurality of identified characters (e.g. letters) ambiguously assigned to said key. Preferably the order of the gestures directions may correspond to alphabetical order of the corresponding identified characters/letters. As an example, figs. 477E to 477G show a first exemplary method of entering precise characters/letters. In this example, the default character of each key/zone may preferably be the first character of the corresponding ambiguous characters in alphabetical order (e.g. respectively, A, E, I, O, and T). The other characters of each key/zone may preferably be entered precisely according to their alphabetical order on the corresponding key, preferably according to gestures in corresponding predefined directions (e.g. clockwise order or opposite clockwise order).
For example, as shown in fig. 477E, providing gliding actions on/from the key 477701 towards up, upper-right, and right, may respectively correspond to entering precisely the letters, B, C, and D, and providing gliding actions on/from the key 477702 towards up, upper-left, left, lower-left, and down, may respectively correspond to entering precisely the letters, J, K, L, M, and N.

Also, for example, as shown in fig. 477F, providing gliding actions on/from the key 477703 towards up, upper-right, and right, may respectively correspond to entering precisely the letters, F, G, and H, and providing gliding actions on/from the key 477704 towards up, upper-left, left, and lower-left, may respectively correspond to entering precisely the letters, P, Q, R, and S.

Also, for example, as shown in fig. 477G, providing gliding actions on/from the broadly ambiguous zone/key 477707 towards up, upper-right, right, lower-right, down, and lower-left, may respectively correspond to entering precisely the letters, U, V, W, X, Y, and Z.

Note that in this example, providing a tapping action on the keys/zones 477701, 477703, 477702, 477704, and 477707, preferably correspond to respectively, the default letters A, E, I, O, and T. Note that this is only as example to demonstrate the principles of entering intuitively/blindly precise character. Other methods may be considered. For example, interacting such as a tapping action on a key may not correspond/provide a letter, but (e.g. a symbol representing) a blank character. In this case, according to one method, any (e.g. of all) of the characters (e.g. ambiguously) assigned to a key may be precisely entered by providing a gliding action towards a predefined direction. As an example, providing gliding actions on/from the key 479901 towards up, upper-right, right, and lower-right, may respectively correspond to entering precisely the letters, A, B, C, and D. Same rule may be applied to other keys/zones.
Note that in the embodiment above, the order (e.g. of gestures in different direction (e.g. such as up to eight different directions from a key) described for entering precise character is alphabetic. Other orders such as for example Qwerty order may be used .Note that according to principles described above, a user may enter text blindly, both, in precise mode and in ambiguous mode.
According to one embodiment of the invention, as described throughout different patent applications filed by this inventor, gliding actions including a press-and-holding-action in different directions such as in up to eight directions as described above may be used for entering special characters assigned to a key. As described before in detail, each key may represent a group of characters having a common characteristic. For example, press-and-holding-and gliding actions in different predefined directions such as eight different directions on a key, may provide up to eight different special characters assigned to a key. A long pressing action on a key and removing the finger (e.g. without providing a gesture) may be related to entering another special character assigned to said key.

Fig. 477H shows the keypad of fig. 477E wherein the letters represented by a key are shown in a simplified reduced manner to permit having extremely small ambiguous keys. for example, the letter IJKLMN assigned to the key 477802 are shown as I-N. in this example, the letters assigned to

the broadly ambiguous zone are displayed as T-Z in a (e.g. small) location 477817 on said (e.g. large) 477707 zone.

According to one embodiment of the invention, after the system provides a number of one or more words (e.g. in an initial word list) based on the user's input information corresponding to a word (herein may be referred to as initial input information), providing a predefined interaction such as tapping on a zone such as on the uncompleted word may cause the system to enter into a/the precise letter mode and (e.g. preferably simultaneously) propose more words/stems (e.g. different from those proposed in the word list) (e.g. if any) (herein, a stem may also be referred to a s a word) corresponding to the input information provided by the user. Preferably, the stems are the beginning potions of corresponding longer words. According to one method, the system may preferably propose a large number of such words/stems in a large location (e.g. in an enlarged word list). (According to one method, the proposed words/stems have preferably the/a same length (e.g. the same number of characters) as the current predicted word and preferably include substantially all of the corresponding words/stems.) At this time several scenarios may be considered:
Scenario 1: The user may select a proposed word/stem. In this case, according to one method said word/stem may preferably be entered, while according to a second method, the system may propose another word list of one or more words (e.g. preferably including the selected word and) beginning with the selected word (e.g. if any). Preferably after selecting one of the words the enlarged word list is disappeared and the a smaller word list (e.g. similar to the initial word list) may be proposed.
Scenario 2: The user does not select any of the proposed words (e.g. none-of the proposed words is her/his desired word) and begins (e.g. a correction procedure by) using the keyboard in precise letter mode to enter her/his desired word character by character precisely. In this case, preferably upon using said keyboard, the system removes the enlarged word list. Preferably, when the user begins to enter precise characters, the system may propose longer words based on the initial input information that was already provided by the user before entering into the correction procedure. The correction procedures of the invention have already been described in detail in different patent applications filed by this inventor.

According to one method, the words/stems in the enlarged word list may be displayed/proposed in alphabetic order, while according to another method they may be displayed/proposed based on said and/or other characteristics such as their priority, etc.

Note that the space and backspace keys of the keypad of the invention may preferably always be invisible and preferably their location on a surface may be presented by small icons (e.g. right and left arrows).

The arrangement of letters on the (e.g. four letter) keys of the keypad of the invention may be in alphabetical order to permit a novice user to type fast from the beginning. According to a first method, as shown in the example of fig. 474A, at least most of the letters may be arranged such that to form two linear lines of letters in alphabetical order (e.g. the letters A to H, and the letters I to S), while according to a preferred method, as shown in the example of fig. 477B, a first and second potions of said letters (e.g. A to H, and I to S) are preferably arranged on two pairs of keys (e.g. 477001, 477003, and 477002, 477004) located in opposite relationship (e.g. on the/a touch screen) 477009. This way, (e.g. specially on tablets) the user can more easily the keys to find a letter (e.g. for the letters A to H the user looks at the left side, and for the letters I to S the user looks at the right side. In the above mentioned examples, the remaining letters are assigned to the/a broadly ambiguous zone (e.g. respectively, 474007, and 477107).

How to present words in a word list
If word comes from N-gram N>1, entry
- if its length is equal to current word goes in blue

- if not, the highest priority in blue (preferrably with any length, alternatively can have same length)

If word does not come from N-gram,
- **1 gram with highest goes to blue**
- **If no words cut a longer word with highest priority**

Current can be anywhere such as in a word list or in a/the text box

1 gram – can show highest priority with current word length

As described before in this application and previous applications as filed by this inventor, groups of words such as predicted word (for example, candidate words) and the current word, may be display/presented to the user in various formats, styles, methods, etc. For example, predicted words may be presented as wordlists, as described before herein. Such a word list may contain candidate words and also include the current predicted word, preferably displayed the current predicted word in a different color to the candidate words. Alternatively, the current predicted word may (e.g. also) be displayed through/by any other means, for example, at a position in the text (e.g. as if the word is entered directly into the text at the current cursor position) of, for example, a text box. According to one embodiment of this invention, a wordlist may contain candidate words predicted/proposed by a predictive system combined with data entry system of the invention, including the current predicted/proposed word.

According to one method, the current word may be presented to the user according to several (e.g. one or more) criteria, preferably, relating to N-gram entries in a word database where, preferably, N>1 (e.g. bi-grams and/or tri-grams). Preferably, the system may present the current word when the following criteria are satisfied, for (e.g. any) input information provided to the system:
- If the last word in a candidate (e.g. one or more) N-gram is equal in length to the length of the current word being entered (e.g. same number of entered characters for the current word), then the last word of the N-gram with the highest priority is preferably presented to the user as the current word.
- If the last word of a candidate (e.g. one or more) N-gram is not equal in length to the length of the current word being entered (e.g. same number of entered characters for the current word), then the last word of the N-gram with the highest priority is preferably presented to the user as the current word.
- If there is no N-gram in the word database that corresponds to the current input information for the current word being entered, then a 1-gram with the highest priority may be presented as the current predicted/proposed word, preferably with any length. Alternatively, the unigram presented as the current word may be restricted to the length of the current word being entered (e.g. the same number of entered characters for the current word).
- If no word (e.g. from unigrams, or from N-grams where N>1) are found that correspond to the input information for the current word being entered by the user, then system may propose a word with highest priority corresponding to any of the input information available to the system. Preferably, if such a proposed word is greater in length than the length of the current word being entered (e.g. same number of entered characters for the current word), then the presented word may be presented such that, preferably, the first characters of the proposed word are presented/display as the currently predicted word.

First goes to precise letter, then back and forth in precise letter and symbols

When in precise mode a small return button pops up to go back to amb. mode

According to one embodiment of the invention, various modes of the keypad/keyboard may be navigated (e.g. presented and/or accessible) by the user at various (e.g. any stage) during the entry of input information to the system. Said modes may be presented and/or accessible to the user programmatically, for example, when the user is entering information into an field that only accepts numbers/digits. According to one method, the user may navigate (e.g. some of) the various modes of the keypad/keyboard, as shown in the example of Fig. 488A, 488B, and 488C. Fig. 488A shows an example of a keypad 488000 that includes a function key/button 488001; here the keypad is in the fully predictive mode. Upon the user activating the function key 488001, the keypad moves/switches/activates to another mode, preferably, as shown in Fig. 488B, the precise letter mode and the system presents the precise letter keypad 488100. In this mode, the function key 488101 presents numbers/digits and an additional function key 488102 is shown. Upon the user activating the additional function key 488102, the system returns to the fully predictive mode, for example, as shown in Fig. 488A. If the user does not activate the additional function key, but instead activates function key 488101, then the keypad moves/switches/activates to the special character mode, for example as shown in Fig. 488C. In this mode the function key 488201 presents characters on an alphabet, and an additional function 488202 is shown. Upon the user activating the additional function key 488202, the system returns to the fully predictive mode, for example, as shown in Fig. 488A. If the user does not activate the additional function key, but instead activates function key 488201, then the keypad moves/switches/activates (e.g. back) to the precise letter mode, for example as shown in Fig. 488B.

Note that the symbols for Fig. 488B and Fig. 488C are descriptive examples, and not all of the symbols are necessarily shown, for example on the keys 488211 and 488212.

According to another embodiment, the access to the precise letter mode and to the precise symbol mode may be through two different types of interactions/means/buttons/zones so that the user can access any of said modes directly. Fig. 488D shows as an example, the screen 488009 of a device having two different buttons/zones 488111 and 488112 so that interacting with them permits a direct access respectively to the precise letter mode and to the precise symbol mode. Preferably the buttons are narrow and located close/adjacent to the edge of the device. This has several advantages such as: a) the button(s) does not cover a significant portion of the screen, b) the access to (e.g. a tapping action on) the button(s) is accurate. In the example of Fig. 488E, the system is switched to the precise letter mode, and the buttons 488113 and 488114 respectively correspond to switching the system to the precise symbol mode and to the ambiguous mode. In the example of Fig. 488F, the system is switched to the precise symbol mode, and the buttons 488115 and 488116 respectively correspond to switching the system to the precise letter mode and to the ambiguous mode. Note that such a button (e.g. 488115) may have an additional invisible portion so that as to make (e.g. detectable) zone larger without covering the content on the screen.

Note that the buttons corresponding to swiching between modes, the word list, etc., may be located / displayed in any (e.g. predefined) location on the screen. As an example, in Fig. 488H, the mode buttuns 488117 and the wordlist 488118 are located close to each other on the right side of the screen 488109.

