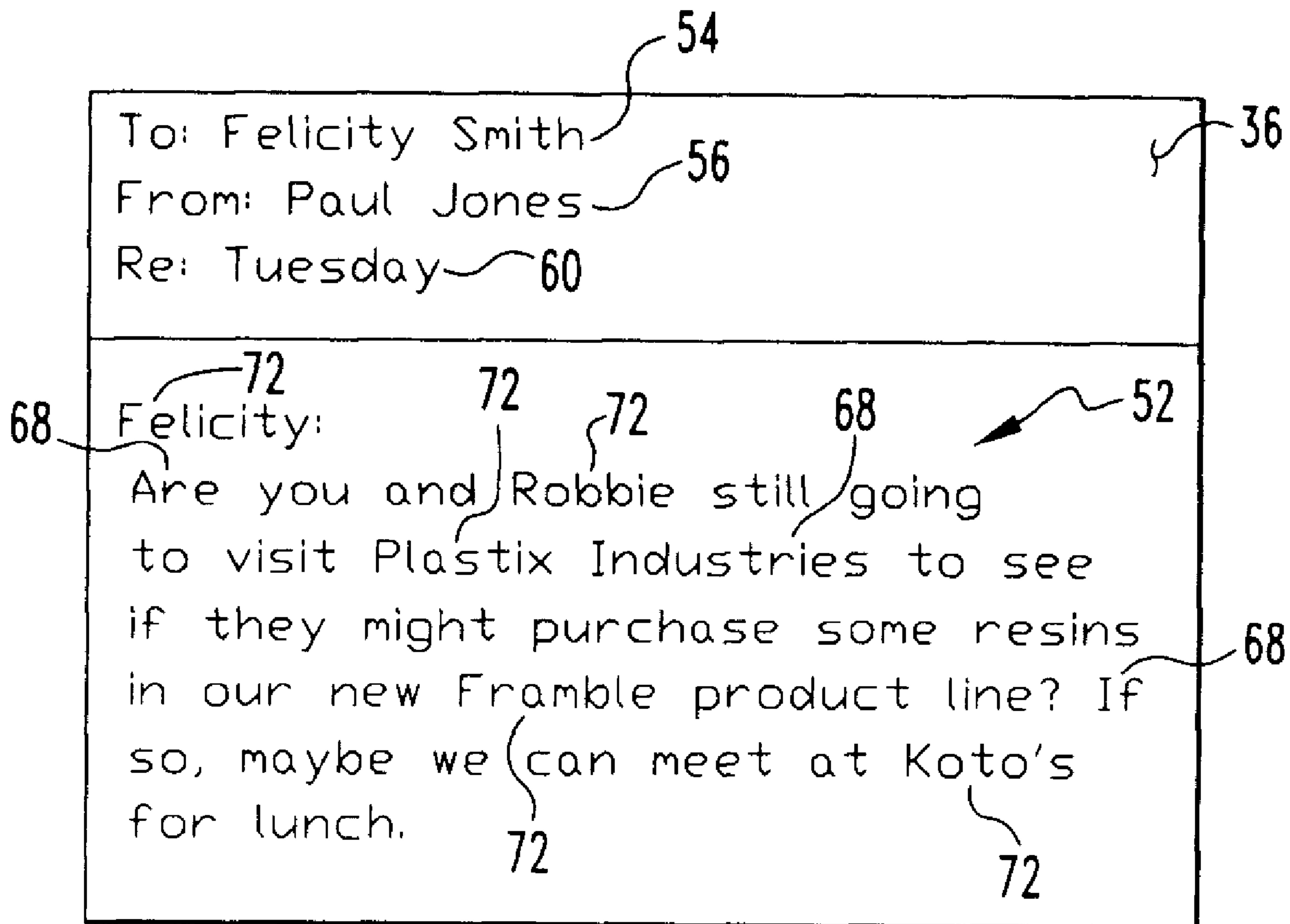




(86) Date de dépôt PCT/PCT Filing Date: 2006/04/25  
 (87) Date publication PCT/PCT Publication Date: 2006/11/02  
 (45) Date de délivrance/Issue Date: 2011/06/07  
 (85) Entrée phase nationale/National Entry: 2007/10/25  
 (86) N° demande PCT/PCT Application No.: CA 2006/000664  
 (87) N° publication PCT/PCT Publication No.: 2006/113995  
 (30) Priorité/Priority: 2005/04/28 (EP05252667.0)

(51) Cl.Int./Int.Cl. *G06F 17/27* (2006.01),  
*G06F 15/02* (2006.01), *G06F 3/01* (2006.01)  
 (72) Inventeur/Inventor:  
 VANDER VEEN, RAYMOND, CA  
 (73) Propriétaire/Owner:  
 RESEARCH IN MOTION LIMITED, CA  
 (74) Agent: BORDEN LADNER GERVAIS LLP

(54) Titre : DISPOSITIF ELECTRONIQUE PORTATIF A CLAVIER REDUIT ET PROCEDE CONNEXE AMELIORANT LA  
 RESOLUTION D'AMBIGUITE SANS DEGRADATION DE PERFORMANCE  
 (54) Title: HANDHELD ELECTRONIC DEVICE WITH REDUCED KEYBOARD AND ASSOCIATED METHOD OF  
 PROVIDING IMPROVED DISAMBIGUATION WITH REDUCED DEGRADATION OF DEVICE PERFORMANCE



(57) Abrégé/Abstract:

An improved handheld electronic device having a reduced keyboard that provides facilitated language entry by making available to a user certain words that a user may reasonably be expected to enter. Incoming data, such as the text of a message, can be

**(57) Abrégé(suite)/Abstract(continued):**

scanned for proper nouns. Such proper nouns might not already be stored in memory and might be expected to be entered by the user when forwarding or responding to the message. A proper noun can be identified on the basis that it begins with an upper case letter. The proper nouns can be stored in the memory that may be a temporary dictionary.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
2 November 2006 (02.11.2006)