According to one embodiment, different types of interactions with a type of button as just described in the embodiment above, may be used by any application (e.g. an application other than the application using the screen) to provide different input signals to the system for any purpose (e.g. without interfering with the functions of the user interface on the screen corresponding to an application which is currently running.). As an example, different (e.g. straight) gliding actions towards different directions provided from the corresponding edge of the device towards the inside of the screen may be related to functions that are related or are not related to the current running application. This is because, the gliding action provided from the edge of the device or touch

sensitive surface (e.g. touch screen) towards the inside of the device at first interacts with such button/bar. This permits/enables an application/a system to perceive a screen event before any other application that uses another portion of the screen. Such type of button/bar and preferably the corresponding gliding actions as described may be used for entering different corresponding input information. Said input information may be used by the system to provide/process different functions. Note that one or more of such buttons/bars may be located on a same edge of a device. According to one embodiment such button may have the form of a (e.g. an invisible) line (e.g. 488331 of fig. 488G). According to one method, a single such button may substantially cover an edge of the screen. One or more of such buttons may be place on one or more edges of a screen. As an example, as shown in fig. 488G, three gliding actions 488301, 488302, and 488303 which are provided from the edge of the device/screen towards the inside of the screen preferably provide three different input signals that may be used for any purpose (e.g. to input key interactions, to input data/text, to activate functions, etc.).
As an example, by providing one or more such bars (e.g. 488331, 488332, 488333) on one or more edges of the screen of a device such gliding actions may simulate (e.g. ambiguous and/or precise) key interactions. As an example, in fig. 488G, six gliding actions 488301 to 488306 may simulate interactions with six keys of the keypad of the invention (e.g. respectively the keys 488401 to 488406). As an example, a different gliding action such as the gliding action 488307 may simulate interacting with the broadly ambiguous zone 488407of the/a keypad of the invention. It is understood that a greater or lesser number of different gliding actions may be related to a greater or lesser number of keys simulating interactions with keypads with a greater or lesser number of keys. This type of keypad may be beneficial for many people including visually impaired people. In this case, the keypad may not be printed/shown/presented on the screen. Note that said gliding actions may be related differently (e.g. in another order) to the keys of the/a keypad of the invention. Also other types of gliding actions may be used to emulate interactions with the keys of a keyboard. For example, a plurality of gliding actions wherein each of them is provided from a different portion of one or more edges of a touch sensitive surface (e.g. in any angle) towards the inside of a touch sensitive surface may represent a corresponding plurality of different input signals, and wherein each of the input signals may correspond to one or more characters (e.g. emulating a precise keyboard or an ambiguous keyboard).

Precise kb lock on long press on abc

Note that according to one method, upon providing a predefined interaction, such as a long pressing action, on the keyboard mode button 488001, the keypad of the invention may, preferably, be switched to another mode, for example, the precise letter mode, and stay/remain in that mode until another predefined interaction such as a tapping action on the button 488102 is provided (e.g. in this example, providing space characters, preferably, does not switch back the system to the ambiguous mode). Same may be applied to the symbol mode by, for example, a long pressing on the button 488101 so as to lock the system in, for example, a precise symbol mode of the invention.

Size of the keys very small

According to one embodiment of the invention, the size of a key (e.g. as presented to a user) may be very small. A very small key may, preferably, be defined for the purposes of this and previous patent applications as key that has a size:

- being a minimum size of one display element (e.g. pixel) of a display of an input means, for example, such as a touchscreen;
- being a minimum size of an area equal in size to the resolution of a coordinate position of an input means, for example, such as a touch sensitive surface;
- being a maximum size of the area, preferably, no larger than a fraction (e.g. half) of the touching (e.g. impact) area of a user's finger with a touch sensitive surface/display;
- being a maximum size of a fraction (e.g. 10%) of the length (e.g. width and/or height) of a touch sensitive surface/display; or

- a substantially small area of a touchscreen/touch sensitive surface considered by a user not to hinder access to the majority of the information presented on the touchscreen/available information accessible by the touch sensitive surface.

Examples of very small keys are presented in Fig. 489A and Fig. 489B. In these examples, the majority (e.g. substantially, almost the whole display) of the tough sensitive input means/display is available to the user.

DRAGGING THE KB
Can have access to content
Bs/sp key for dragging a portion, long press and drag for whole kb
Or alternatively: From Bs for one potion, from Space key for dragging the whole kb (or vise versus)
Default location
All other icons on the sides
Towards/outwards

According to one method, the keypad of the invention may be (e.g. physically and/or virtually) split in two or more portions each having one or more keys. At least some of said portions of the keypad may be moved towards each other and/or moved away from each other on the/a corresponding input means, for example, a touchscreen/touch sensitive surface. A predefined interaction, with/on at least one portion/key/zone of the keypad, for example, such as a dragging or gliding action, or a pinching action (e.g. such as two fingers gliding towards or away to/from each other) may be used for such a purpose. Preferably, the space/area between keys (e.g. the/a broadly ambiguous zone) may contract/expand accordingly. Preferably, the size of any portion/key/zone may contract/expand accordingly.

According to one embodiment of the invention, the keys of the keypad may be approached (e.g. moved towards each other) and preferably reduce the size of the/a broadly ambiguous zone (e.g. and the keypad).
This may permit to have an extremely small input interface (e.g. herein may be referred to as reduced dynamic keypad) for a highly accurate input system. Figs. 490A to 490E show exemplary drawings demonstrating the principles of creating and manipulating a reduced dynamic keypad. Fig. 490A shows a keypad of the invention having four keys 490001 to 490004, a broadly ambiguous zone 490007, a space key 490006 and a backspace key 490005. In this example, at least the group of keys (e.g. 490001, 490002) of one (e.g. left) side (e.g. herein may be referred to as the first portion of a keypad), and at least the group of keys (e.g. 490003, 490004) of another (e.g. right) side (e.g. herein may be referred to as the second portion of the keypad) are positioned far (e.g. not substantially close and/or not beyond a predefined space between the/said portions) from each other, near opposite edges of the screen (e.g. a portion of the input means) 490009 of a device. According to one method, said first and second portions of keypad may be approached (e.g. moved closer together) by a means such as by dragging (e.g. with a gliding action) one portion towards another portion or by dragging both (e.g. by a pinching action) portions towards each other. Different dragging methods may be considered. According to a preferred method, a portion may be dragged towards another portion by touching one of the keys such as the space key or the backspace key and dragging the respective portion of keys towards the other portion of keys. For example, as shown in Fig. 490B, the portion of keys on the right side may be dragged towards the portion of keys on the left side by touching the space key 490006 and sliding the finger towards the left portion of keys. Preferably, the size of the broadly ambiguous zone (e.g. 490007) is now reduced. According to one method, another predefined interaction such as a dragging action from another key, for example, the backspace key may be used to relocate at least both the portions of the keypad on the screen. As an example, Fig. 490C shows the reduced dynamic keypad of the invention being

relocated on the screen by touching the backspace key 490005 and providing a gliding action towards a desired location on the screen 490009 (e.g. by dragging the backspace key 490005 from one location to another location).
As mentioned before, the keys of the keypad may be invisible/transparent. Preferably, the borders of the invisible keys (e.g. preferably at least the letter keys) are presented on the screen in a predefined manner such as that shown in Fig. 490D. In this example, the borders of the space and the backspace keys are not shown, because the user may easly know where said keys are located relative to the letter keys 49001-490004. Also, preferably, the borders of the (e.g. invisible) broadly ambiguous zone are generally not shown because the user may easily know its location (e.g. between the split keys) relative to the letter keys. Fig. 490E shows, as an example, the keypad of Fig. 490D superposed on a content (e.g. text) presented on a screen wherein the portion of the content under the keys/zone(s) of the keypad is visible to the user.
Note that the letter keys and the broadly ambiguous zone(s) may herein be referred to as letter keys/zones. Note that as shown in Fig. 490D, the space and backspace keys may be located anywhere (e.g. preferably outside the letter keys/zones) on the screen. Preferably other buttons/zones/keys (e.g. keyboard mode button, few symbols location, etc.) may be located on at least one of the edges of the screen.

According to one embodiment, the system may include a means such as using a predefined user's interaction for positioning the (e.g. portions of the) keypad of the invention in a predefined (e.g. default) location on the screen.

More portions
Include or exclude sp bs
Prefraby stay at the same level
According to another method of dragging, a first portion of the keypad may be dragged towards or away from a second portion of the/a keypad by providing a predefined interaction such as touching a corresponding key (e.g. letter keys, space key, backspace key) and sliding said portion in a desired direction. Preferably, when such dragging action is provided from a first portion towards or away from a second portion, said portions stay on a same (e.g. horizon or vertical) level (e.g. plane/axis) so that the broadly ambiguous zone stays (e.g. preferably, (e.g. proportionately) expands/contracts) in a square, rectangular, or similar/other shape, for example, to it shape before said dragging action.

Note that the first and/or the second portions of the keypad described may include or exclude the space, the backspace keys, and/or, optionally, other keys/buttons/zones (e.g. corresponding to functions, special characters, letters, etc.).

According to one method, at least the whole letter keys/zones may be relocated on the screen by a dragging action from a key wherein said dragging action includes a press and holding action (e.g. at its beginning).

Note that the keypad of the invention may be divided in top and bottom portions instead of left and right portions. The keypad may also be divided into more than two portions.

Said reduced dynamic keypad may provide several valuable features (e.g. in addition to other advantages/features mentioned herein). For example, said reduced dynamic keypad enables a user to easily and/or comfortably enter data with one (e.g. or two) hands. One-handed use is particularly valuable for users of small devices (for example, mobile phones with touch screen input means, tablet computers with larger screen where the/a few keys close to each other can provide fast text entry with one hand), for example, when the have a need to multitask in the (e.g. physical) environment of activity. Another example, since the size and/or location of the reduced dynamic keypad can be reduced and/or changed, the user is now enabled to access any content around (e.g.

490008 of fig. 490E) the keypad, enabling the user to scroll/move said accessible (e.g. screen) content of a touch screen device in a way that the device or pertinent application allows. The keypad removes a significant limitation of ordinary (e.g. QWERTY, and QWERTY-like) keyboard, namely enabling (e.g. tough simple/convenient interaction with the keypad) the user to access any of said content.

It must be noted that said actions for manipulating the size, position, mode, features, etc. of the dynamic reduced keypad may, preferably, also be applied in the case of any keypad such as, preferably, a semi-precise keypad.

Enlarging/reducing the size of the keypad/keyboard

According on one embodiment of the invention, the size of the keypad may be reduce/enlarged by using a predefined means such as providing one or more predefined interactions with the keypad. For example, touch a specific point of the keypad and dragging in the horizontal plane, may enlarge/reduce the keypad in the horizontal plane. Similarly, for example, an interaction in the vertical plane, may accordingly enlarge/reduce the keypad in the vertical plane.
Accordingly, a diagonal gesture from a specific point of the keypad, may preferably enlarge/reduce the keypad in both the horizontal and vertical planes, preferably simultaneously.

Broadly ambiguous zone can be anywhere or may change its location dynamically (e.g. upon resizing the keyboard)

As mentioned before, the/a keyboard used by the system may include a broadly ambiguous zone that can be located anywhereon the screen (e.g. preferably between the split keys of a keyboard such as the/a keyboard of the invention (e.g. zone 490007 of fig. 490F). According to one embodiment of the invention, (e.g. preferably, when the split keys are very closed to each other, the broadly ambiguous zone may be located outside the other letter keys of the keypad. As an example, Figs. 490F to 490H show exemplary keypads/keyboards of the invention wherein the exemplary broadly ambiguous zones 490007, 490107, and 491207 are respectively located on different locations relating to the other letter keys 490001-490004 of a keypad/keyboard of the invention. Note that in Fig. 490H, the space and backspace keys are also relocated. In Fig. 490H, the exemplary gesture 490011 preferably correspond to interacting with the keys/zones 490002, 490207 and 490004.

Symbols vertical drawing

Only wl moves with ks

According to one embodiment, when the keyboard is relocated/moved on the screen, the wordlist is located in a location on/near an edge on the screen. Said location may preferably be a location on that edge with a predefined relationship relative to the keyboard (e.g. word list moves up or down on an edge if the keyboard is moved up or down anywhere on the screen). Fig. 490K shows a keyboard of the invention relocated on the screen and the word list 490008 is-shown/remains on a predefined location relative to the keyboard on the right side.

According to a preferred embodiment, when the keyboard is relocated/moved on the screen, the wordlist is also relocated on the screen such that the words being shown near the keys so that the user can see them without (e.g. visual) effort. Fig. 490L shows a keyboard of the invention relocated on the screen and the word list 490018 is show/relocated next/near the keyboard (e.g. far from an edge).

According to one embodiment, when the keyboard is relocated/moved on the screen, at least some of buttons/keys/zones other than the main keys/zones of the keyboard (e.g. symbol switching icons, the few symbols button, etc.) may also be relocated accordingly on the screen. On the other hand, according to a preferred embodiment, when the keyboard is relocated/moved on the screen,

at least some of buttons/keys/zones other than the main keys/zones of the keyboard (e.g. symbol switching icons, the few symbols button, etc.) is/remains located in a location on/near an edge on the screen. Said location may preferably be a location on that edge with a predefined relationship relative to the keyboard (e.g. said at least some of buttons/keys/zones other than the main keys/zones of the keyboard are moved up or down on an edge if the keybord is moved up or down anywhere on the screen).

Fig. 490M shows a keyboard of the invention being relocated on the left side of the screen of a device and/while the symbol switching icons 490031 and the few symbols button 490028 (e.g. which here is in vertical position) are shown/remained on a predefined location relative to the keyboard on their corresponding sides near near the edges on/of the screen. As mentioned before a/the few symbols button 490028 may include a switching means so that to present more options/functions. In Fig. 490N the few symbols button of fig. 490M (e.g. after tapping on the + sign) is displayed in a switched instance 490038 to present other/more functions.
It must be noted that other methods of relocation of a/the split keyboard may be considered. For example, the user may use two fingers e.g. by touching (e.g. simultaneously) a key of the first portion and a key of the second portion of the split keyboard and drag (e.g. simultaneously) (e.g. each of) said two portions of the split keyboard to a desired location/s on the screen.

Precise and ambiguous can be relocated separately
According to one embodiment, any of the/a keyboard in precise mode and the/a keyboard in ambiguous mode used by the/a system may be relocated on the screen. According to one method, each of said keyboards may be relocated in a different location on the screen regardless of the location of the other keyboard.
According to a preferred method, when a first of said keyboards is relocated on the (e.g. touch) screen, the height of the second keyboard on the screen may be adjusted to the height of the first keyboard on the screen so that when the system is switched to the second keyboard said second keyboard is shown at the same height as the first keyboard.

Note that the/a keyboard in the precise mode may also be reduced or extended in size. As an example, Fig. 490Q shows a keyboard of the invention is precise mode located on the screen 490809 of a device in landscape mode. As an example, in order to move the keys of the left side towards the keys of the right side or in order to reduce the width of the keyboard, the user may slide from the a key such the backspace key 490805 towards right. Fig. 490R shows said keyboard after being reduced in size. Note that the key/zone 490807 is also relocated. (Now) the user may relocate the reduced keyboard on the screen 490809 by sliding from a key such as the space key 490806 towards any desired direction on the screen. Fig. 490S shows said keyboard after being relocated on the screen 490809.

4k a zone kb no distance
In fig. 490P, the split letter keys are moved towards each other such that to be substantially adjacent to each other and form a 2x2 array of letter keys 490001 to 490004. In this example, the broadly ambiguous zone 490017 is dynamically defined to be a zone in the center of said array of keys. An exemplary alphabetical letter arrangement 490091 of the keyboard in this position is also shown for better explanation.
Tapping instead-of/or dragging
It must be noted that other methods for approaching, distancing, or relocating at least a portion of a keyboard such as the/a keypad/keyboard of the system may be considered. For example, according to one method, the user may provide a predefined interaction such as a predefined pressing action a a desired location on the screen, and wherein said at least one portion of the keypad/keyboard may be relocated in a predefined position relative to the pressing action on the screen.

Keys can be split vertically
Note that at least the letter keys of the keypad may be split in other manners such as vertically as for example shown in figs. 490I and 490J.
moving keys
Relocate in all directions
- **easy relocation with one hand**
- **two hands to relocate**
- **Function Icons next to the keys**

It must be noted that in the embodiments above, the relocation (of e.g. any portion) of a split keypad in any direction (e.g. upward, downward, leftward, rightward, diagonally) on the screen has been described such that to permit the relocation of the keypad with one finger. This is very beneficial in mobile environments wherein in many situations one of the hands of a user may provide other tasks. The data entry system of the invention where the keyboard can become very small and complete manipulation of it including fast and accurate text input can be provided by a single finger (e.g. thumb) (e.g. while holding a device is with the same hand) is a unique input technology. It must be noted that other methods of relocation of keys may be considered with one or two hands. As an example, moving a first portion of the keypad towards a second portion for a (e.g. predefined) distance may also cause the second portion to move towards the first portion for the same distance.

According to one embodiment, upon relocation of the keyboard, at least some of the function icons may preferably be relocated accordingly and positioned near the keypad. For example, when the right portion of the keypad is moved inside the screen (e.g. distanced from the right edge), the few symbols button may be located at the right side of (e.g. adjacent to) said portion.

Sliding methods a gesture for the 2nd word
breaking the line
- at the entry and at the exit angles are not the same
a zone other than in the middle
+ for additional functions
Space key larger
Completion
No sp/bs key

A method of (e.g. simple) sliding/gliding action(s) to emulate tapping/pressing actions on the keys and/or zones (e.g. of a keypad) on a touch sensitive surface may be considered. According to one embodiment, providing a gesture (e.g. sliding/gliding action) from/on a first key/zone towards/onto/traversing (e.g. partially or completely) one or more keys/zones may preferably represent/duplicate (a number of) corresponding interactions (e.g. tapping actions) with at least some of said zone/keys preferably depending on parameters such as a gesture's shape, trajectory, speed, etc. For example, providing a single gliding action traversing three zones/keys of a keypad may emulate/correspond-to pressing/tapping on said keys.

According to a preferred method, a straight gliding action beginning from a zone/key of a keypad and ending on another zone/key or traversed a last key during the gliding action, may preferably correspond to interacting with said two zones/keys of the keypad even if the gliding action traversed other zones/keys. Accordingly, if said gliding action is a complex (e.g. not straight/curved one or more times) gliding action, it may preferably also correspond to interacting with at least some of the other zones/keys on which said gliding action traversed/interacted. Preferably, said other zone/s are the zone/s on which the trajectory is angled/curved. Note that according to one method, beginning of a gliding action is where a user touches a (e.g. touch sensitive) surface and begins to provide a gliding action. Accordingly, a gliding action preferably ends upon removing the finger from the surface.

The above method may be used with a keypad/keyboard of the invention. As an example, such keyboard may have a few keys (e.g. four keys) and preferably one broadly ambiguous zone as shown in Fig. 491A. According to a preferred method, a straight gliding action departing from/on a first key and ending on or traversing a last key of the interaction with the keypad, may preferably correspond to interacting with said two keys. As an example, in Fig. 491A, the straight gliding actions 491011, 491012, 491013 respectively correspond to interacting with the keys 491001 and 491003, 491001 and 491004, and 491001 and 491002. Note that in this example, all of the gliding actions have traversed the broadly ambiguous zone 491007, but because they are straight gliding actions, they are not considered as interacting with the broadly ambiguous zone 491007. Also, as an example, the complex gliding actions 491014 and 491015 both correspond to interacting with the keys/zones 491002, 491007, and 491003. Note that in this example, the complex gliding actions have several line segments that are either angled or curved in the broadly ambiguous zone 491007.

According to one embodiment of the invention, if a gliding action provided over the keys/zones of the keypad ends on a location outside said keys/zones of the keypad, a corresponding word of a database used by the system may be entered and a space character may be added after said word by the system. As an example, as shown in Fig. 491C, the gliding action 491016 corresponds to interacting with the keys 491002 and 491001 and wherein because said gliding action has ended on a location outside, preferably, the letter keys and the broadly ambiguous zone 491007 of the keypad (e.g. herein may be referred to as the main keys/zones of the keyboard), a corresponding word (e.g. "ha") may be entered and a space key may preferably be added after said word. Similarly, the gliding actions 491017, 491018, and 491019 ended outside the main keys/zones of the keyboard may respectively correspond to the words relating to interacting with the keys/zones 491002 and 491007, 491002 and 491003, and 491002, wherein, preferably, a space character may automatically be entered/inserted/added after the corresponding words. Accordingly, as shown in the example of 491E, the gliding action 491021 corresponds to a word relating to interacting with the keys 491002, 49003, and the broadly ambiguous zone 491007 wherein a space character may automatically be entered/inserted/added after said word.

According to one embodiment of the invention, a complex gliding action provided over two keys, and traversing outside the main keys/zones of the keyboard may correspond to interacting with said two keys. As an example, in Fig. 491D the gliding action 491023, wherein a portion of it traverses outside the main keys/zones of the keyboard, corresponds to interacting with the keys 491003 and 491004, and a similar type of gliding action 491022 provided on said two keys, but traversing the broadly ambiguous zone 491007, preferably corresponds to interacting with the keys/zones 491003, 491007, and 491002. Similarly, the complex gliding action 491025 departing from the key 49001 and ending on the same key 491001, and traversing outside the main keys/zones of the keyboard may preferably correspond to two consecutive interactions with a corresponding single key 491001. Accordingly, a similar type of gliding action 491024 departing from and ending on a same key 491002, but traversing the broadly ambiguous zone 491007 preferably corresponds to interacting with the zones/keys 491002, 491007, and 491002.

According to one embodiment of the invention, a gliding action that ends within main keys/zones of the keyboard may correspond to a one or more words of the database used by the system, where a number of said words are preferably presented to the user. Fig. 492A shows a complex gliding action 491026 corresponding to interacting with the zones/keys 492007, 492002, 492001, and 492007. A word list 492008 is presented to the user. According to one embodiment of the invention, if a gliding ends outside the main keys/zones of the keyboard one of the words presented to the user may be entered automatically by the system and a space character may be entered/inserted/added after said one of the words. Fig. 492B a gliding action 492027 similar to the gliding action 492026 but ending outside the main keys/zones of the keyboard. In this example, the word "that" (e.g. preferably having the highest priority among the corresponding presented words)

may be entered by the system and a space character is preferably inserted/added/entered after said word.

According to one embodiment of the invention, if a gliding action ends within a corresponding word list another word of the word list may be entered and a space characters is preferably added/inserted/entered after said word. In Fig. 492C, a gliding action 492028 is similar to the gliding action 492026 and similar to gliding action 492027, but ending in the word list 492008. In this example, the word "what" (e.g. having the second highest priority among the presented words) is entered, and preferably a space character is entered/added/inserted after said word.