PCT

(10) International Publication Number  
**WO 2006/113995 A1**

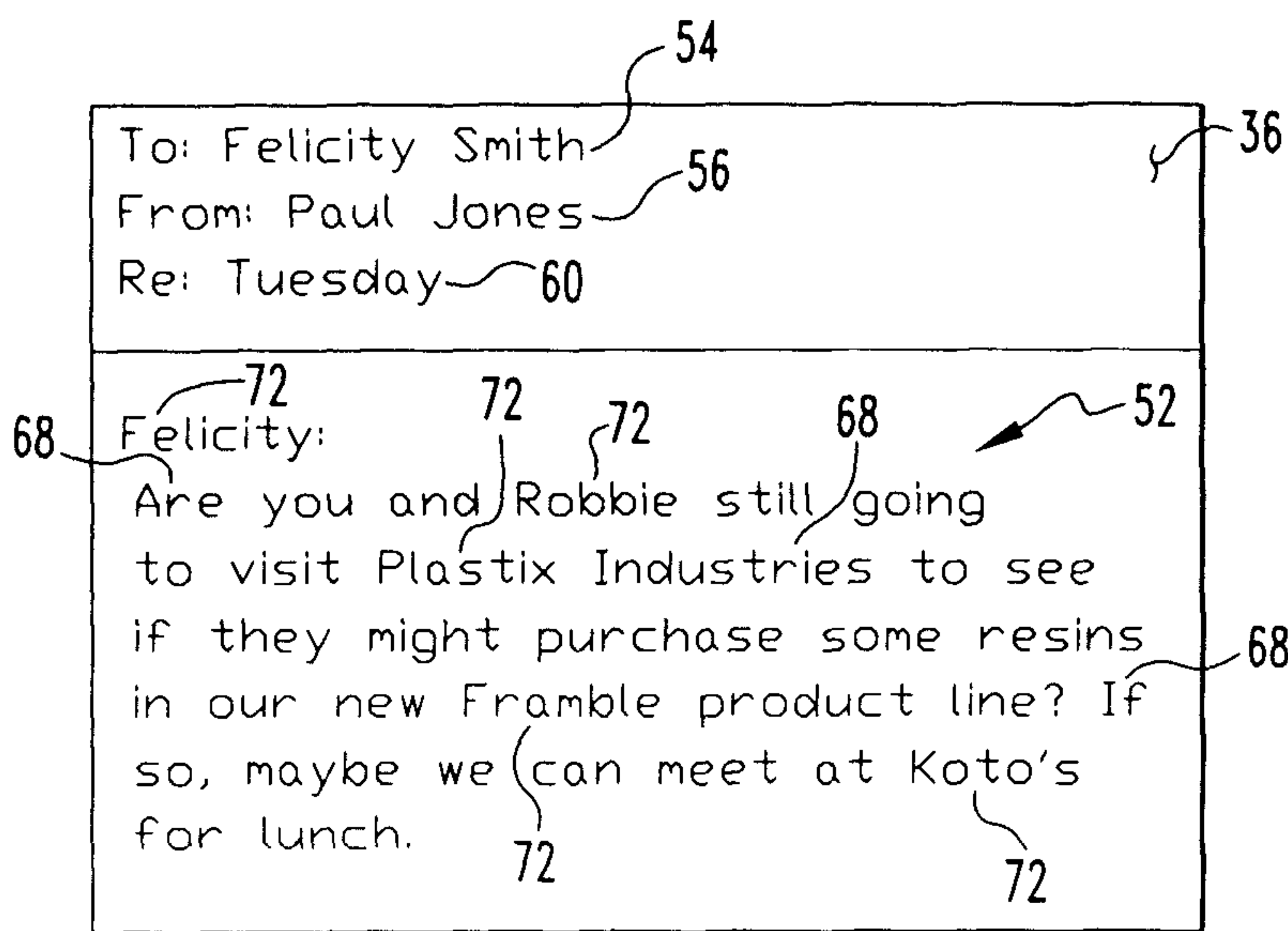
- (51) International Patent Classification:  
G06F 17/27 (2006.01) G06F 3/01 (2006.01)  
G06F 15/02 (2006.01)
- (21) International Application Number:  
PCT/CA2006/000664
- (22) International Filing Date: 25 April 2006 (25.04.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
05252667.0 28 April 2005 (28.04.2005) EP
- (71) Applicant (for all designated States except US): **RE-SEARCH IN MOTION LIMITED [CA/CA]**; 295 Phillip Street, Waterloo, Ontario N2L 3W8 (CA).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **VANDER VEEN, Raymond [CA/CA]**; 800 Columbia Forest Court, Waterloo, Ontario N2V 2M6 (CA).
- (74) Agents: **KINSMAN, L. Anne et al.; BORDEN LADNER GERVAIS LLP**, World Exchange Plaza, 100 Queen Street, Suite 1100, Ottawa, Ontario K1P 1J9 (CA).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:**
- with international search report
  - with amended claims

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

(54) Title: HANDHELD ELECTRONIC DEVICE WITH REDUCED KEYBOARD AND ASSOCIATED METHOD OF PROVIDING IMPROVED DISAMBIGUATION WITH REDUCED DEGRADATION OF DEVICE PERFORMANCE



(57) Abstract: An improved handheld electronic device having a reduced keyboard that provides facilitated language entry by making available to a user certain words that a user may reasonably be expected to enter. Incoming data, such as the text of a message, can be scanned for proper nouns. Such proper nouns might not already be stored in memory and might be expected to be entered by the user when forwarding or responding to the message. A proper noun can be identified on the basis that it begins with an upper case letter. The proper nouns can be stored in the memory that may be a temporary dictionary.

WO 2006/113995 A1

**HANDHELD ELECTRONIC DEVICE WITH REDUCED KEYBOARD AND  
ASSOCIATED METHOD OF PROVIDING IMPROVED DISAMBIGUATION  
WITH REDUCED DEGRADATION OF DEVICE PERFORMANCE**

5

**BACKGROUND**

**Field**

The invention relates generally to handheld electronic devices and, more particularly, to a handheld electronic device that has a reduced keyboard and that facilitates the entry of text in communications.

10

**Description of the Related Art**

Numerous types of handheld electronic devices are known. Examples of such handheld electronic devices include, for instance, personal data assistants (PDAs), handheld computers, two-way pagers, cellular telephones, and the like. Many handheld electronic devices also feature a wireless or other communication capability, although other handheld electronic devices are stand-alone devices that are functional without communication with other devices. Such handheld electronic devices are generally intended to be portable, and thus are of a relatively compact configuration in which keys and other structures often perform multiple functions under certain circumstances or may otherwise have multiple aspects or features assigned thereto. With advances in technology, handheld electronic devices are built to have progressively smaller form factors yet have progressively greater numbers of applications and features resident thereon. As a practical matter, the keys of a keypad can only be reduced to a certain small size before the keys become relatively unusable.

25

In language entry applications, such as in a messaging or e-mail application, a keypad must be capable of generating substantially all of the elements desirable or necessary to form the relevant language. For example, in a language that employs Latin letters, a keypad must be capable of generating substantially all twenty-six of the Latin letters. In order to provide such functionality with relatively few keys, some keypads have included multiple linguistic elements per key, such as providing a plurality of Latin letters on each of at least some of the keys when the keypad is used to generate a language that employs Latin letters.

30

In order to make use of the multiple linguistic elements on any given key, numerous keystroke interpretation systems have been provided. For instance, a “multi-tap system” allows a user to substantially unambiguously specify a particular linguistic element, for example, on a key by pressing the same key a number of times equal to the  
5 position of the desired linguistic element on the key. Another keystroke interpretation system includes key chording in which keys are pressed in various combinations to achieve particular results. Still another keystroke interpretation system might include a disambiguation routine which seeks to interpret the keystrokes in view of stored dictionary data, linguistic rules, stored algorithms, and/or the like.