According to another embodiment, after a gliding action exits the main keys/zones of the keyboard, the wordlist becomes available under the user's finger so that the user can select one of them (e.g. by continuing the gesture until the desired word in the list.

According to one embodiment of the invention, the input information corresponding to a word provided by a user may include a variety of interactions such as one or more gliding actions (e.g. one or more separate gliding actions, each corresponding to a different portion of a desired word) and/or one or more tapping actions on the keys of the keypad. This permits to a user to enter a word by lifting his/her finger from the corresponding touch sensitive surface between each interaction. According to one embodiment, an signal such as providing a space character, providing a special character such as "?", selecting a word (e.g. of a list of words) presented to the user, etc., may (e.g. gliding and/or tapping actions) signify the end of the entry of the input information corresponding to a desired word. As an example, Figs. 493A and 493B show exemplary steps of the entry of the word "pull". In the step of Fig. 493A, the user provides a gliding action 493029 corresponding to three beginning characters of the word "pull". The system may propose a number of words corresponding to the input information provided until then. In the step of Fig. 493B, the user provides a gliding action 493030 corresponding to the last character of the desired word. Note that, the gliding action 493030 is ended outside the main keys/zones of the keyboard, therefore preferably, the system enters/selects the word "pull" (e.g. the most probable word of the word list) and preferably inserts a space character at the end of the entered/selected word "pull".

Figs. 493C and 493D show another example of the steps of the entry of the word "pull". The step of Fig. 493C, is similar to the step of Fig. 493A. In the step of Fig. 493D, the user provides a tapping action 493032 corresponding to the last character of the desired word. The system proposes a number of corresponding words including the word "pull" (e.g. the most probable word of the word list-of-the-word signal The user may now select a desired word (e.g. the word "pull"), and preferably provides an end-of-the-word signal such as a space character by interacting with (e.g. tapping on) the space key 493006. Note that in order to provide more accuracy, the space key 493006 of the system occupies a large portion of the keypad.
Fig. 493E show another exemplary steps of the entry of the word "pull". In this example, the user may first provide the input information corresponding to the first three letters of the desired word "pull" by three tapping actions 493033, 493034, 493035 on respectively the key/zone 493004, the zone 493007, and the key/zone 493003. He then may provide a gliding action 493036 corresponding to the last character of the desired word, wherein preferably said gliding action ends outside the main keys/zones of the keyboard so that the system enters the word "pull" and adds a space character to its end.

Note that a single compound gesture resembling to combination of two single gestures may correspond to two different input information. As an example, the compound gesture 494013 of fig. 494A corresponds to interacting with the keys 494004, 494002, and 494003. On the other hand, the two gliding actions 494014 and 494015 of Fig. 494B correspond to interacting with the keys 494004, 494002, 494002, and 494003.

Word predicting decides about the zone 0

According to one method, a gesture provided over a number of keys/zones may correspond to interacting with at least some of said keys/zones. As an example, providing a gliding action over a number of keys/zones may be considered as interacting with said keys and/zones if a corresponding word exists in the database of words used by the system. On the other hand, as an example, providing a gliding action over a number of keys/zones may be considered as interacting with some of said keys and/zones if a corresponding word does not exist in the database of words for inyeracing with all of the keys/zones being interacted. Acordingly, as an example, even if a corresponding word exists for the keys/zones being interacted, in addition to proposing said word/s, the system may also consider some of the zones being interacted and may propose additional corresponding word/s.

According to one example, when a user provides a straight gliding action over the keys/zones 494001, 494007, and 494003, may be considered by the system to two sequences of interactions respectivey: the sequence of key/zone interactions 494001, 494007, 494003, and/or the sequence of key/zone interactions 494001, 494003.

Wordlist on the fly

Note that the predicted words may preferably be presented to a user each time the system/processor receives a new input information during the entry of a word (e.g. when the gliding action traverses a new/additional zone/key, a new tapping actions is provided, etc.).

Note that a gesture ended outside the main keys/zones of the keyboard may correspond to a full word or it may be related to the beginning portion of a longer word which both may be presented in the corresponding word list to a user. Accordingly, a word entered/selected as such may be one of of said words based on the different methods of presentation/selecting a word such as those as described in this application.

WL Under finger

According to one embodiment, after a gliding action enters to a location outside the main keys/zones of the keyboard, the system may present the word list under the user's finger so that the user can quickly select a word in the wordlist.

After end of sliding, a word is selected/entered, but Wordlist remains (for replacement)
If continues typing first/selected word enters, if selects another word, replaces the selected w

According to one embodiment of the invention, after the user provides a gliding action corresponding to selecting/entering a word (e.g. the gesture ends outside the main keys/zones of the keyboard), the wordlist remains on the screen. At this time several scenarios may be considered such as:

Scenario 1: The user interacts with the word list for example for selecting another word, scrolling within more words, etc. In this case the word list remains on the screen. In the user selects one of the words (e.g. other than the already entered word), the newly selected word preferably replaces the previously entered word. According to one method, the wordlist still remains on the screen for example for more selection, wheile according to another method the wordlist disappears. Note that after selecting a word, depending on the design of the system, a space character may be entered or not entered at the end of the selected word.

Scenario 2: The user proceeds to a task other than interacting with the word list, such as for example proceeding to entering the input information corresponding to a next word, entering/activating a function, etc. In this case the word list preferably disappears.

Note that at least some of the words (e.g. presented in the word list) corresponding to the input information (e.g. gliding and/or tapping actions provided by the user) may be longer words (e.g. the input information corresponds to the beginning characters of said words).

Space key is larger

Note that as shown in the above-mentioned figures (e.g. 491A), at least the space key (e.g. 491006) may preferably be a large key so that to avoid mistyping and accelerate the speed of the data entry.

No sp or bs k

As mentioned before, providing a gesture that ends outside the main keys/zones may correspond to preferably selecting a word and preferably entering a space character. According to one embodiment of the invention the keyboard of the invention may not include a space key.

1st Remove finger outside corresponds to ending the input infoamation for a word
2nd Exiting the keypad and going back on it without removing the finger stays in the input information
3rd going on the space key (and going back on the keypad) corresponds to ending the input information corresponding to a word and starting the information corresponding to a new word.

According to one embodiment of the invention, when a user provides a gesture on the keypad and wherein the end of the gesture is provided outside the main keys/zones of the keypad, at this time, several scenarios may be considered such as:
Scenario 1: if the user removes the finger from the surface on which the gesture is provided, the system preferably considers that providing the input information corresponding to a word is ended.
Scenario 2: if the user does not remove the finger from the surface on which the gesture is provided, and glides back onto the keypad (e.g. without removing the finger from said surface), the system preferably considers that providing the input information corresponding to a word is not ended and adds the input information corresponding to at last gliding action to the previous input infoamation corresponding to the desired word.

According to one embodiment of the invention, when a user provides a gesture on the keypad and wherein the end of the gesture is provided (e.g. outside the main keys/zones of the keypad) on a zone corresponding to entering a space character, at this time, several scenarios may be considered such as:
Scenario 1: if the user removes the finger from the surface on which the gesture is provided, the system preferably considers that providing the input information corresponding to a word is ended.
Scenario 2: if the user does not remove the finger from the surface on which the gesture is provided, and glides back onto the keypad (e.g. without removing the finger from said surface), the system preferably considers that providing the input information corresponding to a word is ended, and providing the input information corresponding to a new word is started.

Exiting from a different side corresponds to a different word

According to a preferred method, each of plurality of gliding actions corresponding to a same input information (e.g. a same key interactions) and each ending in a different predefined location preferably outside the main keys/zones may correspond to a different predicted word (e.g. of a proposed word list). For example, each of two such gliding actions wherein one ends on the upper side of the keypad outside the main keys/zones, and the other ends on the right side of the keypad outside the main keys/zones, may correspond to a different corresponding word. Preferably, a such gliding action that ends on the space key/zone may preferably correspond to a corresponding word that matches a predefined condition such as the word having the highest priority among the corresponding words.

Remove finger in the keypad zone, the system stays in the instance of providing the input information corresponding to a same word

- **Space ends the input information**

According to a preferred method, during the entry of a word, the user may provide at least one gliding action and/or at least one tapping/pressing action on the keypad. Providing each of such interactions generally requires touching the keypad and removing the finger from the keypad. According to this method, the system combines all of said interactions and (e.g. ambiguously) relates them to one or more single words. Providing a predefined signal such as tapping/gliding on a space key may end the procedure of providing such (e.g. combined) input information corresponding to a word.

On swipe

- **First and secong order of presentation**
    - **Tap for a first w Slide for a 2nd w**
- **Personal words**

According to one embodiment of the invention, upon providing an input information by providing a first type of interaction with (e.g. tapping actions on) the keys of the/a keyboard (e.g. of the invention or any other keyboard (e.g. a full keyboard such as as a QWERTY keyboard)) the system may present the corresponding words in a first manner/order, and upon providing the same input information by providing a second type of interaction with (e.g. said interactions include at least one gliding action on) the keys of the/a keyboard (e.g. of the invention or any other keyboard (e.g. a full keyboard such as as a QWERTY keyboard)) the system may present the corresponding words in a second manner/order.

According to one embodiment of the invention, upon providing an input information by providing a first type of interaction with (e.g. tapping actions on) the keys of the/a keyboard (e.g. of the invention or any other keyboard (e.g. a full keyboard such as a QWERTY keyboard)) the system may present a first group of corresponding words (e.g. from a general database of words), and upon providing the same input information by providing a second type of interaction with (e.g. said interactions include at least one gliding action on) the keys of the/a keyboard (e.g. of the invention or any other keyboard (e.g. a full keyboard such as a QWERTY keyboard)) the system may present a second group of corresponding words (e.g. from another database of words such as a sms database, personal database, professional database, etc.).

Can be single or together with watch

Watch and phone manufacturers regardless of each other
watch device

- **Text and/or phone**

watch cover

    - **see a portion of display**
    - **empty base**
- **cover of the box for watch**

The data entry system of the invention may be implemented into and/or attached to a wrist apparatus and/or a wristband. Fig. 495A shows a wrist device 495000 having a wrist watch 495011,its band 495014. The watch may be a traditional watch manufactured by a watch manufacturer. As an example, as shown as in fig. 495B, the bracelet of said watch may include an electronic device such as a wrist communication device 495100. According to one aspect, said electronic device may have a first portion 495111 that preferably includes a display unit 495009, and a second portion 495112 to cover said display for example when the display is not in use. The

data entry system of the invention may be implemented within or used by the device. In this example, the data entry system uses an on-screen keyboard having the letter keys 495001 to 495004, the broadly ambiguous zone 495007, the space key 495005, and the backspace key 495006, which are all implemented in the display of the device which uses a touch screen. A user may use said keyboard to enter text.

In the example of fig. 495C, a substantially similar device is shown, wherein here the body 495111 of the device and the cover 495212 of the electronic device both includes a display unit, respectively 495209 md 495219. In this example, a first display 495109 is used for input and a second display 495119 is used for output.

The advantage of having two devices using a single wristband is in that a watch manufacturer can manufacture a wristwatch regardless of a device (e.g. smartphone) manufacturer may manufacturing a wrist device and wherein a single strap may be used to form a single bracelet. Said watch and electronic device may preferably be located on opposite sides of a user's wrist. Fig. 495D shows an example 495300 of such bracelet. In this example, the wristwatch 495310 is attached to an electronic device, having a body 495301 and a cover 495302, by means of a strap 495304. In this example, the inside of the cover 495302 includes a display unit. Preferably, an input interface is integrated within a touch sensitive surface (e.g. touch screen) in the body of the device 495301. Preferably both display units are used to display contents. According to one method, the input interface may be integrated within the display of the cover. According to one method, the attachments of said strap and the at least the wristwatch may preferably be used those (e.g. commonly) used in the watch industry. According to one method, the cover preferably does not include a display but preferably has a transparent/empty portion so that the user can see at least a portion of the display unit located on the body of the electronic device.

According to one aspect the strap may include a (e.g. at least one) housing so that to (e.g. preferably, removable) house the electronic device and/or the watch. Fig. 495E shows a strap 495420 having a housing 495411 to removably house an electronic device such as mobile computing/phone 495410. Said bracelet may preferably be manufactured by a watch manufacturer according to the style of a corresponding watch to which said bracelet is suitably attached. Preferably the housing may be manufactured such that to cover substantially all of the surfaces of the electronic device. According to one aspect, only the display side of the electronic device may not be covers by the housing. According to another method, the housing may also cover the display of the corresponding device preferably when the display is not in use. For example, the housing 495411 may have a cover 495412 covering the display 495413 of the device 495410 when needed and to recover the display 495413 when needed as shown in fig. 495E. Note that the housing may have any shape such as square, rectangular, oval, etc. according to a preferred method, the housing may have an easy housing/unhousing system such as a clipping feature, so that to easily permit to house or to remove the device from the housing. Preferably, the housing may include a empty/hollow base permitting to reduce the height of the housing (e.g. when it the device is inserted inside said housing).

Such (bracelet) approach may creating an enormous market for both watch and mobile device manufacturers.

- **Buckling means**

From 4/8 or more sections
Then inside

The data entry system of the invention preferably having few letter keys such as four keys permits an easy and quick method of input for devices with any size of screen including devices with tiny screens. One of such devices may be a wrist mounted electronic device.

Fig. 496A shows as an example, a small electronic device 496000 (e.g. in this example being implemented/attached to a wristband 496017) having a touch sensitive surface (e.g. a touch screen) 496009. A data entry system of the invention having a keypad of the invention having few keys such as four letter keys 496001 to 496004, a broadly ambiguous zone 496007, and two more keys/zones 496005 and 496006 preferably respectively representing at least a backspace key and a space key. The keypad of the invention is used to enter some words that are displayed on the screen. Fig. 496B shows as an example said device with a data entry system of the invention having a keypad of the invention having few keys such as four letter keys 496001 to 496004 and a broadly ambiguous zone 496007. In this example, the space and backspace functions are assigned to gestures provided on the keypad (e.g. broadly ambiguous zone 406007)/screen respectively towards right 496106 and towards left 496105.

According to one method, preferably, a few/preferred symbols button/zone and the corresponding features and interactions as described earlier may be implemented with the system. In fig. 496B, an exemplary few/preferred symbols button/zone 496101 is displayed for example after the entry of a word. methods of interaction and methods of presenting and/or hiding a few/preferred symbols button/zone has been described before.

Gestures from different edges inward

To enhance some of the functionalities of the data entry system (e.g. interacting with a word list, activating functions, etc.) on preferably small devices different methods of interaction may be considered. As an example, providing a predefined interaction such as a gesture from each of a number of different edges of a device/screen towards inside a/the screen of the device may correspond to the entry or output of a different type of data.

- **WordList**

According to one embodiment of the invention, during the entry of a word, providing a predefined interaction such as a gesture departing from a predefined location such as an (e.g. a predefined) edge of a device/screen towards inside the screen may result in presenting a word list having one or more words corresponding to the input information relating to a word being entered by the user. Preferably, one or more words may be shown to the user before/without-requiring providing such gesture. Preferably, the word list is shown on a new window (e.g. hereafter may be referred to a secondary window) at least substantially overlapping or replacing the window wherein a text box and/or the keypad of the invention are located (e.g. hereafter may be referred to a primary window). Fig. 496C shows as an example, the screen of the device of fig. 496A after the user provides a gesture 496108 from the edge of the device/screen towards inside the screen during the entry of the input information corresponding to a desired word. In this example, the input information being provided by the user corresponds to several words including the word "that" which had been shown before as shown in fig. 496A as the best match to the user. By providing such gesture, the system may preferably show also said word in the wordlist so that the user may select it to get longer word beginning with said word. Methods of interaction with a word list have been described before in detail. They may be applied to any wordlist such as the one of being described here. For example, providing a gesture downward 496117 or upward 496118 on the word list may result in proposing respectively a next group of corresponding words or a group of (e.g. corresponding words previously being proposed).

Depending on the design of the system, according to one method, after providing a predefined interaction such as selecting/entering a word or providing a same type of gesture from the edge of the devide/screen, the system may switch back to the main window.

Preferably, if a word is not being entered, providing a same type of predefined interaction (e.g. such as a gesture from an edge of a device/screen towards inside the screen) may be related to another functionality such as showing another type of content on the screen.

- **Symbols**

According to one embodiment of the invention, providing a predefined interaction such as a gesture departing from a predefined location such as an (e.g. a predefined) edge of a device/screen towards inside the screen may result in switching the keyboard into the precise symbol mode wherein at least a large number of special characters are presented to the user for being selected. Preferably, the symbols are shown on a secondary window that at least substantially overlaps or replaces the primary window. As an example, Fig. 496D shows the screen of the device 496000 after the user provides a gliding action 496208 from the left edge of the screen/device towards inside the screen. In this example, two groups of symbols corresponding to the keys 496001 and 496002 are presented to the user. By providing a predefined interaction such as a gliding action 496218 rightward on the screen the system may propose more symbols as shown in fig. 496E. Providing a gliding action leftward 496228 may result in presenting the previous screen status.

- **Precise letters**

According to one embodiment of the invention, providing a predefined interaction such as a gesture departing from a predefined location such as an (e.g. a predefined) edge of a device/screen towards inside the screen may result in switching the keyboard into the precise letter mode wherein at least a large number of characters mainly letters are presented to the user for being selected. Preferably, the letters are shown on a secondary window that at least substantially overlaps or replaces the primary window. As an example, Fig. 496F shows the screen of the device 496000 after the user provides a gliding action 496508 from the right edge of the screen/device towards inside the screen. In this example a groups of precise letters are presented to the user. By providing a predefined interaction such as a gliding action 496518 leftward on the screen the system may propose more precise letters as shown in fig. 496G. Providing a gliding action rightward 496608 may result in presenting the previous screen status. Note that in the examples of Figs. 496F and 496G, the (e.g. secondary) window corresponding to the precise letters partially covers the screen. The other remaining potion (e.g. respectively, 496511, 496611) of the screen is used to show (e.g. a portion of) the text box so that the user being able to see what he/she types.

Fig. 496H shows a window corresponding to the precise symbol mode shown to the user after providing the gliding action 496708. In this example, the secondary window covers a portion of the screen and the user can see the special character (e.g. " ? ")after the word "what", which is entered by interacting with this window.

- **Other Functions (e.g. Settings)**

According to one embodiment of the invention, providing a predefined interaction such as a gesture departing from a predefined location such as an (e.g. a predefined) edge of a device/screen towards inside the screen may result in switching the system into the function/setting mode wherein at least a number of functions are presented to the user for being selected. Preferably, the functions are shown on a secondary window that at least substantially overlaps or replaces the primary window. As an example, Fig. 496I shows the screen of the device 496000 after the user provides a gliding action 496808 from the bottom edge of the screen/device towards inside the screen. In this example, a number of functions are presented to the user. By providing a predefined interaction such as a gliding action 496818 upwards on the screen the system may propose more functions. Providing a

gliding action downwards 496828 may result in presenting the previous screen status (e.g. previous functions or the primary window).

Note that a device may have an extending display. As an example, Fig. 496J shows a device having a main display 496909. Said device has an extending portion with an integrated display 496919. As an example, providing a gliding action 496908 corresponding to switching the system to the precise symbol mode may result in presenting a number of symbols on at least one of the display (e.g. in this example on both displays). A predefined gliding action 496918 may provide more symbols on the screen/s. Providing another predefined interaction 496928 may result in presenting the previous screen/s status.

Swiping on bars/lines

Also swipes for space and bs

Larger keys on edges, then tap

As mentioned gliding actions from (e.g. a predefined portion of) an edge of a device/screen/touch surface, etc., towards the inside of a touch sensitive surface may be related to interacting with a key of a keyboard model. According to one embodiment, a gliding action traversing one or more times with one or more predefined edges of a device may correspond to interacting one or more times with the key/s of a keypad model.

As an example, Fig. 496K shows touch sensitive surface of a device wherein (e.g. invisible) portions 496731 to 496734 and 496737 of bars/zones/lines located on the edges of the device correspond to the keys/zones (e.g. 496001 to 496004 and 496007) of a keypad model such as the keypad of fig. 496A. As an example, a substantially horizontal gliding action (e.g. 496721) provided from the upper left side of the edge of the screen towards the inside and ending inside the screen may be related to interacting with the key/zone 496001. As an example, a substantially horizontal gliding action (not shown) from the upper right side of the edge of the screen towards inside and ending inside the screen may be related to interacting with the 496003. As an example, a substantially horizontal gliding action (not shown) from the lower left side of the edge of the screen towards inside and ending inside the screen may be related to interacting with the 496002. As an example, a substantially horizontal gliding action (e.g. 496724) from the lower right side of the edge of the screen towards inside and ending inside the screen may be related to interacting with the 496004. A diagonal gliding action 496723 provided from lower left edge towards the center of the keypad/touch surface may be related to interacting with both the key 496002 and with the broadly ambiguous zone 496007. A gliding action 496725 traversing zone/line 496737 preferably corresponds to interacting with the broadly ambiguous zone 496007. As an example, a substantially horizontal gliding action (e.g. 496722) provided from the upper right side of the edge of the screen traversing the upper-left side of the screen may be related to interacting with the keys 496003 and 496001. And so on.

Note that instead of having the keys in form of lines on the edges of the/a device, narrow keys in form of bars may be used on the corresponding locations (e.g. alongside the edges) so the user may provide either gliding actions as just described or provide tapping actions on said keys.

With continuous description of the current embodiment, according to one method, a gliding action provided from a zone/key, preferably of the keypad, in a first direction (e.g. to the right 496727) may correspond to entering a space character, and a gliding action provided from a zone/key, preferably of the keypad, in a second direction (e.g. to the left 496726) may correspond to providing a backspace function. Preferably, said gliding actions may be required to continue until the corresponding edge of the screen (e.g. exiting from the screen). By using this method, the space key and the backspace key may be eliminated from a/the corresponding keyboard.

According to one embodiment, a curved (e.g. curved upward) gliding action, provided from any predefined edge, and traversing the opposite predefined edge may correspond to interacting with the keys 496001 and 496003. A similar gliding action curved in the opposite direction (e.g. curved downward), but gliding in the same direction (e.g. from start to finish), provided from any predefined edge, and traversing the opposite predefined edge may correspond to interacting with the keys 496004 and 496002. This matter has been described in detail in previous patent applications filed by this inventor. Said details of said interactions may be applied to edge/bar type buttons and/or interactions as described herein.