10 While such disambiguation systems have been generally effective for their intended purposes, such disambiguation systems are not without limitation. In certain applications, the function of a disambiguation routine can be cumbersome if a user must expend substantial effort in entering language. One such situation in which this may occur is in the context of a word that may not already be in the stored dictionary. Another  
15 exemplary situation in which this may occur is when a word is already stored in the dictionary but is considered to have a relatively low frequency, and this may require significant input effort by the user to achieve the desired word. Also, a desired word may not already be stored in the dictionary of the device. It thus would be desirable to provide a handheld electronic device having a reduced keyboard wherein the device might make  
20 available to a user words and the like that the user might reasonably be expected to enter, with such availability being provided substantially without introducing a significant processing burden on the device. Such words and the like might, for example, be somewhat unconventional.

25

### SUMMARY

In view of the foregoing, an improved handheld electronic device having a reduced keyboard provides facilitated language entry by making available to a user certain words that a user may reasonably be expected to enter. Incoming data, such as the text of a message, can be scanned for proper nouns, for instance, since such proper nouns might not  
30 already be stored in memory and might be expected to be entered by the user when, for example, forwarding or responding to the message. A proper noun can be identified, for instance, on the basis that it begins with an upper case letter. The proper nouns can be

stored, for example, in memory that may, by way of further example, be a temporary dictionary.

Accordingly, an aspect of the invention is to provide an improved handheld electronic device that has a reduced keyboard and that provides facilitated entry of language.

Another aspect of the invention is to provide an improved handheld electronic device having a reduced keyboard that can store certain data in one or more temporary or other dictionaries for retrieval in certain contexts.

Another aspect of the invention is to provide an improved handheld electronic device that has a reduced keyboard, that identifies proper nouns in incoming data, and that stores the proper nouns in memory for later identification.

Another aspect of the invention is to provide an improved handheld electronic device that has a reduced keyboard and that facilitates the entry of language without introducing a significant degradation in performance to provide such feature.

Another aspect of the invention is to provide an improved method of enabling disambiguation of an entry on a handheld electronic device having a reduced keyboard.

These and other aspects of the invention are provided by an improved method of enabling disambiguation of an input into a handheld electronic device. The handheld electronic device is of a type that includes an input apparatus, an output apparatus, and a memory having a plurality of objects stored therein. The plurality of objects include a plurality of language objects. The input apparatus includes a plurality of input members, with each of at least a portion of the input members having a plurality of linguistic elements assigned thereto. The general nature of the method can be stated as including receiving on the handheld electronic device a quantity of data including a number of language objects, identifying from among the number of language objects a number of proper language objects, and storing in the memory at least some of the proper language objects. The method further includes detecting an ambiguous input including a number of input member actuations, with each of at least a portion of the input members including a number of linguistic elements assigned thereto, and with at least one of the input members having a plurality of linguistic elements assigned thereto. The method further includes identifying in the memory a proper language object that corresponds with the ambiguous input and outputting at least a portion of the proper language object as a proposed disambiguation of the ambiguous input.

Other aspects of the invention are provided by an improved handheld electronic device, the general nature of which can be stated as including a processor apparatus, an input apparatus, and an output apparatus. The processor apparatus includes a memory having a plurality of objects stored therein, with the plurality of objects including a plurality of language objects. The input apparatus includes a plurality of input members, with each of at least a portion of the input members having a plurality of linguistic elements assigned thereto. The handheld electronic device is adapted to receive thereon a quantity of data including a number of language objects. The processor apparatus is adapted to identify from among the number of language objects a number of proper language objects. The processor apparatus is adapted to store in the memory at least some of the proper language objects. The processor apparatus is adapted to detect an ambiguous input including a number of input member actuations, with each of at least a portion of the input members including a number of linguistic elements assigned thereto, and with at least one of the input members having a plurality of linguistic elements assigned thereto. The processor apparatus is adapted to identify in the memory a proper language object that corresponds with the ambiguous input. The output apparatus is adapted to output at least a portion of the proper language object as a proposed disambiguation of the ambiguous input.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front elevational view of an improved handheld electronic device;  
 Fig. 2 is a schematic view of the handheld electronic device of Fig. 1;  
 Fig. 3 is a schematic view of a portion of a processor apparatus of the handheld electronic device of Fig. 2;  
 Fig. 4 is a first exemplary message on the handheld electronic device of Fig. 1; and  
 Fig. 5 is another exemplary message on the handheld electronic device.  
 Similar numerals refer to similar parts throughout the specification.

## DESCRIPTION

An exemplary improved handheld electronic device 4 in accordance with the invention is indicated generally in Figs. 1 and 2. The handheld electronic device 4 includes a case 8, an input apparatus 12, an output apparatus 16, and a processor apparatus 20. The present exemplary embodiment of the handheld electronic device 4 includes

applications and/or routines resident thereon such as, for example and without limitation, a disambiguation routine and an e-mail client, although other and/or additional applications and/or routines can be provided.

The input apparatus includes a keypad 24 that includes a plurality of keys 28. The  
 5 input apparatus 12 additionally includes a trackwheel 32 for additional input. Many of the keys 28 have one or more letters 30 assigned thereto, and a some of the keys 28 have a plurality of letters 30 assigned thereto. In the present exemplary embodiment, the exemplary letters 30 are Latin letters, and the exemplary Latin letters serve as linguistic elements for language entry into the handheld electronic device 4. It is understood that  
 10 while the linguistic elements of the instant exemplary embodiment are depicted as being characters, specifically Latin letters, the linguistic elements could be other elements such as, for example and without limitation, other types of characters, ideograms, portions of ideograms such as strokes, and other elements that can be used in the generation of language. The expressions “text” and “word”, and variations thereof, are to be broadly  
 15 construed herein and are not intended to be limiting in any fashion with regard to a particular language, a particular portion of a language or a means of providing an expression in a language, or to a particular language type or format.

The output apparatus 16 in the present exemplary embodiment includes a display  
 36. The output apparatus 16 may additionally include other output devices such as lights,  
 20 speakers, and other output devices without limitation.

As can be seen in Fig. 2, the processor apparatus 20 includes a processor which may be, for instance and without limitation, a microprocessor ( $\mu$ P) 40 and which is responsive to inputs from the input apparatus 12 and provides output signals to the output apparatus 16. The processor apparatus 20 additionally includes a memory 44 with which  
 25 the microprocessor 40 interfaces. The memory 44 can be any of a variety of storage devices such as, for example and without limitation, RAM, ROM, EPROM, EEPROM, and/or other devices.

The memory 44 includes a generic word list 48 that has a plurality of language objects and frequency objects stored therein. The language objects are, in the instant  
 30 example, representative of words. The language objects and the frequency objects are associated. A given frequency object is representative of a frequency value that reflects, for instance, the relative likelihood that a language object with which the frequency object is associated is what is intended by a user when the user makes an input via the



keypad 24. The memory 44 includes other objects stored and organized therein, as will be described in greater detail below.

The processor apparatus 20 has resident thereon a disambiguation routine that interfaces with the memory 44 and the objects stored therein to provide output in response to input via the input apparatus 12. Certain words and the like may advantageously be stored in one or more temporary dictionaries or other dictionaries in the memory 44 and made available to the user, such as when the user might reasonably be expected to wish to input such words. The words in such a temporary or other dictionary may be accorded a relatively high frequency value in order that such words, if appropriate, will be presented in whole or in part to the user at an early opportunity during the text entry process to limit the editing effort and other input that might otherwise be required to enter such words.

Although many uses for the invention will be apparent, one exemplary use is presented herein as being in the context of electronic mail. As can be seen in Fig. 4, for example, a message 52 has been received on the handheld electronic device 4. The exemplary message 52 in Fig. 4 includes, for instance, a recipient 54, a sender 56, and a subject 60 for reference by the user.

Each such message 52 can be said to include a quantity of data which, in the example of such a message 52, is comprised largely of text. Such text may include a number of language objects in the form of words, shortcuts, and the like that may include known parts of speech such as nouns, verbs, pronouns, adverbs, etc.

In a situation where, for example, a user enters a replying or forwarding command with respect to one of the messages 52, the user can reasonably be expected to wish to enter certain language. Such expected language might include, for example, a reference to something that has already been referred to in a prior message, for instance, a prior message in the same message thread. In some circumstances, some of the language that a user can reasonably be expected to wish to enter can be ascertained prior to entry of such language by the user.

Thus, certain language is advantageously stored in one or more temporary or other dictionaries in the memory 44 for ready use by a user in entering language. While language is described herein as being stored in temporary dictionaries, it is understood that the language could alternatively be stored in relatively permanent dictionaries. It is also

noted that the stored data is described herein as being employed in the context of a response to a message or a forwarding of a message, but it is understood that the stored data can be used in any type of data entry context, such as in the context of using a browser, a word processor, and the like without limitation.

5           In identifying language objects that the user might be expected to enter and that may not already be stored in the memory 44, the device 4 and the exemplary method in accordance with the invention advantageously identify proper language objects such as proper nouns, for instance, in the message 52 for potential storage in a dictionary. An exemplary proper noun might include, for example, the name of a person, the name of a  
10 place, the name of a product, the name of a business, etc., without limitation. In the present exemplary embodiment that employs the English language, a proper noun typically begins with an upper case letter. In order to identify proper nouns, therefore, the device 4 analyzes data, such as the incoming message 52, and identifies the words in the data that begin with an upper case letter. The identified words can then be compared with  
15 words in the generic word list 48. An upper case word that is not found in the generic word list 48 can then be added to a temporary dictionary 84 on the basis that the upper case word is likely to be a proper noun. If an identified word is found in the generic word list 48, the identified word might be ignored and not added to the temporary dictionary 84 on the basis that it is already stored elsewhere in the memory 44. As an alternative, an  
20 identified word that is found in the generic word list 48 may be stored in the temporary dictionary 84 in a form having its first letter being an upper case letter if, for example, the corresponding word stored in the generic word list 48 is a lower case word.

While the exemplary device 4 and method are described herein in the context of proper language objects beginning with an upper case letter, it is understood that proper  
25 language objects in non-English languages potentially can be identified in other fashions. It thus is understood that the teachings herein are not intended to be limited to proper language objects having initial upper case letters. Rather, the teachings can be applied to any type of proper language object that can be generally identified by the device 4 as being such.

30           The analysis of all of the language objects in a quantity of data such as a message can be cumbersome and can consume a significant portion of the processing capability of the device 4, particularly if the message is long. Proper nouns are a class of language object that the user can reasonably be expected to type and that have a good likelihood of

not already having been stored in a dictionary on the device 4. Limiting such additional processing substantially to words having an initial upper case letter, which would include proper nouns, thus advantageously saves processing power and provides enhanced disambiguation capability without introducing significant processing overhead to provide  
5 such benefit.

An example is presented in Figs. 4 and 5. The message 52 includes the following words with initial upper case letters: "Felicity", "Are", "Robbie", "Plastix", "Industries", "Framble", "If", and "Koto's". Words such as "Are", "Industries", and "If" are ordinary nouns 68 that are likely to be found in the generic word dictionary 48. Such ordinary  
10 nouns 68 are unlikely to become stored in the temporary dictionary 84, unless such words are being stored as new words with an initial capital, as mentioned above. Words such as "Felicity", "Robbie", "Plastix", "Framble", and "Koto's" are proper nouns 72 and are unlikely to be found in the generic word dictionary 48. The words "Felicity", "Robbie", "Plastix", "Framble", and "Koto's", if not found in the generic word list 48, will be stored  
15 in the temporary dictionary 84 for use in facilitating future text entry.

In this regard, of the eight words "Felicity", "Are", "Robbie", "Plastix", "Industries", "Framble", "If", and "Koto's" that were analyzed by the processor apparatus 20, three of the words, i.e., "Are", "Industries", and "If", were ordinary nouns 68. Five of the eight words, i.e., "Felicity", "Robbie", "Plastix", "Framble", and "Koto's", were  
20 proper nouns 72. It is further noted that the message 52 includes a total of thirty-five words. Only five words of the thirty-five were proper nouns 72, and in the present example, these five words are the only words that had not previously been stored on the device 4. The processing of only eight words, i.e., the words starting with an upper case letter, to obtain the five proper nouns 72 advantageously requires significantly less  
25 processing by the device 4 than if the device 4 were required to process all thirty-five words of the message 52 in order to identify the five words, i.e., "Felicity", "Robbie", "Plastix", "Framble", and "Koto's", that had not previously been stored in the memory 44.

The device 4 can be configured in any of a variety of fashions to enable it to identify proper words for potential storage in the memory 44. The example mentioned  
30 above is directed generally toward the device 4 identifying proper words by identifying words having an initial upper case character. This can be accomplished in various ways. For example, the device 4 could be configured to identify words having an initial character within the ASCII range &#065 through &#090. This ASCII range includes the upper case

Latin letters. The device additionally or alternatively could be configured, for example, to identify words having an initial character coded to be within a certain range in the Unicode standard or being among a predetermined Unicode set. Other ways of identifying proper words will be apparent. While the example presented herein is directed toward the identification of proper words by identifying words having an initial character that is upper case, the device could additionally or alternatively be configured to identify, for instance, upper case letters that are other than the initial character, characters that include a diacritic, and the like without limitation.