5/6 line kb, circle/sqr kb

- **Dynamic**
  Swipe from edges

4/5 dots

Methods of dynamically defining an ambiguous zone relating to interacting with a location on a touch sensitive surface and relating said interaction to the characters surrounding/neighboring the interaction position on the screen have been described before in patents applications filed by this inventor. According to one embodiment, the letters (e.g. and one or more special characters) of a language may be arranged on a (e.g. small) zone/surface and by considering this method and using a word prediction system using a database of words, words/text can be entered relatively quickly. Figs. 496L to 496O show as examples different types of such character arrangements on a touch sensitive surface. As an example, each of the tapping actions 496811 to 496815 provided on the keypad of fig. 496L may correspond to several characters surrounding the touching impacts on the keypad. As an example, based on a sequence of such tapping actions a word predictive system of the invention may predict one or more words, for example one or more words including the word "input". The arrangement of letters on in fig. 496O is such that the vowel characters are positioned far from each other (e.g. to augment the accuracy of the word prediction).

Providing another same interaction to exit or for other content

It must be noted that according to one method, at any moment during presentation of a secondary window, providing a gesture from one/another edge of the device/screen towards inside the screen may provide a corresponding secondary window. According to one method, two different secondary windows may be shown simultaneously on the screen.

Loop-type presentation

According to one method, in the embodiments above, after providing an interaction (e.g. gesture) to so that the system to present additional secondary window/content, if there is no additional secondary window or additional content to be shown, the system may present the corresponding first secondary window (e.g. looping presentation).

Can be applied to any (e.g. small) device

It must be noted, that the principles of principles/embodiments described may be applied to devices with any size of the screen.

From the broadly ambiguous zone

It must be noted, that the principles of principles/embodiments described above regarding the presentation of a secondary window may use any type of predefined interaction to switch the system to said secondary window. For example, said gestures may be provided from a zone on the screen such as preferably from the broadly ambiguous zone. As an example, instead of and/or in addition to providing gestured from four different edges of a device/screen towards inside of the

screen, four gestures from a broadly ambiguous zone wherein each gesture in provided in a different direction (e.g. up, right, down, left) may provide a different corresponding window as described.

Any function
Note that, in the embodiments above regarding the sliding method from different edges of a device/screen towards inside of the screen have been described to correspond to a data entry system, it is understood that said interactions may be related to any other type of functionality/content.

Slide can be applied from outside any content inward
Note that, in the embodiments above regarding the sliding method from different edges of a device/screen towards inside of the screen have been described to correspond different types of functionalities, according to one embodiment, said type of gliding actions may be provided from outside of a predefined-portion/content on the screen towards inside said portion/content to provide different types of functionalities preferably related to said portion/content.

More than one location from edge to more than one type of content
According to one embodiment, two gliding actions provided from different predefined portions of an edge of a device/screen/zone towards inside of the device/screen/zone may correspond to two different windows/functions.
Line mechanism
The/a method of capturing a gesture interaction provides from/the the edge of a screen/device towards inside the screen has been described in different patent applications filed by this inventor.

Double tap to remove kb
According to one embodiment of the invention, a predefined interaction, such as a double tapping action on the broadly ambiguous zone, may preferably remove the keyboard from the screen

According to one embodiment, the ambiguous characters assigned to a key/zone may include one or more special characters. The word predictive system of the invention may consider said characters (e.g. too) when it predicts word/s. According to one embodiment, the group of special characters ambiguously assigned to a key/zone may mainly be constituted of one or more special characters of the group of special characters that, in the precise symbol mode of the system, are represented/located/correspond to the location of the ambiguous key in the ambiguous mode. This matter has already been described in detail in different patent applications filed by this inventor.

c shape display
- **Aut. Landscape or vertical**
- **None rigid cover**

Figs 496P to 496S, show another type of wrist mounted (e.g. communication) devices. Fig. 496P shows a wrist-mounted device 496980 in form of a bracelet having a curved/flexible touch sensitive display unit 496989 wherein on which a text 496981 is presented. Preferably, the screen is large enough to circumferentially cover at least a large portion of the user's wrist. The data entry system of the invention may be used/implemented in said device. In this example, the user's arm/hand and the corresponding text 496981 are in horizontal position. Fig. 496Q shows as an example, the user's hand in vertical position. In this case, according to one method, the screen of the device may preferably automatically change the orientation of the contents printed on it. In this example, the text 496981 is shown in landscape mode. Note that, as shown in Fig. 496R, said wrist-mounted device may include attaching/detaching means (e.g. including, Velcro, hinges 496983, clasp

496984, etc.) so as to be attached/detached from the user's hand/arm. The screen of the device may include a cover 496986 (e.g. rigid, flexible) as shown in fig. 496T.

According to one embodiment, the wrist-mounted device may be in form of a strap having a communication/computing device. Said strap may be attached to a (e.g. conventional) watch. Fig. 496S, shows as an example, a wrist-mounted device 496890 having a strap 496995 including a communication device. Said strap may be (e.g. detachably or fixedly) attached to a (e.g. conventional) watch unit 496985.

Gestures from keys for abc and gestures (e.g. including long press/gesture) for 123

According to one embodiment, providing a first type of gliding actions (e.g. gliding actions not including a press and holding action) in different predefined directions on/from a key may correspond to a first type of different corresponding symbols (e.g. mainly letters), and providing a second type of gliding actions (e.g. gliding actions including a press and holding action) in different predefined directions on/from a key may correspond to a second type of different corresponding symbols (e.g. mainly special characters). Preferably, when a key is touched, the touching point may be considered as the center of a virtual copy of the key which may or may not be shown under the user's finger.

In this example, a gliding action provided from the center of a such virtual key towards or traversing a letter/character located on said key may correspond to entering said letter/character. Accordingly, a gliding action including a press-and-holding action provided from the center of a such virtual key towards or traversing a special character located on said key may correspond to entering said special character.

Fig. 497A shows as an example, a virtual keypad of the invention located on a touch screen. Said keypad has four letter keys 497001 to 497004, the broadly ambiguous zone 497007, a space key 497006, and the backspace key 497005. Note that in this example, the character "-" 497021 along with several letters A,B,C,D, and the character " ' " 497022 along with several letters E,F,G,H are respectively ambiguously assigned to the key 497001 and 497002. The arrangement of letters on the keys of the keypad (e.g. clearly/easily) permits a user to enter a desired precise/identified letter by providing a gliding action on/from a key based on principles just described. For example, the provided gliding actions 497011, 497012, 497013, 497014, and 497015, respectively correspond to the letters -, b, i, j, and s. According to one embodiment, the letter assigned to the broadly ambiguous zone may or may not be shown on the screen but may follow the same principles for entering them precisely. Preferably, one of the characters (e.g. "t") assigned to said zone may precisely be entered by providing a press and holding action on said zone. The rest of the characters may be entered according to the principles just described. As an example, as shown in fig. 497B the letters assigned to the broadly ambiguous shown are shown and arranged such that to guide the user about the direction of gliding action to provide regarding a specific letter. As an example, the gliding actions 497111, 497112, and 497113 may respectively correspond to the letters u, x, and z. As mentioned, in this example, entering the letter 't' is assigned to providing a press and holding action anywhere in the broadly ambiguous zone 497007, therefore said letter is printed in the center of the other letters. It is understood that entering the letter "t" may be assigned to a gliding action in a specific direction such as to the rightward on/from said zone. Other methods for entering specific characters such as other types of gliding actions, and/or other (e.g. types of) different directions assigned to different specific characters may be considered by people skilled in the art.

Preferably, the special characters ambiguously assigned to the keys of the keypad in ambiguous mode are mainly from the corresponding group of special characters printed/presented on the screen when the system is in the precise symbols mode. As an example, as shown in Fig. 497C, in the precise symbol mode, preferably, the arithmetic characters (e.g. 497121) and punctuation marks

(e.g. 497122) are printed/located on the screen such that their locations on the screen respectively correspond to the location of the keys 497001 and 497002 of the keypad of Fig. 497A in the ambiguous mode.

Instant editing of a image

A method of editing an image is described hereafter. According to one embodiment of the invention, a portion (e.g. herein may be referred to as image/subject frame) of box (e.g. a background image, application, etc.) (e.g. on a display or touchscreen surface, etc.) may be defined by a user or by a system to display/present/store a content such as an image (e.g. one or more images (e.g. photo, video, text, etc.), a (e.g. online) game, audio content, etc. (e.g. herein may be referred to as discussion subject) on the fly (e.g. dynamically). Said content (e.g. image) may be an image sourced from a gallery of images (e.g. on a device), from a camera (e.g. immediately after taking a photo) (e.g. automatically and/or directly), or other communication or storage device/system. Said image frame may be a predefined zone on said box or it may be dynamically defined by a user or by the system depending on some (e.g. one or more) (e.g. dynamic) parameters. Fig. 498A shows an example of a box 498009 on which an image frame 498008 is defined (e.g. size, location, and orientation in the box). As an example, if a user takes a photo using a camera (e.g. a camera of the corresponding device) said photo may be directly (e.g. without user's intervention) placed into said image frame 498018 as shown in Fig. 498B. A user may provide/type text anywhere on the box and save or share said box (e.g. as an image like a postcard).

Virtual Forums

The current principles may be used in many circumstances. For example, this technology may be used to create a social interaction/discussion (e.g. texting, audio, visual, etc.), preferably including a texting application that herein may be referred to as a (e.g. virtual) forum. As an example, said box may display (e.g. contain) a group of users interacting (e.g. a (e.g. virtual) message board/forum), and said image frame 498018 may be considered as a/the subject of interaction/discussion. Preferably, the display of a device of each of the participants may display the box (e.g. preferably in a similar manner/fashion/rendering). Preferably, a server (e.g. remote computer/platform) may be used to handle the streaming/interactions of the discussion between the participants.

Note that said/the content/subject/image may be changed at any moment by any of the users or another user which may not currently be part of the said interaction/discussion so that a new discussion will be initiated (e.g. in the/a (e.g. different) box).

According to one embodiment, the history of the interaction/discussion may be stored or it may not be stored so that it may not be accessible after the interaction/discussion. As an example, the history of a chat may be stored or it may be deleted when a subject of corresponding to an image frame is changed, or on a predefined (e.g. automatic system) events, for example, such as a period of time after a change to an image frame.

Note that the content (e.g. image) in the image frame may be the subject of discussion or it may contain a text or other information for the purposes of discussion.

According to one method, a different zone (e.g. herein may be referred to as a desk(s)) on the box may be assigned to the comments/discussion of one (e.g. each different) user. As an example, as shown in Fig. 498A, four different zones 498001-498004 are assigned to users (e.g. one of more different users), for example as shown in Fig. 498B each of the users (e.g. 498014, 498011) have commented in a zone allocated to each of said users.

Note that the box may be of any shape.

Note that user interactions may by information of any form including, for example, text, images, audio, etc. As an example the image editing system of the invention for entering text as described in detail throughout this application may be used for such purpose. In this case, the background of the box or the background of a zone corresponding to a user, may, by itself be an image.

Note that history of an image frame and/or a corresponding user may be browsed or scrolled while interacting with the image frame, such as for example providing gestures (e.g. back and forth). In this case the corresponding discussion/interaction may appear on the box/zones in the corresponding locations.

Note that the history of discussion of each user may also be browsed, for example, by scrolling on the corresponding zone (e.g. or other zone) of a user.

Note, a zone corresponding to a user may be considered as an image frame of another interaction/discussion.

It must be noted that other types of presentations and methods of discussion may be considered; for example, a (e.g. single) zone may include all of the discussions relating to said image in said frame.

Note that the frame and/or zones may have any shape, location, orientation, size, and other (e.g. graphical) attributes. For example, the size of the frame may be controlled (e.g. before, during, or after any discussion/interaction).

Note that the frame and the desks may be shown on the devices of each of the participants. Preferably, a participant may select the desk of a number of participants (e.g. to be displayed on the screen of his/her device) among all of the participants.

As mentioned, a virtual discussion may, preferably, be opened by providing a content in the frame. A group of one or more participants may participate in discussion. Different methods of creation of a such group may be considered: such as:

- The initiator of the discussion (e.g. the provider of content in the frame) may invite a predefined group of people/friends.
- The initiator of the discussion (e.g. the provider of content in the frame) may provide a public invitation for any random participant.

The initiator of the discussion (e.g. the provider of content in the frame) an invitation to a number of people to participate.

A/the (e.g. remote) server (e.g. used by the forum application) may be used to send notifications to the appropriate participants or to the general public.

Note that a remote server or online platform may be used in transmitting information related to any activity/functionality of/during the forum (e.g. among the participants). For example, a remote server communicates information from a first user/participant (e.g. user's desk) to at least a second user/participant). As another example, the server may be used by the forum administrator for activities such as sending invitations to users.

Each user may interact with a forum through one or more devices, that preferably includes a box (e.g. with which a user may interact).

subject

- may have sub-subjects

A subject may have sub-subjects. For example, the subject may be a football game and a sub-subject may be a replay of a portion of a game. Note that a sub-subject of a subject may or may not be related to the main subject.

group/personal/sub-group chat
dynamic/predefined selection of one or more attendees to chat
predefined group
dynamic group
- authorization
- no autho
Name of the participant on the desk
preferred positions
- payable
- size
Watch/type
payable desks
- prefered location

According to one method, the participants of the forum may be a group of one or more people/entities, each being represented by one or more desks (e.g. one or more (e.g. text) box/s). The participants may be invited to the forum (e.g. they may get a password for participation)or the forum may be open to any (e.g. random) participant. According to one embodiment, a participant may enter a content (e.g. text, picture, video, game, etc.) in his corresponding desk to be accessed (e.g. viewed) by one, more than one, or all participants (e.g. according to the users preference settings). According to one method said content may be available for viewing by all of the participants. According to another method, said content may be available for being viewed by a number of one or more selected participant/s. For example, a participant entering a content (e.g. in his desk) may select one or more other participants by for example, providing an interaction (e.g. such as single-tapping) on/in their corresponding desk/s, enabling them to view his/her content entered/being entered/to be entered. Said selection may be a predefined selection or it may be a selection dynamically provided during a forum (e.g. for a period of time/text entry during the forum).

Different types of participants may be considered. For example, a first type of participant may have the right to watch/view the forum but not have a desk to participate in discussion/chatting (e.g. type/write), while a second type of participant may have a desk for discussion/chatting. According to one method, having a desk may require a satisfication of some criteria (herein may be referred to as a fee), for example, such the payment of a fee. Preferred locations regarding the desk may also require a (e.g. higher) fee. Because the screen of a mobile device has a limited size, more than one layer of boxes may be considered for more desk assignments. For example, a first layer may include a first plurality of desks and a second layer may include a second plurality of desks. A second box layer may preferably include the subject frame although according to one method, it may exclude the subject frame. The size of desks may vary, for example, based on a fee. The number of desks may vary, for example, based on a fee.

A desk may include the name or a username or some other identifying information for identification of the corresponding participant.

History
The content (e.g. text) inputted or outputted in desks/image frame(s) may disappear after a predefined of time given some predefined event. The history of a forum may be stored or it may not be stored.

Location of a desk
- by sliding
- from a list to a desk
According to one embodiment, the desk locations (e.g. in a box) may be defined by a user (e.g. such as any entity, for example an administrator or participant in a discussion) in the box (e.g. depending on the features and configuration of a forum).
Optionally, the assignment of a desk to a participant may be defined by himself/herself or by another entity such as a computer, administrator of the forum or the forum host.
According to one method, one or more of the desks may be relocated in a box. According to one embodiment, one or more desks may not be permitted to be relocated.

A participant (assigned to a desk) may be a person and/or a group of persons. (e.g. A participant may be assigned to more than on desk.)
As mentioned, a desk is preferably a content such as a text box, but may also be used to display or play other type of content such as an image, a video, audio, game, document, etc.

Desks may not have a same location on different users screens
Relocation
- **Drag on desk**
- **waiting list**

According to one method, the location and/or assignment of one or more desks on the/a box of different devices may not be identical. A user may be permitted to relocate a desk or change the assignment of it to a (e.g. another) participant. According to one method, a user may use a list of entities/information such as a list of contacts (e.g. email address, facebook identifier, twitter identifier, name, telephone number, etc.) in a device and may assign a desk(s) to a user/participant (e.g. by dragging a corresponding entry of the list to a desired desk). A user may also relocate a desk in the box by for example dragging it to a desired location. For example, a contact information (e.g. displayed on a screen of a device) may be dragged in order to assign a desk to a user or to relocate a desk in a box.

Preferably, a desk may be designed to have a predefined specification (e.g. including settings, features, format). Preferably, the specification of a desk may dynamically change for example by a person or automatically by a computer/system.

dynamic users
- **participant attends or leaves**
- replaced by someone else

If all of the desks of a forum are occupied/assigned, a/the system may create a waiting list for additional users desiring to participate in a/the forum (e.g. in case of cancellation or creations of additional desks, or in case a participant leaves the forum, etc.)

A participant can manipulate the subject
- replay
subject can be static or dynamic for one to all of participants
During a forum, one or more subjects (e.g. of the image/subject frame) may be discussed. A new subject may be provided by a participant dynamically during a forum. Preferably, for such action, an authorization may be required provided by an entity such as the administrator/admin of the forum (e.g. administrator (e.g. administrator in this application refers to an owner, creator, beneficiary, initiator, etc., of a forum).

questions
to all
to some
- pay for a question in a preferred location,
- on the subject
- on near the subject
- highlighted/blinking/red

According to one method, preferably, upon authorization, a user may use a predefined location in the box, such as one near the subject frame, to display a (e.g. their) desired content (e.g. such as to ask a question, display an image, video, etc.) so that other (e.g. all, some, a, etc.) participants can view desired content.

Can use any keyboard to chat
- comment can be done in the commentor desks or other users desks

It must be noted that any type of keyboard such as for example preferably the keyboard of the invention permitting to view at least a significant portion of the screen may be used for discussion/texting during the/a forum.
Note that the displayed content in the frame subject may be modified during a forum.

Scientific, entertainment
- forums
- (e.g. an on-line) game
- music
- movie

Any type of forum may be considered to be used by the system/app. For example, the subject of a forum may be a scientific matter (e.g. medical), a game, a video/movie (e.g. live chat, see a video/subject then chat), a photo, a text, shopping, auction, etc. As mentioned a user may relocate the desk of the/his preferered participants to a location that he desires. For example, during a medical forum wherein participants are doctors, a user may relocate the desks of the doctors he wants to see their interactions (e.g. texting) to the first/main layer or close to the subject frame, or any other preferred location.

example: a football game streaming
- replay of a portion
Auctions

As an example, a forum may be created regarding a (e.g. live) football game. The admin may invite some people and the participants may watch the game while having a live chat (e.g. texting). A replay of a portion of the game may be provided (e.g. by the admin, by any of the participants, etc.). Preferably, a participant may have access to the content of the forum to view it at any moment preferably in the subject frame on his/her device, preferably while other participants continue viewing the (e.g. original) content provided by the admin.

A forum may also be used for auctions where participants type their offers for an article, for example, presented in the subject frame, and wherein people can see (e.g. best) offers in the desks of the corresponding participants in real time.

Monetization
Free until 5 participants
pay to create a larger forum
pay to attend
advertisement

- between 2 sessions
- during a session
buy a participant's desk
- commission

Many methods of monetization may be considered for/through the virtual forum application/system such as:

- a forum with up to a predefined number of participants may be free and beyond that number the forum will be permitted upon a fee (e.g. for a new user beyond the predefined number or for all the users).
- Attendees/participants of a forum may attend the forum upon a fee (e.g. or authorized membership).
- Advertisements during a session/forum may be displayed on the screens (e.g. or box/desk) of the participants, preferably in the image/subject frame. The advertisement may be the same for all participants or they may be different for each participant for example based on their tastes, location, or online behavior, etc.
- Preferred desks may be assigned to a participant(s) based on a fee.
- A person may purchase a desk of another participant upon a fee and the administrator/owner may take a commission or a fee for that transaction.
- A forum administrator/owner may take a commission or a fee for a/any financial transaction/exchange relating/during a forum.
- - An entire (e.g. and it's history) may be transferred to another owner/administrator for a fee.
- A participant may enter a content (e.g. text, video, picture, audio) in the image/subject frame for a fee.

Banning a user/participant
More than one subject frames
More than on administrator (e.g. an entity)
The Box can be zoomed/desk in/out
The Box can be partially displayed (e.g. also by predefined filters)
A Desk or group of desks can be highlighted
A box may not include a image/subject frame
Text wrapped or one-line is shown
May be scrolled
Some of desks may not be allowed to relocate
Text extended if there is room
enlarge desk/box/frame

According to one method, a desk, a portion of discussion such as a comment, and/or a participant may be banned (e.g. restricted/excluded in any predefined way) for any reason such as bad behavior, from the box/forum.

Note that a box may include one or more subject frames at any moment.
Note that more than one entity such as an administrator may control or be assigned to manage a forum/box.
Note that a box or a portion of it (e.g. a desk) can be zoomed into or zoomed out of its display. For example, by providing a predefined interaction such as a double tapping action on a desk, the desk may be enlarged (e.g. to full screen) so that its content will be better viewed. Also for example, by providing a predefined interaction such as a double tapping action on a/the subject frame, the said frame and its subject/content (e.g. a video, a photo, a text, etc.) may be enlarged (e.g. to full screen) so that its content will be better viewed.

Note that a box display may be filtered, for example, to highlight areas of the box, or to display portions/layers of the box, etc.

Note that one or more desks may be highlighted, publically (e.g. on all participating boxes/devices) and/or locally (e.g. on a user's device/box). For example, when a participant selects a group of one or more other participants the corresponding desks may be highlighted, for example in a highlighted color.
Note that at least for a lapse of time during a forum an image/subject frame may not be displayed.
Note that text of a desk/box may be limited by being wrapped in a desk or may be limited to one line in a desk, or a predefined number of characters when displayed. Upon authorization, said limitation may be removed. A scrolling method may be used to view the history of the content of the desk (e.g. independently or in synchrony with at least some of the other desks). According to one method, the desk may be (e.g. dynamically) enlarged to view more lines of a desk.
Note that some desks may not be enabled to be relocatable/moveable in a box.

According to one method, any user (e.g. other than participants) may be able to provide/submit a content (e.g. a question) to the forum that may preferably be displayed on a location in a box (e.g. a subject/image frame, a predefined desk, etc.) for example upon authorization (e.g. if required) of for a fee.

forum w/o admin
According to one method, a forum may not have an admin.
According to one method the forum application/platform may be used for a group chat (e.g. including texting) that may be communicated peer-to-peer and/or amongst peers (e.g. without the involvement of an administrator).
all forum is transferred to all devices
- auto by server
- by user after access to all info on server
According to one embodiment, an (e.g. relevant) information provided by a (e.g. any) party regarding/during a forum may be transmitted to a server and from there to corresponding/relevant devices/users. According to one embodiment an information may be transmitted to devices/user automatically by a/the server or upon a user's request.
- some desks mandatory other by user's choice
- user selects the desks/participants from anywhere
- friends
- a list from server (invited confirmed guest)
According to one embodiment, at least one of the desks of a forum is mandatory. This means that all of the boxes used by participants of a forum preferably include said at least one desk. According to one method, a user can add one or more desks of participants of his choice into the box. The list of said participants may be provided from different sources such as by the admin of the forum, contacts list of the user's phone device, facebook friends, etc.