The first temporary dictionary 84 may additionally include frequency objects stored therein that provide frequency values for association with the stored language objects. Alternatively, the language objects in the first temporary dictionary 84 may be associated in some other fashion with a frequency value that is relatively high. In this regard, and as will be set forth in greater detail below, the exemplary disambiguation routine employed on the handheld electronic device 4 identifies language objects in the memory 44 and presents the language objects, in whole or in part, to the user in response to an ambiguous input for the purpose of providing proposed disambiguated interpretations of the ambiguous input. The output oftentimes may include a plurality of language objects, in whole or in part, listed in some fashion in a descending order of frequency value and/or in accordance with other criteria. By associating with the language objects stored in the first temporary dictionary 84 frequency objects of a relatively high frequency value, the language objects identified in the first temporary dictionary 84 during operation of the disambiguation routine may be output at a position of relatively high probability, i.e., frequency, in order to make such language objects readily available to the user. Such ready access to such language objects by the user facilitates entry and reduces the amount of input effort that may otherwise be required of the user.

An exemplary new message 64 in the form of a reply message to the original message 52 is depicted in Fig. 5. A text input location 128 is indicated by a cursor 136. The present exemplary new message 64 includes a text component 116 and a variant component 120. The text component 116 is output at a text input location 128. The variant component 120 is, in the exemplary embodiment of the depicted handheld electronic device 4, output at a lower region of the display 36. The contents of the output

include a default output 124 and a number of variants 132. The default output 124 “Fr” is depicted as being output as both the text component 116 at the text input location 128 and as the leftmost variant 132 in the variant component 120. In addition to the variant component 120 including the default output 124, the variant component 120 outputs a number of variants 132 adjacent the default output 124 to provide alternate proposed outputs.

In the present example, the user has actuated the key 28 to which the letters 30 “D” and “F” are assigned, followed by an actuation of the key 28 to which the letters 30 “E” and “R” are assigned. These key combinations could indicate a desire by the user to enter words such as “feed”, “deep”, “drive”, and the like. When words such as this are identified in the generic word list 48, a portion of the word can be output as a variant 132 based in order of descending frequency. However, in the present example, the word “Framble” has previously been identified as being a proper name and has already been added to the temporary dictionary 84. “Framble” has also been associated with a frequency object having a relatively high frequency value. In the present example, “Framble” is associated with a frequency object having a higher frequency value than any of the words in the generic word list 48 that correspond with the aforementioned two keystrokes. As such, “Fr” is listed as the default output 124.

In this regard, the word “Framble” is made available to the user to facilitate text entry. The word “Framble” was made available to the user because it previously had been identified as a proper noun 72 and was added as such to the temporary dictionary 84. The word “Framble” advantageously was identified by the processor apparatus 20 in the context of analyzing eight words from the message 52, rather than in the context of analyzing all thirty-five words of the message 52. The device 4 and the method described herein thus facilitate text entry, and this feature is provided without introducing significant additional processing overhead to the device 4.

A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or patent disclosure, as it appears in the U.S. Patent and Trademark Office patent file or records, but otherwise reserves all copyrights whatsoever.

While specific embodiments of the invention have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. Accordingly, the particular arrangements disclosed are meant to be illustrative only and  
5 not limiting as to the scope of the invention, which is to be given the full breadth of the claims appended and any and all equivalents thereof.

**CLAIMS:**

1. A method of enabling disambiguation of an input into a handheld electronic device, the handheld electronic device including an input apparatus, an output apparatus,  
 5 and a memory having a plurality of objects stored therein, the plurality of objects including a plurality of language objects, the input apparatus including a plurality of input members, at least some of the input members each having a plurality of linguistic elements assigned thereto, the method comprising:
- receiving on the handheld electronic device a quantity of data including a number  
 10 of language objects;
- identifying from among the number of language objects in the quantity of data a number of potential proper language objects for potential storage in the memory as proper language objects, the identified potential proper language objects being fewer than all of the language objects in the quantity of data;
- 15 comparing the potential proper language objects with the plurality of language objects in the memory to identify at least some of the potential proper language objects as being not among the plurality of language objects in the memory;
- storing in the memory the at least some of the potential proper language objects as proper language objects;
- 20 detecting an ambiguous input including a number of input member actuations, each of at least some of the input members each including a number of linguistic elements assigned thereto, at least one of the input members having as the number of linguistic elements assigned thereto a plurality of linguistic elements assigned thereto;
- identifying in the memory a proper language object that corresponds with the  
 25 ambiguous input; and
- outputting at least a portion of the proper language object as a proposed disambiguation of the ambiguous input.
2. The method of Claim 1, further comprising identifying as a potential proper  
 30 language object a language object from among the number of language objects that is a proper noun.

3. The method of Claim 1, further comprising identifying as a potential proper language object a language object from among the number of language objects having an upper case character as an initial character.

5 4. The method of Claim 1, further comprising identifying as a potential proper language object a language object from among the number of language objects having an initial portion that corresponds with a code designation within a predetermined range of code designations.

10 5. The method of Claim 1, further comprising identifying as a potential proper language object a language object from among the number of language objects having an initial character within a predetermined ASCII range.

15 6. The method of Claim 1, further comprising identifying as a potential proper language object a language object from among the number of language objects having an initial character within the ASCII range &#065 through &#090.

20 7. The method of Claim 1, further comprising determining that one of the potential proper language objects is among the plurality of language objects in the memory and, responsive thereto, ignoring the one of the potential proper language objects.

8. The method of Claim 1, further comprising determining that the quantity of data is greater in size than a predetermined size.

25 9. The method of Claim 1, further comprising:  
detecting at least one of a replying input and a forwarding input with respect to the data; and  
responsive to said detecting one of a replying input and a forwarding input, performing said identifying, said comparing, and said storing.

30

10. The method of Claim 1, further comprising associating with at least a first proper language object a frequency object having a relatively high frequency value.



11. A handheld electronic device comprising:

a processor apparatus including a memory having a plurality of objects stored therein, the plurality of objects including a plurality of language objects;

5 an input apparatus including a plurality of input members, at least some of the input members each having a plurality of linguistic elements assigned thereto;

an output apparatus;

the handheld electronic device being adapted to receive thereon a quantity of data including a number of language objects;

10 the processor apparatus being adapted to identify from among the number of language objects in the quantity of data a number of potential proper language objects for potential storage in the memory as proper language objects, the identified potential proper language objects being fewer than all of the language objects in the quantity of data;

15 the processor apparatus being adapted to compare the potential proper language objects with the plurality of language objects in the memory to identify at least some of the potential proper language objects as being not among the plurality of language objects in the memory;

the processor apparatus being adapted to store in the memory the at least some of the potential proper language objects as proper language objects;

20 the processor apparatus being adapted to detect an ambiguous input including a number of input member actuations;

the processor apparatus being adapted to identify in the memory a proper language object that corresponds with the ambiguous input; and

25 the output apparatus being adapted to output at least a portion of the proper language object as a proposed disambiguation of the ambiguous input.

12. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to identify as a potential proper language object a language object from among the number of language objects that is a proper noun.

30 13. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to identify as a potential proper language object a language object from among the number of language objects having an upper case character as an initial character.

14. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to identify as a potential proper language object a language object from among the number of language objects having an initial portion that corresponds with a code designation within a predetermined range of code designations.

5

15. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to identify as a potential proper language object a language object from among the number of language objects having an initial character within a predetermined ASCII range.

10

16. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to identify as a potential proper language object a language object from among the number of language objects having an initial character within the ASCII range &#065 through &#090.

15

17. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to determine that one of the potential proper language objects is among the plurality of language objects in the memory and, responsive thereto, to ignore the one of the potential proper language objects.

20

18. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to determine that the quantity of data is greater in size than a predetermined size.

19. The handheld electronic device of Claim 11 wherein the processor apparatus:

25

is adapted to detect at least one of a replying input and a forwarding input with respect to the data; and

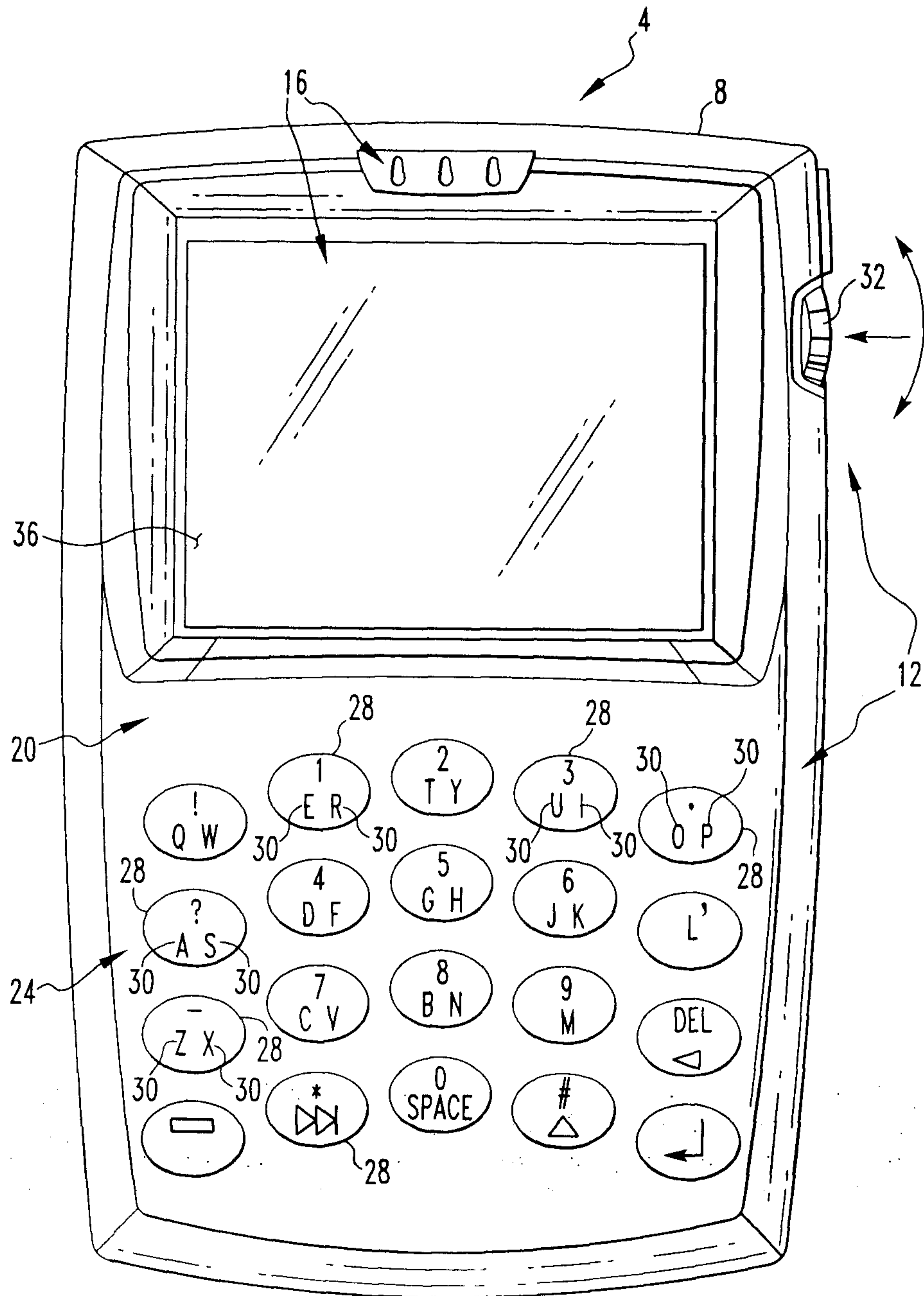
30

responsive to detecting one of a replying input and a forwarding input, is adapted to initiate identifying from among the number of language objects in the quantity of data the number of potential proper language objects, comparing the potential proper language objects with the plurality of language objects in the memory to identify at least some of the potential proper language objects as being not among the plurality of language objects in the memory, and storing in the memory the at least some of the potential proper language objects as proper language objects.

20. The handheld electronic device of Claim 11 wherein the processor apparatus is adapted to associate with at least a first proper language object a frequency object having a relatively high frequency value.