In online chatting two users chatting together may have different group chatting with
Note that accordingly, two users participating in a forum may have different participants' desks in their box/es.
Game
- the longest word
- by order
- the fastest
- a predefined lapf of time
- exits if provides a non-dictionary word

A gaming application for providing the longest word by participants, for example, using the forum applications/platform is described hereafter. As an example, a group of participants may use a keyboard (e.g. of the invention) wherein at least one of the keys ambiguously corresponds to a

plurality of characters. Said application may use a word predictive system based on receiving ambiguous input signals provided by interacting with ambiguous keys. As an example, a user may press a desired ambiguous key for a desired word/stem. (e.g. said information may correspond to the length of the desired word, or the length of the corresponding beginning portion of a longer word that other participants may not be aware of). The content (e.g. the single word wherein its length corresponds to the input information provided until then) is presented on an image/subject frame or some other location on the participant's devices/screens. The length of the presented word (e.g. must) correspond to the input information (e.g. key interactions) provided until then. After viewing the output and by considering the output, the next participant (e.g. preferably in a predefined row of participants) may attempt to enter a next letter for a word/stem (e.g. as just described above) corresponding to input information provided until then (e.g. including the participant's current attempted input), and so on by the next participants (e.g. preferably in the row). Note that a word may be a stem of a longer word.

According to one aspect of the invention, after interacting with a key/zone of the keyboard, if there is no corresponding word in the database of words used by the system/application, the participant is eliminated. (e.g. by eliminating participants as such) the last participant providing the last word is the winner of the game (e.g. or that session of the game).

According to one method, the history the words proposed in the game by be reviewed (preferably at any moment) during/after the game. Note that preferably, a predefined lapse of time is assigned to a participant for enter the input information (e.g. corresponding to a next character) wherein upon expiration of said time lapse, when not receiving said input information, the participant may be penalized (e.g. eliminate from the game) in some manner.

No mouse functions during entry of a word

- **from settings**

According to one embodiment during the entry of a word, the size of the keys/zone(s) of the keyboard and/or the invisible zone around the keypad may be enlarged so as to reduce or eliminate mistyping. Preferably, the enlarged portions may be invisible so as not to obscure the visibility of the content printed/presented on the screen. Preferably this option may be activated or deactivated from a menu such as a/the settings of the input method.

Wordlist

According to one embodiment of the invention, a word list may include up to a predefined number of words, for example up to five words, wherein each of said words in presented or related to a different color corresponding to the colors of the keys/zones of the keypad. As such, providing an interaction (e.g. such as a gliding action) with a key/zone with a predefined color may correspond to entering or selecting the word in the word list with the corresponding color. Preferably, the gestures may be provided from the edge of the screen (e.g. corresponding to a corresponding key) towards inside the screen. According to one method, the edges of the screen may include different bars in different colors each corresponding to the color related to one of the words of the wordlist so that the sliding action being provided from a corresponding bar. Note, that different characteristics of a bar other than color may be considered.

Viewing/playing the history or a portion of the history of a forum/box

A player to play a portion/all of the forum/box

As mentioned before, the history of a box/forum/frame/desk may be accessible. According to one embodiment of the invention, the history can be replayed (e.g. played back). For such purpose, according to one method, a play mechanism (e.g. a software application) may be used. Said play mechanism may include features such as play forward, play backward, stop, start, repeat, etc. A

user my view an instant of a history synchronized between at least some, preferably all, of the objects (e.g. desk, image/content/subject frame, etc.) in a box. At least some of said objects may be interactable. **an instance, a portion, or all of the forum/box is sychronizely viewed/shown/played upon:**

- **selection of a content such as of a desk or of the frame subject, etc. results in viewing at least some portions of the box in synchronized**
- **searching a content of a forum such as keyword/a frame/ a picture**
  - **when a search result is selected, that instance of the box +/- a predef. laps of time is played**

According to a preferred method, an instance such as a portion of the forum/box may be synchronously viewed (e.g. replayed) upon selection of a content such as a desk, portion of the content of a desk, or an image/subject/content frame, etc. Preferably, selection a content may result in playing at least a portion of the history of the forum/box/object that may include a time period before and/or a time period after the corresponding instance related to the selected content.
Note that, any portion of a forum/box may be searched according some search parameters, such as a keyword, a scrolling means, playing means, color, time/date, user, subject, etc. If the results correspond to an identified content, then the system may (e.g. automatically) view the corresponding instance as described. If there is more than one results, then the user may select (e.g. identify) one of the results and view the corresponding instance as described.

simplified private and public communication/messaging

- **In each desk others can see only (unless otherwise decided) what a person provides/enters but not what he/she receives**
  - **If a user does not select other desks for private texting/content sharing, the content goes in his desk and others can access/view**
    - **An invitation may be send to others**
  - **If a user does select other desks for private texting/content sharing, the content goes to selected desks and others can not access/view it**
  - **Sending to public excluding some participants**

A method of simplified private and/or public communication/message is described hereafter. Said method may preferably be used by the forum application described herein. According to one embodiment, upon providing and/or selecting a content, such as recording/selecting a video, taking a photo, recording audio, generating a text, etc.

Public Content

According to one method, said selected content may be considered (e.g. by a user/provider) as public content which means that preferably said content may be automatically/manually located in the provider's desk and or image/subject/content frame (e.g. if user is so authorized), and may (e.g. preferably automatically) be viewed, respectively, in a desk corresponding to the provider in other user/s' box(es) or an image/subject/content frame. Preferably, upon such procedure, other users/participants may be informed (e.g. alerted) of the selected content so as to access said content.

Private Content

According to one method, said select content may be considered (e.g. by a user/provider) as private content which means that preferably said content may not be located in the provider's desk and or image/subject/content frame, and may (e.g. preferably automatically/manually) be transmitted to a selected number of participant's but may only be visible and/or accessible by the said selected number of participants with in their corresponding desks. Note that according

to this method, the public content of a desk is the information provided by the owner of a desk, and preferably does not include the information/content received from others (e.g. transmitted/send to said (e.g. selected participant's) desk). Preferably, upon such procedure, said selected number of users/participants may be informed (e.g. alerted) of the selected content so as to access said content.

Note that the/a public method (e.g. as described in this embodiment), a user may exclude another user from viewing content in the user's desk. Such exclusion may be applied to a number of particular contents in the desk or it may be applied to all content in the desk (e.g. at any time).

alert after taking a picture/video/audio recording or other info

- **as the subject (e.g. picture is placed in the subject frame)**
- **as a content of a desk**

According to one embodiment, upon providing and/or selecting a content, such as recording/selecting a video, taking a photo, recording audio, generating a text, etc. said content may automatically be located in a desk or an image/subject/content frame (e.g. if user is so authorized) of a user's box. Upon such procedure, other users/participants may be informed (e.g. alerted) of the selected content so as to access said content. Note that, a server may be used to provide automatically or upon a participant's request (e.g. according to a participant's settings), the content to the participants device(s), so that it may be viewed in the corresponding forum/box. According one method, said content may be automatically transmitted to a selected number of participants as a private content, in such a way that it may not be viewed in the providers box.

New message:

- highlighted

- to a dynamic desk in the main layer

- if a preferred participant by a user/owner of a device

According to one embodiment, if a participant provides a new content/message, the corresponding desk/message may be highlighted. Optionally, the corresponding desk/message may be shown in the first/main layer of the forum/box.

a content provided by a provider/participant:

- **is either transmitted to other (desired) participant/s' desk/s; or**
- **in the provider/source desk and accessed by others on demand**
  - **provider sends an alert/invitation**

According to a first method, a content provided by a participant may be transmitted to other participants' desks. According to a second method, said content may be transferred to the desk of the provider of the content and be accessed/seen by other uses. An alert may be send to the other users to access the content.

gaming

- **black jack**
  - **participants can play with the admin**
  - **part. can chat between them**

The subject of a forum may be a game (e.g. blackjack) where participants can play against the admin or against each other.

selection of group/participants based on the subject

Note that according to one embodiment, a group of participants may be dynamically defined by a user (e.g. forum provider/admin) for example based on the subject of the forum.

Spell-help

- **long-press/gesture for the end chars**
- **mimumun predefined first and last letters**
- **does not consider more than 5 then rest**
- **system later autocorrects**
- **show by length or by freq**
- **12345* => all after star**
- **From 1 char longer**
- **W * gesture + bs * insert before gesture position**
  - **Counts for the end from insert point**
  - **Deletes gesture**
- **Gesture towards down from left keys**
- **Gesture only**
  - **all wds from that point**
  - **preferably longer than input inform.**
  - **Several gests**

- **applies to any kb such as qwerty**

A method of spelling help may be used with the system so that to help a user to type a word such as a long word or a word for which the spelling is not known, etc. According to one embodiment of the invention, the user may provide one or more beginning characters of a word (e.g. herein may be referred to as a beginning portion of a word) and/or one or more of the end characters of a word (e.g. herein may be referred to as an end portion of a word). By considering the input information corresponding to a word as such, the system may predict one or more corresponding words from a database of words. Different scenarios may be considered, for example:

(a) Preferably, before providing the input information corresponding to an end portion of a word, the user may provide a predefined interaction (e.g. a long-pressing action, a gliding action, downwards from the Backspace key of a keypad, etc.). Note that, in this scenario, according to one method, the user may not provide input information corresponding to the beginning portion of a word;

(b) A predefined number of characters corresponding to a beginning portion of a word and/or a predefined number of characters corresponding to an end portion of a word may be provided by a user, without the user providing a predefined interaction;

(c) The user provides input information corresponding to a beginning and ending portions of a word without providing an interaction between said portions. In this case, the system dynamically differentiates one of more combinations of beginning and end portions of corresponding words from the input information provided by the user.

Preferably, the length of a word(s) proposed by the system, based on the input of information, may include at least one character in addition to the number of characters corresponding to the input information.

Note, that, the order of presentation of the words proposed by the system may be based on several parameters, for example, such as the length of the proposed words, the frequency of use of the proposed words, etc.

According to one embodiment, several portions of a word may be provided based on the principles as described above (e.g. providing input information for a middle portion of a word and for an end portion of a word).

Note that, the principles described may be applied or used with any type of keyboard/keypad such as the keypad of the invention, a full keyboard (e.g. such as a qwerty keyboard) wherein a tapping

action on a key may correspond to a single character and/or may dynamically correspond to several characters, etc.

With continuous description of the current embodiment, during the entry of a portion (e.g. an end portion) of a word, upon the user providing a number of backspacing actions such that said number of backspace actions is one more than the number of characters of said end portion being entered, the system cancels (e.g. ignores) said predefined interaction relating to entering a corresponding portion (e.g. end portion).

Slide for longer, tap to enter w

According to one embodiment, in the word list, tapping on a word/stem may enter said word/stem and preferably may result in adding a space character at the entd of the entered word. Accordingly, providing a gliding action (e.g. rightwards) on/from a word of the word list may select said word, and the system may propose more longer word(s)/stem(s) beginning by the selected word/stem.

Search and URL in LetSnap

According to one embodiment of the invention, in the photo editing application, typing a word/text on a picture may be related to activating a function. For example, the text entered may be related to a keyword for a search function or to a url address for browsing.

Note that the methods and principles described for moving the keypad on the screen as described in this applications may be applied to any type of keyboard such as an ambiguous keypad/keyboard and/or a précised keypad/keyboard (e.g. such as those shown and described throughout this applications)