5

1/3



2/3

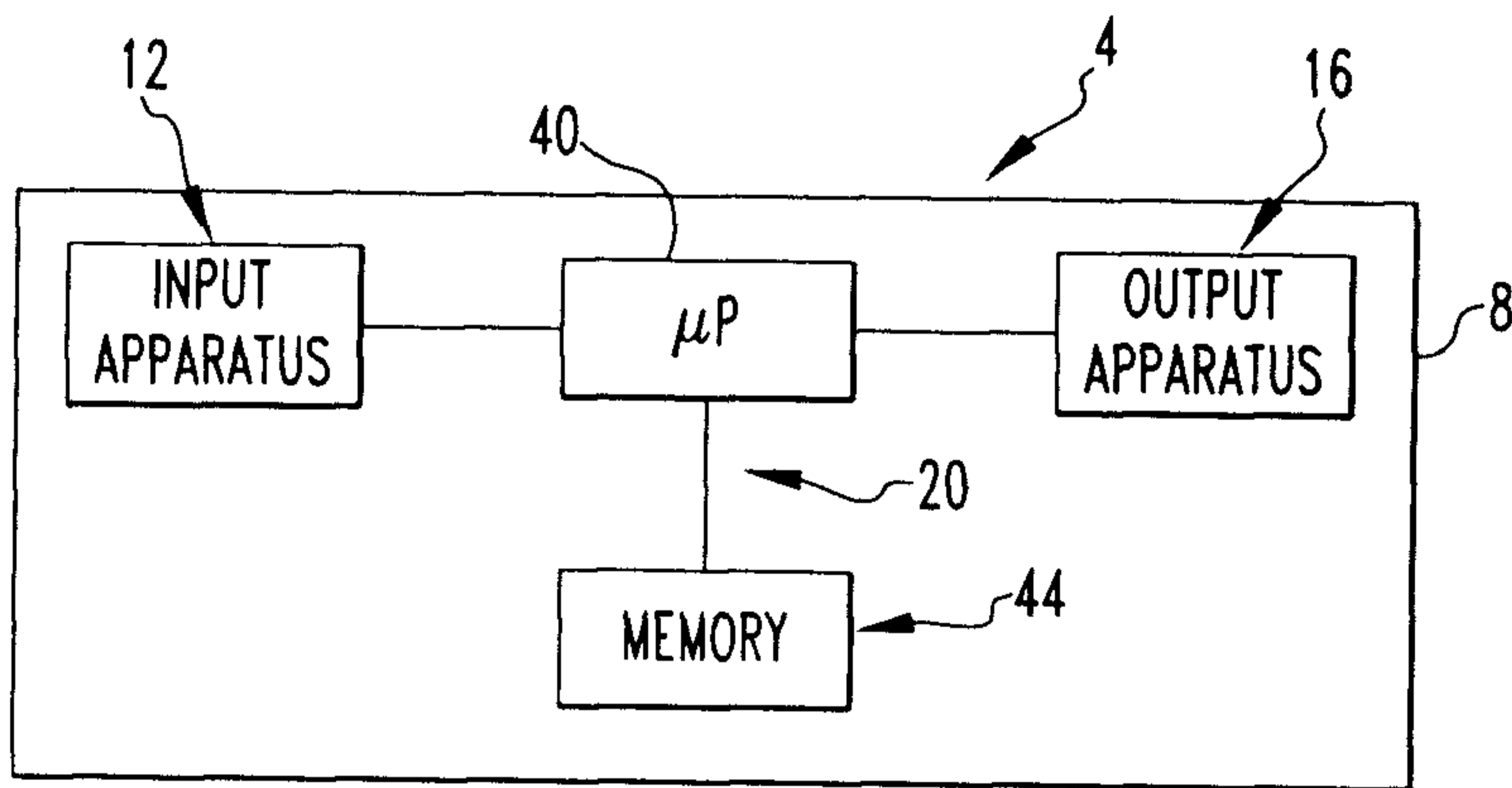


FIG. 2

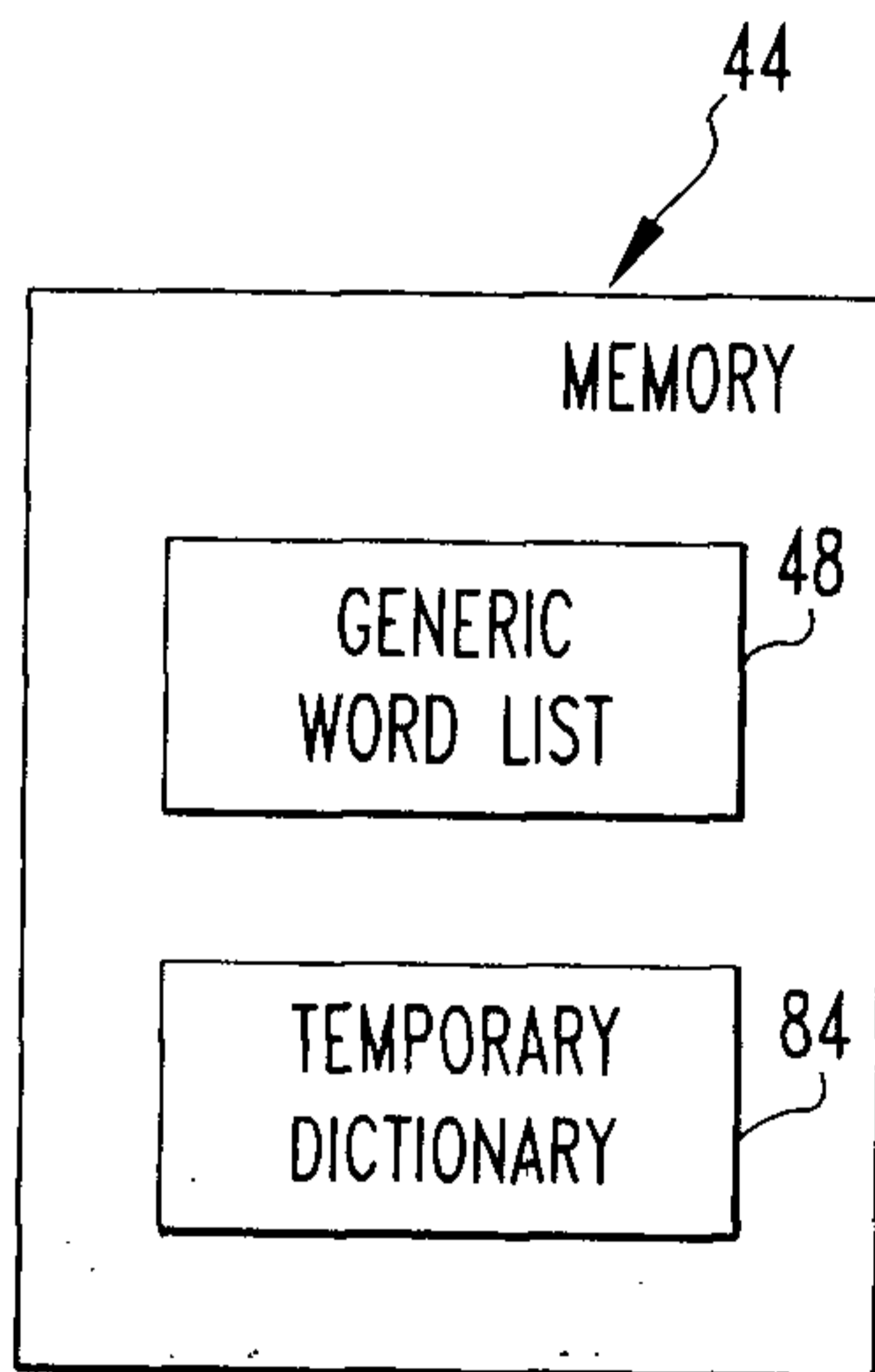


FIG. 3

3/3

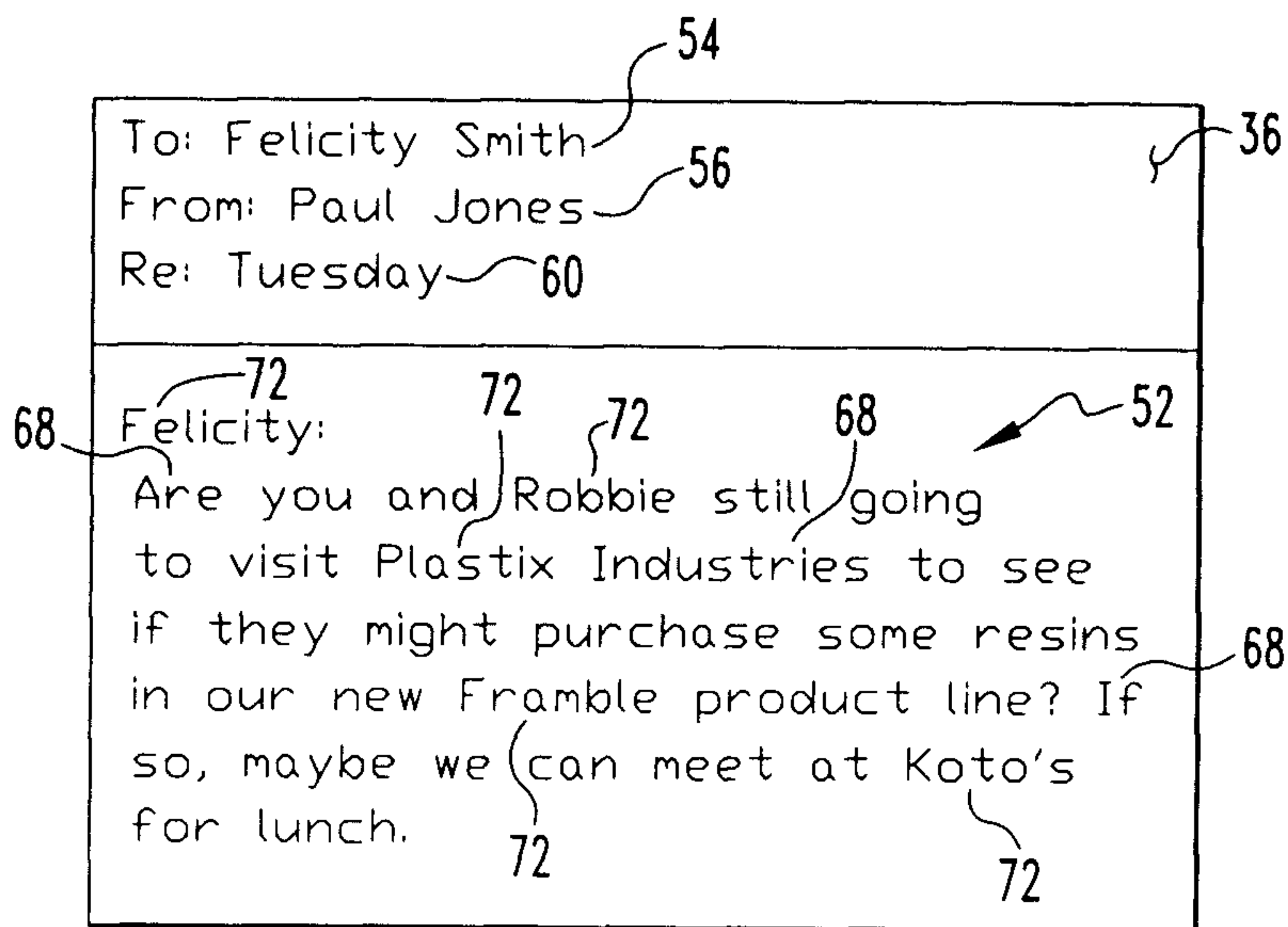


FIG. 4

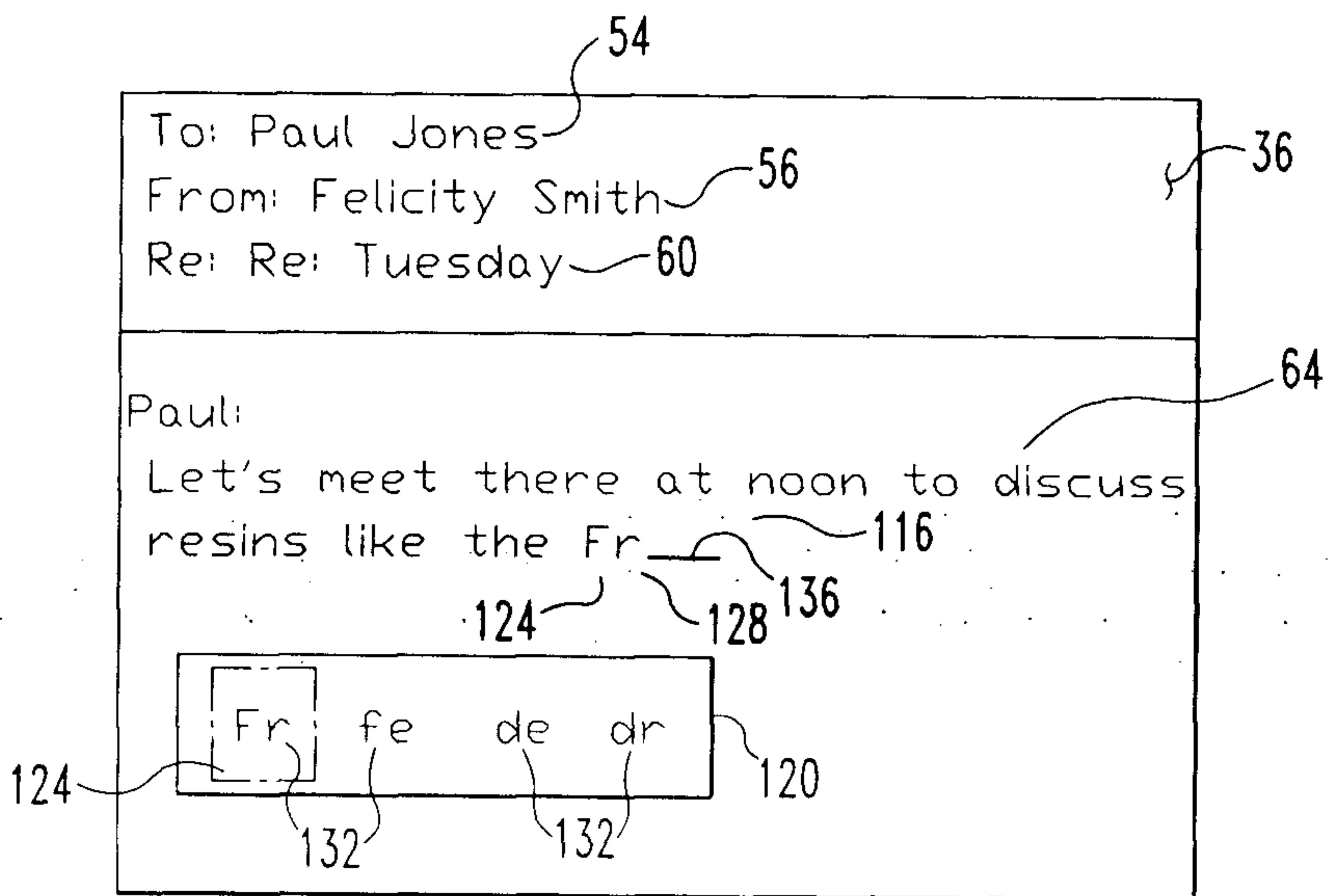


FIG. 5

To: Felicity Smith

From: Paul Jones

Re: Tuesday

Felicity:

Are you and Robbie still going to visit Plastix Industries to see if they might purchase some resins in our new Framble product line? If so, maybe we can meet at Koto's for lunch.

